Consciousness-Based Education: A Foundation for Teaching and Learning in the Academic Disciplines

A Series of 12 Volumes

Managing Editor, Dara Llewellyn
Executive Editor, Craig Pearson

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Higher education faces a complex set of challenges today. We are seeing resources diminish at the same time we are hearing calls for greater access and affordability. Demands for greater transparency and accountability are being sounded by both the general public and the government. Government is exerting increasing controls in this long-independent area.

These challenges, however, are merely financial and political, and they are hardly limited to colleges and universities. The fundamental challenges are educational and center around the students themselves. Challenges include high levels of stress, pervasive substance abuse (particularly binge drinking), lack of preparedness for college-level work, and mental and emotional disabilities. In most of these areas, the problem is serious and worsening. Though colleges and universities are striving to address these challenges, few would claim we are turning the tide.

An encouraging trend is the increasing focus in higher education nationwide on promoting student learning. Yet these laudable efforts do not take into account the powerful forces working in opposition. It is well known that learning is inhibited by stress, sleep deprivation, alcohol, and poor diet—and these are among the most conspicuous features of the college student experience.

Something new is required. Education needs a reliable means of developing students directly from within. We need a systematic method for cultivating their creative intelligence, their capacity to learn, and their natural humanity. All education aims at these goals, of course—but the approach thus far has been from the outside in, and the results have been haphazard at best.

Consciousness-Based education was established to address this need. It integrates the best practices of education and places beneath them a proper foundation—direct development of the student from inside out.

The outcomes of Consciousness-Based education have been unprecedented and scientifically verified. These outcomes include significant
growth of intelligence, creativity, learning ability, field independence, ego development, and moral maturity, among others. These results are remarkable because many of these values typically plateau in adolescence—but Consciousness-Based education promotes this growth in students of all ages, developing potentials that otherwise would have remained unexpressed.

Beyond this rich cognitive growth, Consciousness-Based education significantly reduces student stress, boosts self-esteem, improves health, reduces substance use, and enhances interpersonal relationships. All of this comes together to create exceptional learning environments. This approach even measurably improves the quality of life in the surrounding society.

Consciousness-Based education was founded by Maharishi Mahesh Yogi, the world authority on the science of consciousness. First pioneered at Maharishi University of Management (previously Maharishi International University, 1971–1995) in Fairfield, Iowa, Consciousness-Based education is being adopted by schools, colleges, and universities around the world. It is easily integrated into any school, without any change in mission or curriculum.

Consciousness-Based education recognizes that student learning depends fundamentally on students’ levels of consciousness or alertness. The more alert and awake the student, the more successful and satisfying the learning.

Consciousness-Based education consists of three components:

- a practical technology for directly developing students’ potential from within,
- a theoretical understanding of consciousness that gives rise to a unifying framework for knowledge, enabling students to easily grasp the fundamental principles of any discipline and to connect these principles to their own personal growth, and
- a set of classroom practices, arising from this understanding, that also helps promote effective teaching and learning.
The Transcendental Meditation program

At the heart of Consciousness-Based education is the practice of the Transcendental Meditation technique. The technique was brought to light by Maharishi Mahesh Yogi from the Vedic tradition of India, the world’s most ancient continuous tradition of knowledge. It is practiced for 20 minutes twice daily, once in the morning and once in the afternoon, while sitting comfortably with eyes closed. It is simple, natural, and effortless—so simple, in fact, that ten-year-old children can learn and practice it. It has been learned by more than six million people worldwide, of all ages, religions, and cultures.

The Transcendental Meditation technique differs from other procedures of meditation and relaxation in its effortlessness. It involves no concentration or control of the mind. Neither is it a religion, philosophy, or lifestyle. It involves no new codes of behavior, attitudes, or beliefs, not even the belief it will work.

The Transcendental Meditation program is the most extensively validated program of personal development in the world. It has been the subject of more than 600 scientific research studies, conducted at more than 250 universities and research institutions in more than 30 countries worldwide. These studies have been published in more than 150 scientific and scholarly journals in a broad range of fields, including Science, Scientific American, American Journal of Physiology, International Journal of Neuroscience, Memory and Cognition, Social Indicators Research, Intelligence, Journal of Mind and Behavior, Education, Journal of Moral Education, Journal of Personality and Social Psychology, Business and Health, British Journal of Educational Psychology, Journal of Human Stress, Lancet, Physiology and Behavior, and numerous others. No approach to education has as much empirical support as Consciousness-Based education.

This approach, moreover, has been successfully field-tested over the past 35 years in primary, secondary, and post-secondary schools all over the world, in developed and developing nations, in a wide variety of cultural settings—the United States, Latin America, Europe, Africa, India, and China.

The Transcendental Meditation technique enables one to “dive within.” During the practice, the mind settles inward, naturally and spontaneously, to a state of deep inner quiet, beyond thoughts and per-
consciousness-based education

Ceptions. One experiences consciousness in its pure, silent state, uncolored by mental activity. In this state, consciousness is aware of itself alone, awake to its own unbounded nature.

The technique also gives profound rest, which dissolves accumulated stress and restores balanced functioning to mind and body.

This state of inner wakefulness coupled with deep rest represents a fourth major state of consciousness, distinct from the familiar states of waking, dreaming, and sleeping, known as Transcendental Consciousness.

In this restfully alert state, brain functioning becomes highly integrated and coherent. EEG studies show long-range spatial communication among all brain regions. This coherence is in sharp contrast to the more or less uncoordinated patterns typical of brain activity.

With regular practice, this integrated style of functioning carries over into daily activity. Research studies consistently show a high statistical correlation between brainwave coherence and intelligence, creativity, field independence, emotional stability, and other positive values. The greater one’s EEG coherence, in other words, the greater one’s development in these fundamental areas. At Maharishi University of Management, students even have the option of a Brain Integration Progress Report—an empirical measure of growth of EEG coherence between their first and last years at the University.

The brain is the governor of all human activity—and therefore personal growth and success in any field depend on the degree to which brain functioning is integrated. The increasingly integrated brain functioning that spontaneously results from Transcendental Meditation practice accounts for its multiplicity of benefits to mind, body, and behavior.

Every human being has the natural ability to transcend, to experience the boundless inner reality of life. Every human brain has the natural ability to function coherently. It requires only a simple technique.

Theoretical component—
a unified framework for teaching and learning

Scholars have long called for a way to unify the diverse branches of knowledge. Current global trends are making this need ever more
apparent. The pace of progress is accelerating, the knowledge explosion continues unabated, and knowledge is becoming ever more specialized.

Academic disciplines offer a useful way of compartmentalizing knowledge for purposes of teaching, learning, research, and publication. But each academic discipline explores only one facet of our increasingly complex and interrelated world. The real world, however, is not compartmentalized—an elephant is not a trunk, a tusk, and a tail. Academic disciplines, consequently, are criticized as inadequate, in themselves, for understanding and addressing today’s challenging social problems.

Today, more than ever, we need a means of looking at issues comprehensively, holistically. We need a way of discovering and understanding the natural relationships among all the complex elements that compose the world, even among the complex elements that compose our own disciplines.

Various attempts to address this need have been made under the rubric of interdisciplinary studies—programs or processes that aim to synthesize the perspectives and promote connections among multiple disciplines. Some of these efforts have been criticized as superficial joinings of disciplinary knowledge. But the chief criticism of interdisciplinary studies—leveled even by its proponents—is that looking at an issue from multiple perspectives does not, in itself, enable one to find the common ground among contrasting viewpoints, to resolve conflicts, and to arrive at a coherent understanding.

The diverse academic disciplines can be properly unified at only one level—at their source. All academic disciplines are expressions of human consciousness—and if the fundamental principles of consciousness can be identified and understood, then one would gain a grasp of all human knowledge in a single stroke.

This brings us to the theoretical component of Consciousness-Based education. Consciousness-Based education does precisely this—and not as an abstract, theoretical construct but as the result of students’ direct experience of their own silent, pure consciousness. In this sense, practice of the Transcendental Meditation technique forms the laboratory component of Consciousness-Based education, where the theoretical predictions of Consciousness-Based education can be verified through direct personal experience.
This theoretical component offers a rich and deep yet easy-to-grasp intellectual understanding of consciousness—its nature and range, how it may be cultivated, its potentials when fully developed. This theoretical component also identifies how the fundamental dynamics of consciousness are found at work in every physical system and in every academic discipline at every level.

With this knowledge as a foundation, teachers and students in all disciplines enjoy a shared and comprehensive understanding of human development and a set of deep principles common to all academic disciplines—a unified framework for knowledge. With this unified framework as a foundation, students can move from subject to subject, discipline to discipline, and readily understand the fundamental principles of the discipline and recognize the principles the discipline shares with the other disciplines they have studied. This approach makes knowledge easy to grasp and personally relevant to the student.

**Pure consciousness and the unified field**

Consciousness has traditionally been understood as the continuous flux of thoughts and perceptions that engages the mind. Thoughts and perceptions, in turn, are widely understood to be merely the by-product of the brain’s electrochemical functioning.

Maharishi has put forward a radically new understanding of human consciousness. In Consciousness-Based education, pure consciousness is understood as the foundation and source of all mental activity, the most silent, creative, and blissful level of the mind—the field of one’s total inner intelligence, one’s innermost Self. (This unbounded value of the Self is written with an uppercase “S” to distinguish it from the ordinary, localized self we typically experience.) Direct experience of this inner field of consciousness awakens it, enlivens its intrinsic properties of creativity and intelligence. Regular experience of pure consciousness through the Transcendental Meditation technique leads to rapid growth of one’s potential, to the development of higher states of human consciousness—to *enlightenment*.

But consciousness is more, even, than this.

Throughout the twentieth century, leading physicists conjectured upon the relation between mind and matter, between consciousness and the physical world; many expressed the conviction that mind is,
somehow, the essential ingredient of the universe. But Maharishi goes further. He has asserted that mind and matter have a common source, and that this source is pure consciousness. Consciousness in its pure, silent state is identical with the most fundamental level of nature’s functioning, the unified field of natural law that has been identified and described by quantum theoretical physicists over the past several decades. Everyone has the potential to experience this field in the simplest form of his or her own awareness. Considerable theoretical evidence, and even empirical evidence, has been put forward in support of this position.

Maharishi has developed these ideas in two bodies of knowledge, the first known as the Science of Creative Intelligence, the second as Maharishi Vedic Science and Technology. The Science of Creative Intelligence examines the nature and range of consciousness and presents a model of human development that includes seven states of consciousness altogether, including four higher states beyond the familiar states of waking, dreaming, and sleeping. These higher states, which develop naturally and spontaneously with Transcendental Meditation practice, bring expanded values of experience of one’s self and the surrounding world. Each represents a progressive stage of enlightenment. Maharishi Vedic Science and Technology examines the dynamics of pure consciousness in fine detail. It reveals the fundamental principles of consciousness that may then be identified in every field of knowledge and every natural system.

Most important for teaching and learning, these sciences reveal how every branch of knowledge emerges from the field of pure consciousness and how this field is actually the Self of every student.

**Strategies for promoting teaching and learning**

Consciousness-Based education also includes a battery of educational strategies that promotes effective teaching and learning. Foremost among these is the precept that parts are always connected to wholes and that learning is most effective when learners are able to connect parts to wholes. In Consciousness-Based education, the parts of knowledge are always connected to the wholeness of knowledge, and the wholeness of knowledge is connected to the Self of the student.
One means of doing this is through *Unified Field Charts*. These wall charts, developed by the faculty at Maharishi University of Management and used in every class, do three things: (1) They show all the branches of the discipline at a glance; (2) They show how the discipline emerges from the field of pure consciousness, the unified field of natural law at the basis of the universe; (3) They show that this field is the Self of the student, which the student experiences during practice of the Transcendental Meditation technique.

In this way students can always see the relation between what they are studying and the discipline as a whole, and they can see the discipline as an expression of their own pure consciousness. Again, this is more than an intellectual formulation—it is the growing reality of students’ experience as they develop higher states of consciousness.

Another strategy is *Main Point Charts*. Developed by the faculty for each lesson and posted on the classroom walls, these charts summarize in a few sentences the main points of the lesson and their relationship to the underlying principles of consciousness. In this way students always have the lesson as a whole in front of them, available at a glance.

**The next paradigm shift**

If higher education is fundamentally about student learning and growth, then Consciousness-Based education represents a major paradigm shift in the history of education. To understand this change, it is useful to reflect on the encouraging paradigm shift that has already been taking place in education over the past several decades.

This shift involves a move from what many call an *instruction paradigm* to a *learning paradigm*. In the instruction paradigm, the mission of colleges and universities is to provide instruction; this is accomplished through a transfer of knowledge from teacher to student. In the learning paradigm, the mission is to produce student learning; this mission is achieved by guiding students in the discovery and construction of knowledge.

This shift is a vitally important advance in education, leading to more successful outcomes and more rewarding experiences for students and teachers alike. But a further paradigm shift remains, and we can understand it by examining a fundamental feature of human experience.
Maharishi observes that every human experience consists of three fundamental components: a knower, a known, and a process of knowing linking knower and known. We may also use the terms experiencer, object of experience, and process of experiencing, or observer, observed, and process of observation.

This threefold structure of experience is nowhere more evident than in schools: The knowers are the students, the known is the knowledge to be learned, and the process of knowing is what the full range of teaching and learning strategies seek to promote.

Understanding this threefold structure helps us understand the paradigm shifts that are taking place.

The instruction paradigm places emphasis on the known. It focuses on the information students are to absorb and the skills they are to learn. In this paradigm, the instructor’s role is to identify what students need to know and deliver it to them.

The learning paradigm emphasizes the process of knowing. It recognizes that students must be actively involved in the learning process, that knowledge is something individuals create and construct for themselves, that students have differing learning styles and differing interests that must be taken into account. In this paradigm, the instructor’s role is to create learning environments and experiences that promote the process of learning.

The Consciousness-Based paradigm embraces the known and the process of knowing but places primary emphasis on the knower—on
Consciousness-Based education, in summary, is a theory and practice grounded in a systematic science and technology of consciousness, making available the complete experience, systematic development, and comprehensive understanding of the full range of human consciousness. More than 30 years’ experience and extensive scientific research
confirm the success of this approach and its applicability to any educational institution.

About this book series
This series of twelve volumes is the result of a unique faculty-wide project that began with the founding of Maharishi University of Management in 1971 and continues to this day. Each volume in the series examines a particular academic discipline in the light of our Consciousness-Based approach to education.

Volumes include:

• an introductory paper introducing the Consciousness-Based understanding of the discipline,
• a Unified Field Chart, if available for publication, for the discipline—a chart that conceptually maps all the branches of the discipline and illustrates how the discipline emerges from the field of pure consciousness and how that field is the Self of every individual. Thus, these charts connect the “parts” of knowledge to the “wholeness” of knowledge and the wholeness of knowledge to the Self of the student;
• subsequent papers that show how this understanding may be applied in various branches of the discipline,
• occasional examples of student work exploring how the Consciousness-Based approach enhances learning in the discipline, and
• an appendix describing Maharishi Vedic Science and Technologies of Consciousness in detail.
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We welcome inquiries and further contributions to this series.

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Because education is a human endeavor, it is governed to a large degree by human conception. Or, in other words, what is done in the name of education is a lot about what we think we are trying to do. Of course, other ideas and influences arise naturally in the process of teaching and learning, but these are ignored, adjusted, or enforced according to our goals.

Many of today’s reform efforts, for example, are aimed at closing the gap in test scores between the rich and the poor, or at making the nation’s students more competitive in today’s international economy, or at ensuring that all children meet discipline-based national standards. These are worthy aims, but they sell short the potential of education. They aim too low. According to the articles in this volume, even for the poor child or for the child who has difficulty learning, the school and the teacher should aim for more than improved test scores or an easier time learning. To focus on these is to focus the enormous energies of the young mind on a fragment of a picture rather than the picture itself.

Maharishi Mahesh Yogi, the person who inspired the articles in this volume, was a great scholar in the Vedic tradition of India. He was the favored disciple of Brahmananda Saraswati Shankaracharya of Jyotir Math, a figure known throughout India as the leading light of the Shankaracharya tradition. It was under his spiritual leadership that India attained independence. It was under his tutelage that Maharishi, after attaining a bachelor's degree in modern physics, gained mastery of the principles and practices extolled by the Vedic texts.

When Maharishi began to teach in 1955, he brought out a much higher aim for education than is commonly espoused today. Maharishi proclaimed in writings and lectures that with proper education, a per-
son “can accomplish the maximum in life.”

Education is for achieving enlightenment for the individual and invincibility for the nation. It would be narrow, however, to say that Maharishi was the only one to propose this broader, deeper, and more holistic vision of education. In every continent in nearly every epoch of recorded history, there have been those who have viewed the first and last responsibility of education to unlock the full potential of body, mind, and spirit, to discover and live wholeness in life. It was Maharishi’s genius, however, that interpreted this ancient and eternal vision of education, sometimes called the perennialist tradition of education, for our modern, scientific mind. He gave this vision scientific footing.

In addition, Maharishi went far beyond others in this time-honored tradition. We know of no one else in recorded history who went so far as to make the perennialist tradition practical and attainable for all people, even those in today’s fast-paced, multitasking, doubting times.

Maharishi made the tradition practical and attainable, possibly for the first time, by placing experience at the heart of his teachings. Through the Transcendental Meditation program and other advanced technologies that he restored from the ancient Vedic tradition, he made it possible for the average person to experience for him or herself the unified, blissful center of life, about which the perennialists had been writing. From this experience one could confirm on the basis of one’s own experience the central tenets of the theory espoused by great leaders of the world’s religions, by leading scientists, philosophers and poets of times gone by. Once such an experience could be reliably replicated in one’s own life, the experience and its consequences became open to scientific investigation and integration into modern scientific thought.

This volume is meant as an introduction to the theory, the technology, and evaluation research on this Vedic approach to education, called Consciousness-Based education. Already the initial appreciations for this Consciousness-Based approach over 38 years have been

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3 For the philosophical roots of the perennialist’s education theory, see Aldous Huxley’s The Perennialist Philosophy, NY: Harper and Brothers, 1944.
very encouraging, and now the opportunity exists to introduce this approach to education in schools of any size. This writing is meant to provide greater understanding and support for administrators or teachers who want to take first steps to incorporate Consciousness-Based education into their school or college.

Understanding Consciousness-Based Education

The term Consciousness-Based education is the broadest and most recent term that Maharishi used for his theory and practice of education ("unified field based-education" and "Maharishi Vedic Science-Based Education" are other terms that appear in this volume). As the name suggests, Consciousness-Based education starts from an understanding of consciousness. All other concepts and practices arise from an understanding of this fundamental field.

Little more needs to be said by way of introduction to this term "consciousness," since every article in this volume expands upon its meaning. However, it will be useful to prepare the reader from the beginning that consciousness may be used in two ways. Maharishi Vedic Science, the science of consciousness derived from the Vedic tradition of India, distinguishes three fields of life commonly experienced by humankind: the physical world including the human body, the mental world of thought, and the less often available and recorded experience of a transcendental world, the Self, or the spirit, the silent witness to all thought and objects of perception.

Consciousness pervades all three worlds. This is a central tenet of Maharishi Vedic Science and it is confirmed through both theoretical analysis and direct experience. As one’s consciousness develops through regular experience of the Transcendental Meditation and TM-Sidhi programs, one begins to experience consciousness within, the source of one’s own thoughts and one’s own physical body. One also begins to experience consciousness existing within the objects of perception around us. From the vantage point of this experience, everything is consciousness, and Consciousness-Based education is dedicated to locating this experience in all fields of study and all practical enterprises.

Consciousness, however, may also be used to refer to consciousness in the more pure sense in which it is first encountered within one’s own awareness, at the source of thought, at the transcendental basis of the
mental and physical worlds. This is consciousness without any thought content, usually referred to as “pure consciousness.” In this sense Consciousness-Based education is dedicated to locating that transcendental basis of every field—for example, pure beauty in art, or the self-organizing basis of life in biology.

Consciousness, therefore, may be used in both ways: as the essential content of life, organizing and driving all forms and phenomena; or as the pure field of creative intelligence by itself, existing at the source of thought, formless, unbounded, and infinite in energy and intelligence. Consciousness-Based education relates learning to both aspects—the moving and the silent aspects of consciousness.

Orientation to Articles in this Volume

Part I

Consciousness-Based Education Theory is devoted to thoroughly introducing the rationale for, and main principles of, Consciousness-Based education.

Address by Maharishi Mahesh Yogi

We begin with one of the best known of Maharishi’s early lectures on education, laying out the origin, scope, and expected outcomes of Consciousness-Based education, given in Chicago in 1973 to the annual national conference of the American Association for Higher Education (AAHE). Maharishi first introduces a simple but profound analysis of the problems and solutions in higher education from the vantage point of developing fulfillment in life. Something is lacking, he explains, which is why education “either fails to inspire the student for knowledge or it becomes boring.”

Maharishi explains that all knowledge involves three aspects: the knower, an object of knowledge, and the process of knowing, which connects them. When the knower comes to know the known through a process of knowing, knowledge is created. Education in the West has been very effective at delivering the known, but it has been unable to deliver knowledge of the knower, the basis of knowledge. The result is that knowledge is incomplete and therefore unfulfilling, unsatisfying, and of limited use. This education has brought practical gains in sci-
ence and technology, but not in the quality of life or fulfillment. For example, it has not brought us closer to solving the problems of countries living together. By adding the missing element, knowledge of the knower, education can provide complete knowledge and “every citizen of every nation could rise to his full potential” (38). We use the first article of the volume, then, to introduce Consciousness-Based education in terms of the fundamental structure of consciousness, composed of a knower, known, and process of knowing.

S.L. Dillbeck on Consciousness-Based Education and Its Four Basic Components

Dr. Dillbeck examines the theory and practice of Consciousness-Based Education, founded by Maharishi Mahesh Yogi, specifically, the four basic components of this educational system: 1) courses on consciousness for direct experience and intellectual understanding; (2) study of the standard disciplines in light of the knowledge of the full potential of consciousness; (3) teaching and curriculum practices that holistically develop the personality toward more expanded levels of awareness; and (4) a healthy, stress-free routine and nourishing environment.

Grant and Jones on the Significance of Pure Consciousness for Education

Drs. James Grant and Christopher Jones also provide an overview of Consciousness-Based education, though from a slightly different angle. Rather than organizing and summarizing all that Maharishi has said about education, as the preceding article does, this article starts from a simple premise mentioned by Maharishi in his AAHE talk in this volume and unpacks the logic of Consciousness-Based education from this statement:

If the age is to change to one of invincibility, a fundamental value has to be supplied to the field of education. This missing fundamental is knowledge of pure consciousness and how to experience it.4

Grant and Jones then unfold the logic of how discovery of this missing fundamental radically alters the educator’s conception of human nature, learning and development, and knowledge. The revised view of these three elements of the educational process (essentially knower, process of knowing, and known) then gives rise to a more complete and fundamental theory of education, on which can be based more effective educational programs and practices. The authors summarize both research and evaluation results from educational institutions using Consciousness-Based education.

Boothby on Interdisciplinary Study
In this article Dr. Samuel Boothby examines the benefits of Consciousness-Based education for interdisciplinary studies, an approach to curriculum design that swept across higher education some 30 years ago. As he explains, the goal of this approach was to address complex, real-life problems which seemed resistant to solution through single-disciplinary analysis. The problem that interdisciplinary studies faces now, as then, is that the languages and methods of the disciplines are so different that interdisciplinary approaches may have no common language, method, or techniques to use when attacking complex problems.

As Dr. Boothby points out, Maharishi Science of Creative Intelligence and Maharishi Vedic Science, together the theoretical component of Consciousness-Based-education, include a language and a body of principles that permit cross-disciplinary conversation and research. Dr. Boothby then reviews the research which suggests that not only can Consciousness-Based education facilitate the cross-disciplinary work, but when combined with the practice of the Transcendental Meditation technique it can achieve the ends of interdisciplinary study, namely, creating citizens capable of understanding and addressing the problems of the world beyond academe.

Jones on the Impact of Consciousness-Based Education in Higher Education
This article examines the early research (up to 1978) on the outcomes of Maharishi University of Management in the context of higher education assessment as a whole. It reviews both scientific research and evaluation data that indicate that Maharishi University of Manage-
ment is doing quite well on standard measures of learning and growth, but also is extending those outcome measures in higher education. In addition to the traditional measures of student satisfaction and general education achievement data, the University has measured development of consciousness as a whole, improvements in health, and reduction of social stress in the society as a whole. This article, therefore, not only supports the success of the University as an example of Consciousness-Based-education in higher education, but also advances a broader concept of education, including outcomes not typically even considered by most institutions.

**Dillbeck and Dillbeck on Unified Field-Based Education**

The next article by Drs. Michael and Susan Dillbeck, first published in the *Journal of Modern Science and Vedic Science*, is the most comprehensive article in the collection summarizing theory, research, and practice in education at all levels. Published initially in 1978, this article still provides the best overview to the field by two of the most respected experts on the research and theory of Consciousness-Based education in elementary, secondary, and higher education levels. It includes a far-ranging introduction to Maharishi’s theory, largely in his own words.

**Part II**

**Research Studies**

This section of the volume presents three ground-breaking studies with wide-ranging implications for education. The first study by Travis, Haaga, Hagelin, Tanner, Nidich, Gaylord-King, Grosswald, Rainforth, & Schneider focuses on the effects of the Transcendental Meditation program component of Consciousness Based-education on brain functioning in a typical college population at a moderately selective private college. The second study by So Kam Tim & Orme-Johnson examines the impact of the Transcendental Meditation program on seven facets of intellectual functioning in a junior high school population in Taiwan. The third study by Chandler, Alexander, & Heaton examines the impact of Consciousness-Based education (involving students attending a Consciousness-Based education institution) on human development,
as measured by ego development, a broad construct that incorporates within it cognitive, social, and moral development.

In keeping with the theoretical work we have chosen in Part I, these studies have been chosen because they have the potential to expand significantly the way we conceive and practice education. They represent only a sample of the hundreds of studies that have been done on various aspect of Consciousness-Based education, but because the constructs they discuss (brain functioning, cognitive functioning, and ego development) are so fundamental, they amply illustrate the extent of the impact of Consciousness Based education on academic abilities.

**Travis et al. on the Effects of Transcendental Meditation Practice on Brain Functioning and Stress Reactivity**

Originally published in 2008, this 10-week longitudinal study followed 50 college students at an east coast college who learned the Transcendental Meditation program, compared with a control group who delayed learning by the same 10 weeks. Dependent variables focused mainly on brain functioning, including a brain integration scale score drawn from a number of EEG measures, electrodermal habituation, sleepiness, heart rate, respiratory sinus arrhythmia, and P300 latencies. This article, in addition to providing a comprehensive examination of the effects of the Transcendental Meditation program on the brain functioning of college students, gives a thorough conceptual overview of the effects of the Transcendental Meditation program on brain function in all populations.

**So Kam Tim et al. on the Effects of the Transcendental Meditation Technique on Cognition**

Originally published in 2001, this study combines the results from three separate randomized controlled trials from six to twelve months in length. The study looks at a very broad concept of intellectual functioning, ranging from creative thinking to a computer-assessed measure of speed of mental functioning. It included 362 junior high school students from the Republic of Taiwan measured on seven different
variables: creative thinking-drawing production; constructive thinking inventory; group embedded figures test; state anxiety; trait anxiety; inspection time; and a culture fair intelligence test. The study not only shows an interesting comparison of the strength of the influence of the Transcendental Meditation program on these separate variables, but also compares the Transcendental Meditation program to napping and to a contemplative form of meditation. In addition, this study examines much younger students than the other two reported in this volume.

Chandler et al. on the Effects of Consciousness-Based Education on Postconventional Self-Development

First published in 2005, this study examines the impact of Consciousness-Based education (at Maharishi University of Management) on ego development, as compared with three other control universities: a respected midwestern liberal arts university, a major northeastern technical university, and a smaller university in the western mountains. This study is remarkable for the size of the impact documented, ten years after graduation, and for the holistic nature of the concept being studied. It illustrates that colleges can set their sights on improving the level of human development with which their students leave. Such a goal is beyond improving critical thinking skills, the outcome on which most liberal arts institutions pride themselves.

Summary

This volume was created to fill a need in the literature on holistic education, and specifically Consciousness-Based education. Though important theoretical and empirical work has been done in this field, it is scattered among many journals. Here we bring together the theory, the practice, and a few ground-breaking empirical studies of the practice to provide an in-depth analysis from several perspectives, focused on several important areas—specifically, brain functioning, cognitive functioning, and human development.

Thus the overarching point of this volume is the concept of education as a means of promoting holistic development in every student to levels not previously seen in even the best and most innovative institutions. The change begins within—through the experience of wholeness of consciousness in the most silent levels of the mind—and manifests
as improved functioning in the brain, in the body, and even in the environment as a whole. The theory predicts that the wholeness, the evenness, the balance, and the happiness that at first are encountered within oneself are brought to the mind and eventually to the society at large.

This reminds us as educators of the great ideals of reformers in ages past. Plato saw education as a means to create philosopher kings and a just society. In later generations, John Dewey saw education as the means to create a fully intelligent human being and a truly democratic nation. The articles in this volume demonstrate that Consciousness-Based education revives these lofty ideals, no longer as distant ideals but as measurable outcomes well within the reach of functioning institutions. If we are looking to improve today’s schools and colleges, we need look no further than within our own selves, our own consciousness. Within is a field of all possibilities easily uncovered and applied for the benefit of individuals and institutions. From where else did we expect the solution to come?
Part I

Theory and Review of Research
Maharishi Mahesh Yogi
Speaks to Educators
at the National Conference on Higher Education

March 13, 1973
Conrad Hilton Hotel
Chicago, Illinois
Maharishi Mahesh Yogi, a great Vedic sage, brought to light the knowledge of ancient Vedic science and integrated it with modern sciences so that Vedic science and modern science are now seen as complementary methods of gaining knowledge of the same reality—the unified field of all the laws of nature. This knowledge, known as Maharishi Vedic Science, gives complete knowledge of consciousness, of the knower, complete knowledge of the object known, and complete knowledge of the process of knowing. In knowing the unified field, all three—knower, known, and process of knowing—are united in a single unified state of knowledge in which the three are one and the same—pure consciousness. In 1971, Maharishi founded Maharishi International University (Maharishi University of Management since 1995) to offer Consciousness-Based education to the world. This approach to education enables students to discover the field of pure consciousness within themselves as the source of all knowledge and to explore the academic disciplines in the light of this knowledge.
In this address, Maharishi likens education to the flow of knowledge between two banks of a river, where one bank represents the knower and the other the known. While education around the world has provided some knowledge of the objective realm of life, leading to increased material comfort on the physical level, it has left out knowledge of the knower. This lack is the essential cause of all problems in education and in all areas of life.

The simple effortless practice of the Transcendental Meditation technique gives direct experience of the knower, the Self within, the “home of all knowledge.” The practice of the Transcendental Meditation technique and the study of a new interdisciplinary science of consciousness, the Science of Creative Intelligence, supply that which has been missing thus far in education and are the essence of Consciousness-Based education. This, Maharishi says, is his contribution to education: to provide knowledge of the knower and thereby bring completeness to knowledge and to education. Through complete knowledge, it is possible for any nation to culture a full person, a full citizen, so that every citizen in every nation can rise to his or her full potential.

Address

It’s a great joy for me to present to this august assembly of educators, in this most creative country of the world, my findings about education, higher education. It is obvious that education has been facing problems throughout decades, even centuries. Education has not been satisfactory; something more has always been needed. The fact is that whatever it has been, and whatever it is today, education does not develop the full person. The quality of life that is expected of an educated person does not seem to develop through the present system of education. There is something missing somewhere. What is missing I think should be obvious to us all. If we look into the process of gaining knowledge, we find there are two sides to knowledge—the object of knowledge and the subject of knowledge (the knower). What the present system of education provides is the knowledge of the object. What

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1 I heard Chancellor Boyer yesterday, and Dr. Cross today made a beautiful survey of what the present system of education provides and the conclusion came out that there is some lack somewhere. How to fill that gap is a question. In my thoughts, there is definitely something lacking in education.
it misses is the knowledge of the subject, the knowledge of the knower.

The stream of knowledge has two banks—on one side is the object of knowledge and on the other side, the knower. With these two points of reference, the knower and the object of knowledge, the first point of reference is the knower. This is very important, because we know that knowledge is as the knower is. When the mind is dull, when the knower is sleepy, the knowledge is something different than what it is when one is fresh and wide awake in the morning. Perception is different, understanding is different, and emotions are different. Knowledge is different in different states of consciousness.

It is very clear; we know from our experience that what education provides is knowledge of physical values—physics, chemistry, biology, astronomy. Different disciplines are there to provide information about different fields of life. Everything is alright in the disciplines, nothing is wrong there, but what is not provided is the knowledge of the knower; that is what we are concerned with. Without knowledge of the knower—when the knower is in ignorance about himself, the whole structure of knowledge is as if baseless. The foundation of knowledge is the consciousness of the knower; it is the knower. But if the knower is in doubt, if the knower doesn’t know himself, then it is very obvious that the whole structure of knowledge, the whole field of knowledge, has no basis to it. And such baseless knowledge can only be not fulfilling.

Knowledge provided by the present system of education is not fulfilling. It has its basic values but these values are on the objective level of life, and values are missing on the subjective level of life. The individual is not fulfilled. The blessings of education, the blessings of knowledge, promote progress in the objective field of life, so there is progress in the objective field, but education does not touch the field of the subject, and therefore the field of the subject, the field of the knower remains outside of knowledge. It is now high time that we provide the knowledge of the knower along with the knowledge of all disciplines. And I am so very happy to say that this knowledge of the knower, in its entirety, in its total value, is very easily gained. The Transcendental Meditation program provides the direct experience of what the knower is.

When we say the knower, obviously we mean consciousness, one’s consciousness, the Self within or the awareness that the practice of the Transcendental Meditation technique brings to our awareness, the
awareness of that field of consciousness which we say is “the home of all knowledge,” the pure field of consciousness, and whereby we know in its totality what the knower is. This direct experience of the knower eliminates that ignorance of the knower and eliminates that lack of the basis of all knowledge.

We say “home of all knowledge”; we mean that consciousness is the home of all knowledge, just for the simple reason that whatever knowledge we gain, we gain through perception, through action, through information. All the impulses of information enter through our senses and reach somewhere deep within us on the level of our awareness, on the level of our conscious mind, on the level where the emotions fall. In one word, we say, on the level of consciousness.

So the field of consciousness is that field where all information gets deposited, and that is why we say consciousness is the home of all knowledge. It is the field of the knower. It is onto the knower that all streams of knowledge rush and get deposited. This is how the knower gains knowledge. Without the practice of the Transcendental Meditation program there doesn’t seem to be any way of directly revealing the value of the knower to our awareness. As long as the knower remains hidden from view, it will not be possible to have the knowledge of the knower, and in the absence of this knowledge of the knower, the knowledge of the object is baseless.

Whatever achievements have been made through education, it is obvious there has been progress on the material, physical level of life, yet the field of consciousness remained untouched; the direct experience of it remained untouched. Some aspects of philosophy seemed to guess about it; some aspects of psychology seemed to guess about it, but that is not the total knowledge of it. It is like firsthand experience that brings in that value as it awakens the knower, and on that awakened value of the knower, knowledge is lively.

It is a great question why, in all countries all over the world, the majority of students leave their studies after high school. Higher education is for higher consciousness, and every citizen should have higher consciousness. Why should not everyone be a Ph.D. or at least have an M.A.? There is something lacking in the procedure of teaching, without which, it either fails to inspire the student for knowledge or it becomes boring. Students leave. A majority of the students discontinue
their education after high school. To my mind, there could be many factors; economic factors there may be, but when we analyze the field of education, what we find is that in the present system of education, as one studies more in any field—physiology, history, anything—the more one studies, the greater the field of the unknown one finds lying ahead. What is happening?

The ignorance of the subject increases with a greater pace; knowledge can’t cope with it. The system of education fails to satisfy the thirst for knowledge, and when the thirst for knowledge is not satisfied, it leaves the man in scarcity, always curious to know more. This non-satisfaction of the thirst for knowledge is a great handicap for the system of education. Whatever the system of education may be, the net result is that it has the ability to increase and excite the thirst for knowledge but not to satisfy it. There should be a way whereby the thirst for knowledge is satisfied.

There are so many different fields of life—hundreds, thousands of fields—and each field must be made familiar to each person because the knowledge in each field makes a person more proficient in that field, and one has to be proficient in all fields of life. An educated man is expected to be proficient in every phase of his life and in every phase of the life of his environment. Education should be such that it makes a man satisfied for knowledge of all parts of life.

All disciplines are necessary, but the bulk of knowledge is so great that the time of life doesn’t allow for all disciplines to be mastered. With more scientific research the knowledge is increasing in every field. The life span doesn’t allow one to amass all the knowledge, and therefore one cannot be proficient in every field of life even though education should be such that it makes everyone proficient in all fields of life. There should be a way to correct this situation.

When we analyze what education does, we find, for example, that an engineer studies this and this and this. He never remembers all the formulas, but whenever he is asked to construct a bridge, immediately all the formulas come into his awareness like that, spontaneously as they are needed. So education makes a man capable of doing things even though all the things are not required to remain in his awareness all the time. Therefore an engineer feels at home with any problem; he knows he can solve it.
Education, basically, cultures the awareness of a man, cultures the emotions and the understanding in such a way that he feels at home with everything. He is not confused—not like a hungry man falling on everything—but more satisfied, feeling at home with everything. This is the net result of education. When the field of consciousness comes to one’s awareness, just for the simple reason that consciousness is the home of all knowledge, one’s awareness enjoys that status of being at home with everything. Here is a technique, a clue to that satisfaction, so that even if one cannot go through the study of all subjects, and on that basis become proficient in every field of life, one can structure the home of all knowledge on the level of one’s awareness. If one’s conscious mind is open to the field of pure consciousness, a home of all knowledge is structured on the level of awareness, and on this basis, it becomes possible to be at home with everything.

This is the overall gift of education. Specialization is very necessary, but one cannot specialize in all fields. The requirement of life is that one has to be proficient in every field, but time doesn’t allow one to acquire specialization in every field. We work through a technique of structuring the home of all knowledge on the level of our awareness when we are gaining efficiency or proficiency in some fields, specialization in some one, two, three, four fields. This was the goal of interdisciplinary study, but the common basis of all disciplines, that field of pure consciousness, was not fathomed in a way whereby it could become grounded on the level of one’s conscious mind, and therefore the long sought goal of interdisciplinary study remained unfulfilled.

Consciousness has been located as the home of all knowledge. It has been located as the common ground of all disciplines. It has been found to be a common link to stand between all disciplines. Therefore, the knowledge and the direct experience of pure consciousness is that means whereby education could be made complete. As it is, education is incomplete because it only takes care of the knowledge of the object, and it does not provide the knowledge of the subject. When one can open one’s awareness to the field of pure consciousness and know all about it theoretically, this practical experience and theoretical knowledge of consciousness, which is the home of all knowledge, will supply to education that which has been missing. Then both sides of the process of knowing, the knower and the object, will be in the light of
knowledge. Both will open to one’s awareness and then education will be complete. Life will be complete.

In speaking of consciousness, we know there are different states of consciousness. We are aware that consciousness changes from night to morning to noon to evening, sometimes dull, sometimes complete black-out, sometimes very wide awake in the morning, fresh. So consciousness is a changing value. Knowledge changes with the changing value of consciousness. In the sleep state this lecture hall might not exist; there could be a banyan tree; in the dream state there could be something else. Different states of consciousness have different values of knowledge. There has to be something whereby knowledge could be reliable. Otherwise, as the values of consciousness change, knowledge is apt to change, and in the changing spheres one could find inconsistency, chaos, confusion. Therefore, what is required is stabilizing a level of consciousness that will not change, in order that the knowledge of the object could be consistent. This non-variable level of consciousness has to be established on the level of one’s awareness in order to structure the home of all knowledge in one’s awareness, in one’s conscious mind, on the level of one’s emotions—a non-variable state of consciousness. There is a level of consciousness which is non-variable, and that is Transcendental Consciousness, which is, in terms of awareness, unbounded awareness.

It doesn’t matter if these words seem farfetched. When one has the experience, one finds that these are the expressions that really define the character of pure consciousness, Transcendental Consciousness. In the practice of the Transcendental Meditation technique, one experiences finer states of a thought and then the experiencing mind goes beyond the finest thought; it comes to a state of stillness. That stillness—that wide-awake stillness, not the stillness of deep sleep—is called Transcendental Consciousness. The thought has been transcended, the finest experience of a thought has been transcended, and pure consciousness, the thinker alone, is left. The knower alone is there in its essential value. This is unbounded consciousness: no boundaries, no thoughts, and pure consciousness.

This is a level of awareness that could be made permanent in one’s consciousness through the practice of the Transcendental Meditation technique morning and evening. What obstructs this pure awareness from remaining stationary on the level of one’s consciousness is stress
and strain. The practice of the Transcendental Meditation technique, by lowering the metabolic rate, produces deep rest for the physical system and thereby naturally releases deep-rooted stresses and thereby eliminates the cause which inhibits the full value of consciousness. The mind functions from its full potential.

Psychology tells us we use only 5, 10, and 15% of the mind. The total potential of the mind is not being used. Total potential of the mind is that stillness of the mind, Transcendental Consciousness, which is restful, but restfully alert. Transcendental Consciousness—this is the home of all knowledge, the source of thought. Like the ripples rising from the still surface of the ocean, all thoughts arise from the still surface of pure consciousness. Thoughts are the waves of creativity, waves of creative intelligence. They translate into action and performance, but this pure consciousness is where all inspirations, all understanding, all emotions, all thoughts, arise. So, this is the field in which knowledge gets imprinted. We just call it the home of all knowledge.

If pure consciousness is not open to one’s awareness, the home of all knowledge is not structured in one’s consciousness. It is the need of education that the knower may rise to his full potential and then rise to gain knowledge. The study of the Science of Creative Intelligence must be introduced along with the study of any discipline, every discipline, so that when knowledge is being amassed, the knower is becoming more and more wide awake within himself. With this structuring of the home of all knowledge, any knowledge that comes from outside becomes a wave of one’s own consciousness. It’s a beautiful point.

In this situation, every field of knowledge is an inspired wave of one’s own consciousness and this results in owning the knowledge. Knowledge becomes a part and parcel of one’s life. It doesn’t remain outside. This is what builds up the personality in knowledge. When the knowledge becomes a part and parcel of one’s breath, of one’s awareness, then every wave of knowledge is a wave of happiness, a wave of fulfillment. And the result will be to desire to study more and more and more; every man will be taking Ph.D. The drop-out from high school will be missing, and we will be developing fully cultured individuals.

Citizenship will be on the level of fulfillment in life, personal fulfillment and progress, well-being for society. All this will result the moment the home of all knowledge, that field of pure consciousness,
gets opened to our awareness. How to do it? It is so simple. It takes 10–15–20 minutes morning and evening. And the process of taking the awareness to that field of still-but-wide-awake state of mind is so very natural, so very rewarding, right from the beginning to the end. This has been the experience of hundreds of thousands of students, professors, parents. This has been the experience of everyone.

The lack in education, the lack of the knowledge of the knower, can be fulfilled in this way by opening our awareness to the field of pure consciousness. Then the field of education will be complete. It’s only incomplete education that does not reach the target. The present situation of modern education is so fortunate; every university is autonomous, makes its own curriculum, makes its own subjects, makes its own rules, makes its own everything, like a government. When we can teach what we like, then we should be able to teach to produce the results that we want. And certainly we want fully developed individuals, who can take care of themselves and others, who themselves will not be a drag to society, but who will be a blessing to all others around them. This will be a reality when we develop the full man through education. It only needs introduction of the Transcendental Meditation program and the knowledge of all these experiences.

So much scientific research has been made on the Transcendental Meditation technique within the past two, three, four years, in this country, in Germany, and in England, that from this systematic procedure of practicing the Transcendental Meditation technique has arisen a new discipline, a new science, the Science of Creative Intelligence. The field of pure consciousness is the field of creativity; from there the impulse of inspiration comes up as the impulse of creative intelligence. This whole study of creative intelligence, and pure consciousness, and the emergence of the currents of creativity, and the development of creative intelligence, this whole study has been in such a systematic way that a new science has arisen. The name doesn’t matter; it is the quality of knowledge that is so systematic, so profound in its theory and practice, so simple for its experience, and so profound for its result.

And now the faculty of Maharishi University of Management (previously Maharishi International University, 1971-1995) is presenting every discipline in the light of the Science of Creative Intelligence. It’s a beautiful study. And it will be very interesting, innovative, and reward-
ing for all concerned with higher education and for all concerned with
that which has been missing from higher education to look into the
catalogue of Maharishi University of Management, where no matter
what subject of study one takes, he has this knowledge of the Science of
Creative Intelligence, and the practice of the Transcendental Medita-
tion program, and all the knowledge about it, the whole knowledge of
creative intelligence. These courses on the science of consciousness have
to be added to all the classes, right from the time of entrance into the
University and year after year. A few weeks in the beginning and this
will answer all the problems of education.

It’s very obvious that problems have their basis in weakness. Where-
ever there is a problem, there is weakness. Problems in education mean
there is weakness in education. And what is weak, as we have just ana-
alyzed, is that education only aims at the objective field, only aims at
objects, and doesn’t touch the subject. So the knowledge of the knower
is missing. This is the weakness of the present educational system,
which could be completely eliminated by the introduction of this pro-
cedure of directly experiencing pure consciousness, and the knowledge
that the Science of Creative Intelligence brings about it.

We eliminate the basic weakness and thereby we allow the flower
of education, the flower of knowledge, to bloom in its full glory. In
this generation now with this knowledge of the Science of Creative
Intelligence and with this natural technique of the Transcendental
Meditation and TM-Sidhi programs, including Yogic Flying, it is not
necessary for us to feel so deeply concerned with how we can improve
the quality of life because this has been answered in a very simple, nat-
ural way. The quality of life will be improved because the basic weak-
ness of life is eliminated. Full potential of the mind develops once that
unbounded awareness, the direct experience of pure consciousness is
made possible. And by now hundreds of colleges and universities—
even high schools—are introducing [Consciousness-Based education],
so it is no longer just a hope; it is now on the level of realization. It’s not
a matter of trying something. No. It has proven its value, and we must
only adopt it as thoroughly as we can in our own institutions and the
result will be, as has been experienced the past three, four, five years,
that the students are happy, the professors are happy, the parents are
happy. There is something of a very profound value of life that develops.
And this is for everyone. It is possible in this generation for us to provide this complete knowledge by introducing the Science of Creative Intelligence into the curriculum and thereby develop the full potential of life. Such a beautiful quality of life, which has always been the aim of education, can now be produced. Now, the procedure is in our grip.

Why do we say the practice of the Transcendental Meditation technique is a natural process? Let us analyze for a moment what makes it natural. There is a force of evolution: as we look around, everything is growing. We find everything is growing; growth is natural to life. Evolution is natural. We know it from our own instincts, from our own tendencies. We want everything more and more and more—more knowledge, more power, more happiness, more wealth, more everything. It is natural to life because the force of evolution demands us to proceed, to progress, to evolve more and more. This natural tendency of life ingrained in the nature of the mind takes the mind to greater expanded values and makes it experience finer states of thought, and automatically makes it transcend the finest thought until the mind gains unbounded awareness.

It is the natural tendency of the mind to move in the direction of greater happiness, greater knowledge, and greater power. Mind moves; this we know from our own desires. We desire more this, more this, and more this. This makes it very clear that the natural tendency of the mind, which is utilized by the Transcendental Meditation program, takes the mind to unbounded expansion of awareness, pure consciousness. It settles down the activity of the mind and makes the mind restfully alert, and that restful alertness is that Transcendental Consciousness, pure consciousness. Mental activity is stopped; what remains is inner awareness, and that is unbounded expansion of the mind. That is the full potential of the mind. It is the natural tendency of the mind, taken to its full value, that makes it possible for the process of the Transcendental Meditation practice to gain that settled state of restful alertness, which we call pure consciousness, pure awareness, or the home of all knowledge.

With practice, as the stresses are dissolved, that state of mind remains all the time and then every thought, every inspiration, every feeling, every understanding is on that foreground of pure consciousness. When this happens, broadened awareness disallows a man to
make mistakes. It is the narrowness of mind, which makes a man go wrong, this way, and this way. So the beautiful quality of life, which spontaneously makes a man do right, without trying to do right—and right means performance in the evolutionary direction, free from mistakes—this habit gets established in the nature of our awareness, our consciousness, in the nature of our conscious mind. And that straightens out all the emotions, all understanding, all aspirations. One always thinks in the right direction—and right means flawless, straight, in the progressive direction. This gets structured spontaneously by use of that natural tendency of the mind to move in the direction of more and more. This is what makes the Transcendental Meditation technique natural. It is such a systematic procedure and every step of progress is a direct experience.

At every step there is experience; every experience can be analyzed, scrutinized, and explained thoroughly. Intellectual understanding and direct experience, both in a profound manner, have made this knowledge a science, a new science—a science which may be said to be the basic science of all sciences, the science of the knower/the systematic knowledge of the knower. And the procedure of gaining knowledge is such that it develops full potential of the knower. It is a tremendously rewarding knowledge. With this knowledge available to us in this generation, there is absolutely no reason for us to remain concerned for long. We are concerned. All the generations in the past have been concerned about the quality of life which is desirable and which has not been reached by education. There has always been a concern. But now, fortunately, in this generation, we have that knowledge. We have only to implement it in all fields of education, and we will have created an ideal procedure, an ideal system of education.

We don’t have to change anything. Everything is alright. We just introduce this knowledge of the Science of Creative Intelligence. In this scientific age, we have succeeded in achieving that technique and that knowledge which will bring fulfillment to the highest aspiration of education. Changing the systems of teaching, the different styles of teaching, is too superficial to actually hit the target, to accomplish the ideal of education.

All that we do is alright. It doesn’t matter. All televisions, all radios, universities of the air and everything—all these changes may have
their value, but the essential need of education to culture a full man, to
develop a full citizen, a universal man on earth, that will not be accom-
plished until we provide the knowledge of the knower, and the whole
thing is so simple.

This is my contribution to the field of education. It’s nothing new, an
age-old system. Only it has to be expressed in the language of today.
And it will meet the requirement of fulfilling that which has been
missing from life, missing from education. And because in all the free
world, we are free to put in, to teach anything we like, therefore, the
hope is that every citizen of every nation could rise to his full potential.
Consciousness-Based Education

and Its Four Basic Components

Susan L. Dillbeck, Ph.D.
AB O U T TH E A U T H O R

Susan L. Dillbeck, Ph.D., received her Ph.D. and M.A. in Education from the University of California at Berkeley, and her B.A. from the University of Illinois. Dr. Dillbeck worked under the guidance of Maharishi Mahesh Yogi on Consciousness-Based education from 1971 to 2008. She is currently president of the International Foundation of Consciousness-Based Education, established by Maharishi in 2005 to develop Consciousness-Based curricula, courses, guidelines, and faculty development materials for universities and schools worldwide. She is Professor of Education and former Education department chair, Dean of the Graduate School, and with her husband Dr. Michael Dillbeck, International Vice President of Maharishi University of Management; they are currently two of its Trustees. Dr. Dillbeck was president of Maharishi Spiritual University and Ideal Girls School in Iowa, and founding president of the American Association for Ideal Education. She has made more than 150 videotaped lectures, many with Dr. Michael Dillbeck. She has produced 20 video courses or seminars on education-related topics, and written more than 50 publications related to Consciousness-Based education. In 1982 she developed the first faculty development programs in Consciousness-Based education for schools and universities, which continue to be used. She has taught at all levels of education and received several teaching awards. The Dillbecks have presented in conferences or to government and university leaders on Consciousness-Based education in more than 40 countries.
ABSTRACT

Consciousness-Based Education, founded by Maharishi Mahesh Yogi, has been shown by 50 years of experience worldwide and extensive scientific research to produce exceptional educational outcomes, improving mental abilities, academic performance, brain development, health, personal well-being, social behavior, and the environment.

This system of education directly improves the quality of students' awareness, which is the fundamental determinant of educational success. Primarily through the Technology of Consciousness, the Transcendental Meditation and TM-Sidhi programs, Consciousness-Based education makes use of the laws of nature governing the refinement and increased integration of the nervous system and brain functioning. The effect is steady progress towards higher states of consciousness, with the resulting expansion of comprehension, organizing power, inner fulfillment, and the experience of unity with everyone.

Consciousness-Based Education adds four basic components to the standard disciplines of the school or university curriculum: (1) courses on consciousness for direct experience and intellectual understanding; (2) study of the standard disciplines in light of the knowledge of the full potential of consciousness; (3) teaching and curriculum practices that holistically develop the personality toward more expanded levels of awareness; and (4) a healthy, stress-free routine and nourishing environment.

Introduction

To increase our mastery of a skill, discipline, or sport—any activity or area of knowledge—we more carefully analyze its components and how they interact; and through this deeper analysis, if we are fortunate, we gain insight into more powerful principles or laws of nature to achieve deeper understanding and better results.

Everyone on earth looks up at the moon. Simply seeing the moon involves some laws of nature governing visual perception and recognition. But for those moon-viewers who want to develop manned lunar orbiting missions, they analyze the moon’s orbit, composition, topography, atmosphere, temperature, illumination, gravitational influence, and magnetic field—gaining and applying more powerful laws of nature for greater mastery.
The deeper the knowledge of natural law in a given area, the greater one’s organizing power in that area. Similarly, to gain greater mastery of education as a process, in order to produce a more reliable outcome, i.e., an educated person in the fullest sense, requires deeper knowledge of the functioning of the laws of nature governing the essential activity of education.

The basic activity of education is giving and gaining knowledge. Formal education organizes this process in a systematic way, by dividing students into age groups, organizing the experience of life into separate disciplines, organizing the disciplines from simple to difficult, training teachers; but the process of education is essentially giving and gaining knowledge.

A great leap of understanding about the process of gaining knowledge, the depth of knowledge that can be gained, and how the human nervous system can be cultured to gain the greatest benefit from this knowledge, has been brought to light by Maharishi Mahesh Yogi. The traditional knowledge and procedures for the full development of human consciousness were re-formulated by Maharishi as a Science of Consciousness, whose theoretical principles are consistent with those of the natural sciences, and whose technologies have been verified by hundreds of scientific research studies. Applied in the field of education as Consciousness-Based education this science has produced outstanding educational results.

Central Theme of this Article

The central theme of this article is that Consciousness-Based education, which systematically and reliably develops the latent capacity of students, has four basic components. These add to the standard curriculum technologies and study of consciousness; principles of consciousness to make the disciplines more relevant to the student’s growth; Consciousness-Based principles of teaching; and a daily routine that balances academics, sports, creative expression, group meditation, and rest. The demonstrated result is that this system significantly helps schools and universities in any culture to achieve their highest goals.
Analysis of knowledge—Knower, Process of Knowing, Known
Since giving and gaining knowledge is the fundamental educational process, we’ll look more deeply into what knowledge is. As described by Maharishi, knowledge is the awakening within the individual that results from the individual—the knower—unifying with the known through a process of knowing.

The student (knower) reads and hears (processes of knowing) about clouds (the known), which (the teacher hopes) produces an awakening in the awareness of the student (knowledge) of what clouds are, the three main types of clouds, and how clouds are used in weather forecasting. Once the students have had this awakening, they never look at clouds in the sky in the same way again.

The scientist (knower) statistically analyzes (process of knowing) research results (the known) to gain the awakening, the inferential knowledge, that a specific treatment is effective in reducing blood pressure. This knowledge is disseminated in the health care community and used to improve treatment programs.

Distinguishing between knower and processes of knowing
In this analysis, the knower is considered separately from the processes of knowing; this is an important distinction in Consciousness-Based education.
The knower refers to the quality of awareness of individuals—how alert, how awake they are. Our alertness to ourselves and our surroundings is minimum when we are in the state of deep sleep; alertness is a little bit greater in the dream state; and more in waking state, with each state having specific correlates in the state of the physiology, in the functioning of the nervous system and the brain. Waking state itself has a wide range, as we know from experience—from being able to barely hold our head up to being highly alert and ready to go. So the knower—the quality of the individual’s awareness—is highly variable.

The Science of Consciousness identifies levels of awareness, of wakefulness, that go beyond the familiar waking state, and gives reliable technologies of consciousness for developing these higher states. Just as waking, dreaming, and sleep states have distinct psycholophysiological correlates, each of the higher levels beyond ordinary waking state has corresponding physiological, psychological, and perceptual characteristics.

The processes of knowing—senses, mind, intellect, intuition—depend for their acuity and usefulness on the knower, on the quality of the individual’s awareness; quality of awareness is primary. If we are rested and wide awake, our friends look better to us, we absorb new information more easily, we analyze and solve problems more quickly, and our intuition is more accurate. In contrast, in deep sleep the processes of knowing yield nothing.

And just as the processes of knowing function differently in the three familiar states of consciousness, in each higher level of consciousness, the senses, mind, intellect, and feelings function with increasing power, and with greater positive effect for the world.

With the detailed understanding of consciousness provided by the Science of Consciousness, together with the practical technologies for developing higher levels of consciousness, the awareness of the knower becomes highly significant in Consciousness-Based education. In contrast, if educators are familiar only with waking, dreaming, and sleep states, and not with dependable ways for developing awareness, then the state of awareness of the students is not very useful in any broad undertaking to improve education.

At a press conference in 2006, Maharishi said,
“An important consideration in the effectiveness of education is the level of human consciousness—how much wholeness is lively in the consciousness of a person, whether he is awake 100 percent, or he is drowsy 10 percent, or drowsy 40 percent. We have sleep state, dream state, waking state—how much a man is awake, how much a man is sleeping. A man who is not fully awake cannot be authentic; he is a searcher in the field. He is not a master of his destiny, but a slave of situations.” (March 8, 2006)

The quality of awareness of the knower determines the usefulness of the knowledge
Here we are leading to the reason why Consciousness-Based education was founded. We have an object of focus—clouds, research results, anything. If the Knowers are highly alert, highly awake, they will see more, understand more, gain more from their attention on the object of knowledge than other knowers who are less alert, more stressed.

Kepler and Newton and Einstein were exposed to the same old sun, planets, and universe as everyone else, but due to their extreme alertness, discernment, and broad comprehension, they developed insights into the functioning of natural law that have changed human understanding and led to an immense range of applications.

The usefulness of knowledge depends directly on the quality of awareness, the quality of consciousness of the knower. Stated in physiological terms, the value of knowledge for the individual depends on the state of the nervous system—how free from stress, how balanced and integrated, how rested and alert, how coherently the brain is functioning, and how much of the brain’s potential is being utilized.

Knowledge is therefore not a stable entity apart from the quality of consciousness of the knower. And since giving and gaining knowledge is the essential activity of the educational process, the success of education essentially depends on the state of the knower.

Consider the range of student performance in the same class of the same course. For students who are worried or agitated, distracted by stress, or dull and sleepy, there may not be much of an awakening in knowledge or ability to apply that knowledge. For students who are more alert and calm, more receptive and focused, these “Aha” awakenings happen regularly and are applied more easily to expand mastery. Knowledge is as the knower is.
Even though the most renowned educational theorists in the western tradition—Plato, Jean-Jacques Rousseau, and John Dewey—all emphasized the central role of developing the knower through meaningful experiences, educators have not known which experiences to provide for all students that practically and reliably develop the optimum quality of awareness for learning and growing.

**Without a means to directly develop the knower, education has focused primarily on the known**

Lacking the knowledge of how to directly unfold the potential of the knower, educational systems focus mainly on the known—what subjects to teach in which grades, in which order, what textbooks to use, which courses for a major; and at graduate and at post-graduate levels, which research problems to investigate.

In addition to focusing mainly on the known, teachers also focus on developing the *processes of knowing*—giving assignments, depending on the age, to stimulate the senses, rational thinking, analysis, synthesis, evaluation. But as mentioned above, effective exercise of the processes of knowing also depend directly on how alert the knower is.

For example, a secondary physics teacher asks all the students after reading a chapter on airplanes to close their books and give a two-sentence synthesis of why an airplane is able to fly. The student with an unsettled physiology, and therefore unsettled mind scattered awareness, thinking about a dozen unrelated things as she was trying to read, responds vaguely: “An airplane can fly because of the way it is made—with wings, an engine, and a tail. The pilot works the controls to keep the airplane flying.” A calmer, more alert student, who focuses more easily, absorbing the big ideas and the details as she reads, could say, “Airplanes are designed to make use of four basic aerodynamic forces: lift, weight, thrust and drag. These four together hold the plane in the air and allow it to be controlled.”

So the usefulness of both the known and the processes of knowing for progress and achievement depend directly on the quality of consciousness of the knower—which almost no educational system has had the means to systematically develop.

This has had unfortunate consequences. Lack of a reliable way to develop the consciousness of students means, in effect, the inability
to culture the qualities every individual needs, not only for academic success, but for success throughout professional and personal life: alertness, intelligence, creativity, inner calm, flexibility, energy, confidence, integrity, happiness.

In the keynote address to the annual conference of American Association for Higher Education in 1973, Maharishi said on this point:

> “Different disciplines provide information about different fields of life. But what is not provided is the knowledge of the knower—that is what we are concerned with. Without knowledge of the knower, when the knower is in ignorance about himself, the whole structure of knowledge is as if baseless.

> “The foundation of knowledge is the consciousness of the knower; it is the knower. If the knower doesn’t know himself, the whole field of knowledge has no basis to it. And such baseless knowledge can only be non-fulfilling . . . . It is now high time that we provide the knowledge of the knower along with the knowledge of all disciplines; and I am so happy to say that this knowledge of the knower, in its entirety, in its total value, is very easily gained.” (March 13, 1973)

**Purpose of Consciousness-Based Education: Fully develop the knower**

Consciousness-Based education is unique in directly, systemically, and naturally developing the consciousness of the knower—the student and the teacher. This growth has been documented by hundreds of research studies indicating that this educational system, with its key technologies of consciousness, improve psychological and physiological functioning associated with the ability to excel academically and develop holistically.

Over 600 scientific research studies, conducted in more than 250 universities and research institutes in 33 countries validate the benefits of the key technologies of Consciousness-Based education, the Transcendental Meditation and TM-Sidhi programs, for mental abilities, brain development, health, personality development, social behavior, and quality of life in the immediate and extended social environment.

Students in Consciousness-Based schools in different countries consistently perform at exceptionally high levels on standardized achievement tests, particularly in light of the non-selective academic entry requirements of these schools.
The effectiveness of Consciousness-Based education is further documented in 40 years of experience worldwide, currently in over 50 countries, in more than 300 educational institutions totaling over 200,000 students. Over five million people in the world, of all cultures, religions, and educational backgrounds, have learned Transcendental Meditation in the past five decades.

Consciousness-Based education adds to the standard subjects of study the technology and study of consciousness, Consciousness-Based teaching and curriculum practices, unique instructional materials, and a nourishing academic routine to the standard subjects of study. These elements all culture the students’ consciousness, their inner creative intelligence, on the basis of which their achievements and happiness continue to expand.

The fundamental knowledge and technology of Consciousness-Based education has been preserved in its purity and effectiveness by Maharishi from the ancient traditional knowledge of full development of consciousness. Maharishi restored this knowledge for its theoretical and practical value in a Science of Consciousness. Its technologies make use of laws of nature governing the refinement of the physiology, elimination of stress, and activation of total brain functioning, resulting in the progressive development of higher states of consciousness.

In contrast to the knowledge of objects and physical phenomena gained through the objective approach of modern science, the unique knowledge in Consciousness-Based education has been brought to light mainly through the subjective approach to knowledge, though the experiences of individuals established in higher states of consciousness. Within their own fully expanded awareness, enlightened people are spontaneously awake to the full range of the laws of nature, including those governing the complete development of individual life and society. There is an impressive consistency over centuries and across ancient cultures in the descriptions by enlightened sages of higher states of consciousness and, and of the knowledge of reality available when one is established in these states.
Four basic components of Consciousness-Based Education

Maharishi founded a system of education to enable students and teachers everywhere to benefit from this knowledge.

Consciousness-Based education has four basic components, which together accelerate holistic development of consciousness as students grow in mastery of the standard subjects of study. These four components all contribute to the same goal: for the individual, awakening the total potential of consciousness for an increasingly problem-free, mistake-free, fulfilled life of ever-expanding possibilities, where one can achieve one’s goals at every stage of life; and for society, an increasingly integrated, strong and creative national consciousness in which diversity thrives and destructive influences cannot take hold.

The four components, elaborated below, are these:

1. Courses on consciousness—for direct experience and intellectual understanding;
2. Study of the standard disciplines in light of the knowledge of the full potential of consciousness;
3. Teaching and curriculum practices that holistically develop the personality toward more expanded levels of awareness;
4. A healthy, stress-free routine and nourishing environment.

We’ll consider each of these separately, and how each contributes to the goal.

Component 1:
Courses on consciousness—for direct experience and intellectual understanding

The courses on consciousness are most fundamental to Consciousness-Based education because, as we’ve established, how developed the students’ consciousness is—how really awake they are—determines more than anything else their success and happiness in school and for the rest of their life. Consciousness is the prime mover of life.
In Consciousness-Based education, students take two types of courses on consciousness: one that develops consciousness through direct experience, the other through intellectual understanding.

(1) Courses for direct experience of consciousness
The courses that gives direct experience of the development of consciousness are the Transcendental Meditation (TM) program and the advanced TM-Sidhi program, including Yogic Flying. These are credit-bearing courses and part of the academic curriculum. The Transcendental Meditation technique is taught to students starting at age 10.

Through the practice of this technique the awareness of the individual settles down naturally to increasingly quiet and wakeful levels, to experience the unbounded field of Transcendental Consciousness.

This is the central and essential experience of Consciousness-Based education. Transcendental Consciousness is the basis and full potential of the senses, mind, intellect, feelings, ego—the unified basis of all knowers, processes of knowing, and values of the known. It is the experience of Transcendental Consciousness that purifies, and integrates the functioning of the whole physiology, allowing the most subtle and creative levels of existence to be increasingly lived in practical life. It is primarily this experience that naturally and systematically transforms the knowers, the students to become all that they have the potential to be.

As documented extensively by physiological and neurophysiological research, the practice of Transcendental Meditation produces a unique state of restful alertness: the body is deeply relaxed (Dillbeck & Orme-Johnson, 1987; Travis & Wallace, 1997; Wallace, 1970), and at the same time the mind is particularly wakeful, as verified by EEG research showing high levels of orderliness in brain functioning (Badawi et al., 1984; Dillbeck & Bronson, 1981; Hebert et al., 2005; Travis, 2001; Travis & Arenander, 2006; Travis et al., 2010).

Characteristics of Transcendental Consciousness—Providing an insight into the scientific research results and subjective experiences in Consciousness-Based schools and universities

The unusually wide range of scientific research findings on the Transcendental Meditation program and the consistently positive experiences of students and teachers in Consciousness-Based educational institutions can be more easily understood when considered in light of the characteristics of Transcendental Consciousness.

As mentioned above, from a physiological perspective, this level of awareness is a fourth state of consciousness with unique neurophysiological properties. From the perspective of direct experience and knowledge of higher consciousness, Transcendental Consciousness is the unified basis of subjective and objective knowledge, and the field of the individual’s total potential. It also has the following characteristics, as experienced directly by individuals and described in the Science of Consciousness:

• Pure bliss—Transcendental Consciousness is also called “bliss consciousness”;
• Unbounded awareness;
• The Self—capitalized to distinguish it from the small ‘self’ or ego;
• Self-referral consciousness—fully awake to itself only, the basis of complete self-sufficiency and self-knowledge;
• Pure order and intelligence—Transcendental Consciousness is also called the field of pure intelligence;
• Pure silence and peace;
• Limitless dynamism and energy;
• Inner fullness and wholeness;
• Pure creativity;
• The field in which all the laws of nature reverberate in their most abstract form—Transcendental Consciousness is also called the field of the total potential of natural law;
• The experience that enlivens the total functioning of the brain.

These characteristics of Transcendental Consciousness help explain the findings cited below, which result from the regular practice of the Transcendental Meditation and TM-Sidhi programs.
Scientific Research Findings on the Transcendental Meditation Program Related to Education

Development of brain functioning. Highly relevant to the success of teaching and learning, irrespective of country or culture, is the state of brain functioning of the individual. Research both during the practice of the Transcendental Meditation technique, and outside the practice, in daily activity, indicates greater effectiveness of brain functioning.

Increased integration and effectiveness of brain functioning found during the practice of Transcendental Meditation is indicated by the findings of increased synchrony of brain wave activity throughout the cortex (Hebert et al., 2005), increased phase coherence of cortical EEG activity (Badawi et al., 1984; Dillbeck & Bronson, 1981; Travis, 2001; Travis & Arenander, 2006; Travis et al., 2010), increased cerebral blood flow widely throughout the cortex (Jevning et al., 1996), and greater use of the latent reserves of the brain (Lyubimov, 1999).

Changes outside the practice of Transcendental Meditation indicating greater effectiveness and integration of brain functioning include the following:

- Greater integration of diverse styles of brain functioning as measured by greater activation of each brain hemisphere (Bennett & Trinder, 1977); longitudinal increase in a multivariate scale of brain integration (Travis et al., 2009); and by the unique integration of EEG associated with the experience of higher states of consciousness (Mason et al., 1997; Travis et al., 2002);

- Greater integration and efficiency of brain functioning underlying cognitive processes—as measured by more effective brain processing of cognitive and sensory stimuli (Cranson et al., 1990; Travis & Miskov, 1994; Wandhofer et al., 1976); greater efficiency of preparatory brain responses (Travis et al., 2000); greater coherence of brain functioning correlated with enhanced cognitive abilities, such as higher moral reasoning, improved mind-body integration, increased concept learning ability, increased emotional stability, higher grade point average, and increased creativity (Dillbeck, Orme-Johnson, & Wallace, 1981; Haynes et al., 1997; Orme-Johnson & Haynes, 1981; Orme-Johnson et
al., 1989); and continued improvement of mental abilities that usually stop developing in adolescence, such as intelligence, ego development, and field independence (Chandler et al., 2005; Cranson et al., 1991; Pelletier, 1974; So & Orme-Johnson, 2001);

- Greater integration and effectiveness in the total functioning of the brain, peripheral nervous system, and neuroendocrine processes, as measured by more adaptive responses to stress by the autonomic nervous system and the endocrine system (MacLean et al., 1997; Orme-Johnson, 1973; Walton et al., 1995); and by improvement in physiological, cognitive, and behavioral abilities that usually decline with aging (e.g., Alexander et al., 1989; Cranson et al., 1990, 1991; Jevning et al., 1996; Pelletier, 1974; Travis, 1979).

This holistic development of brain functioning is a crucial and unique element of Consciousness-Based education. In a 2004 press conference, Maharishi explained that the Transcendental Meditation program in education results in

“. . . complete education, which will engage and enliven the full potential of the brain physiology. Otherwise, if students are not exposed to that abstract experience of silence, then the total brain never functions. Whatever they are learning, only that groove becomes more and more functional, while other values of the brain remain dormant.” (January 14, 2004)

Maharishi continued that it is only the experience of Transcendental Consciousness, unbounded awareness, with no boundaries of particular thoughts or feelings, that enlivens total brain functioning:

“People who start to practice the Transcendental Meditation technique take their awareness to that field of the transcendent which is unbounded awareness. Immediately the conscious mind becomes relieved of pressures. All the pressures build up in the mind as long as the mind is hovering around the boundaries. But when the boundaries are transcended through the Transcendental Meditation technique, then the awareness is on that level which is free from boundaries—ubounded.
“This experience cultures the brain. The experience of Transcendental Consciousness enlivens the total brain. There is nothing else that can enliven the total brain. It is very easy to transcend, and very easy to experience that unbounded, self-referral, Transcendental Consciousness. What does this experience of Transcendental Consciousness do to the physiology? It makes every aspect of the brain physiology function.” (December 15, 2004)

**Increased creativity and improved academic performance.** As students regularly experience the unity of knower, process of knowing, and known in their own awareness, in the state of their own Transcendental Consciousness, they naturally feel greater ease with whatever they are studying. All the different areas of the known, every subject, is felt to be more a part of them, less apart from them. As a result, they are more creative within any area of study—and this is what teachers regularly report.

A former Superintendent of Schools in Missouri remarked after visiting a Consciousness-Based school in Iowa, “At Maharishi School what is most extraordinary is the creative attitude of parents, teachers and students towards every aspect of activity.”

A master teacher who designed curricula for gifted school students in California said when she began teaching in a Consciousness-Based school, what impressed her most was the constant flow of creativity of the students, no matter what the assignment.

Another experienced teacher comments:

“I started teaching in a school where children practice Transcendental Meditation—not only the children but the teachers, the parents, faculty, everyone practices TM. In that environment I started experiencing greater fulfillment as a teacher because I felt that the blocks to education were being dissolved.

“Stress inhibits creativity; I found that my students were more creative because they didn’t have stress blocking the flow of their creativity. I found myself working in a classroom where students were happier. They came to school ready to learn. Even if they had problems, they had a way of releasing the stress associated with those problems. So my experience as a teacher increased a million-fold.” (Deans video lecture, 2002)
Research shows that students practicing the Technology of Consciousness (both the Transcendental Meditation and TM-Sidhi program), compared to other students, perform better academically (Kember, 1985; Nidich et al., 2011).

**Development of the personality.** Compared to other students, those practicing the Technology of Consciousness have less anxiety (Eppley et al., 1989), less depression (Fergusson et al., 1995), greater self-esteem (Fergusson et al., 1995), and are more self-actualized (Alexander et al., 1991). They show greater tolerance (Shecter, 1978) and greater appreciation of others (Gelderloos et al., 1987).

The result is an exceptionally harmonious school environment. This is a comment from a teacher in a Consciousness-Based school in Australia:

> “Maharishi School students, especially after about six months of meditation, just see themselves as they really are—a part of the wider universe. They can accept themselves and others in their natural beauty and perfection. They develop confidence, and with that comes peace, happiness, acceptance and a knowledge that they can be their best, in whatever way they are made to be.

> “They are all regular children, from regular families, just like at other schools. The difference is that they see their potential and see no barriers to developing themselves fully.” (March 31, 2010)

This is from a 12th grade secondary student in a Consciousness-Based school:

> “In our classes, everyone in the class, including the teacher, practices TM, so everyone is stress-free and everyone feels good about themselves. They don’t feel the need to put down other people or make other people feel small so that they feel more intelligent themselves. Everyone supports each other because they’re confident and they’re comfortable with themselves, and that creates a smooth atmosphere for everyone.” (Deans video lecture, 2002)
This is from a secondary student who transferred from another school:

“Last year I started at Maharishi School, and I find it a lot different compared to my old school because everyone’s friendly here, and the other students make you feel really welcome—they look after you here. Here we do Transcendental Meditation; that makes you feel a lot more calm and relaxed, and in fact, you can really concentrate well on your work.” (Deans video lecture, 2002)

The growing inner fullness and satisfaction, reduced stress, and increasing physiological balance from the practice of Transcendental Meditation also accounts for the repeated findings among students of reduced use of alcohol and non-prescription drugs (Alexander et al., 1994); reduced absenteeism; and reduced behavioral infractions at school (Barnes et al., 2003).

**Benefits for teachers and administrators.** Scientific research findings on teachers practicing the Technology of Consciousness, compared to other teachers, include improved morale, increased facilitative leadership, and increased influence in decision-making about classroom instruction (Nidich & Nidich, 1988). Research on working professionals demonstrates increased professional satisfaction, decreased stress, and improved health (e.g., Alexander et al., 1993).

This comment is from the principal of a Consciousness-Based school in Australia:

“Being a principal at Maharishi School is very rewarding. Each day brings great delight as I see teachers, who are full of enthusiasm for their chosen profession, joyfully guiding their students. In response, students are eager to come to school, respectful and kind to those around them, completely engaged in the learning activities, and progressing beautifully in all aspects of student life.” (Dillbeck & Dillbeck video lecture, 2010)

This is from the principal (Head Teacher) of a Consciousness-Based school in United Kingdom:

“The atmosphere of a Consciousness-Based school is unique in everyone’s experience. The teachers say that it doesn’t matter how you
feel when you get up in the morning; you feel better when you get into the school. One of the government inspectors, when evaluating the school, said ‘this is the most harmonious group of teachers we’ve ever come across.’

“With Consciousness-Based Education, the management of education is so easy and intuitive: when the pupils find learning a pleasure, the teacher naturally finds teaching a joy, resulting in the whole institution thriving, which is exactly what the Head Teacher wants.” (Dillbeck & Dillbeck video lecture, 2010)

15-minute periods of Transcendental Meditation after every two hours of discipline study
In addition to twice-daily group practice of the Transcendental Meditation and TM-Sidhi programs, after every two academic classes students practice the Transcendental Meditation technique in their classrooms for 15 minutes.

These extra meditation periods during the academic day help students absorb what they have learned in their classes at deeper levels of their consciousness, expanding their capabilities to use and apply the knowledge they are gaining.

In a 2004 press conference Maharishi referred to these brief periods of Transcendental Meditation during the academic day:

“Give this time for refreshing to the student. Don’t load them for six hours or eight hours; variety in the subject matter is no relief. Getting to the basis of the subject will make the basis of the knowledge lively, lively, lively. Then in addition to activating specific parts of the brain with regard to that particular field of knowledge, the meditation will enliven the total brain with reference to the storehouse of all knowledge, Transcendental Consciousness.” (January 14, 2004)

The Transcendental Meditation-Sidhi (TM-Sidhi) program. This advanced practice of the Transcendental Meditation program develops the habit of thinking and behaving from the level of Transcendental Consciousness, so that individuals can achieve their objectives with increasing success and ease. In addition, and highly significant for society, research on the TM-Sidhi program has repeatedly found that when practiced in sufficiently large groups—approximately the square root of 1% of the population of the society—negative trends, including crime,
violence and civil strife, measurably decrease; and positive trends, such as quality of life, improve (Dillbeck, 1990; Dillbeck et al., 1987; Hage- lin et al, 1999; Hatchard et al., 1996; Davies & Alexander, 2005).

Large schools or universities in which all students and teachers are participating in this program have provided the groups of TM-Sidhi participants for much of this research. Through this technology, such institutions become steady sources of coherence and harmony for their communities—and if the group is large enough—for their nations, strengthening national consciousness to a level from where it naturally resists weakening influences.

Implications of scientific research findings
The scope of the scientific research findings on the Transcendental Meditation and TM-Sidhi programs is uniquely comprehensive, benefitting physiology and health, brain functioning, cognitive performance, emotional well-being, and social behavior.

Verification that the single experience of Transcendental Consciousness supports such wide-ranging benefits is consistent with the description of Transcendental Consciousness as the unified basis of all the laws of nature.

As explained in the Science of Consciousness, lively within the field of Transcendental Consciousness, all the laws of nature exist together in unity in their most abstract form, like different frequencies reverberating within a silent field. This understanding of a unified basis of the laws of nature is comparable to the most recent unified field theories of modern quantum physics, which posit a single unified field of all the laws of nature from where all force and matter fields, and the innumerable laws of nature, sequentially emerge.

Descriptions of higher states of consciousness include the spontaneous ability of individuals to think, act, speak, and behave in accord with all the laws of nature governing growth and progress. The scientific research findings on the Transcendental Meditation and TM-Sidhi programs certainly indicate this trend of life.

In our examination of the first of the four components of Consciousness-Based education, courses on consciousness, we have discussed the first and fundamental courses—those giving direct experience of Transcendental Consciousness. Now we consider the second type of
courses on consciousness—those giving intellectual under-standing of consciousness.

(2) Courses for understanding consciousness
The second type of course on consciousness gives students intellectual understanding of the field of Transcendental Consciousness and how knowledge and experience of this field illuminates and unifies the different areas of their life.

For example, one of the course on consciousness for the middle school level considers fundamental, universal principles of how nature functions. These non-changing principles of orderly functioning are expressed in simple language, e.g., Life is Found in Layers, Order is Present Everywhere, Outer Depends on Inner, Purification Leads to Progress. Students locate these principles in nature; in their family, community, and culture; in the lives of great people of their nation; in scientific principles and research; and in their own lives, with principles becoming more obvious through their practice of the Transcendental Meditation program.

The goal of this study, as Maharishi described in his outline of the curriculum is “To provide understanding of how the inner, more precious values of life support growth and progress in the students’ own lives and in the outer world” (Maharishi Mahesh Yogi, 1974).

With this study, students get into the habit of looking beneath the surface of life. They come to appreciate that at the basis of all their subjects and activities are common principles of intelligence describing the way nature works, the same principles guiding the growth of their own creative intelligence to its full potential. By studying the functioning of their own consciousness as it is expressed in the world around them, they come to experience life as a unified whole.

Teachers have observed that with this study added to the curriculum, students naturally make deeper connections between their subjects of study and their own lives.

For example, here is a comment from a history teacher in a Consciousness-Based girls’ middle school:

“It’s a very different experience teaching these students. The most distinctive feature is that when I have given them some points about
history, they reply by connecting it to their own subjective experience and knowledge of human consciousness. And they do this with such eloquence and so easily. I find this extraordinary—the way they can relate something as objective as an historical event or personality to a Science of Consciousness principle and to their own experience. And sometimes they improve on my own connections, which have taken me a long time to prepare. They have a fluency with the knowledge of consciousness that is just astounding.” (2003)

Value of the study of consciousness for awakening the student’s full potential

Complete knowledge of anything requires both experience and understanding. We don’t really know Rome well if we have a business meeting there in the same hotel every year and know nothing about the city’s layout, landmarks, demographics, government, commerce, architecture, or history; conversely, if we have read books and seen DVDs on all these features, but have never actually been to Rome, our knowledge is equally incomplete. In any discipline, in any activity, the mind and intellect gain understanding; and the organs of action, senses, feelings, and ego gain direct experience. All levels of the personality are involved in knowing something completely.

Through the courses on consciousness, students more deeply understand their experiences during and after meditation. They come to understand the nature of Transcendental Consciousness; how this experience affects different areas of life; how regular practice of the Technology of Consciousness leads to attainment of higher levels of their own potential; the practical value of higher levels of consciousness for daily life; and the deeper principles that unify the different subjects of study with each other and with themselves.

In the courses on consciousness at higher education levels, unifying principles of nature’s functioning are also studied, in appropriate language and concepts. For example, the principle that reducing the excitations of a system increases the orderly functioning of that system is found in physics, in the third law of thermodynamics; it is found in chemistry, in water assuming a more orderly crystalline structure when it freezes; in human physiology as a means to restore health; in education, in classroom management; and in the students’ own experience of
greater orderliness in their thinking and action as a result of the deep rest provided by the Transcendental Meditation technique.

The courses on consciousness also bring to light the connection of all disciplines to their basis in the unified field of all the laws of nature, which is subjectively experienced by the students as unbounded, and holistic awareness, Transcendental Consciousness.

Dr. Fred Travis, Dean of the Graduate School of Maharishi University of Management, describes his experience teaching courses on the Science of Consciousness:

“Intellectual understanding of the nature of the inner reality of life allows the students’ inner potential to be more fully expressed in activity. This is the value of adding a course on consciousness for those already practicing Transcendental Meditation.

“As the students progress in experience and understanding, they report that they are less distracted by unimportant things around them; they are less caught up in small events. They see the larger flow of life around them; and begin to live life from inner silence and fulfillment, rather than from constant reaction to outer change and activity. The frame of reference for living life is transformed from an outer, object-referral reference to an inner, self-referral reference.” (Dillbeck & Dillbeck video, 2010)

The primary benefit of these courses can be summarized in the phrase “what we put our attention on grows stronger in our lives.” When students put their attention on the field of their own total potential, intellectually as well as experientially, this most powerful, creative, blissful level of their existence naturally grows stronger in their life.

Teachers in Consciousness-Based schools reflect in their attitudes and speech the conviction that all students, irrespective of background or circumstances, have unbounded potential, which they are unfolding day by day. The teachers’ attention on the students projects genuine confidence that they will continue to improve and actualize their special talents. As educational research documents, teachers’ expectations of their pupils significantly influence student achievement (Rosenthal & Jacobsen, 1965). In this case, the students’ and teacher’s knowledge that every day they are rising toward new heights creates in the whole class an atmosphere of positivity, confidence, and progress.
So we have discussed the first and primary component of Consciousness-Based education: Courses on consciousness, for direct experience and intellectual understanding.

Component 2:
Study of the standard disciplines in light of the knowledge of the full potential of consciousness

In Consciousness-Based education, students study the usual school and university subjects, with a small amount of time in each lesson given to relating the discipline material to the knowledge and development of consciousness.

These connections to consciousness do not take much time, but they have a big benefit: they provide students with the answers to two pervasive, uncomfortable questions that often float through their awareness: What does this have to do with everything else I’m studying? and What does this have to do with me and my life? By taking a few minutes during the lesson to make these connections, life and study are increasingly experienced as a unified whole.

Connecting the discipline to consciousness with the Main Points Chart

At both middle/secondary school and university levels, the connection between the discipline and the development of consciousness is visually displayed and explained by the teacher mainly with the use of wall charts unique to Consciousness-Based education.

One of these charts is the Main Points Chart, which shows the title of the lesson at the top, then the central idea (“wholeness”) of the lesson, followed by the three or four main points of the lesson that expand on the wholeness.

Underneath the title, the wholeness, and each of the main points is a phrase or sentence that relates that point to the Science of Consciousness. After the teacher fully discusses the first main point of the lesson from the discipline, she reads aloud the main point from the chart as a summary, followed by reading the corresponding point from the Science of Consciousness. This point shines the bright light of the students’ total potential onto the discipline point, the discipline point more relevant and profound.
Here is an example from a school biology course, of the lesson title, wholeness, and first main point, each followed by an expanded perspective provided by the Science of Consciousness.

**The First Three Stages of the Digestive System**

*Our Evolution Progresses toward More Refined and Powerful Levels of Life*

**Wholeness of the Lesson:**
Each different stage of the digestive process refines the food more and more until the food is in a form in which its nutrients can be absorbed by the body.

*Transcendental Meditation refines the activity of mind and body, enlivening Transcendental Consciousness, the level of life that nourishes all levels of mind and body.*

**Main Points**

**Main Point 1.**
*First stage of digestion:* The refining process of digestion starts in the mouth: *saliva* starts to break down the chemicals in the food, and prepares it to be swallowed.

*Science of Consciousness:* Developing higher states of consciousness starts with the experience of Transcendental Consciousness. Even from the start of practicing meditation, Transcendental Consciousness cultures the nervous system to become more refined by dissolving stress, resulting in an increasingly healthy, happy daily life.
Here is an example from an introductory lesson in a university course on financial management, beginning with lesson title:

**Introduction to Financial Management:**
*Maintaining holistic awareness in the midst of diversity*

**Wholeness of the Lesson:**
The goal of financial management is to maximize the value of the business firm.

*The desire for more and more in life is fulfilled by living the full value of one’s inner intelligence.*

**Main Points**

**Main Point 1.**
The field of finance involves the flow of funds—from investors with surplus funds, through markets and institutions, to individuals and businesses with productive uses for these funds.

**Science of Consciousness:** The unbounded, unified field of pure consciousness, flowing within itself, sustains and evolves all diversity; when this field is established in human awareness, individuals nourish all diversity through their decisions and actions.

Here are two more examples of main points from lessons in graduate level courses.

From a course on Educational Theory:

**Main Point 1.**
Education is the process of “drawing out” the inner potential of the individual through knowledge. This is a process of growth, yet distinguished from other forms of growth by the unique self-awareness of human beings, which enables them to accelerate their own development.

**Science of Consciousness:** Human consciousness is uniquely able to be aware of its own basis, Transcendental Consciousness, the Self. Through a technology for naturally putting awareness on the Self,
individuals promote their own development toward the highest level of consciousness, in which one is aware of the unity of the whole of life in every perception.

From a course on Philosophy of Science and the Scientific Method:

**Wholeness** (central idea of the lesson)
Philosophy of science analyzes the ways in which the application of logic and experiment in a community builds confidence in theoretical claims about how the laws of nature structure the universe.

**Science of Consciousness:** As individuals practice the Transcendental Meditation technique, they test and verify the theory of human nature and development from the Science of Consciousness, utilizing a systematic, experiential (i.e., scientific) approach to gaining knowledge of the laws of nature.

When the students in Consciousness-Based schools study geometry, they are reminded that the order in mathematics is the order of the universe, which is expressed in their own consciousness and physiology. In literature, they are studying a poem and are reminded that as they rise to higher states of consciousness, all their words will uplift everyone who hears them speak. They may be studying an historical period and are reminded of the universal desire for freedom, expansion, and mastery that are innate in everyone.

Again, most of the time of the lesson is spent on the discipline; the connection to the Science of Consciousness is read out and briefly discussed at the end of the full presentation of each discipline main point, but it is enough time to expand the students’ awareness to appreciate that at the basis of all disciplines and their own awareness are the same fundamental principles of intelligence, which they enliven through their practice of Transcendental Meditation.

**Value of connecting the knowledge of the disciplines to the science of consciousness for awakening the student's potential**
When the main ideas the students are learning are always connected to the growth of their own full potential, knowledge becomes more intimate, more meaningful, and more holistic. The thirst for understand-
ing of life as a whole begins to be satisfied when students can relate all subjects to each other and to themselves through the understanding and experience of their own deepest Self.

The whole process of gaining knowledge becomes more personal. Students feel more and more at home with everyone and everything. It is a common experience that we make the quickest, most enjoyable progress in the areas of study and activity in which we feel most comfortable. With this increasing feeling of familiarity with everything, students plunge into all their subjects with receptivity and confidence which results not only in more profound understanding of the topics but also a more complete realization of their own nature.

A wonderful mathematics teacher in a U.S. Consciousness-Based school, when confronted each semester on the first day of class by students mumbling the forewarning “I’m no good at math,” smilingly replied, “Give me two weeks.” And that’s all she needed with those students. Within two weeks, they were making their way through the worksheets with alacrity and making up problems for each other.

Maharishi explains the advantage of this crucial second component of Consciousness-Based education—relating the study of the discipline to the knowledge of consciousness:

[Then] every discipline becomes a means to develop the creative potential of the conscious mind, to enliven the Self. Whatever the students study, in the process of gaining specific knowledge of different subjects, they grow in the awareness that the center of all knowledge is present within themselves. This means that if they study 30 different disciplines, then 30 times the Self is connected with the discipline, and with this, all the knowledge remains intimately connected with the knower . . .

When every wave of knowledge gained is connected with the Self, that knowledge becomes a living reality of daily life. It develops one’s feeling of being familiar and intimate with everything and everyone, so that no sphere of life remains strange to the students. This growth of self-confidence and self-sufficiency creates a balanced and integrated personality. (July 26, 1983)

So we have discussed the second of the four basic components of Consciousness-Based education: connecting the main ideas of every
subject of study with the knowledge of the full potential of the students’ consciousness.

**Component 3:**

**Teaching and curriculum practices that holistically develop the personality toward more expanded levels of awareness**

Consciousness-Based education make use of principles of curriculum and instruction that Maharishi brought out over five decades.

We have established that the goal of this system of education is to unfold the full value of consciousness of every student. Attaining this goal requires strengthening and refining the functioning of the students’ nervous system, on the basis of which their processes of knowing function more astutely, attracted to values of the known (the content of the subject of study) that are more profound, resulting in increasingly useful awakenings of knowledge. Stated simply—highly alert, balanced people focus their keen minds on worthy topics, enjoying healthy, fulfilling progress.

All the teaching and curriculum principles of Consciousness-Based education have in common that they refine the functioning of some aspect of the personality—behavior, speech, senses, mind, intellect, feelings, ego—to strengthen the students’ holistic development, so that they are able to think and act at increasingly subtle, powerful, and blissful levels of their own consciousness.

Leaders and faculty of Consciousness-Based schools and universities learn and practice these principles through professional development seminars on Consciousness-Based education.

**Sample principles of Consciousness-Based teaching and curriculum**

(1) **To refine and strengthen the senses and feelings—emphasizing uplifting content and examples**

An important Consciousness-Based principle is that teachers present uplifting content and examples to students through the early college level, not dwelling on the more negative content of the disciplines. We don’t expose students to negativity, problems, and misery in the name of broadening their awareness and compassion; their awareness and compassion grow naturally through their experience of the level of life...
that unifies everyone. The principle of focusing on that which is uplifting is especially relevant to the study of the social sciences, arts, and humanities.

How does focusing on what is uplifting refine the personality? It is the principle mentioned above: What we put our attention on grows stronger in our life. From the understanding provided by the Science of Consciousness, negativity of any kind is born of stress—it is not the natural state of life, but the result of imbalances in the functioning of the nervous system. Exposing students to what is more natural, and therefore more evolutionary—on what is positive, progressive, and nourishing in any field—gives them confidence and a sense of their own unlimited possibilities, which enlivens bliss and is settling to their physiology.

Interestingly, Plato also brought out the importance of this principle: that to strengthen the students and bring out their noble qualities, they should be exposed to stories, poetry, and melodies that inspire these qualities, not to those expressions whose content has a weakening effect (Cornford, 1951).

In bringing out this principle, Maharishi said,

> We select content that is most useful for the students’ evolution. We speak only on that which will elevate them, both within and outside of classes. Our vision is full of love, purity, and joy. By bringing good to our own hearts, we are an influence for good in our students . . . . We emphasize higher values to the students, not negative values. (International Foundation of Consciousness-Based Education, 2011)

(2) To refine and strengthen the integration between understanding and experience—lessons structured in cycles of Knowledge-Action-Achievement-Fulfillment

The teacher structures the lessons in cycles of knowledge-action-achievement-fulfillment. The teacher presents the knowledge, for example, on the human digestive process. Then the students take action to integrate that knowledge—for example, in this case they could make outline drawings of the human body, drawing and labeling the different parts of digestion, and prepare to explain the process. Then the students present to the teacher and other students the product of their activity to the teacher and other students, who express appreciation
and give further suggestions. This recognition and achievement is the achievement part of the cycle, which results in the students experiencing a wave of fulfillment—which inspires them for more knowledge, and the cycle continues.

The cycle of knowledge, action, achievement, fulfillment activates and integrates many levels of the personality—mind, intellect, feelings, ego, organs of speech and action—which helps activate higher-order, more integrated brain functioning (Caine & Caine, 1991), resulting in more complete and useful knowledge. Like all the Consciousness-Based principles of teaching, this principle is upheld by fundamental laws of nature governing human learning and the development of human consciousness.

(3) To refine and strengthen the mind and intellect—unique instructional charts that connect the “part to the whole to the Self”

The most important teaching aids used in Consciousness-Based education are unique instructional charts developed by Maharishi, which, in a phrase, connect the part to the whole, and the whole to the Self. That is, these charts, displayed on the wall of the classroom throughout the course, visually display the relationships among the lesson topics, the bigger themes of the course, the course as a whole: and the basis of the course in the field of pure intelligence, the Self of everyone.

In Consciousness-Based Education, the most important learning appears on charts—what a great concept: The most important ideas and points that the students are expected to know in every lesson, the most important themes of the course, and the relationship of all the parts of the discipline to the whole discipline and to the students’ own potential are displayed visually on charts, so that wherever the eyes of the students wander, they fall on the most important points they are expected to learn.

The three primary wall charts used in Consciousness-Based education are these:

(1) The Main Points Chart—described in the second component of Consciousness-Based education.
(2) The **Course Overview Chart**, which looks like a very big wall calendar, displays in columns and rows the theme of each week on the left column, and the lessons of each day extending from each theme in the rows. The teacher uses this chart to teach the whole course in brief in the first hour of the first day; then it is used at the beginning of each lesson to show today’s lesson in context of the theme of the week, yesterday’s lesson, and the whole course. With the help of this chart, which remains posted on the wall, students maintain a vision of the entire course, and how all the lessons relate to each other.

When representatives of the national Department of Education came to review one of the Consciousness-Based schools in Europe, in addition to being deeply impressed by the qualities of the students, they were especially appreciative of the Course Overview Chart as a teaching method—not only for its advantages for the students, but also because it helps the teacher plan the flow of the entire course in detail, carefully sequencing the themes and lessons for most complete learning.

(3) The **Unified Field Chart**.1 Using boxes of text and connecting lines, this horizontal chart is divided into two sections. One side visually maps the whole discipline, from the most general principles at the bottom to the applied areas serving society at the top; and visually illustrates how the basis of the discipline is the same basis that the students experience during their practice of the Transcendental Meditation technique—illustrated on the other side of the chart.

The teacher uses the Unified Field Chart for about a half-minute at the end of each lesson to show, with a pointer, the lesson of the day in relationship to the wider area of study, to the whole discipline, to the basis of the discipline, and the field of pure intelligence, Transcendental Consciousness, which the students experience directly during their meditation, and enliven in collective consciousness through their group practice of the TM-Sidhi program.

How do these charts strengthen and refine the student’s mind and intellect? These charts continually relate the limited topic to a bigger context—the part to the whole—and to an even greater whole, which is

the full potential of their own intelligence, Transcendental Consciousness, the basis of all expressions of human intelligence found in the different disciplines.

As the students continue to move their awareness from part to whole to Self, they are increasingly able to maintain the total picture of how all the parts fit into the picture.

With the use of these charts, students feel more and more comfortable with any area of knowledge. Greater comfort results in greater receptivity, more confidence, more involvement in what they are learning, and more creative interaction with the material.

This progressive integration cultures the physiology of higher states of consciousness, in which unbounded awareness is maintained as an all-time reality together with the most discriminating focus. This is the fifth state of consciousness, Cosmic Consciousness, when Transcendental Consciousness—unbounded, silent, blissful awareness, the fourth state of consciousness, is the permanent background of waking, dreaming, and sleeping.

Here is a comment about these instructional charts from a language teacher in a Consciousness-Based secondary school:

“With these charts, together with the students’ own experience of Self-referral consciousness through Transcendental Meditation, the students know without any shadow of doubt that they are naturally and effortlessly headed towards complete integration of life, a grand and glorious future. They repeatedly see, hear, understand, and experience that all knowledge is just a lively expression of their own self-referral consciousness, the source, course and goal of knowledge. Through this understanding and experience life is flowing towards perfection, an increasingly perfect life is being actualized in them. This is what a teacher using these invaluable educational tools witnesses in a Consciousness-Based educational system.” (2002)

(4) To refine and strengthen the intellect and speech—students express what they are learning every day and apply it to their own experience

A highly effective Consciousness-Based principle of teaching is that students summarize, synthesize, and express aloud what they have learned. They do this as part of the daily Knowledge-Action-Achieve-
ment-Fulfillment cycle described above; and at the end of each lesson, day, and week through their Student Summaries, Review of the Day, Review of the Week, and monthly Enlightened Presentations.

All these activities engage the higher cognitive functions of analysis, evaluation, and synthesis, as well as engaging their feelings and ego through their interaction with the material. In addition, by immediately reviewing and expressing what they have learned, and using a range of processes of knowing, their retention of the knowledge is greater (Magnesen, 1983).

In their end-of-the-month presentations, students integrate the main themes and from each course into original creations—amusing skits or songs, art or charts, poetry, science or math demonstrations—presented to students, parents, faculty, and visitors.

In these presentations and whenever they speak in class, students are asked to use only the most refined language and to avoid slang; this habit of using precise speech refines the functioning of the mind, intellect, and feelings.

With students reviewing and integrating the knowledge they are gaining through these summary and review activities, together with the Course Overview Chart and Main Points Chart and the Knowledge-Action-Achievement-Fulfillment cycle, the most important knowledge is being repeated—by the teacher and by the students—several times from different angles. Through this repetition, the knowledge settles more deeply in the students’ awareness, so that they more fully own it and more fruitfully use it.

Summary of the third basic component of Consciousness-Based Education

In summary of this component, these principles of curriculum and instruction are called Consciousness-Based because they are derived from how human consciousness naturally develops. They are based on the laws of nature governing holistic development of consciousness and the physiology.

They have in common the refining and strengthening of the different levels of the personality—behavior, speech, perceptions, thought, intellect, emotions, or ego—resulting in students naturally functioning with more and more of their full creative powers.
Component 4:  
A healthy, stress-free routine  
and nourishing environment

We have established the importance of the quality of awareness and the state of the nervous system in Consciousness-Based education, as the basis for developing higher states of consciousness. Helping students gain and maintain a restfully alert, stress-free mind and body is therefore particularly important in this system. Accordingly, Consciousness-Based institutions include in their policies elements of the students’ surroundings and routine that promote the optimal psychophysiological state for unfolding more of their inner genius and joy.

- These elements include group practice of the Transcendental Meditation and TM-Sidhi programs by everyone in the institution, which creates a harmonious, vital atmosphere for teaching and learning. One teacher described her experience in this way:

  “As a classroom teacher of 15 years in a Consciousness-Based school, I accept as a fact of life things that I know are not the norm in many schools. The love that the children have for one another is not just something one notices in isolated instances. It is something that is so pervasive that my colleagues and I very seriously rely upon it in our everyday classroom management. The children want to achieve on their own and are comfortable with competition. But they are visibly happy, even thrilled, by the success of their classmates. If a student has trouble with math and suddenly “gets it,” what I can only describe is gentle cheers break out amongst her classmates.

  “Another aspect of the school atmosphere that has been very important to me is that the love and respect that is so apparent among the children is also strong among the teachers. The atmosphere among us is consistently warm and supportive.

  “Probably, the easiest way to describe the atmosphere at Maharishi School is to recount the comments of scores of visitors including educators working in important positions at the state and national levels. They begin commenting on the feeling in the school almost as soon as they come in, and bring it up again and again in the course of their visits. I found the
comparisons they make to be compelling evidence for the harmony in our school.” (in Deans video lecture, 2002)

- The elements of Consciousness-Based schools and universities promoting holistic development of consciousness also include a balanced daily routine of academic classes, daily sports, creative activities, and pure food.

- The routine also includes early bedtime and no heavy homework assignments. Early bedtime maintains the body and mind in harmony with the cycles of the laws of nature governing the physiology at different times of the day and night. Since the goal is to culture the student’s physiology for higher consciousness, gaining sufficient rest is vital; starting their night rest at the optimal time brings the greatest benefits to the physiology.

- The buildings of Consciousness-Based schools are constructed or selected in accord with the ancient and timeless principles of architecture in harmony with the laws of nature, for the enhanced health and well-being of the students, teachers, and administrators.

- Boys and girls, men and ladies, ideally are educated in their own institutions, which fosters a life style that is less complicated; more focused on knowledge; more conducive to the students’ comfort and progress in all studies—math, science, literature, art; and an atmosphere of greater freedom for unfolding their unique talents.

A teacher in an all-girls Consciousness-Based school wrote

“Teaching all girls is a distinct pleasure. They are more settled within themselves, and more open and receptive to knowledge. They are more aware, and show a different quality of focus, free from distraction.” (2003)

- With a regular routine, a dependable routine—with the same class or activity taught at the same hour, with the same teachers,
no late nights, and no big surprises—it is easier for students to settle into more creative and powerful levels of their awareness, and function with more of their inner genius. The more unpredictability on the surface of life, the less students are prone to explore the quiet, expansive depths of their intelligence.

• Consciousness-Based education promotes the principle that it is important not to put the pressure of responsibility on immature students to make right choices; instead, it is for the adults to guide their study and oversee their activities during the school day, and endeavor to make their whole routine well set and comfortable. As neuroscience has established, it is not until about age 24 that the part of the brain associated with decision making, judgment, planning, evaluation, reasoning, lack of impulsiveness—is fully developed (Powell, 2006).

Through a consistent and full daily routine, with minimum individual choices, teachers help school students progress, channeling their habits of functioning in a positive and productive direction. As the students grow older, of course they are given more choices.

On this topic Maharishi said,

“Having such a routine is a systematic procedure of training not only the mind, but the whole functioning of the nervous system. Every little bit the students do in life has a direct influence on the functioning of the nervous system, which influences their level of consciousness.” (1970)

Finally, here is a comment from an educator—a master teacher and curriculum developer, with thirty years of teaching experience—speaking about the Consciousness-Based school in which she taught:

“I found that because both students and teachers were experiencing their most settled state of consciousness through Transcendental Meditation, communication between teacher and students was easy, relationships were harmonious, and focus on learning came naturally.
“The Consciousness-Based program was clearly awakening in the students their innate thirst for learning, improving their critical thinking, creativity, and integration of knowledge; and increasing their happiness, kindness, and compassion. The Consciousness-Based education program, in my view, fulfills the most exalted aspirations of educators everywhere, providing the basis for an ideal society.”

Conclusion

Any time a school or university succeeds in transforming students in a desirable way, it is making use of laws of nature that promote positive change in the students at some level of the personality. Successful teaching simply means successful application of laws of nature governing the process of giving and gaining knowledge, just as other laws of nature keep the building up, the temperature steady, the marks on the white board, and our feet on the ground.

The key distinction between other schools and universities and Consciousness-Based institutions is that this system of education activates fundamental laws of nature that refine the consciousness and physiology of the students, opening their awareness to their unbounded potential, and dissolving the stress that prevents them from living this potential. Deeper knowledge of the laws of nature inherent in the functioning of human consciousness is therefore the basis of Consciousness-Based education.

The four basic components of this system are (1) courses on consciousness, which give direct experience and intellectual understanding of development of consciousness; (2) study of the standard disciplines in light of the Science of Consciousness; (3) teaching and curriculum practices that holistically develop the personality toward more expanded levels of awareness; and (4) a healthy, stress-free routine and nourishing environment to support the optimum state for learning and growth.

All these components aim at awakening the full potential of consciousness of the student and teacher on the basis of which the enduring goals of education can be most reliably and completely fulfilled.

“Developing the full creative potential of consciousness makes the student a master of his life; he spontaneously commands situations and circumstances. His behavior is always nourishing to himself and everyone around him. He has the natural ability to fulfill his own interests without jeopardizing the interests of others. Such an ideal, enlightened
individual is the result of ideal education—Consciousness-Based education.” —Maharishi Mahesh Yogi (1994)

[For further information about Consciousness-Based education, please write the International Foundation of Consciousness-Based Education: CB Efoundation@ifcbe.org]
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The Significance of Pure Consciousness
for Education

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THE SIGNIFICANCE OF PURE CONSCIOUSNESS FOR EDUCATION

ABSTRACT

This article presents the seminal contributions that intellectual understanding and experience of pure consciousness make to education. This knowledge of consciousness, brought to light by Maharishi Mahesh Yogi and systematically presented in his Vedic Science, supplies a missing foundation for education that deeply transforms the way we understand all aspects of the field: foundational concepts, educational practices, and educational outcomes.

The first part of the paper lays the foundation by examining the concept of pure consciousness, as presented by Maharishi, and providing experiential and scientific evidence for its existence.

The second demonstrates that the knowledge and experience of pure consciousness transform our understanding of basic educational concepts, including knowledge, development, learning, and human potential. The most important implication of this more complete understanding is that enlightenment—higher states of consciousness—should be the goal of education.

The third section examines the implications of pure consciousness for educational practice. These implications include new courses for giving experiential and intellectual understanding of consciousness; new approaches to the teaching of traditional subject matter that emphasize wholeness of awareness and refinement of the emotions; and ways to care for the physiology because of its role in supporting deeper experiences of consciousness.

The final section of the paper examines implications of pure consciousness for individual and social life—the key outcomes of education. Drawing on experience in Consciousness-Based educational institutions and empirical research, this section demonstrates that incorporation of knowledge of pure consciousness into education can significantly enhance academic outcomes, structure enlightenment in students, and contribute directly to the realization of the highest ideals of society—peace, economic growth, and social progress.
Introduction

*If the age is to change to one of invincibility* a fundamental value has to be supplied to the field of education. This missing fundamental is knowledge of pure consciousness and how to experience it. (Maharishi Mahesh Yogi, 1978, pp. 148–149)

The field of education has immense importance for individual and social life. This point is eloquently stated by John Dewey, America’s most influential philosopher of education:

> I believe that education is the fundamental method of social progress and reform. All reforms which rest simply upon the enactment of law, or the threatening of certain penalties, or upon changes in mechanical or outward arrangements, are transitory and futile. . . . By law and punishment, by social agitation and discussion, society can regulate and form itself in a more or less haphazard and chance way. But through education society can formulate its own purposes, can organize its own means and resources, and thus shape itself with definiteness and economy in the direction in which it wishes to move. (Dewey, 1966, p. 57)

The ability of education to promote social progress, however, is dependent on the quality of the educational system. In America today, as in most countries around the world, there is widespread dissatisfaction with education due to perceived educational failures. In the best American schools, for example, attended by students with relative affluence, the overwhelming impression of the classroom is one of “affective neutrality,” as one leading researcher expressed it. The student-teacher relationship in the typical classroom is “neither abrasive nor joyous” (Goodlad, 1984, p. 111). Combine this emotional disengagement with the increasing pressures to perform at high levels, and the resulting atmosphere in schools is a mixture of boredom, cynicism, and anxiety (LoVette & Jacob, 1995; Gardner, 1996). In one recent large-scale study of California and Wisconsin schools, researchers found that roughly 40% of the students said they were “just going through the motions” in school. The average stu-

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1 An invincible society is an ideal society because true invincibility only comes as a result of having no enemies. A society will have no enemies when it is integrated and strong within itself and radiates values of love, truth, virtue, and peace (Maharishi, 1978).
dent, they found, spent only four hours a week on homework outside of school (Steinberg, Brown, & Dornbusch, 1996). In the more troubled schools in many countries, on the other hand, the learning environment is even more discouraging. Children’s concern is less whether they will make good grades than whether they can stay awake and whether they will make it home safely after school (Kozol, 1996).

From a societal perspective the greatest concern for today’s schools is not the apathy or lack of satisfaction, but the waste of human capital—the development of which is the chief function of the school. Jean Piaget, for example, identified the highest level of cognitive development to be “formal operations,” the foundation of scientific reasoning; however, research-based estimates of the percentage of adults who actually attain formal operations vary between 15 and 50% (Greidanus, 1984; Sachs-Brannock, 1980; Darion, 1981). Similarly, Lawrence Kohlberg developed a theory of moral development with six stages leading to principled moral reasoning, yet the average middle-aged adult in society functions at level four on this scale, a level of conventional moral thought (Bakken, 1983). Jane Loevinger developed a scale for ego development, which includes six levels; yet typically only 1% of the adult population reach either of the two highest levels (Holt, 1980). These comparatively low levels of human development indicate that the schools are not developing the primary resource of all nations—human potential. What can society accomplish, if its human resources remain languishing in the schools?

This article presents a new educational paradigm, introduced by Maharishi Mahesh Yogi, that provides a solution to these deficiencies, among others. Maharishi, also, is a strong proponent of the power of education to improve human life. “Through proper education,” he declares, “we can create anything” (Maharishi, 1991, p. 13). “Proper” education, however, must be based on sound educational foundations. The problem with current education, from Maharishi’s perspective, is that it lacks a missing fundamental—intellectual understanding and experience of pure consciousness (Maharishi, 1978). Intellectual understanding and experience of pure consciousness are so fundamental that they transform all aspects of the field of education, including foundational concepts, educational practices, and outcomes of education. This knowledge of pure consciousness, which has been utilized in
educational curricula around the world for the past 25 years, constitutes
a huge contribution to education and must be incorporated into this
field if the social ideals of humankind are to be realized.

This paper is divided into four parts:

1. the understanding of the nature of pure consciousness as pre-
   sented by Maharishi;
2. the implications of understanding and experience of pure con-
   sciousness for fundamental concepts in education;
3. educational practices that follow from these fundamental con-
   cepts; and
4. outcomes of Consciousness-Based education.

The Nature and Verification of Pure Consciousness
Pure consciousness—or simply “consciousness,” as Maharishi often
refers to it—is the most basic concept in Maharishi Vedic Science, and
knowledge of pure consciousness, including experience and
intellectual understanding, is the most important contribution of
Maharishi Vedic Science to contemporary education. It is necessary at
the outset to understand the nature of pure consciousness—the roles
that it plays and qualities associated with it—because these provide the
basis for an understanding of the implications of pure consciousness for
education. These characterizations of consciousness will inevitably be
abstract; therefore, it is important to remember that experience of pure
consciousness can be gained easily through Maharishi’s systematic and
effortless technologies for developing consciousness, the Transcendental
Meditation and TM-Sidhi programs, and that even beginning experi-
ence with these programs verifies many of these characterizations.

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2 Maharishi Vedic Science is a systematic exposition of the ancient Vedic knowledge of
eternal reality cognized by the enlightened seers of ancient India. As such, it is pure Vedic
knowledge, and Maharishi can be seen as the most recent exponent of this ancient tradition
of knowledge. The term “science” is used to convey the emphasis that Maharishi has placed on
direct experience and empirical testing as the foundation and criteria of this knowledge (Chan-
Pure consciousness

Pure consciousness, as Maharishi defines it, is the basic reality of life, the unmanifest, unchanging basis of all subjective and objective existence (Maharishi, 1963/95, pp. 21–23; Maharishi, 1986, pp. 25–26). In *Vedic Knowledge for Everyone*, his most complete exposition on the implications of Vedic knowledge for education, Maharishi expounds on the fundamental nature of pure consciousness as follows:

All speech, action, and behaviour are fluctuations of consciousness. All life emerges from and is sustained in consciousness. The whole universe is the expression of consciousness. The reality of the universe is one unbounded ocean of consciousness in motion. (p. 68)

As the ultimate reality, pure consciousness can be characterized in different ways. All characterizations, however, are linked either to its status as the basis of subjective existence or as the basis of objective existence. These different characterizations are significant because they emphasize different qualities of pure consciousness that are enlivened in the individual when it is experienced.

**Pure consciousness as the basis of subjective experience**

• Self. Maharishi points out that pure consciousness, as the basis of subjective existence, is the universal Self that underlies the individual self. He clarifies this point in his commentary on the Bhagavad-Gītā (1967):

Self has two connotations: lower self and higher Self. The lower self is that aspect of the personality which deals only with the relative aspect of existence. It comprises the mind that thinks, the intellect that decides, the ego that experiences. This lower self functions only in the relative states of existence—waking, dreaming, and deep sleep. Remaining always within the field of relativity, it has no chance of experiencing the real freedom of absolute Being. That is why it is in the sphere of bondage. The higher Self is that aspect of the personality which never changes, absolute Being, which is the very basis of the entire field of relativity, including the lower self. (p. 339)

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3 In the history of his teachings, Maharishi has used many terms to refer to this fundamental reality. Pure consciousness is the term he has used most often. Other terms include Being, Transcendental Consciousness, pure intelligence, unified field of natural law, unified field, and Veda.
Experience of pure consciousness is, therefore, knowledge of the Self.

- Source of thought and simplest state of awareness. As the basis of individual mind, Maharishi teaches that it is the source of our thinking process. As the source of thought, it is experienced as a state of no thought, the simplest state of human awareness (Maharishi 1963, pp. 44–50; Maharishi 1967, pp. 470–71). These qualities are significant because they indicate that pure consciousness is easily accessible to every human being through transcending the thinking process.

- Field of infinite energy, intelligence, and creativity. Because thoughts exhibit movement and intelligence, Maharishi (1972, Lesson 2) observes that their source, from which innumerable thoughts arise, is a field of infinite energy and intelligence. Pure intelligence is used frequently by Maharishi as a synonym for pure consciousness. All intelligence expressed by human beings and seen in nature has its source in this field. All creativity expressed by human beings and also seen in the huge diversity of nature also has its source in this field. The field is thus one of unbounded creativity.

- Perfect orderliness. Maharishi closely associates the idea of intelligence with orderliness. The order in creation reflects the underlying intelligence in nature. As a field of pure intelligence, therefore, pure consciousness is also a field of perfect orderliness (Maharishi, 1972, Lesson 5).

- Pure wakefulness and alertness. Awareness is a synonym for consciousness. Maharishi therefore indicates that the field of pure consciousness is a field of pure awareness. Pure awareness is fully wakeful and alert (Maharishi, 1994, pp. 57–62).

- Freedom. As the ultimate reality that permeates all of creation, pure consciousness is experienced as unboundedness. Experience of this unbounded consciousness brings a sense of complete freedom. This is why the term “liberation” has been associated with this experience in Vedic texts such as the Bhagavad-Gītā (Maharishi, 1967, pp. 378–9).
• Wholeness. Another term Maharishi frequently associates with experience of pure consciousness is wholeness. Because the whole animate and inanimate universe is the expression of consciousness, pure consciousness is known and experienced to be wholeness. When experience of pure consciousness is fully developed, all of manifest creation is experienced as suffused with this underlying wholeness. Maharishi (1995a) has referred to this experience as “wholeness on the move.”

• Bliss. A key quality associated with pure consciousness by Maharishi and the ancient Vedic seers is bliss. In Sanskrit this field is traditionally referred to as Sat-Chit-Ananda—absolute bliss-consciousness (Maharishi, 1967, p. 187). In the Bhagavad-Gītā, pure consciousness is referred to as a field of “infinite joy” (pp. 424, 439). As a field of bliss, this experience brings supreme fulfillment to life.

Pure consciousness as the basis of objective experience
Maharishi explains that many of the above qualities responsible for structuring subjective experience are also responsible for upholding the objective world. Qualities of intelligence, energy, orderliness, and creativity permeate the natural world. In addition, there are other characterizations of pure consciousness that come to the fore in its role as the source of all manifest creation. As discussed in the next section, these qualities correspond precisely to concepts that can be found in modern-day quantum field theory (Hagelin, 1987). Maharishi emphasizes the following qualities:

• Total potential of natural law. From the perspective of modern science, the universe is governed by natural law. The source of the universe must, therefore, be the home of all the laws of nature, and have within it the total potential of natural law. Maharishi (1986, 1994) often refers to pure consciousness as the unified field of natural law, that unified field containing all laws of nature. Because of its role as the source of natural law, Maharishi also frequently refers to pure consciousness as the Constitution of the Universe. Just as the constitution of a nation is the source of all laws of a nation, the Constitution of the Universe, pure consciousness, is the source of all the natural laws that function in the universe.
• All possibilities. As the source of the infinite diversity in creation, pure consciousness is a field of all possibilities (Maharishi, 1986, pp. 25–31).

• Infinite correlation. Because pure consciousness is a unified field out of which all of creation comes, at this level all of creation is connected or correlated (Maharishi, 1977, p. 150).

• Infinite dynamism. As the source of the ever-expanding universe, pure consciousness is infinitely dynamic. It also has infinite organizing power because it is responsible for the organization of all events in the universe (Maharishi, 1995a, pp. 34–47).

• Source of physiology. As the source of the entire objective world, pure consciousness is also the source of our physiology. This is important to make explicit because of the profound beneficial effects that experience of pure consciousness can have for the physiology. Dr. Tony Nader (1995), in a historic discovery made under Maharishi’s guidance, has recently established the profound correspondence between the expressions of pure consciousness, as found in the Vedic literature, and the structure of human physiology. This correspondence concretely demonstrates that the total potential of natural law is lively within the human physiology.

Confirmation of the existence of pure consciousness
The most important confirmation of the existence of pure consciousness comes from the direct experience that individuals have had, and are continuing to have around the world, that conform to key characterizations of pure consciousness listed above. Edward Carpenter, a nineteenth century British social philosopher, for example, describes his experience as follows:

The Man at last lets Thought go; he glides below it into the quiet feeling, the quiet sense of his own identity with the self of other things—of the universe. He glides past the feeling into the very identity itself, where a glorious all-consciousness leaves no room for separate self-thoughts or emotions. He leans back in silence on that inner being . . . and so there comes to him a sense of absolute repose, a consciousness of immense
and universal power, such as completely transforms the world for him. (1904/1921, p. 228)

The British poet Tennyson reports a similar experience:

A kind of waking trance I have frequently had, quite up from boyhood, when I have been all alone . . . as it were out of the intensity of the consciousness of individuality, the individuality itself seemed to dissolve and fade away into boundless being, and this not a confused state, but the clearest of the clearest, the surest of the surest . . . utterly beyond words, where death was an almost laughable impossibility, the loss of personality (if so it were) seeming no extinction, but the only true life. (1899, p. 268)

A practitioner of the Transcendental Meditation technique expresses a remarkably similar experience as follows:

During meditation, the experiences of being the whole universe started to occur more and more often. It reached its climax in one meditation when I had the overpowering realization that I was so unbounded and so unlimited that anything I wanted could easily be obtained. I kept feeling more and more expanded, and the feeling of bliss kept growing and becoming more powerful within me. . . . This gave me a feeling of being whole which I knew could no longer be taken away. (Maharishi, 1977, pp. 79–80)

These experiences express several of the qualities of pure consciousness brought out by Maharishi. Carpenter and Tennyson both communicate the experience of connection with universal Self; all three communicate in different ways the experience of unboundedness. Carpenter’s sense of connection to the things of the universe reflects the status of pure consciousness as the source of the whole manifest universe and his sense of “immense and universal power” communicates the experience of all possibilities. Tennyson’s experience of extraordinary clarity reflects the pure wakefulness quality of pure consciousness as well as perfect orderliness. The experience of the individual practicing the Transcendental Meditation technique in turn reflects the bliss and wholeness qualities of pure consciousness.

Individuals in different cultures throughout the ages—for example, Shankara, Buddha, Lao Tze, Plato, Augustine, Emerson, Whitman—have reported similar experiences of an unmanifest, universal
field that supports all subjective and objective existence (Huxley, 1962; Bucke, 1901/1969; Pearson, in process). The reports of this experience throughout time suggest that it is universally available and not culturally bound or a product of a particular Eastern or Western mind set. This direct experience, which is now easily accessible to everyone through the Maharishi Transcendental Meditation program, is the basis for our confidence in the existence of pure consciousness.

Today this subjective experience has also been confirmed by the objective methodologies of modern science. The understanding that there is an unmanifest, unified basis for all creation is now supported by advances in quantum physics during the past 20 years (Drühl, 1997). Quantum field theories describe a single unified field that completely unifies all particles and forces of nature. This field is recognized as the source of all material creation and is characterized as universal, self-interacting, self-sufficient, and infinitely dynamic, creating from within itself all the laws of nature. The similarities between these qualities of the unified field and the qualities associated with pure consciousness have led Maharishi and prominent unified field theorists to the conclusion that the unified field and pure consciousness are the same reality (Maharishi, 1986, p. 29; Hagelin, 1987).

The existence of pure consciousness and the ability to directly experience it have also been verified by physiological and psychological research. The provision by Maharishi Vedic Science of standardized and easily repeatable technologies for developing consciousness—the Transcendental Meditation and TM-Sidhi programs—has made it possible to empirically examine the effects of the experience of pure consciousness. The Transcendental Meditation program is a natural, effortless procedure that allows the mind to settle down and experience pure consciousness. The TM-Sidhi program is an advanced aspect of the technology of Maharishi Vedic Science. It trains the individual to think and act from the field of pure consciousness, enhancing the coordination between mind and body and greatly accelerating the stabilization of enlightenment (Maharishi, 1994, pp. 283–9).

The research on the Transcendental Meditation and TM-Sidhi programs indicates that there are unique psychophysiological correlates of this experience, which set it off from experiences of other states of consciousness (Wallace, 1986; Mason, 1995). In addition, psychologi-
cal research has demonstrated that this one experience leads to holistic growth of the individual—enhancing mental abilities, improving health, and promoting pro-social behaviors—further verifying its fundamental nature (Alexander et al., 1991; see discussion under “Learning and Development”). Powerful verification of the field nature of consciousness also comes from dozens of sociological studies indicating that practice of Maharishi’s technologies for developing consciousness by sufficient numbers of people improve the health and behavior of individuals who are not themselves practicing these technologies. This “action-at-a-distance” effect, now referred to as the Maharishi Effect, is explained by the enlivenment of the common field of pure consciousness, which, as a field of infinite correlation, connects all people (Orme-Johnson et al., 1988; see discussion of the Maharishi Effect at the end of the final section).

The above discussion has provided a general substantiation of the existence of pure consciousness and a description of important qualities associated with it by Maharishi. The existence of a field of pure consciousness that can be systematically experienced has important implications for education. These implications can be understood in terms of the different levels of education presented in Figure 1 on the following page. This figure shows that all educational systems (Level 3) have their basis in fundamental educational concepts (Level 2). Educational systems, in turn, have outputs, or products. These are depicted as the educated individual (Level 4) and ultimately the society itself (Level 5), which is determined by the quality of the individuals who compose it. Pure consciousness (Level 1), as the basis of the whole field of education, has implications for all the levels above it. The following analysis will examine implications of pure consciousness for basic educational concepts (Level 2), educational practices (Level 3), and educational outcomes (Levels 4 and 5).

All theories of education, and consequently educational practice, are based either explicitly or implicitly on an understanding of fundamental concepts. One way of understanding these basic concepts is in terms of the three-part nature of knowledge. Maharishi (1986; 1994) has brought out that, in order for there to be any knowledge, there must
be a knower, an object of knowledge, and a process of knowing connecting the two. If any of these is missing, there can be no knowledge. As we see in Figure 1, all educational systems derive from an understanding of these three basic conceptions: the nature of the individual (knower), the nature of learning and development (process of knowing), and the nature of knowledge (the known).

The major differences in educational theories throughout the ages can all be traced back to differences in perspective on these fundamental conceptions. John Dewey’s educational theory, for example, is informed by the view of modern science that knowledge is objective and gained through acting on the environment. This view of knowledge
underlies his emphasis on experience and learning by doing. Plato, on the other hand, viewed knowledge as transcendental and not knowable by the senses. His educational theory therefore emphasizes educational practices, such as the study of abstract mathematics and the dialectic, that train the mind to act independently of sense experience. The adequacy of any theory—its ability to produce desirable educational outcomes—rests ultimately on the adequacy of its understanding of these foundational conceptions. If understanding is limited and therefore inadequate, the theory based on it will be limited and, in turn, educational practice guided by the theory will not produce optimal results. Ultimately this limitation has significance for society itself, because the quality of a society depends on the quality of its educational system.

The knowledge of pure consciousness and how to experience it is significant for education because it leads to a deeper and more adequate understanding of these foundational educational conceptions. No understanding of knowledge, development, or of the individual can be adequate without an understanding of pure consciousness if pure consciousness is the ultimate reality that underlies them all. If we accept the existence of pure consciousness and of a systematic means to experience it, we see that they provide the basis for a more adequate understanding of education and for a more optimally functioning society. The following analysis will look, in turn, at the significance of pure consciousness for the three basic educational concepts (located at level 2 of Figure 1):

1) Knowledge;
2) Learning and Development;
3) Human Nature.

**Nature of knowledge**

The development and transmission of knowledge are fundamental tasks of education (Scheffler, 1965). One’s particular conception of knowledge has significant implications for educational practice. All models of teaching, for example, have implicit or explicit positions on what knowledge is and how it is learned (Joyce & Weil, 1996). As pointed out above, the different conceptions of knowledge held by Plato and Dewey led to very different educational practices. Optimal practice
must be based on a complete view of knowledge, and this only comes, as we will see, with an understanding of pure consciousness.

The knowledge of pure consciousness provided by Maharishi Vedic Science contributes two central ideas to our understanding of knowledge: first, that there is an absolute level of pure or total knowledge, and second, that knowledge, because of its basis in human consciousness, cannot be adequate without experience of this field. Knowledge, as we have seen, arises from the coming together of a knower and known through a process of knowing. At the level of pure consciousness these three values are unified. Maharishi (1994) has described how, at this level, consciousness, in the act of knowing itself, is all three values simultaneously.

In the process of knowing itself, wholeness of consciousness, pure consciousness, self-referral consciousness, pure wakefulness, in its singularity, takes on the threefold structure of knower, process of knowing, and known; or observer, process of observation, and observed; or in Vedic terminology, Rishi, Devatā, and Chhandas. Saṁhitā (togetherness) of Rishi (the observer), Devatā (the process of observation), and Chhandas (the object of observation) is the structure of pure knowledge. This is the level of absolute education, where the knower is the embodiment of total knowledge—pure knowledge and its infinite organizing power. (pp. 108–109)

Maharishi refers to pure consciousness as total knowledge or the home of all knowledge (Maharishi, 1972), because it is that unified level of life—the unified field of natural law—that gives rise to all diversified values.

Knowledge in traditional areas cannot be adequate without knowledge of pure consciousness because pure consciousness is the source of all disciplines. Knowledge of each area of life needs to be connected to pure consciousness to be complete. As Maharishi explains: If, along with the study of each subject, the experience of [pure consciousness] is taught to the students, then they will be able to fathom the deeper levels of that subject, and the whole range of that subject will be studied properly. When the two extremities of that subject—the gross, expanded value and the transcendental value—are connected, then the field of that subject will be complete, and the study of that subject will bring something real and useful in life. (Maharishi Vedic University, 1986, p. 269)
As the various articles in the journal *Modern Science and Vedic Science* reveal, the complete understanding and experience of pure consciousness provided by Maharishi Vedic Science has profound significance for all of the disciplines. In the humanities, pure consciousness helps us to understand the nature of the Self, the source of the creative process, and the nature of the full aesthetic experience. For the social sciences, understanding pure consciousness provides knowledge of the knower, the nature of full human potential, how to develop this potential, and of collective consciousness and its implications for improving social life. In the natural sciences, knowledge of pure consciousness provides an understanding of how the language of the natural sciences—mathematics—which is subjectively derived, can describe regularities in the objective world and of the source of all of these disciplines in the unified field. Understanding that all disciplines have their source in pure consciousness also helps the student to realize that all knowledge ultimately has its source in his own consciousness and that he himself is therefore the lively source of all knowledge (Maharishi, 1994, p. 151). This is the complete understanding of knowledge.

Experience of pure consciousness is crucial to gaining complete knowledge for another reason: It transforms the way we see the world. Cognitive psychology has demonstrated that the schemas, or concepts, that we have about the world determine how we see the world (Anderson, 1980; Gagne et al., 1993). Perception is active and therefore how we see the world, our perception of reality, changes as we ourselves change. This has led contemporary adherents of the constructivist view of knowledge to declare that there is no objective knowledge, that all knowledge is relative to the knower (Derry, 1992). This relativity of knowledge corresponds to a central principle of Maharishi Vedic Science: Knowledge is structured in consciousness (Maharishi, 1972, Lesson 9; Maharishi, 1977). According to this principle, as our state of consciousness changes, our experience of reality changes, and as our experience of reality changes, our “knowledge” of the world changes.

The experience of pure consciousness, however, allows one to break from the radical subjectivity of the constructivist view of knowledge. Because pure consciousness is a universal, nonchanging level of consciousness, perception based on this non-variable state of consciousness can be nonrelative and fully reliable (Maharishi, 1994). Because knowl-
Knowledge is structured in consciousness, full development of consciousness gives fully adequate knowledge. In the most fully developed state of consciousness—Unity Consciousness—one directly perceives that pure consciousness, our own Self, is the essence of all things, permeating all creation. Maharishi (1972) describes this highest state of knowledge as follows:

[In] that state, the ultimate value of the object, infinite and unmanifest, is made lively when the conscious mind, being lively in the unbounded value of awareness, falls on the object. The object is cognized in terms of the pure subjective value of unbounded, unmanifest awareness. . . . In this unified state of consciousness, the experience and the object of experience have both been brought to the same level of infinite value, and this encompasses the entire phenomenon of perception and action as well. The gulf between the knower and the object of his knowing has been bridged. . . . In this state, the full value of knowledge has been gained, and we can finally speak of complete knowledge. (Lesson 23, p. 9)

This understanding that knowledge is structured in consciousness has profound implications for education. It means that consciousness must be fully developed in order to have complete knowledge. Because pure consciousness is the Self, it means that Self knowledge—complete knowledge of the knower—must be the basis for all other knowledge. Without this basis, Maharishi (1973) points out that knowledge is incomplete and, as a result, nonfulfilling:

The foundation of knowledge is the consciousness of the knower. If the knower is in doubt, if the knower doesn’t know himself, then the whole structure of knowledge has no basis to it. And such baseless knowledge can only be nonfulfilling. (p. 30 in this volume)

The fact that knowledge is incomplete in educational institutions today, that it lacks knowledge of the foundation of all knowledge, is of immense consequence. It is the root cause, according to Maharishi, of all of the problems and suffering in the world today (Maharishi, 1994, p. 15; see discussion in final section of this article).

**Learning and development**

Development and learning, the second set of foundational educational concepts presented on Figure 1, are clearly central to education. John
Dewey went so far as to say that education is growth or development (Dewey, 1916/1966). An educational experience, in this view, is one that promotes human development. Learning is valuable both as a means to development and because the product of learning—knowledge—is an educational aim in its own right. Given the centrality of these concepts to education, it is imperative for educators to understand them adequately.

**Contribution of pure consciousness to development**

Nature and nurture are the two generally understood sources of human development (Woolfolk, 1995). Nature, or maturation, refers to changes that occur naturally and spontaneously and that are, to a large extent, genetically programmed. Nurture refers to those spurts to development that come from interaction with the environment. Because natural endowments are considered to be relatively fixed, educators are primarily concerned with structuring those environmental interactions that promote maximum growth. The understanding and experience of pure consciousness provided by Maharishi Vedic Science extends our understanding of development in two primary ways: Maharishi Vedic Science contributes to our understanding of the mechanisms of development and the ends of development.

Mechanisms. Our understanding of the mechanisms of development is enhanced by the understanding that experience of pure consciousness is itself a profound means to promote growth. Maharishi explains that bringing our attention to something enlivens its qualities in us (Maharishi, 1972). Consequently, when the attention opens to experience of pure consciousness, its qualities become enlivened in us. Because pure consciousness is a field of infinite intelligence, creativity, power, and bliss and at the same time a field of perfect orderliness, this experience enlivens these qualities in our mind and body, thereby promoting growth. Over 500 scientific studies have now documented that experience of pure consciousness gained during practice of the Transcendental Meditation technique promotes integration and efficiency of the entire nervous system, leading to improved mental abilities, health, and social behavior. Specific results relevant to education include the following:
increased intelligence, learning ability, and intellectual performance (So, 1995; Cranson, 1991);
- improved academic performance and academic orientation (Nidich, Nidich, & Rainforth, 1986; Nidich & Nidich, 1989; Kember, 1985);
- increased creativity (So, 1995; Travis, 1979);
- optimized brain functioning (Orme-Johnson & Haynes, 1981; Dillbeck & Bronson, 1981; Dillbeck et al., 1981);
- improved mind-body coordination (Appelle & Oswald, 1974; Holt, Caruso, & Riley, 1978);
- increased energy and dynamism (Jonsson, 1975; Alexander et al., 1993);
- increased organizational ability and efficiency (Seeman, Nidich, & Banta, 1972; Jonsson, 1975; Alexander et al., 1993);
- improved health (Orme-Johnson, 1987; Herron, 1993);
- increased integration of personality and growth of self-actualization (Alexander, Rainforth, & Gelderloos, 1991; Chandler, 1991); and
- reduction in negative personality characteristics such as anxiety, neuroticism, and drug abuse (Eppley, Abrams, & Shear, 1989; Alexander, Robinson, & Rainforth, 1994; Alexander et al., 1993).

These findings taken together indicate that experience of pure consciousness is a fundamental and powerful means of promoting human growth. This understanding that growth is promoted by the process of transcendence adds knowledge of a third major mechanism of human growth, different from interaction with an external environment and maturation. In addition to promoting growth within the cognitive and affective domain currently studied by contemporary psychology, this mechanism makes possible growth to highly integrated and comprehensive values of development, termed higher states of consciousness in Maharishi Vedic Science.

Ends of development. Knowledge of pure consciousness also fundamentally changes our understanding of the ends of human development. A basic principle of Maharishi Vedic Science is that repeated experience of pure consciousness develops a state of enlightenment
in which the awareness is permanently open to the field of pure consciousness (Maharishi, 1994; see “Outcomes of Consciousness-Based Education” below). Enlightenment is a term that for Maharishi (1972, Lesson 23) encompasses three “higher” states of consciousness that are fundamentally different from the three states of consciousness familiar to contemporary psychologists—waking, dreaming, and sleeping.

These are as follows: Cosmic Consciousness, in which pure consciousness is maintained as a continuous nonchanging level of awareness along with the changing experiences of waking, dreaming, and sleeping; refined Cosmic Consciousness (or God Consciousness) in which there is a refined perception of the objective world and expansion of love along with permanent Self awareness; and Unity Consciousness in which everything in creation is seen in terms of the unbounded Self. Maharishi (1995b) explains that in the highest state of enlightenment, “the total creative intelligence of the Self is fully awake on all levels of life—intellect, mind, senses, body, behavior, environment, and to the individual’s relationship with the entire cosmic life. This means that the infinite power of natural law is spontaneously available to the whole field of thought, speech, and action.” It is a state of complete fulfillment in which the individual is able to know anything, do anything, and achieve anything (Maharishi, 1985). This state is the ultimate endpoint of human development and can be realized by any human being with access to education based on Maharishi Vedic Science.

Scientific research on long-term practitioners of the Transcendental Meditation and TM-Sidhi programs is now beginning to empirically verify the existence of higher states of consciousness. Ground breaking research recently demonstrated that the EEG patterns found in individuals reporting experience of pure consciousness during sleep (a characteristic of experience in higher states of consciousness) are significantly different from those during regular sleep (Mason, 1995). Psychological research also confirms that long-term practitioners of the Transcendental Meditation and TM-Sidhi programs experience higher levels of personality development as measured by the Loevinger ego development test. Longitudinal research showed that Maharishi University of Management alumni were nearly 40 times more likely than the general population to be at the integrated or highest stage of ego development (Chandler, 1991). Other research has shown that indi-
individuals reporting sustained experiences of higher states of consciousness have greatly enhanced affective experiences characterized both by a constant internal state of well-being that is independent of events in the external world and by richer and more differentiated emotions (Guttmann, 1996). These are just a few of the studies indicating that individuals practicing the Transcendental Meditation and TM-Sidhi programs are growing to higher states of consciousness.

The significance of pure consciousness for learning

Learning is a specific case of growth. Just as pure consciousness has important implications for growth in general, it also has important implications for learning. As John Dewey noted (Dewey, 1938/71) and Maharishi has developed at length over the last 30 years (Dillbeck & Dillbeck, 1987), learning involves an interaction between a subject and an object. Effective education must take into account both poles in the education process—the organization of subject matter and the receptivity of the learner. Progressive educators (Dewey, 1938/71) focus on enlivening receptivity through relating subject matter to the life experience of the child, which enhances interest. If a student is interested in the subject matter, receptivity will be increased and learning improved.

Experience of pure consciousness provides an even more profound way to enliven receptivity: It directly develops the cognitive qualities—such as intelligence, memory, alertness, and creativity—and affective qualities—such as self-concept and well-being—that enhance learning (Dillbeck & Dillbeck, 1987). This is highly significant for education because entering levels of cognitive and emotional development largely determine student success in school (Bloom, 1976). Whereas other educational programs depend for their effectiveness on the preexisting receptivity, intelligence, and creativity of the students, extensive research on the Transcendental Meditation program indicates that it develops these characteristics in all students irrespective of their background, attitudes, or abilities. With the knowledge of development of consciousness provided by Maharishi Vedic Science, we do not need to accept human potential as fixed; it can be expanded, and with this expansion comes increased capacity for learning. In Maharishi’s words, practice of the Transcendental Meditation program “expands the container of knowledge” (Maharishi, 1972, Lesson 9).
Experience of pure consciousness enhances learning in another way: It develops the full range of subjective knowledge. As Maharishi notes, “Life as such is not only objective; life is subjective and objective both together” (Maharishi, 1985, p. xii). A major failing of modern education, as discussed above, is that it does not provide knowledge of the knower, the subjective side of knowledge. This crucial omission is rectified by experience of pure consciousness, because it is the Self and thus this experience brings knowledge of the Self.

The intellectual understanding of pure consciousness provided by the Maharishi Science of Creative Intelligence (SCI) course also enhances learning by offering universal principles of natural law through which any new material can be connected to the student’s personal experience. In this course, Maharishi points out that the same principles that uphold the structure of a poem uphold the structure of the universe and our own intimate experience of growth of consciousness. SCI principles such as the whole is more than the sum of the parts, every action has a reaction, and rest and activity are the steps of progress are found in all disciplines. The principle of rest and activity, for example, can be observed in the growth spurts of a plant, phases of activity and consolidation during periods of social reform, and in the progression of a symphony. Growth of consciousness also requires rest (experience of pure consciousness) alternated with activity in order to stabilize pure consciousness in daily life. Knowledge and experience of unifying principles, like rest and activity, provide a structure into which all new knowledge can be fit. Because learning involves the relation of new information to an existing structure of knowledge, intellectual familiarity with universal principles facilitates learning in any field. The process of learning becomes very comfortable because all knowledge can be related to us (Boothby, 1997).

From the above discussion, we see that the knowledge of pure consciousness provided by Maharishi Vedic Science—both experiential and intellectual—has great significance for our understanding of development and learning. Experience and understanding of pure consciousness constitutes a third major mechanism for development, different from maturation and interaction with the environment, and also extends our understanding of the endpoint of human development to include higher states of consciousness. Experience of pure conscious-
ness promotes the learning of objective knowledge through enhancing receptivity. It fulfills the student’s desire for complete knowledge by also providing subjective knowledge of the Self. Intellectual knowledge of pure consciousness related to the SCI principles promotes learning by providing a framework for understanding that allows students to more readily relate knowledge to themselves. These contributions of Maharishi Vedic Science to the understanding of development and learning are highly significant. They form the basis for a new educational paradigm that allows a reconceptualization of the goals of education.

**Nature of the individual**

The third basic educational concept that is transformed in light of an understanding of pure consciousness from Maharishi Vedic Science is the concept of the individual. This understanding is fundamental to education because all education has as an aim the development of the individual. The way one views human nature and human potential impacts the way one perceives education. Rousseau, for example, viewed human nature as innately good but corrupted by society. Therefore, education had for him the role of protecting the individual from the negative influences of society so that natural development could proceed unimpeded (Rousseau, 1980). As another example, many societies historically have felt that women have not had the same potential as men. Consequently, women have been excluded from the education process.

As the discussion of pure consciousness in the previous section indicated, knowledge of pure consciousness contributes significantly to our understanding of human nature. Most fundamentally, we see that pure consciousness is the full potential of the knower, the Self. Without knowledge of pure consciousness, there can be no Self knowledge. In addition, we have seen that the true nature of human potential, the endpoint of human development, is enlightenment. The state of enlightenment is the only natural state of life, according to Maharishi, because it is unnatural for human life to be segregated from its holistic basis. As he explains in *Vedic Knowledge for Everyone*:

> This segregation of the individual from the cosmos is very unnatural, and anything that is unnatural is nonevolutionary, nonprogressive, and damaging to life, because the very nature of life is to evolve. (p. 200)
This recognition that the endpoint of human development is enlightenment or higher states of consciousness is highly significant because it changes the way we think of the goal of education. Goals have a very important role in education. As Lawrence Kohlberg notes:

The most important issue confronting educators and educational theorists is the choice of ends for the educational process. Without clear and rational educational goals, it becomes impossible to decide which educational programs achieve objectives of general import and which teach incidental facts and attitudes of dubious worth. (Kohlberg & Mayer, 1978, p. 123)

One can formulate educational goals in different ways, from individualistic or societal viewpoints, but there is one formulation that encompasses both: the full development of individual potential. As Dewey says, “Here individualism and socialism are at one. Only by being true to the full growth of all the individuals who make it up, can society by any chance be true to itself” (Dewey, 1980, p. 5).

With the knowledge of pure consciousness provided by Maharishi Vedic Science, we can now recognize that enlightenment is the most important end for education. As Maharishi writes, “An individual whose consciousness is fully developed is an enlightened individual, and this full enlightenment, which develops the ability to achieve anything, would be the goal of education” (1994, p. 113). Only with the understanding that enlightenment is the highest goal of education is it possible to structure a truly effective educational system capable of realizing the full potential of both individuals and the societies they compose.

**Implications of Pure Consciousness for Educational Practice**

The significant implications that knowledge of pure consciousness has for basic educational concepts translate into significant differences for educational practice. These differences in practice fall into four interrelated areas that together comprise Consciousness-Based education—a distinct system of education based on knowledge of pure consciousness:

1. Technologies for experiencing consciousness: Maharishi Transcendental Meditation and TM-Sidhi programs, for example);
2. New courses added to the curriculum to give intellectual understanding of consciousness (e.g., the Maharishi Science of Creative Intelligence course);
3. New approaches to the teaching of traditional subject matter (including a variety of Consciousness-Based teaching tools and strategies);

**Technologies for experiencing consciousness**
The discussion in the previous section of the implications of pure consciousness for our understanding of knowledge and human potential indicates that experience of pure consciousness must be basic to education. This experience is necessary both to have complete knowledge, because knowledge is dependent on consciousness, and in order to achieve the goal of education, realization of full human potential in enlightenment. For this reason, Maharishi emphasizes that the self-referral experience of consciousness should be the essence of education:

The process of education is to bring the awareness to this level of pure intelligence, self-referral intelligence, self-referral consciousness—Transcendental Consciousness—and let the awareness be the lively embodiment of total knowledge—pure knowledge fully awake in its infinite organizing power—so that every state of consciousness is always lively in its infinite organizing power.

Education, therefore, is to bring the awareness from knowing anything else (object-referral consciousness) to knowing oneself (self-referral consciousness, subject-referral consciousness). (1994, pp. 110–111)

The Sanskrit term that captures the essence of education, according to Maharishi, is *Nivartadhwam*, which he translates as “return” or “transcend.” In *Vedic Knowledge for Everyone*, he refers to it as “the one word expression of my Absolute Theory of Education.” He says that the “total dynamics of education is contained in this one word of Rk Veda—*Nivartadhwam*” (p. 324).

Given the centrality of the experience of consciousness for education, technologies for developing consciousness become central to
educational practice. Maharishi emphasizes that two technologies are particularly important:

1. Practice of the Transcendental Meditation and TM-Sidhi programs;
2. Reading the Vedic literature on the basis of this practice.

The Transcendental Meditation and TM-Sidhi programs have already been introduced. They allow the mind to directly experience pure consciousness and train the mind to think from this field. Reading the Vedic literature after practicing these techniques is another powerful technology because, as Maharishi explains, the Vedic literature is the sound of the self-interacting dynamics of pure consciousness (Sands, 1997). The Vedic literature has the status of being *Apaurush-eya* or “uncreated” by human minds. It is cognized by highly enlightened individuals who have the ability to open their awareness fully to the eternal reality of pure consciousness and record the fluctuations of that field. The consequence of reading the Vedic literature is then the enlivenment in the consciousness and physiology of that quality of intelligence associated with the particular branch one is reading. As Maharishi writes:

> Every aspect of the Vedic Literature expresses a specific quality of consciousness. Reading every aspect of the Vedic Literature as it flows and progresses in perfect sequential order has the effect of regulating and balancing the functioning of the brain physiology and training consciousness, the mind, always to flow in perfect accordance with the evolutionary direction of Natural Law. This training of the mind fulfills the purpose of education by fully training the student to think and act spontaneously according to Natural Law. (pp. 144–145)

With recognition of the importance of experiencing pure consciousness for education, technologies for developing consciousness take a central place in the curriculum. At Consciousness-Based institutions such as Maharishi University of Management and Maharishi School of the Age of Enlightenment, a research in consciousness course is a mandatory, academically evaluated part of the curriculum.
Courses for intellectual understanding of consciousness

Maharishi emphasizes that both experience and intellectual understanding are necessary for complete knowledge (Maharishi, 1994). This is true equally for subjective and objective knowledge. To fulfill the need for intellectual understanding of pure consciousness, Maharishi, as mentioned earlier, developed the Science of Creative Intelligence course. At the college level, this is taught as a 33-lesson course; at the K–12 level, this is a class with special themes that is taught continuously throughout the year and adapted to age level. The Science of Creative Intelligence serves as a bridge between the main principles of modern science and Maharishi Vedic Science. In the Science of Creative Intelligence course students gain a deeper understanding of themselves and nature by focusing on the basic principles and qualities of consciousness that structure the whole creation. This knowledge thus provides a basis for connecting all subjects to each other and to the student’s own Self, which is demonstrated to be the source of all the qualities of consciousness.

In addition to the Science of the Creative Intelligence course, undergraduate students at the college level take a core course program, which presents an overview of the academic disciplines and shows how they all relate to consciousness. This program makes clear how consciousness manifests in all the different disciplines and throughout life.

Courses in Maharishi Vedic Science also provide both intellectual knowledge and further experience of consciousness, and describe its relevance to different areas of life. All 40 areas of the Vedic literature have value for life, but Maharishi has particularly emphasized the importance of the following areas of study in Maharishi Vedic Science:

- Maharishi Āyur-Veda—a prevention-oriented approach to individual and collective health that is holistic, time-tested, free from harmful side effects, cost effective, and easily applied. This is one aspect of the Maharishi Vedic Approach to Health program (Maharishi 1995c, pp. 422–424).
- Maharishi Jyotish—the Vedic system of predicting the future. This study, along with Maharishi Yagya procedures—Vedic performances—allows an individual to avert potential problems and promote good fortune (Maharishi 1995c, pp. 426, 428).
• Maharishi Sthāpatya Veda—Vedic architecture. This area of knowledge provides principles of designing, orienting, and constructing buildings and cities in harmony with natural law, so that every structure is life-supporting and auspicious for its inhabitants (Maharishi 1995c, p. 428).

• Creating Coherence in Collective Consciousness—knowledge of how large groups of Yogic Flyers, operating from pure consciousness, radiate an influence of coherence and harmony into the whole society. This is knowledge of the most fundamental means of bringing positive social transformation (Maharishi 1995c, pp. 63–65). (See also discussion in the final section.)

New approaches to teaching traditional subject matter
In addition to new curriculum that provides experiential and intellectual knowledge of pure consciousness, Consciousness-Based educational institutions also incorporate new approaches to teaching traditional subject matter that help to promote growth of consciousness and enhance learning.

Emphasis on wholeness of awareness
Structuring wholeness in the awareness of the student is a basic aim of Consciousness-Based education. Wholeness is one of the qualities of pure consciousness that is directly experienced by everyone who practices the Transcendental Meditation technique. It gradually grows through repeated practice, leading to an integrated state of life “in which all the material, intellectual, and spiritual aspects of life are beautifully correlated” (Maharishi, 1994, pp. 145–146). It is a balanced, comprehensive state of awareness capable of focusing sharply while at the same time never losing connection of part to whole. Wholeness of awareness is the foundation of wisdom because wisdom is the ability to put particulars in their broader context.

This comprehensive state of awareness is achieved primarily through Maharishi’s technologies for experiencing consciousness but can also be enhanced through curriculum and teaching techniques that emphasize wholeness. Teaching in this way both aids learning, because learning involves relating new parts to existing wholes, and helps structure
holistic awareness. Strategies for promoting wholeness used in Consciousness-Based education include:

- Main point charts. These charts, which are used in every class, have a wholeness point at the beginning which summarizes the most important point of the class, and several main points, which provide wholenesses for each part of the lecture.
- Course overview charts. These charts present the wholeness of each course at a glance. They include the topic of each day’s presentation and homework assignments.
- Block system of instruction. This system is used at the collegiate level and involves teaching only one course at a time. It preserves focus and prevents the fragmentation of the awareness which comes when one is taking several courses simultaneously. This approach also makes learning more stress free, because one never has competing assignments from different classes.

**Connecting all knowledge to the Self.**

Because the Self is pure consciousness and pure consciousness is the source of all disciplines, it is possible to relate all knowledge to the Self (Maharishi, 1994). This is another general means of maintaining wholeness of knowledge in Consciousness-Based education, because the Self is the ultimate wholeness. This approach to teaching also fosters an intimacy with knowledge for the student, which makes learning more fulfilling and easy.

Modern theorists understand that learning is fundamentally a process of making connections, of connecting new information to existing structures of knowledge that are meaningful to the learner (Caine & Caine, 1991). A system of education which connects all knowledge to the Self thus facilitates making meaningful connections and enhances the learning process. In addition, Maharishi notes that this approach to learning allows each discipline to be a means of developing the Self, of structuring enlightenment.

Every discipline becomes a means to develop the creative potential of the conscious mind, to enliven the Self. Whatever the students’ study, in the process of gaining specific knowledge of different subjects, they grow in the awareness that the center of all knowledge is present within
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themselves. This means that if they study 30 different disciplines, then 30 times the Self is connected with the discipline, and with this, all the knowledge remains intimately connected with the knower. (quoted in Dillbeck & Dillbeck, 1987, p. 405)

There are several methodologies in Consciousness-Based education for connecting knowledge to the Self:

• **Science of Creative Intelligence Points.** All main point charts include points from the Science of Creative Intelligence course that correspond to the discipline main points. The Science of Creative Intelligence points present a broader perspective on the discipline point by expressing a universal principle of the functioning of consciousness presented in the SCI course relevant to the discipline point. These principles, which describe orderly growth in nature, are experienced as the dynamics of the student’s own consciousness. The principles therefore provide a means of directly connecting material from academic disciplines with the student’s own life. They also allow students to see connections between different areas of knowledge, and thus contribute to appreciation of the unity of knowledge. (See Boothby and Dillbeck articles in this volume for examples.)

• **Unified Field Charts.** Unified Field Charts present at a glance the knowledge of a discipline or subject area and show its relationship to the unified field of natural law. The left side of the chart presents the subject matter of the discipline; the right side represents the subjective approach to knowledge through Maharishi Vedic Science and shows how the mind connects to the unified field. The discipline knowledge is organized so that the most abstract, foundational areas are at the bottom and the most expressed areas are at the top. The whole discipline is shown to arise from the unified field of natural law. Maharishi describes the use of these charts in the following passage from *Vedic Knowledge for Everyone*:

Intellectual understanding of total knowledge is fully actualized through a simple and unique approach of teaching. Every part of knowledge, unfolding day by day in the classrooms, is connected with total knowledge. This is accomplished by the teacher during the last minute of every class, when he shows all the students a chart that gives a vision
of the connectedness of the knowledge of the lesson with the knowledge of the corresponding discipline, and also shows the connectedness of the discipline with the total knowledge of all disciplines at the common basis of all disciplines in consciousness.

In this way the WHOLE (of knowledge) is not allowed to be shadowed by the PART (of knowledge), and the PART is always understood with reference to the WHOLE. (Maharishi, 1994, pp. 22–23)

These charts provide an antidote to the problem of fragmentation of knowledge that so afflicts contemporary education.

• Unity Charts. These charts are used to conclude each lecture. They summarize a central theme of the lesson from four different perspectives, each reflecting greater subtlety and power. The two deepest levels connect the theme to the experience of pure consciousness, allowing students to relate central themes of the course to their own Self.

Nurturing the most refined level of feeling.
Upholding and refining the level of feeling is important for Consciousness-Based education because of the contribution of this level to holistic growth of the individual. Maharishi describes the activity of feeling and emotion as the finest level of activity and states that it has an important role in culturing the complete physiological integration necessary for fully mature enlightenment (Maharishi, 1967/72, p. 315). If a teacher’s communication achieves an effect but damages the level of feeling, then it damages the student’s growth. For this reason, it is important to consistently nourish the feelings of others.

As a consequence of this emphasis, teachers in Consciousness-Based institutions always strive to have a nurturing attitude toward their students, uplifting and supporting even when correcting. Practice of the Transcendental Meditation technique becomes important for teachers in this context because of the refining effect it has on the teachers’ consciousness. Maharishi explains this point in The Science of Being and Art of Living:

This quality of kindness and delicacy of the heart develops when the heart begins to melt at the experience of bliss and great happiness of transcendental being. The heart becomes softer and then, by nature, a
man cannot be harsh or displeasing to anyone. Speech will naturally flow in all harmony. (Maharishi, 1963/1995, p. 148)

This softening of the heart along with the revitalizing influence of practicing the Transcendental Meditation program insures that the teacher is most capable of responding in a positive way to the actions of the students.

Concern for the feeling level, and for refining consciousness generally, also affects choice of curriculum materials and the way the learning environment is structured in Consciousness-Based educational institutions. Teachers seek out literature which nourishes the students’ emotions. Literature with low or depressing values is avoided as much as possible, in favor of literature which is uplifting and positive. A basic principle of Maharishi Vedic Science is that “what we see we become,” what we put our attention on becomes stronger in our lives. This principle reflects Maharishi’s more general analysis that the way we know anything is by the awareness taking the form of the object of perception (Maharishi, 1980). It is important therefore to expose students to positive, life-supporting influences that will support their growth of consciousness. By maximizing students’ growth of consciousness, the teacher strengthens students from within, thus enabling them to handle the negative situations they will have to face in life. In this regard the environment is also important. Recent research confirms that peripheral perception influences the learning process (Caine & Caine, 1991). The classroom, therefore, needs to be orderly, well lighted, and as attractive as possible.

The value of refinement in the learning environment has been beautifully stated by Plato in the Republic, an educational treatise that emphasizes the existence of an absolute and describes the importance of gaining knowledge of it:

Rather we must seek out those craftsmen whose instinct guides them to whatsoever is lovely and gracious; so that our young men, dwelling in a wholesome climate, may drink in good from every quarter, whence, like a breeze bearing health from happy regions, some influence from noble works constantly falls upon eye and ear from childhood upward, and imperceptibly draws them into sympathy and harmony with the beauty of reason, whose impress they take. . . . Moreover, a proper training in this kind makes a man quick to perceive any defect or ugliness in art or
in nature. Such deformity will rightly disgust him. Approving all that is lovely, he will welcome it home with joy into his soul and, nourished thereby, grow into a man of a noble spirit. (Plato, 1982, p. 90)

**Nurturing the physiology**

Education devoted to the development of consciousness must be devoted to care of the physiology because physiology supports experience of consciousness. As Maharishi explains in his commentary on the Bhagavad-Gītā:

> For any experience there must be a corresponding state of the nervous system. The most normal state of the human nervous system is that which can support ‘contact with Brahman,’ the omnipresent Reality. It must necessarily be a state of extreme refinement and flexibility, and this is possible only when the nervous system is entirely pure. (p. 439)

Maharishi (1972) considers stress and fatigue clouding the nervous system as two of the biggest barriers to clear experience of pure consciousness. For this reason, Consciousness-Based education places strong emphasis on promoting optimum physical health. Elements of Consciousness-Based education that support the physiology include the following:

- **Transcendental Meditation and TM-Sidhi programs.** Maharishi teaches that the most profound way of refining the nervous system is through bringing it in contact with pure consciousness. Extensive scientific research on the Transcendental Meditation and TM-Sidhi programs demonstrates that they produce deep levels of physiological rest, optimize orderly functioning of the nervous system, and enhance physical health (Wallace, 1986).

- **Balanced daily routine.** The most important aspect of the daily routine is proper rest at night. Early to bed and early to rise are encouraged to promote maximum clarity of consciousness.

- **Diet.** Diet has an important influence on health and clarity of mind. Fresh, organic foods are encouraged. In addition, vegetarian diet is recommended because it is easily digested and most healthy.

- **No drugs or alcohol.** Drugs and alcohol have a well-established, deleterious effect on mind and body. They are contrary to growth
of consciousness and strongly discouraged for students in Consciousness-Based education.

- Exercise. Exercise promotes integration of mind and body, as well as better health. Regular physical exercise is recommended, especially physical exercise that integrates mind and body, such as yoga asanas.

Outcomes of Consciousness-Based Education

All problems in life—whether they are international life, in the collective life of a nation, or in the life of an individual—are the problems of education. And the problems of education are the problems of knowledge. (Maharishi Mahesh Yogi, 1985, p. xii)

As this paper noted at the beginning, education is highly valued by societies for its outcomes—its contribution to individual and social life. Maharishi’s central contribution to education is the understanding that a missing foundation—the understanding and experience of pure consciousness—must be added to education if it is to fulfill its potential for enhancing life. Educational systems and societies everywhere suffer from problems because they lack adequate knowledge of the foundations of education—the nature of knowledge, the process of development, and human nature—which come only with an understanding of pure consciousness. Consciousness-Based education, because it is based on complete knowledge, on knowledge of pure consciousness, is capable of greatly enhancing the outcomes of education for the individual and the society and thereby bringing fulfillment to education.

Individual outcomes

The individual outcomes of Consciousness-Based education can be divided into two areas: learning outcomes and development outcomes. The two areas are closely related because, as discussed in the second section, one’s level of intellectual and emotional development strongly influences one’s ability to learn. Because educators tend to be more expressly concerned with learning outcomes, these will be discussed first; implications for promoting development, culminating in enlight-
enment, will conclude this discussion of individual outcomes of Consciousness-Based education.

Improved Academic Achievement. As discussed in the section “Significance of Pure Consciousness for Basic Education Concepts,” experience of pure consciousness enhances learning by developing the cognitive and affective prerequisites for effective learning, including intelligence, creativity, field independence, memory, health, and emotional stability. As one would expect, therefore, when students begin practice of the Transcendental Meditation program, their academic performance improves. This has been reported in research done both at the collegiate and precollegiate level by researchers in North America, Europe, and Asia. Kember (1985) showed significant improvement relative to controls in grade point average in graduate students randomly assigned to begin the Transcendental Meditation program. Similar improvements in academic performance at the undergraduate level were found in retrospective studies done by Collier (1973) and Heaton and Orme-Johnson (1974).

Similar changes have been seen at the precollegiate level. Kory and Hufnagel (1976), even with relatively small groups of students, found significant increases over just one semester in students at two of three high schools who learned the Transcendental Meditation technique as part of a Science of Creative Intelligence course. At a secondary school in India, where all 5,000 students learned the Transcendental Meditation technique, academic performance on countrywide exams improved noticeably and more students began achieving national academic honors than in any other nongovernmental school in India (Dillbeck & Dillbeck, 1987, p. 415). In an inner city school in the United States, performance of students in a 6th grade who had learned the Transcendental Meditation technique improved markedly on the California Test of Basic Skills, compared to a previous administration and to other 6th grades in the city. Students at this school who practiced Transcendental Meditation, said the following about their experience:

- “I have more energy in gym and I think better in my classes all day.”
- “I am more into what I am doing.”
- “I get energy the whole day.”
- “I feel relaxed and ready to learn.”
“I feel more aware.”
“I felt very happy for the first time.”
“I feel like I can do anything at least better than I have.”
“I feel different. I feel smart.”
“I don’t act up as much.”

One student, in the week following Transcendental Meditation instruction, reported getting a 94 on a test in his science class. He had failed every previous test in the class and attributed the change to practice of the Transcendental Meditation technique.

The most powerful demonstration of the efficacy of Consciousness-Based education at the precollegiate level comes from the first Consciousness-Based primary and secondary school in the world, Maharishi School of the Age of Enlightenment in Fairfield, Iowa. Maharishi School, in which all students, faculty, and staff practice the Transcendental Meditation technique, has a liberal admissions policy and the standardized test scores of entering students are close to the national average. The achievements of this school, therefore, reflect the quality of its educational program. This is substantiated by research on new students, which indicates that students make significant gains relative to age norms—from 10 to 15%—on the Iowa Tests of Basic Skills and the Iowa Tests of Educational Development over the course of their first year at Maharishi School (Nidich, Nidich, & Rainforth, 1986; Nidich & Nidich, 1989). In addition, these researchers found that length of time practicing the Transcendental Meditation technique correlated with overall academic achievement scores and added significantly to the prediction of academic achievement beyond that which could be accounted for by IQ scores alone (Nidich & Nidich, 1987). This again indicates that growth of consciousness is the key factor behind improved academic performance. General achievements include:

- Upper School classes consistently score in the 95th percentile or above in the nation on the Iowa Tests of Educational Development. In both of the last two years, 1995 and 1996, all Upper School classes, 9–12, scored in the 99th percentile on the ITED, both nationally and in Iowa.
In seven of the last eight years, Maharishi School students have won at least one of the two first prizes in the state science and engineering fairs.

In the last two years, individuals and groups from the school have won first places in state competitions in speech, Odyssey of the Mind (a competition in improvised creativity), spelling, the American Junior High School Mathematics Exam, the American High School Mathematics Exam, poetry and writing competitions, the Iowa History Fair, and many areas of artistic achievement.

Over the past five years, 95% of the graduates of Maharishi School have gone on to college. The above findings, at both the collegiate and precollegiate level, indicate that giving students experience of pure consciousness is a direct means of increasing academic achievement.

Realizing the potential of human development

In today’s age of exponential knowledge and technology growth, it is widely recognized that an important aim of education must be to develop the full potential of the individual. The best way to adequately prepare students for a future that is going to be very different from the present is to give them full command over their own powers (National Institute of Education, 1984; Hirst, 1974; Dewey, 1966). As discussed earlier, a fundamental implication of the knowledge of pure consciousness provided by Maharishi Vedic Science is that the state of full human development is enlightenment. The cognitive and affective growth mentioned above—growth in intelligence, creativity, self-actualization, field independence, etc.—are natural consequences of rapid growth of enlightenment. The state of enlightenment, however, is more than just a state of heightened intelligence and creativity—it is a qualitatively different state of life. Maharishi (1994) describes this highest endpoint of education as follows:

Ideal education is capable of providing enlightenment, which is the “fruit of all knowledge,” to every student. The “fruit of all knowledge” is mistake-free life, fulfilling life, daily life in satisfaction and fulfillment—the natural ability to think and act in accordance with Natural Law so that one enjoys the full support of Natural Law. (pp. 114–115)
Elsewhere, Maharishi refers to the fruit of all knowledge as “the ability to know anything, the ability to do anything, and the ability to achieve anything” (Maharishi, 1985, p. xiv). From these descriptions, we see several related qualities of enlightenment: the ability to achieve anything, full support of natural law, mistake-free life, and fulfillment.

- Ability to achieve anything. Pure consciousness, as discussed in the first section, is a field of infinite energy, intelligence, and power. Knowledge of this field, both experiential and intellectual, therefore, transforms the knower, fully unfolding his creative intelligence and making him master over this most basic field of life. Because pure consciousness is the source of all creation, full mastery over it brings full command over nature. Maharishi (1985) explains:

  Knowledge of consciousness is that one knowledge whereby the entire field of creation could be handled. It is like handling the root of a tree and thereby handling all aspects of the different branches and leaves and petals, red, green, and brown. . . . So by handling consciousness, it is completely within the grip of everyone to have the main switchboard of the whole universe within oneself. (p. xv)

- Full Support of natural law. Maharishi (1994) has also described the effect of full enlightenment as gaining the ability to spontaneously engage Cosmic Intelligence—pure consciousness—to act for oneself:

  This ability to spontaneously utilize Cosmic Intelligence in all thoughts and actions is the ability to spontaneously engage Cosmic Intelligence, the Cosmic Performer, to perform for oneself. “Fruit of all knowledge” is the ability to spontaneously live life from this level of intelligence. Rk Veda beautifully expresses this as: Yatināṁ Brahmā bhavati sārathib (Rk Veda, 1.158.6) Those established in self-referral consciousness—Cosmic Intelligence—for them, Cosmic Intelligence, the Creator, Brahmā, is the charioteer, the administrator, of all their actions. This is the fruit of absolute education, supreme education, which develops complete self-sufficiency, bestows freedom and invincibility, and places life on a pedestal of enlightenment and fulfillment. (pp. 120–121)

  In this state, one has full support of natural law, of Cosmic Intelligence, and this support allows all desires to be achieved effortlessly.
Mistake-free life. Support from natural law is closely connected to attunement to natural law. One can only gain support from natural law through complete attunement, through unity with this basic value of life. Perfect attunement to natural law allows mistake-free life. Mistakes can be defined as violations of natural law. Actions performed in enlightenment involve thinking from the level of pure consciousness, so one’s actions are always guided by the total potential of natural law, which makes them spontaneously right. Maharishi (1994) describes the action of the enlightened individual as follows:

He spontaneously commands situations and circumstances; he spontaneously controls his environment; his behaviour is always spontaneously nourishing to himself and everyone around him. He has the ability to spontaneously fulfill his interests without jeopardizing the interests of others. (p. 115)

The repeated use of “spontaneously” is significant. Maharishi explains that spontaneous right action, or mistake-free living, is possible because of perfect attunement with the guiding force of natural law. Only natural law, which simultaneously orchestrates the evolution of the entire universe without mistake, can guide individual life so that it is always evolutionary for oneself and the environment (Maharishi, 1986, p. 32).

Fulfillment. Fulfillment, Maharishi points out, is the natural by-product of a mistake-free life in which one can know anything, do anything, and achieve anything (Maharishi, 1994). This is a life of complete freedom on all planes of life—physical, mental, and spiritual. Life in which there is no obstruction to realization of personal desire and in which personal desire is in tune with the needs of the environment is completely fulfilling.

Maharishi also points out that fulfillment in enlightenment arises from another source: the nature of pure consciousness itself. An essential quality of pure consciousness is bliss; experience of pure consciousness brings bliss to the knower (Maharishi, 1963/1995, pp. 21–22). Because the state of enlightenment is one in which the mind is permanently open to, or established in, pure consciousness, in this state, one is able “to experience the great waves of bliss in the ocean of cosmic
consciousness—experience that joyfulness of eternal life which brings complete fulfillment to his existence” (Maharishi, 1967, p. 163).

In the state of complete enlightenment, Unity Consciousness, one’s perception is transformed so that one sees and experiences everything in terms of the bliss of pure consciousness:

The world is the active divine; everything rises as a wave on the eternal ocean of bliss consciousness. Every perception, the hearing of every word, the touch of every little particle, and the smell of whatever it may be, brings a tidal wave of the ocean of eternal bliss—in every arising of a thought, word, or action is the arising of a tide of bliss. (Maharishi, 1963/1995, p. 248)

This is the state of complete fulfillment in life. This is the goal of Consciousness-Based education on the individual level.

**Student experiences of growing enlightenment**

This experience of enlightenment is growing concretely in students at Consciousness-Based institutions around the world. It is experienced as growth in the ability to achieve desires, to act without making mistakes, and to enjoy increasing bliss and fulfillment in daily activity. Empirical research has documented this growth, as have interviews with students. The most striking empirical confirmation of growth to unprecedented levels of development was conducted by Howard Chandler (1991). He conducted a 10-year longitudinal study of Maharishi University of Management alumni that measured growth in ego or self development, using Loevinger’s ego development test, a projective test with high construct validity and reliability (Loevinger et al., 1985). This study, which used students from three other liberal arts universities as controls, found a highly significant mean increase of nearly one step on ego development compared to the other schools. Thirty-eight percent of those meditating achieved fully postconventional Autonomous or Integrated levels (the two highest levels on Loevinger’s test) up from 9% at pretest and compared to 1% of control samples. The proportion of Maharishi University of Management students achieving fully postconventional development is nearly four times higher than the highest percentage found in any of 30 other published studies and nearly 40 times higher than the proportion of those having achieved
postconventional development in the general population. This research is consistent with other research on Maharishi University of Management students showing continued growth in IQ, at an age when IQ growth has stopped in the general population (Cranson et al., 1991), and integrated growth on measures of autonomy, spirituality, creativity, well-being, and integration beyond what is normally seen in college populations (Gelderloos, 1987; Jones, 1989).

The unique capacity of Consciousness-Based education to produce growth to enlightenment is captured even more richly by students’ descriptions of their experience. Below are a series of experiences related by students at Maharishi University of Management:

  • “I find I am infinitely more effective in activity than before I began [at Maharishi University of Management]. My thinking and action toward fulfilling my desires is much clearer, simpler, and more focused. Therefore, the results I am experiencing from my activity are much more rewarding than ever before. I know this to be the result of aligning my thinking more and more to natural law.”

  • “As I read the Vedic literature, I experience bliss and wholeness in my awareness and in my physiology. As a result, my experience during the Maharishi Transcendental Meditation and TM-Sidhi programs is that of even greater bliss: program is settled and clear and bliss is very lively. In activity, my whole physiology feels more integrated and balanced; I feel a broad, immovable, very expanded awareness accompanied by a great sense of invincibility; and I feel very connected to the universe as a whole.”

  • “I feel myself becoming more lively and awake to knowledge. I feel myself becoming stronger in every way. I feel an inner strength that is unshakable. I can stand up and speak with confidence, where before I was completely overshadowed. I feel blissful and loving and confident more and more.”

  • “After coming to Maharishi University of Management and taking the TM-Sidhi course, I found that I was much more tolerant of conditions which used to make me angry, sad, or impatient. Moreover, I
found that I appreciated the good things in life much more. Now I see beauty in more of my surroundings. . . . I am more patient with others, less critical of my actions, yet, at the same time, continuing to grow at a strong pace. I feel, and others have pointed out to me, that I am growing faster and overall am much happier than I was before coming to Maharishi University of Management.

• “I have learned an incredible amount here at Maharishi University of Management. Not only in terms of the knowledge of my discipline but also a deep and profound understanding about myself, about my own great potential. I have always been shy and afraid to step out into action for fear of failure. But at Maharishi University of Management that potential and power inside of me has woken up and I have had no choice but to put it to work and enjoy it. With this realization of the power of the Self has come a newfound confidence that I can and will accomplish anything.”

• “Since coming to Maharishi University of Management five years ago, the experience of bliss in activity has been greatly increased. This is a unique experience of life, not comparable to any normal experience. It is the beginning of the fulfillment of life, and at Maharishi University of Management, that fullness of experience is amplified by meditating in the Dome and sharing daily activity with others who are experiencing the same growth.”

These quotes provide concrete examples of the unique outcomes of Consciousness-Based education in the lives of individuals. One can imagine that the quality of society would be dramatically improved if composed of such individuals.

Ideal society
The quality of a society reflects the quality of the individuals who compose it. The ability of Consciousness-Based education to create fully enlightened individuals, therefore, transforms our understanding of the potential of social life. Societies everywhere today are shrouded by problems, Maharishi (1994) notes, because they do not have the ability to develop fulfilled individuals living spontaneously in tune with
natural law. Societies populated by enlightened individuals will be very different—they will be enlightened societies. “When man functions in full accord with Natural Law, there will be no violation of Natural Law. Society everywhere will be free from negativity, free from suffering. That will be the blossoming of the Age of Enlightenment brought about by [Consciousness-Based] education” (Maharishi Mahesh Yogi, 1986, p. 101).

Because pure consciousness is a field of infinite correlation—the common source of all individual consciousness and behavior—it is only necessary for a small percentage of a society to experience pure consciousness through regular practice of the Transcendental Meditation and TM-Sidhi programs in order to generate a positive influence in the whole society (Maharishi, 1994; see Alexander et al., 1997). Maharishi illustrates this phenomenon, referred to as the Maharishi Effect, by an analogy. When one drops a pebble onto the surface of a still pond, the whole surface of the pond is enlivened. Similarly, the entire underlying field of pure consciousness is enlivened when individuals transcend and experience it. When, for a given population, a critical mass of people practice the Transcendental Meditation and TM-Sidhi programs together, the enlivenment of the field of consciousness is enough to influence the consciousness and physiology of every individual in that population, even those not meditating.

This critical mass has been found to be one percent of a population practicing the Transcendental Meditation program or the square root of one percent practicing the more advanced TM-Sidhi program together. More than 40 rigorously controlled studies have shown that when the requisite number practices these technologies, there are reductions in negative tendencies such as crime, violence, sickness, and accident rates, and increases in positive indicators such as political cooperation and economic indices (Orme-Johnson, 1992; Orme-Johnson et al., 1988).

This ground-breaking research suggests a very direct and achievable way of creating an ideal society: establish groups of individuals practicing the Transcendental Meditation and TM-Sidhi programs. Schools and universities are the natural sites for these groups because of the value that practice of these technologies has for individual development and learning. Students and faculty can practice the Transcendental Meditation and TM-Sidhi programs for their own benefit and
create the Maharishi Effect as a side benefit for the society. Because only 7,000 individuals practicing the TM-Sidhi program together can positively influence the whole world’s population, establishing groups at large universities around the world can quickly change the direction of human life everywhere on earth.

The potential of educational institutions to create enlightened individuals and generate the Maharishi Effect means that the goal of education, from a societal perspective, should be nothing less than to create an ideal, problem-free society. On a global level, Maharishi refers to this as Heaven on Earth, a world characterized by “all good to everyone, and non-good to no one” (Nader, 1995, p. 5). Maharishi described this ultimate outcome of Consciousness-Based education more than three decades ago in his Introduction to The Science of Being and Art of Living:

A new humanity will be born, fuller in conception and richer in experience and accomplishments in all fields. Joy of life will belong to every man, love will dominate human society, truth and virtue will reign in the world, peace on earth will be permanent, and all will live in fulfillment in fullness of life [in enlightenment]. (1995, p. xliii)

**Conclusion**

Education has the potential to greatly improve the quality of individual and social life if based on the proper foundations. Maharishi Vedic Science provides this foundation—knowledge and experience of pure consciousness. This fundamental knowledge brings fulfillment to the field of education by providing an adequate understanding of the foundational concepts upon which education is based. The basic educational concepts of knowledge, development, learning, and human potential cannot be adequate without an understanding of pure consciousness because pure consciousness is the ultimate reality that underlies them all. With this understanding comes knowledge of the holistic basis of knowledge, the nature of full human potential, and the means to achieve it. This knowledge provides a firm foundation for educational practice, a foundation that allows for full development of the individual and society.

There is an old saying that it takes a new seed to yield a new crop. With the knowledge of pure consciousness integrated into the educational system, the potential harvest is rich indeed—a new era for humankind, the dawning of Heaven on Earth.
References


The Knowledge and Experience
of Self-Referral Consciousness
and the Fulfillment of Interdisciplinary Study

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ABSTRACT

Interdisciplinary studies programs have been widely used to develop students’ problem-solving abilities and to promote more holistic and integrated understanding of knowledge. The Maharishi Science of Creative Intelligence course directly addresses the integrative goal of interdisciplinary study by describing universal principles of creative intelligence that can be found in all academic disciplines. More recently, in his Vedic Science, Maharishi has described in detail the mechanics of creation available in the self-interacting dynamics of pure consciousness. These descriptions provide an additional rich source of integrative principles faculty at Maharishi University of Management use in their courses.

In addition, the highest ideals of an integrated, successful life that interdisciplinary studies programs hope to foster are met by the laboratory component of this curriculum—practice of the Maharishi Transcendental Meditation and TM-Sidhi programs—which systematically develop higher states of consciousness. Research on regular practice of these techniques by Maharishi University of Management students indicates that the problem-solving goal of interdisciplinary studies programs is also achieved; students significantly grow in intelligence, creativity, broad comprehension and wisdom—qualities associated with successful problem solvers—over the course of their education. In addition, research on the Maharishi Effect, a coherent field effect of daily group practice of these technologies by Maharishi University of Management faculty and students, indicates they contribute significantly to the reduction of many problems in society.

This and other research, and the experience of the past 25 years, demonstrates that the addition of the Maharishi Consciousness-Based curriculum to any modern science-based educational institution will bring practical fulfillment to its interdisciplinary studies’ goals.

Introduction

As a response to the problem of the knowledge explosion and its attendant over-specialization in higher education, educators began to emphasize the value of interdisciplinary studies 25 years ago (see, for example, Kockelmans, 1971; 1986). Many believed that if knowledge could be presented to students in a more integrated and holistic fashion, it would be more effectively used to solve the prob-
lems which confront society as a whole and various minorities within society. This orientation comes from the insight that contemporary society faces problems of a complexity and magnitude beyond the boundaries of any single discipline—problems of population control, food distribution, development and use of energy resources, human relationships during periods of rapid and widespread change, and others. Each of these involve issues of economic, political, social, psychological, ethical, and religious significance. (Flexner & Hauser, 1971, p. 341)

William Newell (1983), of the School of Interdisciplinary Studies at Miami University, notes that because the problems of the individual and society transcend the boundaries of separate disciplines, their solution requires the breadth of knowledge that can only be provided by an interdisciplinary education. Thus, the most common approach to interdisciplinary studies, called the thematic approach, focuses on broad problems examined from multiple disciplinary perspectives.

Over the years universities have implemented various kinds of interdisciplinary programs designed to meet this goal of creating citizens who are more effective problem solvers. Carnegie-Mellon University, for example, instituted a core curriculum for the first two years of undergraduate studies that would develop problem-solving skills in five areas: Fundamental Methods and Skills; Humanities and Social Values; Social Political and Economic Systems; Science and Technology; and Language and the Arts. The University of Florida, by contrast, created a program for undergraduates in health care, law, engineering, and business administration whereby they end their education with courses that “instill professional students with the values and attitudes that only a study of the humanities is thought to provide” (Mayville, 1978, p. 45). Wherever they are placed in the curriculum, however, interdisciplinary study courses are meant to create the comprehensive awareness necessary for students to be effective professionals in the real world, “since life itself does not know the boundaries or compartments of what we call disciplines of knowledge” (Beane, 1995, p. 616).

A second issue for which interdisciplinary studies courses have been introduced concerns the proper role of general education requirements for undergraduates. As Earnst Boyer, former U.S. commissioner of education, notes:
Almost all colleges now have a requirement for general education, but all too often this so-called distribution sequence is little more than a grab-bag of isolated courses. Undergraduates complete the required credits, but what they fail to see are connections that would give them a more coherent view of knowledge and more authentic, more integrated view of life. (1990, p. 15)

In this context, interdisciplinary courses have been introduced not only with the goal of creating more effective problem solvers, but also as a more effective means to meet the general education requirements than simple liberal arts distribution requirements set by most universities.

Colleges and universities [are] beginning to rethink their general education requirements and [are] revising them to incorporate interdisciplinary components. Today these trends are so pronounced that when the latest addition to Ohio’s system of state universities proposed a general education distribution requirement, the Ohio Board of Regents told them to replace it with an interdisciplinary general education core. (Newell, 1990, p. 258)

An example of a university with this kind of core is the University of Hartford, where all freshmen are required to take at least four All-University Curriculum (AUC) courses during their four years. Each student selects one course from four of the five breadth categories: 1) Living in a Cultural Context: Western Heritage, 2) Living in a Cultural Context: Other Cultures, 3) Living in a Scientific and Technological World, 4) Living Responsively to the Arts, and 5) Living in a Social Context. These courses draw from many disciplines within cognate areas and are meant to introduce the students to broad themes in these areas as well as address current issues.

The thematic approach to interdisciplinary studies has been successful in enriching students’ enthusiasm for learning and, to some extent, giving them multiple perspectives on many current problems facing society. However, because this approach brings together various specialized disciplines of modern science, issues of integration and communication can frustrate the larger goals of the programs. . . .

[I]t is true that some of the different sciences have no “common language” at all. Bringing viewpoints from different faculties with specific background knowledge, a specific access to reality, and specific “lan-
guages,” there is a great challenge to avoid the confusion of the Tower Babel. (Zwierlein, 1994, p. 2)

These problems are mitigated to some extent by remaining within cognate areas, but can be exacerbated when trying to mix the arts and sciences. For this reason, thematic courses tend to maintain “arts” and “sciences” boundaries, as seen in the Carnegie-Mellon and University of Hartford examples.

In an effort to do more than mix the perspectives of different disciplines, some educators argue that interdisciplinary studies should provide students with a more unified and coherent perspective of knowledge. For example, K.F. Mather, in his essay on the “Objectives and Nature of Interdisciplinary Studies,” states: “Integrative studies for general education must involve the quest for basic concepts and underlying principles. Such studies must go down to the very roots of the tree of knowledge; they must deal with the structures of the universe and its fundamental directives” (as cited in Winquist, 1982). Educators, like Mather, tend to espouse the need for what is often called “transdisciplinarity.”

The transdisciplinary view of knowledge asserts that if interdisciplinary efforts to resolve the problems caused by overspecialization are to be fully successful, they must concern themselves with principles that are universal enough to provide a unified and coherent view of all knowledge. At a recent conference on self-organization, conference organizer Edward Zwierlein suggested this is one goal of science in general:

[L]ooking for a unifying paradigm, a single window or looking glass to understand reality, might characterize the scientific search for truth in the way we characterize an optical prism (i.e., the paradigm) splitting a beam of ordinary white light (the ultimate reality) into light of different wavelengths. Each colored light of the colored band or spectrum of light (representing the different sciences) being the result of the dispersive power of the medium (i.e., the paradigm) must try to go back its own way through a commonly shared medium or paradigm towards their ultimate and common source. (1994, p. 3)

Many new candidates for the ‘single window’ have emerged in recent years including synergetics, neuronal networks, quantum computing, chaos theory, nonlinear dynamics, and general systems theory. All of these approaches begin with some intuitive understanding of comprehensive values of natural law and then set forth principles that
can be applied to different academic fields. Chaos theory, for example, has been applied in such diverse areas as astronomy, physics, chemistry, biology, medicine, economics, political science, and psychological dynamics (Pagels, 1989). But, although these approaches have discovered fundamental laws of nature that seem to govern broad aspects of human behavior and the world around us, none of these attempts have been successful in providing a completely unified framework for all disciplines, and they often seem to leave out the arts and humanities.

Maharishi Mahesh Yogi, founder of a worldwide system of universities based on the knowledge and practice of his scientifically validated Transcendental Meditation program, has created a new approach to interdisciplinary studies. This approach includes two fundamental components:

1) An intellectual approach in which faculty refer in all courses to a set of universal principles of natural law that can be located in all disciplines. These principles are stated in a common language and provide students with a unified and coherent view of the relationship between all disciplines. In addition, because these principles are derived from analysis of the students’ practice of the Transcendental Meditation technique, they provide a context in which the knowledge of all disciplines is seen as meaningful and relevant to the students’ own progress in life.

2) An experiential approach, based on research in consciousness through the Maharishi Transcendental Meditation program, which systematically and naturally provides experience of the source of thought—Transcendental Consciousness—and directly develops the qualities of creativity, intelligence, integration, and wisdom in students. Maharishi has described how continued practice of this experiential component unfolds normally untapped values of human potential. As will be described in more detail later in the article, the culmination of this development is a life in which one enjoys a completely unified understanding of all knowledge and in which one’s actions are spontaneously in accord with the evolutionary value of all the laws of nature. Maharishi has explained that such thinking and action does not give rise to problems in life and therefore uniquely fulfills the problem-solving goal of interdisciplinary study as well the goal of a comprehensive, integrated understanding of knowledge.
The article will begin with a review of the intellectual and experiential approaches to interdisciplinary study presented in the Maharishi Science of Creative Intelligence curriculum. It will continue with a description of how this approach has been implemented at Maharishi University of Management in Fairfield, Iowa, over the past 25 years. It will conclude with a summary of some of the outcomes that have been researched and a projection of the long-term results of this program for meeting the goals of interdisciplinary studies programs, particularly through the development of the full potential of human life described in Maharishi Vedic Science.

The *Science of Creative Intelligence Curriculum* and Interdisciplinary Studies

**Intellectual Approach**

Maharishi recognized the requirement for a comprehensive interdisciplinary studies program in his 33-lesson course that introduced the Science of Creative Intelligence as a new academic discipline in 1972.

Interdisciplinary study must locate a common basis, a link which will join together all the seemingly divergent branches of learning and provide a common meeting ground for them all. If that common ground belonged to everyone on the level of his own awareness, the awareness would be open to the values of all branches of learning. Until such a profound, stable, and non-variable basis of all branches of learning dawns and becomes permanently established on the level of one’s awareness, there is no way to achieve the goal of interdisciplinary study. (Maharishi Mahesh Yogi, 1972, 28–5)

Here, Maharishi suggested the approach of structuring an interdisciplinary studies program around a common ground made lively in the *awareness* of every knower, every student, rather than structured solely around a particular intellectual approach to various disciplines. In this spirit, Maharishi, working with the faculty of Maharishi University of Management (Maharishi International University, 1971–1995) created the Science of Creative Intelligence curriculum to locate this common basis for all disciplines. The Science of Creative Intelligence curriculum locates the fundamental value of any knower as an unbounded field of pure consciousness, pure creative intelligence. Maharishi explains:
What is the basis of all study? Naturally, it is the student, the knower. The knower is the common basis of all knowledge. Unless the knower of knowledge is brought to conscious awareness, the common basis of all branches of learning will not be structured in the mind. Therefore, knowledge of the knower is the direct means to arrive at the goal of interdisciplinary study. (Maharishi Mahesh Yogi, 1972, 28–5)

The most important element of the interdisciplinary studies approach provided by this curriculum, therefore, is the knowledge and experience of pure consciousness—which is, Maharishi explains in the Science of Creative Intelligence course, the source of all intelligence, creativity, knowledge, and energy expressed in human life. As all branches of learning are expressions of the creative intelligence of humanity, understanding of the source of all expressions of creative intelligence can unify all knowledge.

This unification is even more profound because the Science of Creative Intelligence curriculum locates pure consciousness as the basis of all expressions of creation, not only human creations. In his 33-lesson introductory course Maharishi notes:

Intelligence is the basic value of all creation, and of all processes of progress and evolution in creation. It is the fundamental of all existences. This field of pure intelligence, which is one, non-dual, by virtue of its perpetual, eternal, immortal existence, starts to regenerate itself through its own nature, by virtue of its own existence. Intelligence becomes creative intelligence, and creates from its own nature. (1972, p. 8–4)

Maharishi equates the operation of creative intelligence with the laws of nature discovered by the modern sciences, but also recognizes its operation as the fundamental principles organizing all areas of life, including the arts and humanities.

Before his development of the Science of Creative Intelligence curriculum, Maharishi had for many years been teaching throughout the world the simple, natural Transcendental Meditation technique. In his introductory Science of Creative Intelligence course, Maharishi (1972) described it as follows: “The nature of Transcendental Meditation is the spontaneous settling down or refinement of mental activity. It is a method of experiencing the source of thought, the field of pure creative intelligence, in an effortless, systematic manner” (p. 3–4). Practice of the Transcendental Meditation technique provides direct experience
of the range and source of creative intelligence within each student’s mind. It is the laboratory component of the Science of Creative Intelligence curriculum.

The integrative value of the Science of Creative Intelligence curriculum is based on the premise that the operation of creative intelligence in all areas of life is according to the same fundamental principles. In opening lessons of his introductory Science of Creative Intelligence course Maharishi brings to light the most fundamental of these principles through analysis of the experiences during the Transcendental Meditation technique. Some examples of these principles, as expressed in the language of everyday speech, are the principle of least action, the principle of gravity, and the principle of purification (Maharishi Mahesh Yogi, 1972, p. 31–2). In subsequent lessons Maharishi explains how these same principles operate in physics and biology to illustrate their universal character. For example, he locates the principle of gravity in the Transcendental Meditation technique and in physics.

In diving, the body gravitates towards the depth of the water. In meditation, the mind gravitates towards the experience of the pure field of creative intelligence in a spontaneous manner. This is similar to a phenomenon described by physics, occurring when the atom relaxes to the ground state. The ground state is the natural field of rest for the atom. The attraction of the electron towards the nucleus enables the phenomenon of increasingly reduced activity to take place, until the ground state is gained. (1972, p. 14–5)

Examples such as this show how the principles governing the expression of creative intelligence in human experience can be located throughout creation in every area studied by modern disciplines. In addition to the principles that promote experience of pure creative intelligence during the Transcendental Meditation technique, Maharishi discusses many principles that provide intellectual understanding of the experience and development of creative intelligence after meditation in activity. Additionally, he illustrates how qualities of creative intelligence can be located in all areas of life.

Intellectual understanding of these basic principles and qualities can serve a useful integrative function in education. The language of the Science of Creative Intelligence curriculum addresses the need for a common language that can mediate between the specialized languages
of the disciplines. In addition, when faculty locate these principles and qualities in each of the different modern disciplines, students intuitively see the commonalities, as well as the differences, between these disciplines.

Experiential Approach

The Science of Creative Intelligence curriculum goes far beyond a purely intellectual approach in its fulfillment of the integrative goal of interdisciplinary study, however. Many universities have experimented with courses based on meta-sciences like systems or chaos theory, that attempt to provide a language and foundation for intellectual integration of all knowledge. The Maharishi Science of Creative Intelligence curriculum, being more comprehensive in its approach, is more likely to fulfill this intellectual goal of interdisciplinary studies than other more restricted sciences. But the truly unique component of Maharishi’s approach to interdisciplinary studies, which has the farthest reaching implications for educational outcomes, is the laboratory component of his Science of Creative Intelligence curriculum referred to above—the Transcendental Meditation and TM-Sidhi programs.

Maharishi derived the deepest principles of the Science of Creative Intelligence curriculum through analysis of the experience of the pure field of creative intelligence. These principles would be abstract insights for students if left to only intellectual discussion and verification. However, students and faculty systematically experience and verify these principles and qualities in their own lives, through the laboratory component of the Science of Creative Intelligence curriculum. The integration of knowledge based on this daily experience becomes lively and relevant for them in a way that abstract intellectual understanding could not.

Even so, in his Science of Creative Intelligence course, Maharishi explains that the complete fulfillment of this approach to interdisciplinary study lies not in experiencing the pure field of creative intelligence for only short periods of time during the Transcendental Meditation technique, but in the natural and spontaneous effect of this experience on activity. In a more recent publication Maharishi describes these results in terms of the experience of Transcendental Consciousness, a term he uses to indicate that the experience of pure creative intelligence lies beyond any particular individual thoughts or experiences:
The experience of Transcendental Consciousness develops the individual's latent creative potential while dissolving accumulated stress and fatigue through the deep rest gained during the practice of Transcendental Meditation. This experience enlivens within one's awareness creativity, dynamism, orderliness, and organizing power, which results in increasing effectiveness and success in daily life. (1994, p. 261)

Maharishi also explains that Transcendental Consciousness is experienced as the essential value of the Self, which he capitalizes in order to indicate the expansion of the small sense of individuality to its cosmic status. He further explains that daily practice of the Transcendental Meditation program not only increases the above-mentioned qualities of creative intelligence within the individual’s awareness, but over time results in integration of the clear experience of Transcendental Consciousness as an accompaniment to daily activity. This integration of Transcendental Consciousness with waking, as well as the dreaming and sleep states of consciousness, produces a new state of consciousness, the first of a series of higher states of consciousness or enlightenment, so named because of their significantly greater values of integration and comprehension. Maharishi (1963, pp. 54–55) terms this first higher state Cosmic Consciousness, cosmic indicating the status of pure creative intelligence as the basic value of creation, as noted in the last section.

Maharishi has explained in detail the mechanics by which regular practice of his Transcendental Meditation program unfolds Cosmic Consciousness. This explanation focuses on the unique style of functioning that the nervous system adopts during meditation, which supports the experience of Transcendental Consciousness along with deep rest. Once the nervous system is able to purify accumulated chemical and structural stresses in this deep rest, Maharishi (1969, pp. 173, 226) indicates that the physiology has a natural capacity to support two styles of functioning simultaneously: one giving rise to waking, dreaming, or sleeping experience and the other supporting the continuous experience of Transcendental Consciousness at the same time.

In his commentary on the Bhagavad-Gītā, a branch of Vedic literature which contains many beautiful references to Cosmic Consciousness, Maharishi (1969) has elaborated the high values enlightened individuals live. One enjoys the freedom of the unbounded value of pure consciousness and an evenness that cannot be disturbed by any situations
or circumstances. A person in Cosmic Consciousness carries his own fulfillment with him in the continuous experience of pure consciousness as a field of bliss. Yet, Maharishi indicates, “Quite naturally he performs actions which result in every kind of good” (1969, p. 291).

All these values reflect the highest quality of life that interdisciplinary studies programs would like to promote. Even so, Maharishi explains that Cosmic Consciousness is not the highest state of consciousness that one can enjoy in life. Over time, for the enlightened individual, the nervous system becomes refined enough to sustain even more integrated values of awareness. Maharishi terms the culmination of this process Unity Consciousness, a state of complete integration in which the appreciation of the unity of all life as an expression of pure consciousness—one’s Self—is a constant reality of one’s awareness. In the Science of Creative Intelligence course, Maharishi notes that with respect to knowledge,

In this unified state of consciousness, the experiencer and the object of experience have both been brought to the same level of infinite value, and this encompasses the entire phenomenon of perception and action as well. The gulf between the knower and the object of his knowing has been bridged. (1972, p. 23–9)

Unity Consciousness thus represents the ultimate value of integration of knowledge. Here, Maharishi notes that this integration does not remain an intellectual construct, but informs all thought and action. The systematic development of this highest value of human development is therefore the heart of the approach to interdisciplinary studies in the Maharishi Science of Creative Intelligence curriculum. In this curriculum, the intellectual understanding of the unity of all knowledge serves to reinforce and accelerate the growth to Unity Consciousness while the experiential component of the curriculum enhances students’ ability to comprehend the principles underlying this unity. Research indicates that, even before full development of enlightenment, the curriculum results in significant growth of more comprehensive, yet integrated values of awareness. For example, after completing this curriculum students increase their ability to maintain broad comprehension along with sharp focus (Pelletier, 1974). Also, qualities associated with an integrated personality, for example, those grouped together by Maslow in his description of self-actualized individuals, have been
shown to systematically increase through the Transcendental Meditation program (Alexander, Rainforth & Gelderloos, 1991).

**Science of Creative Intelligence-Based Interdisciplinary Studies at Maharishi University of Management**

At Maharishi University of Management, the Science of Creative Intelligence principles were first incorporated throughout the curriculum with the use of charts that connected expressions of these principles to the main points of the lesson. These charts were, and continue to be, used as advanced organizers in courses to summarize the main points of a lecture. The following is an example from a course on neurophysiology where each discipline point is correlated with a principle from the Science of Creative Intelligence (Wallace, 1996).

<table>
<thead>
<tr>
<th>Neurophysiology</th>
<th>Science of Creative Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synaptic transmission and integration converts electrical information into chemical signals which are transduced back into electrical information. Stages:</td>
<td>The integration of silence and dynamism in the nervous system involves the integration of the experience of pure consciousness with dynamic activity. Several steps are involved:</td>
</tr>
<tr>
<td>1. release of neurotransmitters from synaptic vesicles,</td>
<td>1. taking the correct angle,</td>
</tr>
<tr>
<td>2. neurotransmitter interactions with receptors and subsequent opening of selective post-synaptic pores or gates, and</td>
<td>2. the unfoldment of unused potential and the enlivenment of greater orderliness in specific areas of the brain, and</td>
</tr>
<tr>
<td>3. generation of an excitatory or inhibitory potential at the postsynaptic membranes.</td>
<td>3. integration of activity and silence.</td>
</tr>
</tbody>
</table>

This point correlates the description from neurophysiology of the integration of two contrasting values in the brain (chemical and electrical signals) with the explanation of the integration of silent and active values of awareness resulting from the practice of the Transcendental Meditation technique. The elaborated processes involved in both situations are also correlated because they occur in three parallel steps: The release of neurotransmitters as the important initial condition is com-
pared to practicing the Transcendental Meditation technique properly. The effect of the neurotransmitters is paralleled to the effect of the Transcendental Meditation technique in the brain physiology. The final outcome of the neurotransmitters on synaptic membranes (generation of excitatory or inhibitory potentials) is correlated with the enlivenment of unused brain potentials during meditation (experienced as the integration of silence and dynamism by the person practicing the Transcendental Meditation technique). These kinds of global and elaborated parallels help students see the universal character of the principles presented in the Science of Creative Intelligence course. They also help students understand new material from unfamiliar disciplines more quickly and easily.

In Maharishi University of Management’s Science of Creative Intelligence-based curriculum, the expression of the basic principles of each discipline varies from course to course, but the expressions from the perspective of the Science of Creative Intelligence remain the same. The following example from a course on writing compares the same principle of rest and activity from the Science of Creative Intelligence curriculum with the results of research on writing.

<table>
<thead>
<tr>
<th>Writing</th>
<th>Science of Creative Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing research over the past two decades has discovered three major types of writing activities, whose balanced alignment is found in the best writers:</td>
<td>Balance in nature is displaying in cycles of rest and activity: periods of inner quiet alternated with outer activity. The benefit of this cycle is maximized through the Transcendental Meditation program.</td>
</tr>
<tr>
<td>• Planning</td>
<td></td>
</tr>
<tr>
<td>• Translating</td>
<td></td>
</tr>
<tr>
<td>• Reviewing</td>
<td></td>
</tr>
</tbody>
</table>

In this chart, the silent contemplation of the sequence of ideas that occurs during the planning stage, and the periodic silent checking of the text against these goals are compared to the rest phase of life, which from the perspective of the Science of Creative Intelligence includes sleeping and practicing the Transcendental Meditation technique. The active process of writing texts (translating) is compared to the activity which naturally follows sleeping and meditating.
These examples illustrate how main point charts facilitate the use of the language of the Science of Creative Intelligence as the transdisciplinary basis for the integration of knowledge within and between disciplines. From course to course, students are exposed to and work with the same basic principles and qualities of natural law, initially located by Maharishi in his Science of Creative Intelligence course, but now reflected in the basic principles and qualities of many different disciplines. In this way students naturally begin to understand the common basis of all knowledge and the existence of a natural integration between all disciplines.

The integrating role of the Science of Creative Intelligence in the curriculum was further enhanced at Maharishi University of Management by the creation of a core course program taken by all incoming undergraduate students. The core course program introduces the deepest insights from each of 22 different modern disciplines in the context of the Maharishi Science of Creative Intelligence curriculum. Each course ranges from 1–2 weeks (on a block system) and consists of 10–20 classes per discipline. As expressed in a current bulletin of the University (Maharishi University of Management, 1995a, p. 23), the Core Course Program is designed to fulfill several of the goals of interdisciplinary studies programs reviewed in the introduction.

• In the core course program, students study a new science, the Science of Creative Intelligence, which provides knowledge and direct experience of the field of pure intelligence, the unified source of all streams of intelligence found at the basis of all disciplines. They then study a wide range of disciplines in the sciences, arts, and humanities, in light of the interdisciplinary, unifying principles of the Science of Creative Intelligence.

• Students learn that each branch of knowledge is a part of the whole tree of knowledge, not isolated facts and information. . . .

• Through the core course program, students come to feel at home with all knowledge. This perspective stays with them throughout their university years and throughout their lives.

Maharishi has also noted that study of each core course in the light of the Science of Creative Intelligence principles supports the development of Unity Consciousness, because students recognize these principles as expressions of the Self, and then by extension, begin to recognize the truth that each discipline is therefore an expression of the Self.
The sequence of these 24 courses provides a unique general education experience. By spending only 1–2 weeks with each discipline, students learn the ways in which the disciplines as a whole express the same principles of the Science of Creative Intelligence. This experience provides a solid foundation for the upper division courses, allowing the students to maintain a holistic perspective on knowledge even when they begin to specialize in their major discipline.

_Maharishi Vedic Science and Interdisciplinary Studies_

In his Science of Creative Intelligence course Maharishi presents the principles and qualities of creative intelligence in the scientific language of our age. He has always taught, however, that this knowledge comes from the ancient Vedic tradition that has been preserved in India since antiquity. In 1980, at a large course in New Delhi, Maharishi inaugurated a new discipline—his Vedic Science—in which he began to bring out the details of the structure of pure consciousness in the more technical language in which it is expressed in the Vedic tradition in the form of Veda and Vedic literature. Since then Maharishi (1980, 1986, 1994, 1995a, 1995b, 1996a, 1996b) has published several books that describe in detail the self-referral mechanics by which the universe is created and evolves from the state of pure consciousness, the connection of these mechanics to Veda and Vedic literature, and the theoretical and practical implications of these mechanics for individual and social development.

In his Vedic Science, Maharishi explains that the clearest experience of pure consciousness reveals an inherent three-in-one structure created by the self-referral nature of consciousness:

Consciousness is that which is conscious of itself. Being conscious of itself, consciousness is the knower of itself. Being the knower of itself, consciousness is both the knower and known. Being both the knower and known, consciousness is also the process of knowledge. Thus consciousness has three qualities within its self-referral singularity—the qualities of knower, knowing, and known—the three qualities of ‘subject’ (knower), ‘object’ (known), and the relationship between the subject and object (process of knowing). (1994, p. 53)

Maharishi terms this coexistence of knower, known, and process of knowing within pure consciousness, pure knowledge—pure in the
sense that all three components of knowledge comprise the same one reality: pure Consciousness or pure intelligence. In his Vedic Science, Maharishi describes in great detail the dynamical interaction between the unified state of pure Consciousness and the three components of knower, known, and process of knowing which creates unmanifest impulses of intelligence that are the initial mechanics of creation.

This is the picture of the structure of the Ultimate Reality: the self-referral intelligence in motion, within its own singularity, giving rise to the mechanics of creation and evolution—the Unified Field of pure intelligence spontaneously giving rise to the diversity of all the Laws of Nature within itself. (Maharishi Mahesh Yogi, 1994, p. 62)

Maharishi further notes that the dynamical interactions between these fundamental components, create an unmanifest motion or vibration, which can be experienced as unmanifest sound. The sound of this self-interacting dynamics of pure knowledge is Veda and the Vedic literature. That is, Maharishi does not attribute the source of the sounds that are traditionally recited in India as Veda and the Vedic literature to human creativity. He explains that this literature is actually cognitions of the sounds of the self-interacting dynamics of pure consciousness—cognitions of the sound of the total potential of natural law eternally available in the unified field.

All the material and non-material expressions of creation have specific frequencies (sounds). These fundamental frequencies, non-material values, are the sounds of the Vedic Literature: the intellect, the hum of intellect, and with the hum, the flow and stop of it in sequence. The expression of melody, forming the whole Vedic Literature, gives us the entire process of the basic mechanics of transformation within the self-referral state of consciousness. (Maharishi Mahesh Yogi, 1994, p. 66)

In order to illustrate the fundamental role the Veda, and particularly its first expression—Ṛk Veda—plays as the unified field of natural law, Maharishi refers to Ṛk Veda as the Constitution of the Universe. He reasons that just as the constitution of the country is the basis for the creation of all other laws in the country, so the total potential of natural law whose sound is Ṛk Veda, is the foundation of all the other laws of nature that govern the evolution of creation: “The laws governing the self-interacting dynamics of the unified field can therefore be called the
Constitution of the Universe—the eternal, nonchanging basis of natural law and the ultimate source of the order and harmony displayed throughout creation” (1996a, p. 79). The concept of the Constitution of the Universe highlights the practical benefit of an educational approach which systematically develops the qualities of pure consciousness in the student; this development enables thought, and therefore action, to be spontaneously aligned with the evolutionary direction of the total potential of natural law, thereby decreasing the probability that individuals will violate the laws of nature and reap unwanted consequences of such violation.

The implications of this concept have also been elaborated by Dr. Tony Nader, who, working with Maharishi, has discovered exact structural and functional identities between Veda and the Vedic literature and the structure of human physiology (Nader, 1995). For example, Dr. Nader has elaborated the functional identity between the Nyāya aspect of the Vedic literature, which Maharishi has associated with the distinguishing and deciding qualities of intelligence, and the thalamus in the brain, which is also associated with these qualities by modern physiologists. As an example of one of hundreds of structural correspondences between Veda and the Vedic literature and human physiology, the first book of Nyāya lists sixteen topics through which its subject matter is understood, which in the thalamus correspond to “16 groups of cells called nuclei, each of which have a specialized function. It is through these 16 nuclei that the entire function of the thalamus is fulfilled” (Nader, 1995, p. 127).

These structural correspondences, having been found for every branch of Veda and the Vedic literature, provide objective verification of the fundamental role Veda and the Vedic literature play in the mechanics of creation.

These two structures of Natural Law—one on the level of intelligence in the form of sound (Veda), and the other in the form of matter (physiology)—are the cognitions of the structures of Natural Law on concrete levels of perception. (1996a, p. 116)

Maharishi emphasizes the practical implication of this knowledge:

The Veda and Vedic Literature not only present the holistic knowledge of the qualities of intelligence that structure each aspect of the physiology, but more importantly, being the structuring mechanics of each
quality of intelligence, offer the practical technologies of consciousness to enliven the total potential of Natural Law in the human physiology. (1996a, p. 44)

This enlivenment is experienced as higher states of consciousness, as described in the previous section.

The existence and structure of the pure knowledge presented in Maharishi Vedic Science has been investigated and verified by the Vedic tradition of seers, of whom Maharishi is the supreme contemporary representative. These rishis, or seers, experienced the reality lively in everyone’s simplest state of self-referral awareness—pure consciousness—the Veda and Vedic literature (Maharishi Mahesh Yogi, 1994, pp. 247–48). Having discovered the self-interacting dynamics of pure consciousness as the total potential of natural law governing the universe (various parts of which are the objects of knowledge for all disciplines) and having described in addition how this self-interacting dynamics is also the fundamental value of every knower, Maharishi in his Vedic Science has provided more detailed knowledge of the qualities and principles he brought to light in the Science of Creative Intelligence curriculum. This knowledge of Maharishi Vedic Science has also been integrated by the faculty of Maharishi University of Management into their unified approach to all disciplines.

Maharishi’s description of the self-referral mechanics of creation expressed as Veda and the Vedic literature is brought to light in every course taught at the University. For example, DNA is taught as a material expression of the principle of pure knowledge, the Veda, since it behaves as the self-referral source of intelligence for the integrated functioning of the whole organism in the same way that the self-interacting dynamics of consciousness act as the self-referral source of all the laws of nature which structure creation. According to the field of molecular genetics, the DNA molecule contains the totality of biological knowledge within an organism.

In gene expression, self-referral is seen when regulatory proteins, such as apoinducers or repressors, “curve back to” and interact with the DNA to modulate the expression of information contained therein. This is self-interaction and self-referral in the sense that the structures of the repressors and apoinducers are themselves specified by the blueprints that are stored within the DNA. Thus, when an apoinducer inter-
acts with the DNA, we have one form of biological information (the expressed form, here the apoinducer) interacting with another form of biological information (the unexpressed form—a specific regulatory sequence, such as an operator sequence, within the DNA molecule). (Wallace et al., 1988, p. 13)

As the faculty locate parallel expressions of these universal self-referral mechanics of creation within specific disciplines, the unity of nature in terms of the self-referral mechanics of their own awareness is reinforced in the students’ understanding. And then, as was the case with the Science of Creative Intelligence curriculum, students verify the accuracy of these self-referral principles through their own inner experience during meditation. The combination of the two—direct experience and intellectual understanding—produces richer meaning and significance in students’ educational experience. The parallels between the self-referral mechanics of creation explained in Maharishi Vedic Science and the basic mechanics of creativity in all disciplines, rather than remaining an interesting, but abstract piece of knowledge, become a lively reality for these students as the self-interacting dynamics of pure consciousness are enlivened in their awareness.

Unified Field and Ṛicho Akshare Charts
Over the past 15 years, the faculty of Maharishi University of Management, with Maharishi’s inspiration and guidance, have supplemented the main point charts described above with two other charts that also facilitate this integration of knowledge through the application of Maharishi Vedic Science. One of these charts—the Unified Field Chart—provides an integrated display of an entire modern discipline at a glance. These charts locate the origin of the discipline in the unified field of natural law and then arrange the parts of the discipline in a hierarchical structure, with the more abstract, foundational areas at the bottom and the applied values at the top. In addition, the relationship between the discipline and the practice of the Transcendental Meditation and TM-Sidhi programs is also illustrated. (For an example of a Unified Field Chart, and further details on their use in the University curriculum, see Dillbeck & Dillbeck, 1987.)

Faculty members use these charts to indicate the context of a lesson within the discipline as a whole. These charts serve the further purpose
of facilitating the understanding of the connection between disciplines as a whole and the unified field of natural law, pure consciousness. With the location of the source of all the modern disciplines in the unified field, it becomes clear that the laws of nature studied by the modern disciplines are nothing other than expressions of the unified field itself. By graphically illustrating in each course that this unified field is the same field of pure consciousness systematically experienced by the students during their Transcendental Meditation and TM-Sidhi programs, these charts further the interdisciplinary goal of objective integration of the disciplines. As Maharishi (1994) explains:

Every part of knowledge, unfolding day by day in the classrooms, is connected with total knowledge. This is accomplished by the teacher during the last minute of every class when he shows all the students a chart that gives a vision of the connectedness of the knowledge of the lesson with the knowledge of the corresponding discipline and also shows the connectedness of the discipline with the total knowledge of all disciplines at the common basis of all disciplines in consciousness. (pp. 22–23)

A second chart used by the faculty to further the goals of interdisciplinary studies—the Richo Akshare chart—consists of eight boxes of text. Each box represents a basic principle of the self-referral mechanics of creation, and the impact of action in accord with these mechanics, as summarized by what Maharishi terms the master-key verse of Rk Veda\(^1\). This verse of Rk Veda explains that the self-referral state of consciousness, Transcendental Consciousness, is the home of all the laws of nature which structure the entire manifest universe. It further emphasizes the importance of human awareness being open to this level of reality so that perfection in life can be lived. For each discipline or subdiscipline, faculty describe the same self-referral creative and practical mechanics, box by box, demonstrating that “all knowledge of modern science is available in the Richo Akshare verse” (Maharishi Mahesh Yogi, 1994, p. 176). As students are exposed to these deepest principles from discipline to discipline, and again see that they reflect the same basic mechanics experienced during their daily practice of the Transcendental Meditation and TM-Sidhi programs, the unity of

\(^1\) Maharishi explains that Rk Veda is the holistic expression of the self-interacting dynamics of pure consciousness. “The term Rk is the name of Veda—the first, holistic aspect of the [40] aspects of Veda and the Vedic Literature” (Nader, 1995, p. 16).
all knowledge becomes further enlivened in their intellect. As a result, the important practical consequences of operating in accord with these self-referral mechanics is reinforced.

Maharishi has emphasized that the most important practical consequence of operating in accord with these self-referral mechanics is the ability to spontaneously derive the benefit of the infinite organizing power of the total potential of natural law. The *Rīchō Akshare* verse locates Transcendental Consciousness not only as the field of all knowledge, but highlights its infinite organizing power: “This shows that Veda, pure knowledge, is structured in consciousness; and it shows that Transcendental Consciousness is the lively field of all knowledge and its infinite organizing power” (Maharishi Mahesh Yogi, 1994, pp. 176–77). Maharishi further notes that the scope and value of this infinite organizing power has been substantiated through the scientific research which has demonstrated the positive benefits of regular practice of his Transcendental Meditation program in all areas of life.

In addition, these charts verify the knowledge in Maharishi Vedic Science from the viewpoint of modern science. As Maharishi notes:

Thus my Vedic Science is substantiated by both (1) intellectual understanding through the Vedic Literature and also through the theories of modern science, which are available in the *Rīchō Akshare* charts, and (2) direct experience of self-referral Transcendental Consciousness—the Unified Field of all the Laws of Nature, the field of total knowledge, the field of infinite organizing power of Nature—available to everyone through my Transcendental Meditation and TM-Sidhi Programme, the technologies of my Vedic Science. (1994, pp. 177, 180)

Here Maharishi emphasizes the scientific character of this unique approach to integrating knowledge, which relies on both intellectual connections to the current body of scientific knowledge as well as the unique technologies of the Transcendental Meditation and TM-Sidhi programs, which verify the truth of the principles being studied, while simultaneously developing higher states of consciousness in which these self-referral principles become a living reality.
The *Science of Creative Intelligence* Curriculum
and the Solution to Problems

As reviewed at the beginning of this article, an important goal, as well as organizing principle, of interdisciplinary studies has been to provide knowledge which can help solve problems that transcend individual disciplines. Maharishi has explained that because the principles and qualities of creative intelligence spring from the unified source of creation, they are not limited to any one discipline; they can be located in all disciplines. However, through the Science of Creative Intelligence, the knowledge of these principles and qualities does more than integrate the various disciplines: Even before students gain full enlightenment, the enlivenment of the principles and qualities of creative intelligence in students and faculty through practice of the Maharishi Transcendental Meditation and TM-Sidhi programs automatically increases their ability to solve society’s problems. As mentioned earlier, studies conducted on the Transcendental Meditation and TM-Sidhi programs have demonstrated the increase of intelligence, creativity, broad comprehension, and improved productivity which are fundamental to being effective problem-solvers in society (Dillbeck and Dillbeck, 1987).

But more significantly, over 40 studies on the group practice of these technologies for the development of consciousness have indicated a field effect—termed the Maharishi Effect—wherein the coherence, or orderliness, experienced by individuals practicing these techniques spontaneously spreads into society (see Maharishi Mahesh Yogi, 1994, pp. 277–288). The resulting increase in societal coherence is indicated by decreases in crime rate, accident rates, hospital admissions, and national and international conflicts and an increase in economic growth and other constructive factors in society (see Orme-Johnson & Dillbeck, 1987). By enlivening the total potential of natural law through the Maharishi Effect, coherence-creating groups have, for example, averted armed conflicts in areas where it is about to erupt, and diminished or even eliminated such conflicts in areas where it is already in progress (Orme-Johnson & Dillbeck, 1987; Orme-Johnson, Alexander, & Davies, et al., 1988).

Thus, groups of meditating faculty and students spontaneously apply this knowledge to solve, directly and spontaneously, fundamental problems in society, even while they are still at the University, without hav-
ing to interact directly with problem areas. The Science of Creative Intelligence and Maharishi Vedic Science-based curriculum directly, and most practically, fulfills the problem-solving goals of interdisciplinary studies programs when students enliven the qualities of creative intelligence in themselves and throughout their state and nation through the Maharishi Effect. Maharishi (1995a, 1996a) predicts that these qualities will secure the progress of every society, reducing and finally eliminating any lack of congruence between the desires of the individual and social needs.

Most interdisciplinary studies programs at U.S. universities focus on developing objective technological solutions to the problems facing the world. But increasingly, educators are beginning to recognize the solution to these problems may not lie in developing increasingly sophisticated objective technologies. As Clark and Wawytko (1990) note “what is needed is not simply more information, cleverness, and technology, but rather an altogether different species of knowledge involving reflection, self criticism, and wisdom” (p. 4). The Maharishi Science of Creative Intelligence and Maharishi Vedic Science-based curriculum, with its comprehensive knowledge of the fundamental mechanics of nature and its scientifically verified practical subjective technologies for the systematic enlivenment of these mechanics in human life, provides a practical educational approach to developing wise citizens in every nation who cease to create problems (Chandler, 1990). And Maharishi has noted that there is only one approach that will really eliminate the problems facing society in the long run: developing individuals who

1. through the growth of the creativity and wisdom that characterize higher states of consciousness do not create problems in their own lives, and who
2. through their group practice of the Transcendental Meditation and TM-Sidhi programs create the coherence in collective consciousness, which is the ground for individuals in all areas of society to solve the problems that individuals who are not systematically unfolding their full creativity and wisdom continue to create.

Conclusion

Interdisciplinary studies programs have been introduced to create students who are multifaceted problem-solvers and have an integrated
understanding of nature and knowledge. The evidence provided by the last 25 years of experience at Maharishi University of Management indicates that the addition of the Maharishi Science of Creative Intelligence and Vedic Science-based curriculum to modern science-based institutions creates a learning experience which easily meets and even transcends these laudable goals. As Maharishi (1994) emphasizes:

This is the most fortunate time in the history of the evolution of science, when along with the study of specific Laws of Nature administering the field of diversity, the study of the Unified Field of Nature's Intelligence or Natural Law is available, with the consequence that the spontaneous use of the total potential of Natural Law is now available through the subjective approach of Maharishi Vedic Science, while the use of specific Laws of Nature is available through the objective approach of modern science. This presents complete knowledge of Natural Law and offers mastery over Natural Law to any individual. (pp.196–97)

Maharishi emphasizes that the common goal of all educational systems, including all interdisciplinary approaches to knowledge, is to provide students with the knowledge they need to lead successful, fulfilling lives. Furthermore, in the pursuit of this goal, he notes that our most precious educational resource is the human brain physiology, because it is capable of sustaining the experience of the unified field of all laws of nature. Through regular practice of the Transcendental Meditation and TM-Sidhi programs, integrated with the systematic study of the unified field of all the laws of nature and its relationship to all fields of knowledge, research indicates that students rapidly grow in the development of higher states of consciousness. This is the ultimate goal of all education: to allow students to develop their full potential, which we have seen in this article is Unity Consciousness.

Maharishi recommends his Consciousness-Based interdisciplinary approach to all areas of education as the means for developing ideal individuals and a world free from suffering—a world of lasting peace, perfect health, and abundance in life (see Grant & Jones this issue for a fuller discussion of the implications of Consciousness-Based education). The knowledge and experience of the unified field of all the laws of nature comes at a time when education is looking for new knowledge and programs to improve the life of the individual and society. Maharishi University of Management has developed packages
of knowledge, which any institution of higher learning can integrate with their already existing curriculum. By incorporating the theoretical and experiential components of the Consciousness-Based approach to interdisciplinary studies, higher education today can help awaken the hidden genius in every student and create a world free from problems and suffering—a world Maharishi refers to as Heaven on Earth.

References


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The Impact of *Maharishi Vedic Science*-Based Education in Higher Education: The Example of Maharishi University of Management

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Christopher Jones, Ed.D., is Professor of Education and Dean of Arts and Sciences at Maharishi University of Management. He received his B.A. in literature in 1969 from Oberlin College, and his Ed.D. from Columbia University, Teachers College in curriculum and instruction in 1979. Dr. Jones joined the faculty at Maharishi University of Management (previously, Maharishi University of Management) immediately after receiving his doctorate and has been directly involved in the design and administration of Consciousness-Based education at all levels, kindergarten through Ph.D., for the last thirty years.
Leaders in higher education, backed by research on college outcomes, have
drawn attention recently to the difficulty that universities and colleges face
today in providing students with knowledge and abilities sufficient to under-
stand and successfully address the deeper issues of their lives. The Vedic Sci-
ence-based education of Maharishi Mahesh Yogi was developed in part to
solve this “problem of substance” in higher education. This paper summarizes
the research to date on Maharishi University of Management (previously
Maharishi University of Management, 1971–1995), the leading example of
Maharishi Vedic Science-based education* at the post-secondary level.

Research indicates that students at Maharishi University of Management
develop increased flexibility of the nervous system, functional integration
of the brain, field independence, creativity, efficiency of concept learning,
nonverbal fluid intelligence, choice reaction time, psychological health
and well-being, and awareness during sleep, an indicator of the develop-
ment of higher states of consciousness. Cross-sectional studies, comparing
Maharishi University of Management students with students from other
colleges, show higher levels of moral reasoning, greater self-actualization, and
higher levels of general academic knowledge and skills. Studies on the effect of
Maharishi’s system of education on the environment show that the group
practice of the Maharishi Transcendental Meditation and TM-Sidhi pro-
grams at Maharishi University of Management enhances a composite index
of quality of life in the United States, and reduces auto fatalities, notifiable
diseases, homicides, and the general level of violence in the country.

In interpreting these findings the author draws upon educational theory,
Maharishi Vedic Science, and interviews with a cross section of Maharishi
University of Management students. The conclusions are that (1) the overall
effect of Maharishi Vedic Science-based education is to create integration or
balance among the various aspects of the mind and physiology and (2) the
chief agent of change in this system of education is Maharishi Vedic Science
itself, in which theory and experience are unified in the expanding conscious-
ness of the student. Based on this analysis it is recommended that higher edu-
cation institutions meet their current challenge by adding Maharishi Vedic
Science to their curricula.

*Today, the term Consciousness-Based education is used interchangeably
with Maharishi Vedic Science-based education.
I. The Challenge of Substance Facing Higher Education

An eminent scholar of Greek civilization once defined education as the expression of a community’s awareness of a goal or standard for its collective life (Jaeger, 1945). In other words, that which is done in the schools, colleges, and other social agencies reflects the standard of living that a community believes should be achieved by its citizens. If one accepts this definition of education, then one can only be encouraged by the many recent calls for reform in higher education, for they seem to reflect an awareness on the part of society of a higher standard to which we would like our colleges to aspire. Furthermore, judging from the written reports, this higher standard concerns the very purpose and content of higher education more than its organization or administration.

Professional educators have taken seriously these calls for reform. In addressing the 1987 annual meeting of the Council for the Advancement and Support of Education (CASE), Derek Bok, president of Harvard University, said, “The current challenge to higher education is not merely a challenge of public relations, but a challenge of substance, and we must treat it as such” (Desruisseaux, 1987, p. 1). As a symptom of the underlying problem, Bok cited the subtitle of the best-selling book at the time, *The Closing of the American Mind: Education and the Crisis of Reason* (Bloom, 1987).

The “challenge of substance” to which Bok refers we take to include two related challenges: first, higher education is being challenged to provide students with more profound and meaningful knowledge; and second, it is being challenged to develop students’ abilities at deeper and more powerful levels. Both the knowledge and the organizing power that knowledge brings must be strengthened.

In the same year that Bok spoke to CASE, the Carnegie Foundation for the Advancement of Teaching and Learning published a progress report that summarizes the state of higher education and the challenges it faces. The report highlights the need for curriculum reform, the importance of faculty development, and the role of technology in education. It also emphasizes the need for higher education to address issues of social justice and to prepare students for a rapidly changing world.

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1 The most influential reports on the state of higher education in the last five years have been The National Institute of Education’s Study Group on the Conditions of Excellence in Higher Education (1984); the Association of American Colleges’ Project on Redefining the Meaning and Purpose of Baccalaureate Education (1985); the report by the Carnegie Foundation for the Advancement of Teaching on the undergraduate experience in America (1987); the “Governor’s 1991 Report on Education”; and the recent best-selling books, *The Closing of the American Mind* by Allan Bloom (1987) and *Cultural Literacy* by E.D. Hirsch (1987).
report on American colleges by Ernest Boyer (1987). In the introduction Boyer echoed the same concern for substance when he wrote,

The nation’s colleges have been successful in responding to the diversity and in meeting the needs of individual students. They have been much less attentive to the larger, more transcendent issues that give meaning to existence and help students put their own lives in perspective. (p. 7)

The Carnegie Foundation report listed many specific concerns, including the gap between high school and college, the parochialism of most colleges, and the fragmentation of the curriculum. Underlying these concerns, however, was the suspicion that too little was being expected of a college education. As Boyer noted, “It is not that the failure of the undergraduate college is so large but that the institutional expectations are too small” (1987, p. 2).

This “challenge of substance” is expressed also as an increased interest in the measurable outcomes of college. Whereas before college outcomes were the interest of researchers alone, in the last decade taxpayers, politicians, and educators in turn have given support to what has become known as the “assessment movement.” This movement is dedicated to understanding through assessment the impact that college has on students, and to holding colleges and universities accountable for their educational outcomes. Legislatures in fifteen states have mandated that their state institutions measure the learning outcomes of their students. Furthermore, the United States Department of Education has used its influence to ensure that regional accrediting boards look at student outcomes in the accreditation process, thus putting pressure on private as well as public institutions to undertake assessment activities. According to Campus Trends, 1989 (El-Khawas) nearly seven in ten institutions of higher education now have some form of assessment activity in place.

Though the current calls for reform have expanded college assessment programs and focused public attention on the outcomes of college, research on college impact goes back more than half a century. We turn next to a few of the highlights from this research which identify specific areas of concern.
Research on College Impact

In general, the aim of college impact studies has been to answer the question of the effects of college on its students. In recent decades, however, the question has changed from, “What are the benefits that come with a college education?” to “Under what conditions do what kinds of students change in what ways?” This latter emphasis persists today.

One of the earliest compilations of the research, by Feldman and Newcomb (1973), summarizes 1500 studies (until approximately 1970) in two volumes. In it the authors conclude that the most salient changes among students were increases in

- openmindedness (reflected by declining authoritarianism, dogmatism, and prejudice), decreases in conservatism in regard to public issues, and growing sensitivity to aesthetic and “inner” experiences. In addition, a majority of studies showed a declining commitment to religion, increases in intellectual interests and capacities, and increases in independence, dominance, and confidence as well as readiness to express impulses. (p. 48)

As one can see from the list of outcomes, the majority of studies up to that time had addressed the stability of students’ attitudes and values. Intellectual aptitudes, though admittedly subject to change, are discussed only briefly in a footnote (p. 29) in which the reader is referred to several articles. Studies of development among young adults were just appearing.

Since that time, research has increased, focusing on three main areas: values and attitudes, achievement, and human development. We see in these areas even more clearly the issue of substance in a college education.

Values and attitudes. The changes in values and attitudes reflected in the Feldman and Newcomb overview have been substantially corroborated by several large-scale studies by Alexander Astin (1975, 1977, 1985) of changes in student beliefs and attitudes. College attendance in general, he found, tended to strengthen students’ competence, self-esteem, artistic interests, liberalism, hedonism, and religious apostasy, and to weaken their business interests.

Astin also discovered that these changes in attitudes and beliefs were largely peer-mediated, based on an indication that greater-than-
average involvement in both athletic and academic activities (e.g., being a member of a college team or being in an honor society) was negatively correlated with these overall effects of college and, conversely, that involvement in student government tended to accentuate these effects. The author suggests that these two findings together “support the hypothesis that the changes in attitudes and behavior that usually accompany college attendance are attributable to peer group effects” (1985, p. 150).

Astin’s conclusion that the peer group is the main influence in college is in part attributable to his self-report survey method, which is not likely to detect more subtle changes in emotional or cognitive development. Even so, this finding is disconcerting, and it brings into question the extent of the influence of faculty and instruction on student outcomes. A second concern emerges from the nature of the changes taking place—for example, increasing hedonism and religious apostasy. Inasmuch as these do not reflect the goals of any college catalog, they appear to be unintended and (most would say) unfortunate outcomes of college. They imply, rather, increasing skepticism and a retreat from the deeper values of culture which help give meaning and importance to daily life. These two concerns illustrate the effects of the problem of substance in the lives of students.

Achievement. A study by Robert Pace (1979) provides an in-depth summary of 50 years’ research with achievement tests and alumni surveys. His review supports—and greatly expands—Feldman and Newcomb’s passing reference to the benefits of college for scholastic aptitude. In general, with respect to achievement, Pace’s summary shows that colleges have been very successful in imparting information. The more that students study a subject, the more they know it, and the more closely related a subject is to their major field, the more they know about it. “Seniors know more than sophomores and juniors know more than freshman” (pp. 166–167).

Pace, by his own admission, was chiefly interested in achievement results, yet he reflects on the unfortunate division in the research between knowledge acquisition and personal development. Researchers who study knowledge acquisition and intellectual skills tend not to study personal development, and vice versa. Anticipating the Vedic
Science-based assessment approach we will discuss below, Pace calls for further study of the interaction of these two aspects of the college experience.

In recent studies, researchers have begun to probe into the factors behind knowledge acquisition and achievement. Winter, McClelland, and Stewart (1982), for example, undertook a large-scale study of liberal arts education. At one Ivy League college, they found improvements both in students’ ability to form and articulate complex concepts and in their ability to deal flexibly and consistently with rational argument. These findings were contrasted with those from a state teachers college and a two-year community college, which showed little or no change in these same measures. Similarly, at a liberal arts women’s college, Mentkowski and Strait (1983) found longitudinal and cross-sectional differences between freshman and seniors on a measure of critical thinking. Such studies give us hope that at least some institutions are going beyond knowledge acquisition, but simultaneously raise questions about the great majority of state and professional institutions to which these few institutions are compared. Further, one must ask how much beyond information acquisition are even the best institutions moving? To answer this question we turn to research on human development.

Human development. The third area of research on college outcomes is human development; that is, the changes that college brings about in stages of cognitive, moral, and ego development. In the forefront of theory and research in this area is Arthur Chickering. In The Modern American College (1981), the 800-page volume he edited, he solidifies the focus of his earlier work (Chickering, 1969), suggesting that “explicit concern for adult development can provide the unifying purpose or idea for higher education. . . .” He presents entire chapters on ego development, cognitive growth, growth of intelligence, moral development, and nine other specific areas of human development.

In his work Chickering has provided an extremely valuable service to this area of research by focusing the issues and variables surrounding human development. On the other hand, his work also points up the lack of definitive findings in many important areas. In The Modern American College, for example, the chapters on ego development,
intelligence, and moral development present little evidence that college has a salutary effect on these aspects of personality. The authors cite one longitudinal study in progress using the Loevinger scale of ego development, no reported longitudinal studies of the development of intelligence in college, and one reported study of Lawrence Kohlberg’s attempt to foster moral development among college students through a course on moral and political choice.

Other research on development during college, including more recent studies, has yielded mixed results. Studies of private, in some cases highly selective, institutions show modest freshman-to-senior differences in cognitive development and intellectual-ethical development (Mentkowski & Strait, 1983; Whitla, 1978). Studies of ego development have found modest gains in some cases (Mentkowski & Strait, 1983; Redmore, 1983; Loevinger et al., 1985) and no change over comparable periods of time in other cases (Adams & Fitch, 1982; Kitchener, King, Davison, Parker, & Wood, 1984). Even in the instances where change in ego or moral development has occurred, the absolute differences between freshmen and seniors are not impressive within the stage theory itself.

In terms of moral reasoning, though, the Whitla study shows difference between the groups of freshmen and seniors; both groups functioned at a mean of stage four, where stage six represents the culmination of development. Stage four bases moral decisions on a continuation of authority and social order as compared with stages five and six, which develop the foundations of democratic citizenship and ultimately principled moral judgment. In terms of ego development, though the Mentkowski study shows a cross-sectional (though not longitudinal) difference between freshmen and seniors, even the seniors were only functioning at stage four (out of six), labelled “conscientious.” This level represents a stage beyond conformism but still prior to the full integration of the individual’s conflicting inner needs. In neither case can one feel that college as an institution is meeting its responsibility in light of the end goal of human development.

All told, unlike the research with achievement tests, studies of human development remain disquieting. The change observed at even the best schools shows only modest gains, and several studies show little or no gains along this dimension of college impact.
It is clear from this brief review of the literature on college impact that college students do progress on measures of their knowledge and intellectual skills. In addition, their attitudes change, but not necessarily in response to instruction and not necessarily in a desirable direction. On the broader, deeper measures of human development, such as moral or ego development, there is little to inspire us. Some institutions do seem to have a modest though statistically significant impact on measures of human development (Whitla, 1978; Mentkowski & Strait, 1983), but these remain the exception among the 2,100 baccalaureate institutions in the United States, and on any absolute scale the change at even these institutions is not impressive.

This review, though by no means conclusive, serves to strengthen and focus the view that the vast majority of baccalaureate institutions are not significantly affecting the deeper levels of human experience and behavior. In response to students’ questions about their identity, about right action, or about their purpose in life, colleges have typically supplied more information, more questions, rather than deeper knowledge or ability. As a result the scope of students’ doubts has expanded rather than narrowed. As one report phrased it, “We have reached a point at which we are more confident about the length of a college education than its content and purpose” (Association of American Colleges, 1985, p. 2).

This situation may be, as Boyer suggests (1987, p. 2), because expectations are too low, or it may be due to a lack of means to touch the deeper levels of the student’s life. Ultimately, the two causes must go hand in hand: if one does not expect to affect the deeper levels of students’ lives, they are unlikely to be changed; on the other hand, if attempts to address these deeper levels do not produce measurable results, then they are likely to be dismissed as unimportant objectives of the institution. For example, while institutions in higher education would like to develop the general intelligence of their students, most research indicates that fluid intelligence does not significantly increase after late adolescence. As a result, most universities do not attempt to develop intelligence. In either case, the research on college impact only clarifies the need for a system of education that is capable of successfully addressing the full range of human development—body, mind,
and self—and such a system in turn requires a broader science of life than has been available in higher education in the recent past.

II. Maharishi Vedic Science-Based Education in Higher Education

Previous writing on Maharishi Vedic Science-based system of education has focused on general theory and outcomes (Levine, 1972; M.C. Dillbeck, Aron, & S.L. Dillbeck, 1979; American Association for Ideal Education, 1985; S.L. Dillbeck & M.C. Dillbeck, 1987); on individual empirical studies (cf., Orme-Johnson & Farrow, 1977; Chalmers, Clements, Schenkluhn, & Weinless, 1988; Wallace, Orme-Johnson, & M.C. Dillbeck, 1990), or on reviews of research at the elementary and secondary levels (Nidich & Nidich, 1987; Nidich & Nidich, 1989). This paper complements these approaches by reviewing theory and research on Maharishi Vedic Science-based education at the post-secondary level.

Maharishi University of Management (previously, Maharishi University of Management, 1971—1995) was founded in 1971 by Maharishi Mahesh Yogi, in direct response to the challenge of substance that colleges faced then as well as now. As early as 1959, in a lecture to educators, Maharishi described the modern-day university as “hovering on the surface of knowledge.” As a result, he said, “every subject is suffering and every student of every subject is suffering” (Maharishi Vedic University, 1986, p. 269). There are two sides to knowledge, he explained, the object of knowledge—the known—and the subject, who is the knower. While education at all levels was providing knowledge of the object, it was missing the knowledge of the subject or the knower, in whose awareness the knowledge is structured. As a result, while students were learning the theories of the sciences or the humanities, the source in consciousness from which the theory was born remained hidden. Thus, even the objective knowledge was missing its foundation. From Maharishi’s perspective, colleges have not realized their potential primarily because they have not been able to develop the knower as systematically as they have developed the known.

In the same address in 1959, Maharishi offered his solution to this lack in education—a technique whereby students could experience the silent, unmanifest source of thought deep within the mind. Maharishi
describes this source of thought as the experience in individual life of the absolute basis of all relative existence.

[I]t is necessary for the student of every subject to connect [a] field of study with the field of the Absolute within. . . . If, along with the study of each subject, the experience of the Absolute is taught to the students, then they will be able to fathom the deeper levels of that subject and the whole range of that subject will be studied properly. When the two extremities of that subject—the gross, expanded value and the transcendental value—are connected, then the field of that subject will be complete, and the study of that subject will bring something real and useful in life. (Maharishi Vedic University, 1986, p. 269)

Maharishi University of Management (previously, Maharishi International University, 1971–1995) was founded to achieve this integration between the gross, surface values of the various disciplines and the transcendental value in the consciousness of the learner. It brings together the two major streams of knowledge in the world—modern science and Maharishi Vedic Science—on the ground of Vedic Science, which itself is a complete science of both objectivity and subjectivity.

At the heart of Maharishi Vedic Science is the technology of the Transcendental Meditation and TM-Sidhi programs. This technology systematically cultures the mind’s ability to appreciate surface values along with the transcendent. It develops an intellect that, like a great tree, is diversified in numberless small branches and yet securely unified at its roots—simultaneously infinitely diverse and completely unified (Maharishi Mahesh Yogi, 1988).

The Fundamentals of Maharishi Vedic Science-Based Education

The single unifying theme of Maharishi Vedic Science-Based system of education is that education, to be ideal, must provide the knowledge and experience of the self-interacting dynamics of consciousness, the self-sufficient source of all creativity in nature and human experience. The student must come to understand the more surface values of the subject matter—its facts and figures—but not see these as the primary reality. The facts and figures must be understood in terms of deeper levels of thought and ultimately as expressions of the wellspring of human consciousness, the absolute level of consciousness at the source of thought.
This absolute value of consciousness, by interacting with itself, gives rise to all the disciplines and to all their practical applications.

A complete explanation of the self-interacting dynamics of consciousness is available in Maharishi Vedic Science (Maharishi Mahesh Yogi, 1986; M.C. Dillbeck, 1988), but a useful introduction to their range and significance can be found in modern physics. One of the dreams of Albert Einstein in the early days of quantum field theory was to forge a physical theory that would unify the four fundamental forces of nature: electromagnetism, gravity, and the strong and weak nuclear forces. Einstein did not live to see this happen, but over the last three decades quantum field theory has made tremendous strides toward the realization of Einstein’s dream (see, e.g., Georgi, 1981). In 1978, for example, Weinberg and Salam were able to show how electromagnetism and the weak force were actually diverse expressions of a more fundamental electro-weak force. For this they received the Nobel Prize in the following year. In the last two years, Hagelin (1988) has proposed a grand unified theory linking all the forces except gravity to a grand unified force.

There is little doubt at this time that in principle gravity, too, is susceptible to this same process of unification. Thus physics today has glimpsed the goal that Einstein had set more than half a century ago of a completely unified field giving rise to all the force and matter fields—a unified field theory, or, as popular journals have called it, the T.O.E., the “theory of everything” (Taubes, 1986).

These current events in science would be of merely academic interest except that several of the qualities of the unified field emerging from physical theory remind us more of life in its animate expressions than of the great lifeless machine that Newtonian mechanics first depicted. According to quantum field theory, the unified field is self-interacting in that it must interact with itself in order to give rise sequentially to the known forces and particles (Hagelin, 1987). Mathematically it appears to contain an infinite amount of free energy; hence it is infinitely dynamic. And finally, it is self-sufficient, in that it gives rise to natural laws from within itself, without the need of an external agency. Thus, it appears from physics that nature is more self-aware, more dynamic, and more self-contained than previously thought.
According to Maharishi Vedic Science, these qualities of the unified field are salient qualities of consciousness. Maharishi Vedic Science explains this resemblance in its description of the origins of human consciousness. The qualities of the unified field at the basis of physical theory appear similar to the qualities of human consciousness because, according to Vedic Science, consciousness is the primary constituent of mind, body, and environment. Maharishi has explained that consciousness in its pure state gives rise, on the one hand, to the flow of consciousness as thought and to human action, and, on the other hand, to the force and matter fields of the objective world. In other words, consciousness, by virtue of its self-awareness and through its own self-interacting dynamics, gives rise to all the diverse levels of the mind and matter. It is this field of pure consciousness that can be directly experienced during the Maharishi Transcendental Meditation technique.

Maharishi explains the practical value of this understanding of man’s intimate connection to his environment:

The Unified Field is the unmanifest basis of the whole creation, the creator and governor of the whole universe. Through Transcendental Meditation it is simple to open our awareness to this state of transcendence. Spontaneously, the conscious mind identifies itself with the self-referral Unified Field, the fountainhead of all the streams of activity in Nature. As we gain more and more familiarity with that self-referral performance, our thoughts and actions spontaneously begin to be as orderly and evolutionary as all the activity of Nature. (Maharishi Mahesh Yogi, 1986, p. 97)

In this unified field of consciousness the three aspects of the educational process—the knower, the known, and the process of knowing—are unified into one self-referral state where knowledge is its own knower, where the innumerable impulses of natural law which structure objective and subjective creation are found together. This togetherness of knower, known, and process of knowing in the unified field of pure consciousness is called in Vedic Science the Saṁhitā—literally, the “togetherness”—of all the impulses of consciousness.

The fundamentals of Maharishi Vedic Science-based education can be derived from this single principle of the emergence of both nature and experience from the self-interacting dynamics of the Saṁhitā value of consciousness. Because all knowledge arises from the Saṁhitā value
of consciousness, any part of knowledge that is understood separately from its source in consciousness ultimately becomes dry, potentially misleading, and of relatively little use to the knower—the unfortunate result when the various branches of modern science are taught without reference to their source. Conversely, knowledge of the Śāṅhitā value of knowledge connects and coordinates all other aspects of knowledge. As the sap brings nourishment and vitality to every fiber of the tree, experience and understanding of the Śāṅhitā bring to the parts of knowledge vitality, purposefulness, and practicality.

In addition, by knowing this level of reality one gains access to the source of all the laws of nature, which Maharishi calls “the switchboard of Natural Law,” bringing mastery over the course of action. This, according to Maharishi Vedic Science, is the fruit of all knowledge, the ability to act spontaneously in accord with all the laws of nature, “the ability to know anything, do anything, and achieve anything” (Maharishi Mahesh Yogi, 1988). Maharishi offers the experience and understanding of the Śāṅhitā as a practical solution to the challenge of substance with which we began; he explains that to identify one’s conscious mind with the transcendental organizing center of human experience is to gain the highest knowledge available about nature and consciousness. Through this experience one develops the ability to act in accord with the orderly and evolutionary force of natural law, to fulfill one’s desires in a way that is naturally and spontaneously fulfilling for oneself and society.

The two ways in which this unification of knower, knowing, and knowledge is gained in Maharishi Vedic Science-based education are through (1) the regular experience of this Śāṅhitā value of consciousness using the technologies of Vedic Science—especially the Transcendental Meditation and TM-Sidhi programs, and (2) the connection of all that is learned in the classroom to this Śāṅhitā value, the unified basis of knowledge. In 1971, Maharishi founded a new discipline, the Science of Creative Intelligence (SCI), which links the modern academic disciplines with his Vedic Science, connecting the knowledge in each discipline with its source in the unified field, known in SCI as the field of pure creative intelligence. In practical terms, the students and faculty begin each day with the practice of the Transcendental Meditation and TM-Sidhi programs, which give them the direct experi-
ence of the self-referral state of their own consciousness. Then in the classroom, by connecting through the Science of Creative Intelligence all new knowledge to this familiar source of knowledge, all parts of knowledge are understood in relation to the wholeness of knowledge and experience in the student’s own Self. (This unbounded value of the Self is written with an uppercase “S” to distinguish it from the ordinary, localized self we typically experience.)

The effects on individual and collective life of these two aspects of Vedic Science-based education stand in contrast to the effects of a college education following the traditional model. Instead of feeling increasingly lost in an ever-expanding horizon of knowledge, students begin to feel increasingly at home with knowledge, at home with themselves. Instead of identifying their minds and whole being with the isolated parts of the traditional disciplines, they begin to identify more and more fully with the Saṁhitā of knowledge and knowing which is their own Self. Instead of their consciousness becoming increasingly dominated by the pressure to achieve, combined with the constant wear this pressure brings to the physiology, they become increasingly at ease with a rapid pace of development. They begin to enjoy and focus on their own progress.

The fundamental features, then, of Maharishi Vedic Science-based education are the two mentioned above—the experience and the understanding of the Saṁhitā value of consciousness—plus the most advanced knowledge of the traditional disciplines, and specific techniques of teaching which connect the surface values of knowledge with the source of knowledge. (See Figure 1.)

This alternation of direct experience of the self-referral state of consciousness through the Transcendental Meditation and TM-Sidhi programs, with the intellectual probing into the relationship of that self-referral state to all of knowledge, is designed to lead to more refined states of consciousness, supported by more balanced, integrated styles of physiological functioning. Maharishi has laid out the intended outcomes of this system of education in his descriptions of higher states of consciousness (Maharishi Mahesh Yogi, 1969). Above all, Maharishi states, higher education should be for higher consciousness.

In the next section we will describe in more detail the main features of Maharishi University of Management, the first institution to
implement Maharishi Vedic Science-based educational system from preschool to the Ph.D. level. Here many of the abstract fundamentals of the approach discussed above are embodied.

### Maharishi Vedic Science-Based Education

<table>
<thead>
<tr>
<th>Traditional knowledge</th>
<th>Provides</th>
<th>Current knowledge of the sciences, arts, and humanities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The technology of Maharishi Vedic Science</td>
<td>Provides</td>
<td>Direct experience of the Saṁhitā value of consciousness, the basis of all streams of knowledge, through the Maharishi Transcendental Meditation and TM-Sidhi programs.</td>
</tr>
<tr>
<td>Intellectual knowledge of Maharishi Vedic Science</td>
<td>Provides</td>
<td>Understanding of the theoretical principles which govern the self-interacting dynamics of consciousness in the unified field and their expression into all of the levels of objective and subjective life.</td>
</tr>
<tr>
<td>Vedic Science-based teaching techniques and curriculum design</td>
<td>Provide</td>
<td>An approach to teaching and curriculum design through which every lesson is taught with reference to the whole of knowledge in the discipline, and the source of all disciplines is shown to be the student’s own Self.</td>
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Figure 1. This chart identifies the four distinguishing features of Maharishi Vedic Science-based education and the role they play in the educational process.
Maharishi University of Management:  
The Model of Vedic Science-Based Education

At Maharishi University of Management every aspect of the curriculum is designed to help the student experience the underlying self-interacting dynamics of consciousness and to connect these dynamics to all that is learned. The main features of the curriculum at Maharishi University of Management are listed below according to the fundamental of Vedic Science-based education that they reflect:

A. Applications of the technologies of Maharishi Vedic Science.
   1. Research in Consciousness course. All students enroll for a course in “Research in Consciousness,” the main feature of which is the personal practice of the Transcendental Meditation and TM-Sidhi programs. This course, taken concurrently with their traditional coursework, supplies the means for experiencing the principles of Vedic Science that are brought out in classes.
   2. Collective practice of the Maharishi Transcendental Meditation and TM-Sidhi programs. An important feature of the Research in Consciousness course is collective practice of the technologies of Maharishi Vedic Science. Approximately 1600 students, faculty, staff, and community members come together twice daily in one place to practice the Transcendental Meditation and TM-Sidhi programs.

B. The knowledge of Maharishi Vedic Science.
   1. Maharishi Science of Creative Intelligence integrated throughout the curriculum. SCI describes in the simple language of everyday experience the nature and functioning of consciousness, both in its pure unmanifest form as the unified field and as the manifested, concrete universe. SCI in turn provides the intellectual framework used in all subsequent courses to connect each of the disciplines to the student’s experience of pure consciousness, the unified source of knowledge.
   2. Regular courses in Maharishi Science of Creative Intelligence and Vedic Science. All students begin their undergraduate study with a course in Maharishi Science of Creative Intelligence, taught on videotape by Maharishi. This course introduces students to the interdisciplinary principles which describe the functioning of intelligence in nature as a whole and in human life. These principles are common to both
the subjective approach of Vedic Science and the objective approach of modern science. Maharishi Vedic Science is the science of consciousness in its pure form, describing the self-interacting dynamics of consciousness underlying phenomenal creation and the process by which those dynamics give rise to experience and to natural law. All students also spend a two-week period twice each year studying advanced topics in both Vedic Science and the Science of Creative Intelligence.

3. Interdisciplinary First-Year Program. In the first year at Maharishi University of Management, all undergraduate students take a sequence of core courses, collectively entitled “A Vision of All Disciplines in the Light of Maharishi Science of Creative Intelligence,” which connects the fundamental concepts of 14 or more major academic fields to the students’ experience and understanding of their own intelligence. This sequence of coursework is designed to make students feel at home with all knowledge and to enable them to see the various disciplines as expressions of their own intelligence.

C. Vedic Science-based teaching techniques and curriculum design.

1. Main Point Charts and Unified Field Charts. In teaching the traditional disciplines, all faculty use visual aids that identify the main points of each lesson and connect these main points to the student’s experience and to the evolutionary dynamics of consciousness elucidated by the Science of Creative Intelligence. In addition, each University department has developed a “Unified Field Chart” which depicts the relationships among (1) the areas of study within a discipline, (2) the unified foundation of the discipline, and (3) the experience of the unified field of natural law during the Maharishi Transcendental Meditation and TM-Sidhi programs. This chart ensures that, in learning the subject matter of a course or a discipline, the student does not become lost in a particular topic. With the Unified Field Chart each lesson can be placed in the context of the evolution of consciousness in its subjective and objective expressions.

2. Teaching techniques that refine the mind. All faculty are educated in the use of teaching techniques that create a stress-free learning environment and help to refine the functioning of all levels of the mind. Professors learn to unfold the knowledge of a lesson, for example, in the same way the Samhitā itself unfolds, beginning from the wholeness of
the main idea and elaborating that wholeness into its constituent parts, while still maintaining the wholeness at every step of elaboration. Thus, knowledge is imparted in a way that supports the students’ growth of intelligence toward enlightenment, where the intellect is simultaneously infinitely diverse and completely unified.

In addition to these unique aspects of the Maharishi University of Management educational program, there are other features, which, although not defining characteristics of Vedic Science-based education, have been developed by the faculty in the context of Vedic Science and contribute to the overall educational impact. For example, all courses at Maharishi University of Management are taught intensively, one at a time. Instead of taking several courses simultaneously over several months, Maharishi University of Management students take each course separately over a period of one to four weeks. This format allows the student to probe deeply into one field without competing demands from other coursework. Two other practices that are likely to contribute an effect include: (1) a longer academic year (44 weeks) which permits a longer period of exposure to the college experience, and (2) a “tutorial system”—that is, a mentoring system in which every student is assigned to individual faculty for advice and support through an informal relationship.

III. Research on Maharishi Vedic Science-Based Education at the Post-Secondary Level

Research on the outcomes of Vedic Science-based education can be divided into two areas: (1) research on the Transcendental Meditation and TM-Sidhi programs, the core educational technology derived from Maharishi Vedic Science, and (2) research on Maharishi University of Management, a model of Vedic Science-based higher education.

Research on Maharishi Transcendental Meditation and TM-Sidhi programs

At the core of Maharishi Vedic Science-based education are the Transcendental Meditation and TM-Sidhi programs. The Transcendental Meditation technique itself is a simple, effortless technique which allows the conscious mind gradually to settle down while remaining completely alert, until thinking is transcended entirely and the mind
experiences its own silent, unbounded nature. The Maharishi TM-Sidhi program is an advanced technology of Vedic Science which can be learned on the basis of several months’ experience with the Maharishi Transcendental Meditation technique. It accelerates the unfolding of the student’s mental and physiological potential in the same way as the Transcendental Meditation technique and develops in addition a highly refined level of mind-body coordination.

Research on the Transcendental Meditation and TM-Sidhi programs dates back to 1969 when physiological benefits of the Transcendental Meditation technique were first measured. Since this time over 430 studies have been undertaken at 160 independent research institutions and universities in 27 countries. A number of these have direct implications for education. The extent of the research on the Transcendental Meditation technique relevant to education makes it one of the most widely researched educational technologies available today.

S.L. Dillbeck and M.C. Dillbeck (1987) summarized 36 studies on the Transcendental Meditation and TM-Sidhi programs relevant to education. Research has shown improvements in a number of the factors known to contribute to learning, including increases in alertness, intelligence, memory, field independence, self-concept, and emotional stability, as well as greater physiological resistance to stress.

One subset of the research on the Transcendental Meditation and TM-Sidhi programs particularly relevant to higher education is composed of studies on the “Students’ TM-Sidhi Course.” Those students who have not learned the Maharishi TM-Sidhi program before attending Maharishi University of Management may learn it in their first two years of study at the University. In fact, it is perhaps the single factor in the curriculum that students most strongly associate with personal growth.

Several longitudinal studies (M.C. Dillbeck, Landrith, & Orme-Johnson, 1981; Orme-Johnson, 1982; and Wallace, Mills, Orme-Johnson, M.C. Dillbeck, & Jacobe, 1983) have found increases in creativity, functional integration of the brain, and flexibility of the central nervous system among students who took the Students’ TM-Sidhi Course, as compared with other Maharishi University of Management students serving as controls who continued with their practice of the Transcendental Meditation technique by itself over the same
three-month period. These findings illustrate psychological and physiological changes that develop in students through regular practice of the TM-Sidhi program at Maharishi University of Management.

**Research on Maharishi University of Management**

The body of research on the Transcendental Meditation and TM-Sidhi programs represents the kinds of changes that one may expect to occur as a result of adding this technology to a college curriculum. With the establishment of Maharishi University of Management, however, it became possible to study the combined effect of instruction in Maharishi Vedic Science together with its technologies—the Transcendental Meditation and TM-Sidhi programs—thereby supplementing the research on these technologies alone. In addition to practicing the Transcendental Meditation and TM-Sidhi programs, the subjects of these studies (Maharishi University of Management students) were also learning the principles of Vedic Science, which integrate the diverse areas they are studying, and also integrate the content of their studies with their experiences of the development of consciousness.

This section presents the research on Maharishi University of Management’s system of education according to the standard categories of educational measurement (Sax, 1980): achievement and aptitude, intelligence, and values and attitudes. From the design of Maharishi University of Management’s educational system one would predict that students would show improvements along the standard dimensions of educational measurement, together with new dimensions of change not necessarily anticipated in research on other institutions.

**Achievement and aptitude.** Measures of educational achievement and scholastic aptitude are quite similar. By tradition, achievement tests place more emphasis on the specific knowledge acquired during instruction, and aptitude tests emphasize the general knowledge and skills that lead to achievement in one or more fields. In practice, the two dimensions do not represent absolute categories, and a particular test usually displays a mixture of the two.

The Office of Evaluation at Maharishi University of Management has experimented with a number of general education and discipline-based achievement measures, including the College Outcome Mea-
sures Project exam published by the American Colleges Testing (ACT) program, the Undergraduate Placement Field tests published by the Educational Testing Service (ETS), and most recently the Academic Profile test developed by ETS. Of these, the one judged by faculty as most appropriate for the program of instruction at Maharishi University of Management is the Academic Profile.

Maharishi University of Management administered the long (three-hour) version of the Academic Profile to seniors in 1988, the first pilot year of the test (Pilot I), and the short (50-minute) version of the test (Pilot II) during the second pilot year, in the spring of 1989. Both versions cover three content areas (natural sciences, social sciences, and humanities) and four skill areas (writing, reading, critical thinking, and using mathematical data). Results from this test allow Maharishi University of Management to compare the performance of its seniors with those at 31 other liberal arts institutions in 1988 and 23 other schools that administered the short form in 1989.

Of the seniors who took the test at Maharishi University of Management, only 45% in 1988 and 60% in 1989 listed English as their native tongue, while the national average of students in four-year private colleges who are U.S. citizens is 97.9% (from the CIRP data, Astin, Kenneth, Korn, Schalit, & Berz, 1988). In previewing the test, it was suspected that familiarity with English would affect performance, due to the amount of reading required, and later statistical analysis confirmed that native language was moderately (rpb = .28) though significantly (p = .03) correlated with composite score. Consequently, the average scores were calculated for the English language group only, as this group most closely resembled the comparison group provided by ETS. Table 1 summarizes the performance of two groups of Maharishi University of Management seniors on the Academic Profile, showing the percent correct and the percentile rank of the English language groups on each of the seven subscales and the composite scores of the test. These ranks were computed from the aggregated data provided by ETS through a process of linear interpolation and therefore represent best estimates of Maharishi University of Management’s standing among the other colleges in its Carnegie classification who administered the exam.
Table 1. Mean Percent Correct and Percentile Rank of The Native Language Group of Maharishi University of Management Students on the Academic Profile Test

<table>
<thead>
<tr>
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<th>HUM</th>
<th>SOC</th>
<th>NAT</th>
<th>RDG</th>
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<tr>
<td>Pilot 11988 scores N=23 students</td>
<td>67</td>
<td>65</td>
<td>69</td>
<td>68</td>
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<tr>
<td>Est. percentile* N=31 schools</td>
<td>80</td>
<td>87</td>
<td>95</td>
<td>77</td>
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<tr>
<td>Pilot 11989 scores N=33 students</td>
<td>71</td>
<td>69</td>
<td>66</td>
<td>77</td>
</tr>
<tr>
<td>Est. percentile* N=23 schools</td>
<td>96</td>
<td>88</td>
<td>81</td>
<td>84</td>
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<tr>
<th></th>
<th>WTG</th>
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<tr>
<td>Pilot 11988 scores N=23 students</td>
<td>69</td>
<td>63</td>
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<td>Est. percentile* N=31 schools</td>
<td>77</td>
<td>97</td>
<td>94</td>
<td>93</td>
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<tr>
<td>Pilot 11989 scores N=33 students</td>
<td>71</td>
<td>59</td>
<td>68</td>
<td>68</td>
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<tr>
<td>Est. percentile* N=23 schools</td>
<td>96</td>
<td>92</td>
<td>89</td>
<td>91</td>
</tr>
</tbody>
</table>

* Percentiles represent rank of Maharishi University of Management among the group of institutions which administered the Academic Profile that year. They are estimates based on the grouped data provided by ETS.

**Key**

- HUM = Humanities
- SOC = Social Sciences
- NAT = Natural Sciences
- RDG = College Level Reading
- WTG = College Level Writing
- THK = Critical Thinking
- DTA = Using Mathematical Data
- TOT = Composite
This table shows that the relative performance of the two groups on each of the seven scales varies substantially between 1988 and 1989. The 1988 group performed most strongly in critical thinking and the natural science subject field, while the 1989 group performed best in the humanities and writing. Review of the majors represented among the two groups reveals that the differences in performance reflect the relative proportions of humanities and science majors in the two groups. The significant discovery, however, is that the total or composite score each year—the most reliable score statistically—is relatively consistent over the two administrations of the test. Further, the composite score of each group (the Total Score) places the English language group at Maharishi University of Management among the top three or four institutions which gave the test each year.

The gain in achievement of the Maharishi University of Management group, relative to other colleges, is not entirely determinable from these numbers, inasmuch there has been no attempt to control for entry characteristics of students. Nevertheless, within the limits imposed by the availability of data, the level of achievement of the Maharishi University of Management seniors is highly respectable for a university that has a liberal acceptance policy with regard to academic preparation.

One other study in a related area looked at field independence, a psychological trait known to influence academic performance. Previous research has correlated field independence with developmental measures such as Piaget’s formal operations stage (Rubinstein, 1980), Piaget’s and Kohlberg’s moral reasoning stages (Arbuthnot, 1971), fluid intelligence, and various measures of both verbal and performance intelligence (McKenna, 1984). One measure of field independence is the embedded figures test (Witkin, Oltman, Raskin, & Karp, 1971). The embedded figures test is not a pure measure of field independence (Arbuthnot, 1972), but detects the ability to de-embed a geometric figure from a complex surrounding and hence to maintain a stable internal reference frame amidst background distractions. It likely involves elements of perception and working memory as well as cognitive style, and performance on the test does not typically improve significantly after ages 15 to 17 (Witkin, Goodenough, & Karp, 1967).
In a longitudinal study by M.C. Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe (1986), field independence as measured by the group-administered embedded figures test increased among Maharishi University of Management students over four years. Fifty undergraduates in the class of 1984 were measured at the beginning and end of their college career. At entry, students were significantly above the mean for the norm reference group (with an average score of 13.5 out of 18), and over four years they increased to a group average of 15.2 (F = 10.40, p = .005).

To summarize this area of research, students at Maharishi University of Management appear to be developing a stable cognitive style—a more efficient style of learning—at the same time that they are acquiring a high level of proficiency with the knowledge and skills of a general education. This finding supports a major objective of Maharishi University of Management and Vedic Science-based education, which is to develop the intellectual resources of students at the same time that they are acquiring the knowledge and skills requisite for an educated person.

**Intelligence.** The study of intelligence through psychological tests is a complex process. No test may be said to directly measure intelligence; rather performance on any one test can be partially explained by a general factor that correlates highly with all mental tests and a number of specific factors relevant only to the one test. The general factor has been called “g” for “general intelligence,” also called fluid intelligence. The specific factors have been called the “s” factors (Sax, 1980). An example of the generality of the “g” factor can be seen in a study sponsored by the Washington State Board of Higher Education. This study found that the Academic Profile, together with a similar general education test prepared by the College Board, involved one factor, called by the researchers verbal and quantitative ability, which accounted for 60% of the variance on those tests (Council of Presidents and State Board for Community College Education, 1989). This finding accentuates the importance of general or fluid intelligence in college achievement. Of five studies on Maharishi University of Management students that measured intellectual ability, four have focused on general or fluid intelligence, per se. We include, in addition, a study on moral reason-
ing which, though not traditionally viewed as a measure of intelligence, we associate with abstract reasoning in the broad practical sense.

With respect to fluid intelligence, M.C. Dillbeck et al. (1986), Cranson, Orme-Johnson, et al. (1991), and the author, Jones (1989b) have replicated an initial pilot study by Aron, Orme-Johnson, & Brubaker (1981) on the effects of Vedic Science-based education on intelligence. The common measure in these studies was the Cattell Culture Fair Intelligence Test. On this test the examinee chooses from among several options a simple geometric shape or design that either completes a progression of such shapes, completes a pattern, does not belong to a set of similar shapes, or shares a common feature with other shapes. As a group-administered, nonverbal measure of general intelligence, it is particularly suited to evaluation research with populations that have a high proportion of non-native speakers, as Maharishi University of Management has. Previous research (Barton, 1973) has indicated that performance on this test, as with most intelligence tests (Sax, 1980), does not increase significantly after ages 15 to 17; indeed, the study by Cranson et al. included a control group of college students from another university that did not improve significantly between the time of their enrollment in college and the middle of their junior year.

With Maharishi University of Management students, Aron and M.C. Dillbeck found increases equivalent to nine standard IQ points in four years (Dillbeck, F(1,28) = 16.88, p < .001). Cranson et al. found in two-and-a-half years a growth of five points (t = 2.79, p < .005). Most recently, in an unpublished study, the author found an increase of seven points over the first nine months of the first year (F(1,43) = 11.09, p < .002).

To test the generalizability of the results, Cranson et al. employed another measure of intelligence in addition to the Cattell test, the Hick’s measure of choice reaction time. Choice reaction time was chosen particularly because it has been shown to be strongly associated with the “g” factor (Jensen, 1978). With three parameters on this test (two separate tasks and the standard deviation of reaction time for each individual), Cranson found significant improvements among the experimental group and not the controls over the first two-and-a-half years of undergraduate study (the multivariate F including the Cattell test = 31.20 (4,53), p < .000005).
Taken as a whole these studies of intelligence present a remarkably strong case in support of the thesis that Vedic Science-based education improves one of the fundamental abilities underlying academic performance. We are not aware of any other research indicating improvement in general intelligence resulting from traditional higher education, and therefore this research in itself offers new possibilities for improving students’ fundamental abilities, one aspect of the substance issue facing post-secondary educational institutions.

One other finding from a different area of research—moral studies—reflects the influence of Maharishi University of Management’s educational system on abstract reasoning ability. Nidich has conducted several studies of moral reasoning as defined by Lawrence Kohlberg (Nidich, 1975; Nidich, Ryncarz, et al., 1983; Nidich & Nidich, 1989). In the initial studies with college students at a public university he found longitudinal improvement in the level of moral reasoning as a result of starting the practice of the Maharishi Transcendental Meditation technique.

In later cross-sectional studies (Nidich, Ryncarz et al., 1983) with Maharishi University of Management students, using the Rest Defining Issues Test, Nidich found levels of principled moral reasoning which were higher than control subjects from another small private college with similar admissions policies. Nidich also compared controls with a group who planned to start the Transcendental Meditation technique (pre-Transcendental Meditation group) and with a group that was practicing the TM-Sidhi program. There were no significant differences between the pre-Transcendental Meditation and the controls. The TM-Sidhi group scored significantly above those who had only learned the Maharishi Transcendental Meditation technique. Both SAT scores and average GPA, known from previous research to affect levels of principled moral reasoning on this measure, were not different among the four groups. In other research Nidich (1977) found that students at Maharishi University of Management, compared to controls, displayed significantly higher levels of moral reasoning on Kohlberg’s Moral Atmosphere Interview.

We will come back shortly to moral reasoning when we discuss consciousness as a whole, but we should note here that moral reasoning, like intelligence, requires discrimination. In this sense Nidich’s
research supports the idea that Maharishi Vedic Science-based education significantly improves abstract reasoning ability.

Values and attitudes. The study of values and attitudes is largely the analysis of that which is held as important to an individual and therefore motivates behavior. Over an extended time, the combination of interests and habits may be viewed in educational measurement as the structure of the individual personality.

A study that focused exclusively on values of Maharishi University of Management students was conducted by Gelderloos (1987). He used an in-depth measure of values containing both cognitive and affective dimensions, based on a structured interview after Hermans (1976). He interviewed 15 students from Maharishi University of Management and compared them with 15 undergraduates from a nearby university in a nine-month cross-sectional and longitudinal study. To control for possible interviewer bias, nonmeditating interviewers and raters were employed, and double-blind procedures were used in the evaluation process. In addition, subjects and interviewers were not informed of the purpose of the study until after the posttest.

At pretest Maharishi University of Management students, compared with controls, scored significantly higher on all five cognitive value dimensions of psychological health: unifying ability, autonomy, intrinsic spirituality, creativity, and directedness. They began higher also on the two affective dimensions, well-being and integration. Over the nine-month experimental period the Maharishi University of Management students grew more than the controls in five of the seven value areas: autonomy, spirituality, creativity, well-being, and integration.

This study constitutes an important addition to the prior existing body of research because it employed research methods (rated interviews) which are sensitive to the more global, subjective educational outcomes. While these outcomes are an explicit aim of Maharishi Vedic Science-based education, they are also central to all of liberal education. Gelderloos notes this when he concludes, “This [research] suggests that there is no reason for education today not to achieve its original goal of developing holistic, well-integrated individuals as well as providing professional training” (1987, p. 486).
The other major study of values and attitudes among Maharishi University of Management students is found in the alumni survey data collected by the University’s Office of Evaluation. This research focuses directly on student satisfaction with the University.

**The 1987 Alumni Survey.** Another source of data on the effectiveness of educational institutions, as Pace has shown, is surveys of graduates. Findings from this research are especially important because they represent the most direct measure available of long-term satisfaction among those individuals whom the institution is designed to serve, its students. Furthermore, because satisfaction—or fulfillment—is one of the central goals of education according to Maharishi Vedic Science, the level of students’ satisfaction with their lives is an important indicator of a Vedic Science-based university’s success.

Four surveys (1979, 1981, 1984, 1987) have been conducted in the past using the questionnaire of the American College Testing (ACT) Program. Responses to this questionnaire allow Maharishi University of Management to compare its alumni with those of approximately 90 other institutions that have used the survey between 1983 and 1986 (38,000 entries total). The findings from these surveys have been consistent over the separate administrations at Maharishi University of Management. Yet because previous surveys combined graduates and undergraduates, we use only the figures from the most recent survey to obtain a purer measure of the effectiveness of the College of Arts and Sciences.

Two mailings of the ACT survey were sent to 500 Maharishi University of Management undergraduate alumni between November 1987 and February 1988. Of these, 268 (49%) surveys were returned and subsequently scored by the ACT Evaluation/Survey Service. The respondents were well distributed among the 12 years of Maharishi University of Management’s graduating classes (1976 through 1987). For the Maharishi University of Management group the mean number of years since graduation was 4.5, compared with a mean for the ACT reference group of well over 10 years.

One striking finding in this administration, as well as previous administrations, of the survey is the high level of motivation for higher learning found among Maharishi University of Management graduates when compared with the national reference group. Summing the
total percentages over all advanced degrees, the Maharishi University of Management group compared with the reference group shows 10% more alumni intending to pursue graduate degrees after their B.A. or B.S. As we can see from Table 2, the greatest distinction is found in aspirations for the Ph.D. degree. Here there is more than a 20 percentage point spread between the Maharishi University of Management group and the national reference group. Maharishi University of Management students’ level of aspiration for higher degrees indicates the high value they place on knowledge for personal and professional development—on the ability of knowledge to inspire and transform their lives.

Table 2. Degree Aspirations of Alumni

<table>
<thead>
<tr>
<th>Highest Degree Planned</th>
<th>Maharishi University of Management</th>
<th>National Reference Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>31.5%</td>
<td>44.8%</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>41.6%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Professional</td>
<td>8.7%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Totals</td>
<td>81.85%</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

The other finding that is consistent among the several administrations of this questionnaire is that, compared with the national reference group, Maharishi University of Management graduates rate very highly the contribution Maharishi University of Management has made to their lives. When asked, “Regardless of financial benefits, has college improved the quality of your life?” 91% of Maharishi University of Management alumni responded “definitely yes,” compared with 69.8% of the national reference group. Similarly, the number of Maharishi University of Management alumni who said that the University prepared them “exceptionally well” for their continuing education is 25 percentage points higher than the national reference group.

On another dimension of success after graduation, Maharishi University of Management alumni indicate a high degree of satisfaction with the University in the preparation it provided them for their careers. When asked how well their college prepared them for their current occupation, 89% of Maharishi University of Management alumni
reported they were adequately prepared, compared with the national reference group’s 81%. Most notable, however, is the percentage who felt their college prepared them “very well” for their current occupation. Among Maharishi University of Management alumni, 63% responded “very well,” compared with a national figure of 32.4% (the choices were “very well,” “adequately,” “poorly,” or “not at all”).

The last finding from the alumni survey relevant to this discussion was that Maharishi University of Management alumni overall have a very high level of satisfaction with their alma mater. When asked whether they would choose the college again, 79.8% said “definitely yes,” compared with 29.8% in the national reference group (the choices were “definitely yes,” “probably yes,” “uncertain,” “probably no,” and “definitely no”). Of transfer students asked how they would compare the quality of the education at this college with that of other colleges, 83.6% of Maharishi University of Management alumni responded “better,” compared with 35.3% in the national reference group, and 46.0% in the subgroup composed of private colleges only. When questioned more closely on the degree to which their college contributed to 24 different aspects of personal and professional growth, Maharishi University of Management students were above the reference group on 23 of the 24, with an average difference of 26.5 percentage points. The two aspects where Maharishi University of Management alumni felt their college experience contributed most to their development were “caring for your own physical and mental health,” and “understanding the interaction of man and his environment.”

It seems clear from the data gathered on surveyed alumni that the level of satisfaction students express with their education at Maharishi

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2 The subjects mentioned many of the distinctive elements of Vedic Science-based education, including the practical technologies for the development of consciousness from Vedic Science; the integrated view of knowledge provided by the Science of Creative Intelligence; the emphasis which all students, faculty, and staff place on personal development; and the high quality of friendships and human interactions among the staff, faculty, and students. No one of these elements, however, emerged as primary. As Gelderloos reports, “On the basis of the reports of the students, it seems likely that no one individual element is responsible for personal growth. It seems rather to be the outcome of all the various elements together: the practice of the Transcendental Meditation and TM-Sidhi programs, the presentation of the knowledge in a holistic and integrated way relevant to the life of the student, the atmosphere of mutual support and understanding, and the encouragement of development by fellow students and teachers.”
University of Management greatly exceeds the level found in college alumni generally. Even more important is their high level of motivation for higher degrees and their overall satisfaction with the contribution college has made to the quality of their life. The former indicates approval for Maharishi University of Management as an individual institution. The latter findings demonstrate the effectiveness of the Vedic Science-based system of education implemented at Maharishi University of Management, a system which can be incorporated into any university.

**Research that Expands the Scope of Higher Education Assessment**

Several areas of research on the impact of Maharishi Vedic Science-based education go beyond the usual paradigm of educational evaluation. Specifically, three areas that Maharishi University of Management has pioneered are the impact of college on (a) consciousness as a whole, (b) physiology and health, and (c) societal trends.

**The effect of Vedic Science-based education on consciousness as a whole.** Educational reformers, from Plato onwards, have emphasized development of “the whole person,” but little attention has gone to measuring such an abstract entity. Even Winter, McClelland, and Stewart (1982) in their study of liberal education settled for outcome measures such as dealing flexibly and consistently with rational argument, and showing less egotism and more maturity in one’s response to authority figures. In contrast, several researchers on Maharishi Vedic Science-based education have concentrated their efforts on understanding the development of consciousness as a whole, based on the understanding that body, mind, and environment all have a common origin in pure consciousness.

The research cited above on intelligence at Maharishi University of Management is relevant to the assessment of the development of consciousness because intelligence is a very general measure of intellectual functioning, predicting 35 to 50% of the variance in academic or occupational performance (Sax, 1980). Nevertheless, it is still far from a measure of consciousness as a whole. The research on electroencephalographic (EEG) change with the Transcendental Meditation and TM-Sidhi programs, showing intra- and inter-hemispheric coherence, is another broad measure of mental functioning which offers
more promise as a measure of the degree of communication or shared information in the brain (Haynes, Hébert, Reber, & Orme-Johnson, 1977). A review of a number of studies has shown that EEG coherence is correlated with a broad variety of performance tasks, including creativity, the paired Hoffman reflex, grade point average, IQ, moral reasoning, and concept learning (Alexander, Boyer, & Alexander, 1987). EEG coherence thus may be the most successful physiological measure to date of the development of consciousness as a whole.

In contrast to these objective, though indirect, means of measuring the overall development of consciousness, Alexander (1982) and Alexander et al. (1987) have developed a measure based on the subjective descriptions of states of consciousness in Maharishi Vedic Science. This measure uses statements in simple, direct language, which the subject has to rate as descriptive or not descriptive of his or her experience. Many of the descriptions correspond to predicted experiences in the development of higher states of consciousness as set forth in Maharishi Vedic Science. Research with adults using this “States of Consciousness Inventory” represents a potentially fruitful approach to the assessment of the growth of consciousness students undergo at Vedic Science-based institutions.

The only study to date (Cranson, Orme-Johnson, et al., 1991) using this method on Vedic Science-based education included an elaborated version of a descriptor from Alexander’s earlier questionnaire which asked for subjects’ experience of inner wakefulness during sleep. Inner awareness during sleep, called “witnessing sleep” (Maharishi Mahesh Yogi, 1969), is, according to Maharishi Vedic Science, one of the most reliable signs of the growth of higher states of consciousness that develop spontaneously through the regular practice of the Maharishi Transcendental Meditation technique. Specifically witnessing sleep signifies the dawning of Cosmic Consciousness, the first stable higher state of consciousness (after sleeping, dreaming, waking, and Transcendental Consciousness). Cranson found that Maharishi University of Management students ranked above controls from another university on the reported frequency of witnessing during sleep, with a mean score of 3.2 on a scale of 11; and they made significant progress in a two-and-a-half-year interval to a score of 3.8. Two more studies with Maharishi University of Management students are in progress using this same questionnaire.
The effect of Vedic Science-based education on physiology and health. In an age as conscious as ours of stress and its effects on the body, few doubt anymore the importance of a sound and relatively stress-free physiology to effective mental performance. Yet no college assessment programs, to our knowledge, have looked at the effect of college on health and physiological functioning.3

As discussed above, research on Maharishi Transcendental Meditation and TM-Sidhi programs with adults and college students has demonstrated the physiological benefits of this educational technology. Studies specifically on the Maharishi Students’ TM-Sidhi Course by Wallace et al. (1983) found improvements in the overall tone of the nervous system as measured by the paired Hoffman reflex recovery. Similarly, Orme-Johnson (1982) developed a model of the functional integration of the brain using levels of inter-hemispheric and intra-hemispheric coherence of the brain waves. Compared with meditating controls who did not take the TM-Sidhi course, he found, among those who completed the course, increases in coherence at the alpha and theta frequencies from all pairs of electrodes.

Current research on the effects of Maharishi Vedic Science-based education at Maharishi University of Management is using brain wave evoked potentials as a measure of nervous system functioning, and includes a health questionnaire to directly measure the impact of the institution on students’ health.

The effect of Vedic Science-based education on the environment. All students, faculty, and staff of Maharishi University of Management

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3 Thanks to a recent publication of the Assessment Forum of the American Association of Higher Education, it is possible to gain a perspective on the entire range of assessment currently underway in higher education institutions. Of the 28 undergraduate institutions whose assessment programs are summarized in this brochure, 14 use some measure of achievement, and 14 (some of the same ones) use a measure of academic skills (usually the College Outcomes Measures Project of the American College Testing program or the newly launched Academic Profile offered by the Educational Testing Service). Only three are looking at changes in personality, with an additional two that were interested in learning styles. Eight employed some surveys of students values or interests, usually that of the UCLA-based Cooperative Institutional Research Program, and not usually for the purpose of longitudinal comparisons. Only one university reported measuring basic abilities or traits such as creativity or intelligence. In this case it was moral development. Therefore, one can fairly say that there are still few efforts to measure changes in basic ability, and none reportedly including physiological maturation.
gather together twice daily to practice the Maharishi Transcendental Meditation and TM-Sidhi programs. The research described above has measured the influence of these programs on the mind and body of the individual; yet the effects of the technologies of Maharishi Vedic Science are not limited to the individual. A large, rapidly expanding body of research demonstrates that these programs have a measurable, positive effect on the environment as well.

Though the mechanism responsible for these environmental effects has only recently been explored in terms of modern science, the mechanism has long been a central theme of Maharishi Vedic Science. As explained above, according to Maharishi Vedic Science, the basis of individual consciousness is the same as the basis of the physical and social environment. Thus, when the individual contacts the pure intelligence at the basis of his own thought and action through the subjective aspects of Vedic Science, he simultaneously enlivens the field underlying the total environment. Included in the environment is the “collective consciousness” of society, which Maharishi defines as a wholeness that is more than the sum of the influences of each individual consciousness in the social group. According to Maharishi Vedic Science the unified field at the basis of collective consciousness is by nature orderly and evolutionary, and thus when enlivened by individual consciousness these qualities are strengthened in the society as a whole.

The practical relevance of this theory for education is that when students are brought together in a Vedic Science-based educational institution, they make a direct contribution to the overall quality of life in the whole society just by practicing the Transcendental Meditation program. Research has shown (Borland & Landrith, 1977) that the number necessary to have a significant influence is only one percent of the population affected.

The TM-Sidhi program has an even more pronounced environmental impact than the Transcendental Meditation program, and this impact can be strengthened further by practicing the program in a group. Based on physical models from macroscopic quantum phenomena, the formula used to predict the extent of the environmental effect for the group practice of the TM-Sidhi program is the square root of one percent (1%) of a population. Therefore, Maharishi University of Management has set as a goal for itself to have enough people collec-
tively practicing the Transcendental Meditation and TM-Sidhi programs each morning and afternoon to increase coherence in collective consciousness and thereby improve the quality of life in all of North America. This number is currently 1600, or approximately the square root of 1% of the population of the U.S. and Canada (“The Sociology of World Peace,” 1979).

In an article on the application of Maharishi Vedic Science and its technologies to the creation of world peace, Orme-Johnson and Dillbeck (1987) review over 25 studies on the effect of the individual and group practice of the Transcendental Meditation and TM-Sidhi programs on social indicators. This effect, known as the “Maharishi Effect,” has been found in a variety of indicators of social health. The most dramatic evidence of the Maharishi Effect has been in the reduction of violence in international trouble spots. For example, a recent analysis of the influence of a group practicing the Transcendental Meditation and TM-Sidhi programs in Jerusalem during the Lebanon war found that on days of high attendance in the group assembly, war deaths in Lebanon dropped an average of 76% (Davies, Alexander et al., 2005).

On the whole, however, the majority of the studies on the environmental impact of the Transcendental Meditation and TM-Sidhi programs have been done on the quality of life in peacetime. Among these, five have been conducted using primarily the students, staff, and faculty of Maharishi University of Management. These have shown that the Maharishi University of Management group program has had a positive influence on the overall quality of life in the United States from 1960 to 1984 (Orme-Johnson, Gelderloos, & Dillbeck, 1988); on the monthly U.S. and Canadian inflation and unemployment rates—"the misery index" (Cavanaugh, 1987); on notifiable diseases and traffic fatalities in the United States (M.C. Dillbeck, Larimore, & Wallace, 1988); and on the violence index in the U.S. as a whole. Similar research on the group of students, faculty, and staff at Maharishi University of Management’s branch in Washington, D.C., demonstrated the same influence on an urban population. Lanford (1989) found that on days when the number of participants in the group program at the campus exceeded a predicted threshold of 400 there was a significant reduction in daily violent and property crimes in the District. In a related study from August 1980, to November 1983, Dixon (1990) found that homi-
cides in the capital decreased by 22% ($p < .02$) during weeks when the group size was 400 or greater.

These studies of the impact of the group practice of the Maharishi Transcendental Meditation and Transcendental Meditation-Sidhi programs at Maharishi University of Management on the quality of life in the nation, taken together with the more than 20 other studies in the Orme-Johnson and Dillbeck review, provide extensive scientific evidence for the positive benefit of a Vedic Science-based institution to its environment. They present an opportunity, previously unavailable to educational institutions, to make a direct and immediate contribution to the peace, harmony, and well-being of their society as a whole.

These three extensions of traditional college assessment complete our review of the research on Maharishi University of Management. It is clear that Vedic Science-based education at the post-secondary level has a very broad effect, and that the effect is at a deep level of the personality. How do we make sense of these outcomes? And what are the implications of this research for addressing the problem of substance in higher education? We will remember that substance, as defined here, involves both the knowledge that is offered and the abilities that proceed from that knowledge. The next section summarizes the research on Maharishi Vedic Science-based education and relates it to the knowledge offered by an institution.

IV. A Comprehensive Model of Change in Maharishi Vedic Science-Based Education

Research on college impact is a relatively young field, first summarized by Feldman and Newcomb in their 1973 compendium. Similarly, research on Vedic Science-based education is only as old as Maharishi University of Management, founded in 1971. The findings reviewed in this article, therefore, represent only the beginnings of research in this field. In order to achieve a more comprehensive understanding of the impact of Maharishi Vedic Science-based education, this section looks more deeply at the hypothesized mechanism by which Maharishi Vedic Science-based education transforms the lives of students in the four years or so that they spend in it. Here we integrate the empirical research presented above with theory from education and from Vedic Science, as well as interviews with Maharishi University of Management students.
The Nature of Change in Maharishi Vedic Science-Based Education

To understand change during college, one must integrate the objective findings of the research with the subjective experience of students pursuing their degrees. In order to gain insight into students’ perspectives, the author conducted 23 interviews of first-, second-, and fourth-year students. We begin, however, with an overview of the objective results.

The empirical research covered in Part III of this article is available in summary form in Appendix A, according to the major areas of environment, body, mind, and consciousness as a whole, and in Appendix B according to the goals of Maharishi University of Management. By “consciousness as a whole” here we refer to individual consciousness as a whole, an area addressed directly in the evaluation research by Alexander et al. (1987) and Cranson, Orme-Johnson, et al. (1991). The research as a whole may be further condensed according to the dependent variable and the direction of change of each, as shown in Table 3 on the following page.

From this overview one can make several generalizations about the impact of Vedic Science-based education:

1. The change resulting from Maharishi Vedic Science-Based education is comprehensive, with a range from Self to society—intellect, emotions, and physiology are cultured simultaneously;

2. The change is uniformly positive in direction;

3. From several measures such as EEG coherence, moral reasoning, intelligence, value structure, and alertness, one sees that individual life is being influenced from a deep, integrating level—a level not usually affected by the modern science-based approach of contemporary education;

4. From the results on the Academic Profile one can conclude that students receive a quality education in the traditional skill and content areas at the same time that their development is accelerated;

5. The observed changes in students’ learning and development do not reflect selective admissions practices and therefore are relevant to the vast majority of higher education institutions.
### Table 3
**Summary of Research on Maharishi University of Management**

| Environment | Increase in the composite index of quality of life for the United States  
Decreases in the monthly “misery index” (a composite measure including the inflation and unemployment rates) for the United States and Canada  
Decreases in motor vehicle fatalities  
Decreases in the weekly index of fatalities due to violence  
Decreases in violent and property crimes in the District of Columbia |
|---|---|
| Body | Increased flexibility of the nervous system*  
Increased functional integration of the brain (seen in EEG coherence)* |
| Mind | Increased field independence  
Increased creativity*  
Increased fluid intelligence  
Higher levels of moral reasoning**  
Increased psychological health and well-being as reflected in value structure (including increased autonomy, spirituality, creativity, well-being, and integration) |
| Consciousness as a whole | Increased levels of alertness as measured in self-report of “witnessing sleep” |

* Studies of the Maharishi TM-Sidhi program, an aspect of the Maharishi University of Management curriculum  
** Cross-sectional studies

The interviews with Maharishi University of Management students both support and explain these generalizations that emerge from a consideration of the objective research. When students were asked what had changed the most, they mentioned outcomes that reflected many of the traditional goals of a college education such as gaining the tools necessary for the pursuit of a profession or learning to apply knowledge.
to practical situations. They also mentioned changes resulting from specific emphases of the Maharishi University of Management curriculum—for example, improved public speaking ability or improved ability to work in groups—and many of them mentioned gains in general knowledge.

The interviewed students were very articulate, however, in identifying changes, some quite subtle, that most educators would recognize as important goals of higher education, but of which students are not usually conscious. Several of the students, for example, mentioned changes in their manner of thinking. The following statement from a fourth-year student from Kenya is one example:

My thinking has changed now. Actually, I think in terms of all possibilities, not in terms of limitations and bounded possibilities; something which would have taken me a long time to come to where I am, if I had not come to Maharishi University of Management. Some people in thinking about the resources—for example, the limitations of oil—become very depressed. Now I feel that whatever the mind can perceive, it can achieve. Everything is a matter of thinking. My thinking has changed a lot. (Qualitative Research data of the Author, 1987)

The same student noted also that his awareness had broadened, that he was able to keep in mind a broader range of possibilities when planning any action.

Another student, an American student in her second year, expressed a general change in the sharpness and clarity of her thinking that was mentioned by many of the students interviewed: “My intellect,” she said, “has become a lot sharper; my thought processes are clearer and it doesn’t take me as long to get an answer—things come to my head faster.”

Finally, with respect to general changes in thinking, one student expressed clearly a change in his consciousness as a whole, which is characteristic of the development of higher states of consciousness and which helps explain the results that Cranson, Orme-Johnson, et al. (1991) found in his study of witnessing sleep. In this development, the mind becomes so familiar with and well established in the Saṁhitā value of pure consciousness, the ground state of human awareness, the total potential of natural law, that it is able to maintain this perfectly silent, self-referral state of consciousness throughout the waking, dreaming, and sleep states of consciousness. As a result the individual
becomes balanced, clear, and perceptive; able to maintain unboundedness along with boundaries; and able to act spontaneously in accord with the progressive values of natural law. The following comment of one student expresses what several mentioned to us:

I feel very much stronger within myself. I feel basic joy and happiness, comfortable in diverse situations, being able to give more and need less from my environment. The biggest factor in my changing attitudes seems to be my deepening [Transcendental Meditation and TM-Sidhi] program experience. This supplies a value of witnessing experience, which is the foundation for successful day-to-day activity. (Qualitative Research data of the Author, 1987)

Apart from changes in style of thinking, students also mention what could be considered even more subtle changes in personality resulting from Maharishi University of Management’s educational system. They mention greater interest in acquiring knowledge; this helps explain the differences found between alumni from Maharishi University of Management and those from other colleges in their interest in advanced graduate study. They say that they have become more comfortable with knowledge and that they feel closer to it.

Because the relationship between the individual and the knowledge an institution has to offer is an important theme of this paper, it is useful to quote one student who gave his experience with this aspect of change. This young man, an American student, was interviewed in his second year:

I noticed a change on a subtler level in how I related to knowledge. At Maharishi University of Management when I sit down to a test I feel the relationship between me and the knowledge is close. When I walked into a test in my previous college, in the exact same course, it was far removed. There was a cloud between me and the knowledge. With the same kind of test here I was very comfortable. I was able to see the reflection in myself of the knowledge. It made the exam much easier for me. (Qualitative Research data of the Author, 1987)

Finally, many students mentioned greater happiness as the single most important change they had noticed resulting from their education at Maharishi University of Management. This description by one young man from Japan is typical of many:
My friends told me that when I first came here I was very quiet and unsocial. However, they said that my face became brighter and brighter as the days went by. They are so impressed at how much I have grown in one year. (Qualitative Research data of the Author, 1987)

Among all the changes that students mention, the most significant for understanding the effects of Maharishi Vedic Science-based education are those which show not a directional shift in personality, but an overall balancing, an integration of personality. This integration is often expressed as a gain in an area that the student previously felt was deficient. Several brought out entirely in their own words the increasing integration that they felt occurring. Said one second-year student, “There is a great integration between heart and mind. I have found balance between heart and mind to be the key to success in action.”

From our research and interviews with Maharishi University of Management students, this integration or balance of heart and mind, mind and body, inner and outer realities, appears to be the most pervasive and yet subtle outcome of Maharishi Vedic Science-based education.

What Causes Change?
Empirical research on the relative contributions that various aspects of Maharishi Vedic Science-based education make to an individual’s development is relatively new. The studies we have reviewed used as an independent variable either the institution as a whole, the TM-Sidhi program, or the numbers practicing their meditation program in a group. Therefore, the isolated contributions of the knowledge, the experience, the teaching techniques, or the environment have not been assessed empirically. We have tried in interviews, however, to sort out the various factors influencing change. In this section we present the insights generated by these interviews.

When students were asked specifically what has brought about the changes they had experienced, they mentioned many of the dimensions of college life that are considered conditions for impact at any university: caring professors, relationships with their fellow students, and specific courses or programs. From these comments many of the factors for impact described by Chickering, Astin, and Winter et al. could explain the effectiveness of Maharishi University of Management. The University is a manageable size, has clear and consistent goal
CONSCIOUSNESS-BASED EDUCATION

statements, and faculty who are committed to a clear set of values of their own. In addition, Maharishi University of Management provides students with many opportunities to integrate the vast amounts of new knowledge which college inevitably showers on them and gives them a sense of being special because they are part of a university with a clearly articulated mission for the improvement of society.

Other comments which students make, however, go beyond the traditional conditions for impact. For example, some students mentioned the high level of friendliness that develops among members of the Maharishi University of Management community. Students who have attended other institutions consistently cite the level of openness, tolerance, and support among students and between students and faculty as one of the most distinctive features of Maharishi University of Management.

Another unique condition for impact brought out by students is the teaching techniques unique to Vedic Science-based education. As mentioned above, all subjects are taught using Unified Field Charts, Main Point Charts, and Unity Charts. One young woman explained that in her previous university it was often difficult to “gauge” a lecture. Without a detailed syllabus it was easy for the professor to “get off on a tangent.” At Maharishi University of Management, she noted, particularly in the disciplines with which she had less familiarity, the Main Point Charts and the Unified Field Charts helped provide a coherent and unified picture of the subject matter. “You can see visually what is going on,” she said, “as well as hear. It helped me integrate a lot of things that came only with difficulty before.”

The third source of change unique to Maharishi Vedic Science-based education are the Maharishi Transcendental Meditation and TM-Sidhi programs. Many students mentioned these programs of Vedic Science as the most influential source of change for them. Said one student from Malaysia,

Looking back, it is quite hard to imagine how a person like me could flourish so much in such a short period of time. If I had to single out an element that is responsible for it, I keep coming back to Maharishi’s technologies of consciousness. (Qualitative Research data of the Author, 1987)

Another student, one already quoted above as experiencing increasing “witnessing value” due to his practice of the Transcendental Medi-
tation and TM-Sidhi programs, attributed his increasing integration of heart and mind to the deeper, more integrative levels of the mind that he experienced during these programs.

**Maharishi Vedic Science as a source of change.** The final discovery in analyzing with these students the sources of change at Maharishi University of Management was one which we take to be the organizing principle for understanding Maharishi University of Management’s unique effectiveness. One student, when questioned about the elements of a college education—the teachers, other students, the curriculum, and the physical facilities—stopped the line of questioning for a moment. The greatest influence, he said was “the knowledge of Maharishi Vedic Science.”

In exploring his answer, it became clear that he did not refer solely to his experiences of growth of consciousness during the group practice of the Maharishi Transcendental Meditation and TM-Sidhi programs, or to the knowledge in texts alone. He was not thinking primarily of the theoretical or applied knowledge of Vedic Science he had gained through lectures and class discussions, or even of the practical principles about the development of consciousness that he had gained through discussions outside of class with friends and faculty. In probing further, he seemed to be referring to something larger that encompassed all of these. He was referring to an integration of theoretical and practical knowledge, an integration of understanding with experience of the deepest levels of consciousness.

Other students were less direct in expressing this same idea. One young woman, quoted above in reference to the integrating of heart and mind, had difficulty locating the source of change in her life. “It’s so subtle,” she said, “I can’t put my finger on it. It’s something to do with my schooling, with the environment [structured at Maharishi University of Management]. It’s many different variables.” She also was searching for a term that could encompass more than her experience or her intellectual understanding. This something we feel is the unique integration of knowledge available in Maharishi Vedic Science, the science of the Saṁhitā value of consciousness where theory and practice come together as one expression of knowledge, where the knower is the known.
Thus, even though it seems almost tautological on the surface, what we have come to in our analysis of the research, the survey findings, and the interviews we have conducted, is that the most significant factor in any system of education is the knowledge that it offers—but knowledge in the deepest sense, knowledge that is structured in one’s physiology. Hence in Vedic Science-based education, the most significant change agent for students’ lives is Maharishi Vedic Science—not the intellectual descriptions alone, nor the experience alone, but the organized experience, the directly experienced understanding of the most fundamental level of reality at which the knower is the known. This understanding and experience represent knowledge in its purest and most powerful form (cf. Maharishi Mahesh Yogi, 1969, p. 312 on “knowingness”).

This discovery helps explain the difficulty faced by most higher education institutions today. For here, too, knowledge in this deeper sense of lived knowledge is the most powerful agent for change, but the knowledge which is lived by the students is at a level which lacks the unifying and integrating qualities of pure consciousness, the Saṁhitā value of consciousness. Thus, instruction in physics lacks the experience of that most orderly and energetic level of consciousness, which is the home of all the laws of nature, the unified field. Instruction in mathematics lacks the experience of the field of all possibilities, which is the universe of sets, the foundation of mathematical theory. Instruction in physiology lacks the experience of the self-interacting dynamics of consciousness, which is the basis of the functioning of DNA, the totality of information at the basis of physiology. In every field, lack of the experience of the basis of human consciousness deprives the discipline of the knowledge of its deepest, most fully unified, most fully integrated level. The effect of this knowledge on the life of the student, therefore, is substantially less than an education that provides this experience.

This significance of knowledge for college impact has been expressed in graphic form in a model of college impact presented in Figure 2 on the following page. The model shows the relation between the various factors that interact to generate “the college experience” and which lead ultimately to the outcomes of college. Thus it is an “Outcome Model for Higher Education.” It provides a synoptic view of the major factors, which determine the effectiveness of a higher education institution or system and lead to the outcomes of that system.
Because the process variables—those variables, which together compose the educational program—stand in an immediate relation to time, they are the ones which, as the graphic indicates, are connected to the knowledge and experience of college. By knowledge here we refer not only to the disciplinary knowledge which most professors consider their primary responsibility, but also to the more practical knowledge of life conveyed explicitly in class discussion, and implicitly in the conduct of the faculty.

In the standard model of college outcomes, the model would stop at this level of knowledge, explicit and tacit, that drives college life. Knowledge in a Vedic Science-based institution, however, is integrated and unified by the experience and understanding of a single source for all of the methods and findings of the disciplines—the Samhitā of knower, known, and process of knowing. The components of Maharishi Vedic Science-based integrated system of education described above—the technologies of Maharishi Vedic Science, the knowledge of Vedic Science, and the Science of Creative Intelligence-based teaching techniques—all contribute to this integration and unification of knowledge.

Any or all of these components of Vedic Science-based education can be—and have been—easily incorporated into any educational system. At Maharishi University of Management they are all employed systematically for the maximum growth of the students.

S.L. Dillbeck and M.C. Dillbeck have shown in some detail (1987) how these components are used in Vedic Science-based education and have given a full rationale for each. For our purpose it is necessary only to emphasize that these components are derived from the knowledge and experience of Maharishi Vedic Science and that they serve as the means by which teaching faculty connect the knowledge of the discipline to Vedic Science.

This outcome model presents at a glance the logical relationships among the many factors contributing to the impact of a college. It includes those factors found in institutions based on Maharishi Vedic Science, but is not meant to be limited to such institutions. It presents in graphic form two of the major conclusions of this paper, (1) that the knowledge offered by an institution is the most fundamental level causing change among students, and (2) that the most significant outcome
Figure 2. This model depicts the projected relationship between the input, process, and outcome variables in higher education. The grey highlighted boxes are added to the traditional model to explain the contribution of Maharishi Vedic Science-based education. Key to this model are the proposed foundational role which knowledge in general and Vedic Science especially plays in education and the holistic goals of balance, integration, and wholeness which should result from the educational process and which develop reliably and rapidly through the addition of Vedic Science to the knowledge base.
of higher education is the most general one—the degree of integration, balance, and wholeness gained in individual and collective life.

**Summary and Conclusion**

We began this article by stating that the challenge in higher education today is a challenge of substance. According to this view, our educational institutions are not addressing the transcendent issues that give meaning to students’ lives. Based only on the objective, surface values of knowledge, they expect too little of students and hence deliver too little. The proposed cause for this shortfall has been the unavailability to most institutions of knowledge of the absolute basis of the knower and how to develop this fundamental element of the process of education.

In reviewing the research on college impact, the lack of this knowledge was brought out strongly in Astin’s findings, which show that it is the peer culture rather than the classroom that thus far has accounted for the main effects of college. The scarcity of significant effects in the crucial areas of human development also highlights the concern over the substance of a college education.

In contrast, the research on Maharishi Vedic Science-based education at Maharishi University of Management shows that students are developing in factors, such as intelligence and field independence, that previous research indicates do not typically develop among college students. In addition, findings on the physiological changes, the development of consciousness as a whole, and the societal effects resulting from the group practice of the technologies of Vedic Science, have expanded the arena of college impact to include a much broader and deeper range of effects than previously thought possible. The figures reported for the alumni surveys reinforce the more objective findings in that they show graduates’ remarkably high level of satisfaction with the long-range benefits gained in college. Both sets of findings should inspire a renewed hope in the efficacy of higher education, as well as an expanded idea of what may be conceived as assessment.

Institutions based on modern science and its objective approach to natural law have been found unable to significantly affect the deeper levels of the students’ lives. Maharishi University of Management, by contrast, shows that it is possible, by placing Maharishi Vedic Science at the basis of the educational experience, to develop the latent
mental and physiological potential of the student toward higher states of consciousness. Research on basic knowledge and skills of Maharishi University of Management students indicates that through Maharishi Vedic Science-based education the development of consciousness occurs simultaneously with the growth of the information and skills necessary to play a productive and successful role in society. Finally, research on the “Maharishi Effect” indicates that development of consciousness among students also has a measurable, positive environmental impact that benefits society at large.

From the theory and research we have arrived at two conclusions, significant both for future research and for contemporary practice: first, that the growth of consciousness expressed in increasing integration or balance is the most subtle and important outcome of Vedic Science-based education; and second, that the primary agent for this achievement is the knowledge an institution has to offer. Further, we have concluded that it is the knowledge and experience of the self-interacting dynamics of consciousness at the source of creation, available in Maharishi Vedic Science, that accounts for the rapid and integrated progress experienced by students at Maharishi University of Management.

These dynamics of cause and effect in the educational process are explained most clearly and concisely in the language of Vedic Science itself, particularly in the Ṛk Veda, which Maharishi describes as the essence of the Vedic literature. One verse in the first mandala (chapter) of the Ṛk Veda explains this precise connection between the knowledge of the self-referral state of consciousness and balance or integration of life. The verse expresses, according to Maharishi, the essence of his Vedic Science and its application to human life:

\[
\begin{align*}
Ṛicho \, akshare \, parame \, vyoman \\
Yasmin \, devā \, adhivishve \, nishedūḥ \\
Yastanna \, veda \, kimrichā \, karishyati \\
Ya \, itta\text{-}āvidus \, ta \, ime \, samāsate
\end{align*}
\]

(Rk Veda 164.39)

Maharishi Mahesh Yogi (Maharishi Vedic University, 1985) translates:

The verses of the Veda exist in the collapse of fullness (the Kṣhara of “A”) in the transcendental field, in which reside all the devās, the impulses
of creative intelligence, the Laws of Nature responsible for the whole
manifest universe. He whose awareness is not open to this field, what
can the verses accomplish for him? Those who know this level of reality
are established in evenness, wholeness of life. (p. 101)

The first half of this verse presents the theme of self-referral and
sequential transformation by which the unified field, the Saṁhitā, the
field of unity, becomes the field of diversity. The second half of the verse
presents the possibility of direct experience of these mechanics, and
the value for human life of that experience. In the terms that we have
used in this paper, the verse implies that unless students are allowed to
understand and experience the Saṁhitā of consciousness at the basis of
their lives, the rest of the knowledge they gain in the disciplines will be
of little use to them. As they experience the underlying reality of the
unified field, however, the knowledge of the full range of the discipline
will bring evenness and wholeness to their lives.

Students at Maharishi University of Management describe clearly
these mechanics of transformation in their own lives. They describe
the growing integration or balance of life and they attribute it directly
to their growing knowledge of Maharishi Vedic Science, which pres-
ents, above all, the knowledge of the Saṁhitā of knower, known, and
process of knowing. The Ṛichō Akshare verse of the Ṛk Veda, therefore,
expresses the beginning and end of knowledge as found in the lives of
Maharishi University of Management students.

From the perspective of Maharishi Vedic Science-based education,
one can envision a time when higher education institutions will elimi-
nate their current problems, including their fundamental problem of
substance. Maharishi has clearly expressed this possibility:

All the problems of education—and further—all problems of life any-
where in the world or in heaven, arise from inadequate education. . . .
And the problems of education are the problems of knowledge. . . . This
Vedic Science, this science of pure knowledge, delivers the fruit of all
knowledge in everyone’s self-referral consciousness. In simple words,
the fruit of all knowledge should mean the ability to know every-
thing, the ability to do everything, and the ability to achieve anything.
. . . The fruit of all knowledge will be delivered to everyone in one’s
own consciousness as soon as Vedic Science is an aspect of education.
(Maharishi Mahesh Yogi, 1988)
Beyond the difference Maharishi Vedic Science will make to every student, one can foresee an elevation in the role of faculty as they become able to give out scientific knowledge about the full range of life in its subjective as well as objective expressions. They will have an opportunity to regain their natural role as leaders in society. Educational institutions also will be able to fulfill their time-honored role in society by becoming centers of knowledge and organizing power.

We began on the hopeful note expressed by the publication of the recent calls for reform in higher education. We saw in these the rise in expectations that precedes any real progress in society. Based upon the achievements of Maharishi University of Management and the possibility of the expansion of this system of education to other institutions, however, more than hope is called for. Maharishi has said “through proper education we can accomplish anything.” Through education he has predicted the dawn of a heavenly life on earth. This life is the natural outcome of the simple system outlined here. We end with Maharishi’s own offer to educators everywhere:

It is our joy to offer to the custodians of education in this generation a perfect, and yet simple system of education, which will accomplish the goal of education—the creation of a perfect man and Heaven on Earth. (Maharishi Mahesh Yogi, 1988, p. 9)

Appendices A and B follow.
## APPENDIX A

### Summary of Research on Maharishi International University

#### Environment

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Dependent Variable</th>
<th>Design Type</th>
<th>Independent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lanford (1989).</td>
<td>Violent &amp; property crimes in the District of Columbia.</td>
<td>4</td>
<td>Days when more than 400 people were practicing the TM-Sidhi programs collectively.</td>
</tr>
<tr>
<td>2. Cavanaugh (1987); Cavanaugh &amp; King (1988).</td>
<td>Okun’s “Misery Index” (combining the national inflation and unemployment levels) in the U.S and Canada.</td>
<td>4</td>
<td>Weeks when Super Radiance threshold (approximately 1600 people practicing the Transcendental Meditation &amp; TM-Sidhi programs) was exceeded at MUM.</td>
</tr>
</tbody>
</table>

| Incidence of homicides in Washington, DC. | Weeks when Super Radiance threshold for Washington, DC was reached. |


| Composite index of quality of life in the United States. | Maharishi Effect Index: Composite index of numbers practicing Transcendental Meditation & TM-Sidhi programs at MUM & percentage practicing the Transcendental Meditation technique throughout the U.S. |


| Dow Jones industrial average/CB Commerce Dept. “Leading Indicators.” | Days when Super Radiance threshold of square root of 1% of the U.S. population was reached at MUM. |

### Body And Behavior

<table>
<thead>
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<th>Dependent Variable</th>
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<th>Independent Variable</th>
</tr>
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<tbody>
<tr>
<td>7. Wallace, Orme-Johnson, Mills, M.C. Dillbeck, &amp; Jacobe (1983).</td>
<td>Flexibility of the nervous system.</td>
<td>3</td>
<td>Participation in the student TM-Sidhi course at MUM.</td>
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</table>
### Mind: Senses, Desires and Thinking

<table>
<thead>
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<th>Dependent Variable</th>
<th>Design Type</th>
<th>Independent Variable</th>
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<tr>
<td>11. Jones (1989b).</td>
<td>Achievement levels on skills and knowledge of a general education.</td>
<td>1</td>
<td>Institution</td>
</tr>
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### Mind: Intellect

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<tbody>
<tr>
<td>* Cranson, Orme-Johnson et al. (1991).</td>
<td>Speed of mental processing.</td>
<td>3</td>
<td>Institution</td>
</tr>
</tbody>
</table>
### Consciousness-Based Education

12-14. Jones (1989a); Cranson, Orme-Johnson et al. (1991); M.C. Dillbeck et al. (1986); Aron et al. (1981).

<table>
<thead>
<tr>
<th>Institution</th>
<th>Nonverbal fluid intelligence.</th>
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<tbody>
<tr>
<td>2, 3</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Institution</th>
<th>Moral reasoning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Participation in the Transcendental Meditation and TM-Sidhi programs</td>
</tr>
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</table>

#### Mind: Ego

<table>
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<th>Design Type</th>
<th>Independent Variable</th>
</tr>
</thead>
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<tr>
<td>17. Orme-Johnson &amp; Duck (1977).</td>
<td>Personality profile.</td>
<td>1</td>
<td>Institution</td>
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#### Consciousness as a Whole

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<th>Design Type</th>
<th>Independent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Cranson, Orme-Johnson et al. (1991)</td>
<td>Inner wakefulness while asleep.</td>
<td>3</td>
<td>Institution</td>
</tr>
</tbody>
</table>

* Findings from studies already cited above.

#### Key to Design Types

<table>
<thead>
<tr>
<th>Design Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Cross-sectional or correlation study.</td>
</tr>
<tr>
<td>2</td>
<td>Pre-post with normative data.</td>
</tr>
<tr>
<td>3</td>
<td>Pre-post with control group.</td>
</tr>
<tr>
<td>4</td>
<td>Time series (Box-Jenkins ARIMA impact assessment).</td>
</tr>
</tbody>
</table>
Appendix B

Research Supporting Maharishi University of Management’s Long-Range Goals

The outcomes cited above can be summarized according to the initial seven goals of Maharishi University of Management. The research to date suggests that Maharishi University of Management is making significant progress in meeting these goals.

1. To develop the full potential of the individual
   - Increased flexibility of the nervous system* (Wallace, Mills, Orme-Johnson, M.C. Dillbeck, & Jacobe, 1983)
   - Increased functional integration of the brain* (Orme-Johnson, 1982)
   - High levels of achievement (Maharishi University of Management Evaluation Office data)
   - Increased field independence (M.C. Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986)
   - Increased fluid intelligence (Aron, Orme-Johnson, & Brubaker, 1981; M.C. Dillbeck et al., 1986; Cranson, Orme-Johnson et al., 1991; Jones, 1989a)
   - Increased creativity (verbal fluency and flexibility)* (Orme-Johnson, 1982)
   - Greater efficiency of concept learning* (M.C. Dillbeck, Landrith, & Orme-Johnson, 1981)
   - Increased speed of mental processing (choice reaction time) (Cranson, Orme-Johnson et al., 1991)
   - Higher levels of moral reasoning Nidich, Rynearz et al., 1983
   - Higher levels of self-actualization (Orme-Johnson & Duck, 1977)
   - Increased psychological health (Gelderloos, 1987)
   - More rapid growth of higher states of consciousness Cranson, Orme-Johnson et al., 1991

2. To realize the highest ideals of education
   - High levels of motivation for higher degree (Maharishi University of Management Evaluation Office data)
Higher levels of satisfaction with personal and professional development in 23 out of 24 areas of college effectiveness (Maharishi University of Management Evaluation Office data)

- Increased ego development among graduates (Alexander, Davies, Dixon, et al., 1990)

3. To improve governmental achievements
- Increased peaceful overtures by the United States government toward the Soviet Union (Gelderloos & Cavanaugh, 1990)

4. To solve the age-old problems of crime and all behavior that brings unhappiness to the family of man
- Improvements in a composite index reflecting quality of life in the United States (Orme-Johnson & M.C. Dillbeck, 1987)
- Reduced deaths due to violence in the U.S. (M.C. Dillbeck, 1990)
- Reduced violent and property crimes in the District of Columbia (Lanford, 1989)

5. To bring fulfillment to the economic aspirations of individuals and society
- Comparable or higher salaries among graduates (Maharishi University of Management Evaluation Office data)
- Increased levels of the Dow Jones industrial average (Orme-Johnson & M.C. Dillbeck, 1987)
- Decreases in Okun’s “Misery Index” (combined averages of the national inflation and unemployment rates) (Cavanaugh, 1987; Cavanaugh & King, 1988)

6. To maximize the intelligent use of the environment
- Reduced automobile accidents (M.C. Dillbeck, 1990)
- Comparatively higher percentages of alumni who “understand the interaction of man and his environment” (Maharishi University of Management Evaluation Office data)
7. To achieve the spiritual goals of mankind in this generation
   • Increased functional integration of the brain* (Orme-Johnson, 1982)
   • Increased “intrinsic spirituality,” one of the subscales of psychological health, among Maharishi University of Management students (Gelderloos, 1987)
   • Increased inner wakefulness during sleep—a sign of rising higher states of consciousness (Cranson, Orme-Johnson et al., 1991)

*These studies are specifically on the TM-Sidhi course for students at Maharishi University of Management.

References


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The Maharishi Technology of the Unified Field
in Education:
Principles, Practice, and Research

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This paper presents evidence that the highest goals of education can be achieved by adding the Maharishi Technology of the Unified Field to the existing curricula of schools and universities. This technology, which is used in the Consciousness-Based education system, develops the full value of the three fundamental aspects of education: the knower, or student; the known, or subject matter; and the processes of knowing, which connect knower to known. The first section gives a brief overview of the basic principles from Maharishi Vedic Science that are the foundation of this approach to education. Section 2 analyzes knower, known, and process of knowing. It suggests that the deficiencies in education today result from the knower’s limited experience of his or her own infinite potential, and that these deficiencies can be eliminated by stabilizing in the awareness of student and teacher the experience of the full potential of the mind, Transcendental Consciousness. Section 3 describes how the theory and experience of Transcendental Consciousness, which are provided by the Maharishi Technology of the Unified Field, are applied in an educational system. Section 4 reviews the scientific research documenting the success of Unified Field-Based education. Sections 5 and 6 describe how this approach solves current educational problems and is giving rise to new, more powerful principles for guiding educational practice. (Today, the Maharishi Technology of the Unified Field is called the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying.)

Introduction:

Education for the Full Development of Human Life

The study of education grew out of a desire to improve the quality of schools and universities. The knowledge available in this area of study, however, has not given any educational system what it needs to produce wise, mature, and fulfilled citizens or a peaceful world. Students are dissatisfied, teachers are discouraged, and the public is not happy with the results. Hundreds of published reports over the past century—dozens in the last few years—have identified the failures of education but have not provided the means to assure its success. Clearly, if the knowledge available in this field is responsible for its outcomes, more profound knowledge is needed.

Over the past 30 years, Maharishi Mahesh Yogi has suggested that the solution to the problems in education lies in developing the limitless
inner potential of students and teachers. Toward this end Maharishi has revived, from the tradition of ancient Vedic Science, the knowledge for systematically unfolding the full range of human consciousness. This knowledge is Maharishi Vedic Science or the Maharishi Technology of the Unified Field, and includes the Transcendental Meditation and TM-Sidhi programs, including Yogi Flying.

The Transcendental Meditation program is the foundation of Maharishi’s educational programs. This technology has been found to prepare students to learn and teachers to teach by increasing their intelligence, creativity, and vitality. The Transcendental Meditation program has been learned by more than three million people worldwide and implemented in public and private educational institutions in over 20 countries. Extensive research and experience demonstrate that this program is uniquely effective in enabling educational systems to realize their highest aims. This article discusses Maharishi’s contribution to education in the following sections:

1. Overview of Maharishi’s Theory of Education;
2. Analysis of the Educational Process: Knower, Known, and Process of Knowing;
3. Realizing the Full Potential of Education through the Maharishi Technology of the Unified Field: The Maharishi Unified Field-Based Integrated System of Education;
4. Validation of the Success of Unified Field-Based Education: Results of Scientific Research and Application of the Maharishi Technology of the Unified Field in Education;
5. Meeting Current Educational Challenges; and
6. New Principles of Education Based on Knowledge and Experience of the Unified Field.

**Overview of Maharishi’s Theory of Education**

A few fundamental principles form the basis of Maharishi’s approach to education. These ideas, briefly introduced below, are explained more fully in subsequent sections.

(1) The creative potential of the mind is unlimited, having its source in the field of pure consciousness.
Maharishi explains that the thoughts and feelings of the conscious mind are limited expressions of a vast, unbounded reservoir of creative potential at the basis of all thought. The basis of thought, he explains, is the field of pure consciousness or pure intelligence, the most fundamental level of existence in man and nature. Only by experiencing pure consciousness can individuals use their full mental and physical potential in daily life. “As long as that basic field of creative intelligence does not come to the conscious level of the mind, life does not become as strong or as powerful as is its capacity to be” (Lecture, February 12, 1971).

(2) The field of pure consciousness is the unified field of natural law.

Progress in quantum physics during the past twenty years has led to theories that describe the complete unification of all particles and forces of nature in a single unified field. Physicists characterize the unified field as self-interacting, self-sufficient, and infinitely dynamic, creating from within itself all the laws of nature governing the universe. These and other characteristics have led Maharishi and prominent unified field theorists to conclude that the unified field being investigated today by modern science is the same field known by Vedic Science for thousands of years as pure consciousness (Hagelin, 1987).

Maharishi Vedic Science describes the unified field as the unmanifest, unchanging basis of all subjective and objective existence, a field of infinite creativity and intelligence containing all the laws of nature in “seed” form. Maharishi describes the unified field as the concentrated source of all the innumerable qualities in the universe that guide life in a progressive and evolutionary direction (Maharishi Mahesh Yogi, 1986, pp. 24–27).

(3) The unified field, or pure consciousness, can be experienced through the practice of the Maharishi Technology of the Unified Field, which includes the Transcendental Meditation and TM-Sidhi programs.

The Transcendental Meditation program is an easily learned, natural technique during which the individual experiences the unified field of natural law in his own awareness as Transcendental Consciousness (Alexander, Boyer, & Alexander, 1987). As Maharishi states,
In Transcendental Meditation the conscious mind comes to the simplest form of human awareness, where consciousness is open to itself. This self-referral state of consciousness is the Unified Field of Natural Law. (Maharishi International University, 1988, p. 1)

The TM-Sidhi program is an advanced practice of the Maharishi Technology of the Unified Field. This program trains individuals to think and act while their awareness is established at the level of the unified field; it greatly enhances the coordination between mind and body and the ability to fulfill one’s desires.

(4) As the individual repeatedly experiences Transcendental Consciousness the functioning of the entire nervous system becomes more integrated and efficient, leading to improved mental abilities, health, and social behavior.

Through the regular practice of the Transcendental Meditation program for 15–20 minutes twice daily, the infinite creativity and perfect orderliness of the unified field become increasingly lively in daily life. At the same time the Transcendental Meditation technique gives deep rest and releases stresses that impede optimal functioning of mind, body, and behavior (Wallace, 1986).

Over 350 scientific research studies conducted in the past 17 years confirm that the Maharishi Technology of the Unified Field benefits physiological, psychological, and sociological development² (Maharishi International University, 1984a). (See Section 4 of this paper.)

(5) Continued practice of the Maharishi Technology of the Unified Field develops higher states of consciousness in which one enjoys a permanent state of fulfillment while spontaneously benefiting oneself and society.

According to Maharishi, when Transcendental Consciousness is experienced as a continuous reality along with waking, dreaming, and sleeping, individuals spontaneously use the full potential of the mind, easily accomplishing their goals without damaging themselves or the environment. Maharishi explains that this capacity is inherent in the human nervous system: “The structure of life is complete; that completeness has only to be lived. And this is the goal of education,
to make the individual be at least what he is—total life” (Lecture, February 12, 1971).

Maharishi calls the culmination of human development “Unity Consciousness”: the unbounded field of Transcendental Consciousness is present in every boundary—in every perception, thought, and feeling. This gives an unbroken wholeness or unity to life; every object, event, and person is experienced as a blissful expression of oneself.

(6) Practice of this technology in large groups creates an influence of coherence and positivity in the whole society, reducing negative trends and improving the quality of life.

Research has repeatedly shown that when the Maharishi Technology of the Unified Field is practiced in one place by a relatively small group of people—on the order of the square root of one percent of a population—crime, accidents, sickness, violence, and other negative trends in society decrease, and positive trends, such as economic vitality, increase. (See Section 4 of this paper.) This finding, which has been replicated many times worldwide, has practical significance for educational institutions. Any school or university of sufficient size can be a source of coherence and harmony for the nation as a whole, and if the group is large enough, for the world.

Maharishi summarizes the results of using the knowledge and technology of the unified field in education:

The creative genius of the student blossoms as his awareness is identified more and more fully with the Unified Field of all the Laws of Nature. Instinctively his thoughts are right; he does not make mistakes; his behavior is spontaneously evolutionary. He grows in ideal citizenship—the ability to fulfill his own interests and promote the interests of society simultaneously. The natural simplicity of his life radiates the dignity of higher states of consciousness. (Maharishi International University, 1984b, p. 34)

Maharishi describes education as having three basic components: the learner, or knower; that which is to be learned, or the known; and the process of knowing or learning, which connects the knower with the known. The processes of knowing include sense perception, thought, intellectual analysis, and intuition (see Figure 1).
Analysis of the Educational Process: Knower, Known and Process of Knowing

Figure 1. This figure illustrates the levels of the mind and the relationship among knower, process of knowing, and known. The level of awareness of the knower determines the corresponding process of knowing, as well as the nature of the knowledge gained. Education traditionally trains the knower to use deeper levels of the mind to gain more useful and fulfilling knowledge. When the deepest level of the mind, the unified field, is lively in the knower’s awareness, all levels of the knower and all processes of knowing are integrated and functioning at their full potential. Knower and known are united on the ground of Transcendental Consciousness. The result is complete knowledge of natural law, and on that basis, thought and action are spontaneously most effective.

This model of knower, known, and knowing is useful for analyzing the strengths and limitations of educational practice. Educators throughout history have recognized how weakness in any of these three areas creates weakness in the entire process of imparting knowledge.
For example, stress in students’ lives, superficial or incoherent content, teaching that fails to stimulate deeper thinking processes—these are signs of weakness in knower, known, and process of knowing that ultimately preclude the educational system from achieving its goals.

Unfortunately, most educators have not understood the primary importance of the knower in the interaction of these three components, nor how to improve all three simultaneously, nor what to expect when the potential of each is fully realized. This section describes the consequences of incomplete development of each of these three aspects of the educational experience. It also outlines how Maharishi Vedic Science fully unfolds and unifies knower, known, and process of knowing, thereby making education most rewarding and complete.

**The Knower**—In Maharishi’s analysis, educational systems have organized formal schooling without complete knowledge of the creative potential of the individual or how to develop it. Research suggests that students’ entering levels of cognitive and emotional development largely determine their success in school (B. Bloom, 1976). Yet programs for improving these aspects of the students’ lives have not been found by research to be consistently successful. As a result, students who graduate with high motivation and intelligence are the same students who entered the schools and universities with these qualities, and generally those who came without them leave without them (Astin, 1977).

Of equal concern is the failure of our institutions to foster in the student the traits and values that uphold the integrity and progress of society—enlightened self-interest, rationality, compassion, justice, breadth of vision (A. Bloom, 1987). These more subtle values have long been associated with liberal education. Yet no educational system has been able to consistently produce graduates who embody the highest qualities of human life. It is evident that without more fundamental knowledge of human potential, society will always be hindered by what John Goodlad (1984, p. 57) calls the “education gap: the distance between man’s most noble visions of what he might become and present levels of functioning.”

Maharishi has said that to make these highest ideals a reality, education cannot depend solely on teachers, curriculum, and parents. The students themselves must develop their own enormous untapped potential. When students are not growing in receptivity, depth, inner
discipline, or enthusiasm for learning, they themselves become frustrated, teachers become exhausted, and the whole environment suffers from lack of creativity, coherence, and progress.

Without this vitality in the schools many teachers entering the profession with a high level of commitment and high standards find it difficult to maintain their initial level of energy. From his extensive study of high schools, which included 1350 teachers, Goodlad (1984) reports:

The teachers in our sample, on the whole, went into teaching because of these inherent professional values. However, they encountered in schools many realities not conducive to professional growth. . . . Even if the best in pedagogy is practiced for a few years, the demands on teachers are such that some will turn to routines that make the least physical and emotional demands. (p. 194)

Even in higher education, where students are more motivated to advance in their chosen specialization, it is rare to find students whose educational experience is contributing to the growth of their own wisdom, happiness, and holistic development:

Most professors are specialists, concerned only with their own fields, interested in the advancement of those fields in their own terms. . . . They have been entirely emancipated from the old structure of the university, which at least helped to indicate that they [the specializations] are incomplete, only parts of an unexamined and undiscovered whole. So the student must navigate among a collection of carnival barkers, each trying to lure him into a particular sideshow. This undecided student is an embarrassment to most universities, because he seems to be saying, “I am a whole human being. Help me to form myself in my wholeness and let me develop my real potential,” and he is the one to whom they have nothing to say. (A. Bloom, 1987, p. 339)

Face to face with the graduates of our educational system, the public has come to expect not much more than reading, writing, and arithmetic from its schools, and no better product from its universities than a qualified specialist. In an address at the 1973 annual conference of the American Association for Higher Education, Maharishi defined the problem and offered a solution:

It is obvious that education has been facing problems for decades, for centuries. It has not been satisfactory. . . . What is lacking should be
obvious to all. If we look into the process of gaining knowledge we find there are two sides to knowledge—the object of knowledge and the subject of knowledge, the knower. What the present system of education provides is knowledge of the object; what it misses is knowledge of the subject, knowledge of the knower.

To Maharishi, “knowledge of the knower” includes more than being aware of one’s thoughts and feelings. It refers to the individual’s direct subjective experience of the full range of his own consciousness, from the most active surface level of thought to the deepest inner silence of Transcendental Consciousness, the field of the total potential of the mind (Maharishi Mahesh Yogi, 1986). (See Figure 1.)

Education until now has offered no procedures to give students access to the full range of the mind. Though occasionally experienced by exceptional individuals, the deepest reservoirs of creative intelligence are not lively in the daily existence of millions of students in the world. And this lack, from Maharishi’s perspective, impoverishes life:

When the attention is always kept on the outer sphere of life and not drawn to the inner, the link between the inner and the outer life is obviously missing, and the harmony between the two is lost on the conscious level of appreciation. This makes the outer life devoid of the glories of inner life, and the worldly life becomes a struggle, full of ignorance and suffering. The tree becomes dry and dull when the connection with the roots is not maintained. (Maharishi Vedic University, 1986, p. 258)

In Maharishi’s view, lack of access to the deepest, nonchanging level of the mind is the source of widespread personal dissatisfaction among students:

The foundation of knowledge is the consciousness of the knower. If the knower is in doubt, if the knower doesn’t know himself, then the whole structure of knowledge has no basis to it. And such baseless knowledge can only be non-fulfilling. (1973)

According to Maharishi, when the expanding understanding of the outer world does not bring expansion of personal fulfillment and self-knowledge, a continuous thirst develops that is never satisfied. There are persistent doubts and unanswered questions: Where is this going? To what end?
These questions arise not only in students. Even highly educated people often find that the satisfaction and mastery they gain from their particular areas of expertise are not experienced in the rest of their lives.

Maharishi describes Transcendental Consciousness as the total potential of the individual’s creativity and intelligence, as a field of unbounded awareness, as the common ground underlying both knowledge and knower, as the home of all knowledge, and as a field of inner bliss. As the student regularly experiences this field through the practice of the Transcendental Meditation program, the problems of education that arise from limited experience of the self disappear. Maharishi (1973) states:

Here is a technique, a clue, to satisfaction, even if one cannot go through the study of all subjects and through that basis become proficient in every field of life. If one’s conscious mind is open to the field of pure consciousness the home of all knowledge is structured on the level of one’s awareness, and on this basis it becomes possible to be at home with everything. This can be the overall gift of education.

Maharishi explains that experience of the full potential of the mind in Transcendental Consciousness not only brings inner satisfaction but confers mastery in the field of action; thought and action are more powerful and effective. Education has always aspired to develop in the individual increasing mastery over life. In the words of the educational theorist Paul Hirst, education should have the effect of “freeing reason from error and illusion and freeing man’s conduct from wrong” (1974, p. 31). The National Institute of Education’s 1984 report on higher education recognized the need for education to culture such broad abilities:

[N]o one knows precisely how new technologies will affect the skills and knowledge required by our future labor force. We thus conclude that the best preparation for the future is not narrow training for a specific job, but rather an education that will enable students to adapt to a changing world. (p. 43)

From Maharishi’s perspective, the most effective way to prepare for a changing world is to develop the spontaneous ability to think and act correctly in every situation. This, he has explained, naturally occurs when awareness is established in “the transcendental field in which reside . . . the Laws of Nature responsible for the whole mani-
fest universe” (Maharishi Vedic University, 1985, p. 101). When one’s awareness is open to this fundamental field then thoughts are always in harmony with the orderly and evolutionary trends of natural law. One’s decisions and actions—in one’s discipline or profession, in relationships with others, in every aspect of life—are spontaneously right for the individual and for the environment. In every case they lead to progress. Inherent in the human brain is this capacity to think without error (Maharishi Mahesh Yogi, 1986, pp. 32, 97–98).

This section has proposed that fulfillment of our highest educational goals—whether intellectual, moral, or social—requires more complete development of the knower. This is most effectively attained through the experience of the full potential of the mind, Transcendental Consciousness. How this experience reveals the full value of the object of knowledge, the known, is discussed next.

The Known—“The known” is the content of the disciplines, the objects of knowing. For centuries, Western thought has been directed toward investigation of the objects of knowing. In this approach the investigator views nature as separate from himself. He attempts to minimize the role of subjectivity in gaining knowledge, because the subjective approach to knowledge has not proved reliable. The objective approach has been formalized in the concepts and methods of modern science. Using increasingly refined tools of inquiry, scientists explore the outer world, bringing to light subtler levels of nature’s functioning.

Objective knowledge, as embodied in the course content of curricula, has received the most systematic and sustained attention from educators; education today focuses mainly on the known. As schools and universities continue to incorporate the methods and findings of science in their curricula, society has continued to progress in knowledge of the outer, objective field of life.

Maharishi points out, however, that exclusive emphasis on the known in our educational systems without commensurate development of the knower has several unfortunate consequences: the knowledge students possess will never be sufficient to make them competent in every area of their lives; their knowledge can never be wholly reliable, complete, or fulfilling; and individuals can never be sure that their knowledge will have only good effects in society.
This section elaborates these points and suggests how the experience of Transcendental Consciousness can resolve the problems arising from limited comprehension of the known.

Educational institutions are dedicated to offering the knowledge students need to become self-sufficient members of society. But as society becomes more complex and areas of knowledge become increasingly specialized, schools teach less of all there is to know.

More and more young people emerge from high school ready neither for college or for work. This predicament becomes more acute as the knowledge base continues its rapid expansion. The number of traditional jobs shrinks, and new jobs demand greater sophistication and preparation. (The National Commission on Excellence in Education, 1983, p. 12)

Maharishi observes that by teaching only the content of the disciplines, we cannot give students what they need to fully prepare them for life. They can learn in one lifetime only a few of the innumerable laws of nature—a few from chemistry, physics, grammar, or mathematics. This, in Maharishi’s terms, is an education that gives partial knowledge of natural law, as contrasted with knowledge of the totality of natural law available in the subjective experience of the unified field (Maharishi Mahesh Yogi, 1986, pp. 31–33). As discussed in the previous section, it is the repeated experience of the totality of natural law that develops competence in every sphere of activity. Maharishi (1973) explains that by offering only partial knowledge of natural law, education cannot hope to give the students mastery over their lives:

An educated person is expected to be proficient in every phase of his life and his environment. Yet the time doesn’t allow all disciplines and aspects of life to be mastered. And with continued scientific research, knowledge is increasing rapidly in every field.

Maharishi offers the solution to this problem of incomplete knowledge of the laws of nature.

Now Vedic Science offers the knowledge to develop a fully integrated individual, whose mind, body, intellect, and behavior are in perfect accord with all the Laws of Nature . . . . Human awareness has the ability to identify completely with the total potential of Natural Law . . . and spontaneously exhibit Natural Law in daily life. Thereby all aspects
of life come to be always in the direction of evolution. . . . (Maharishi Mahesh Yogi, 1986, p. 32)

Maharishi has also pointed out that only when the individual’s awareness is established in Transcendental Consciousness is his knowledge completely reliable. Otherwise perception of the object varies, depending on the fluctuating awareness of the perceiver. Scientific methodology is designed to reduce the effects of the observer’s variable subjective states on what is observed. But even in the physical sciences, which have been most successful in applying this objective approach, the observer still has been found to influence the object of observation. Maharishi (1973) explains:

When we consider consciousness, there are different states of consciousness. We are aware that consciousness changes from night to morning to noon to evening. Sometimes we’re dull, sometimes asleep, and sometimes very wide awake in the morning. Consciousness is a changing value. And knowledge changes with the changing value of consciousness. Different states of consciousness have different values of knowledge. There has to be a way to have reliable knowledge. Otherwise, as the values of consciousness change, knowledge is apt to change. And in the changing spheres of knowledge one finds inconsistency, chaos, confusion. A stable level of consciousness is required, one that will not change, so that the knowledge of an object could be reliable. A non-variable level of consciousness has to be structured in the level of one’s awareness. There is a level of consciousness that can be made to be non-variable. That is Transcendental Consciousness, unbounded awareness. (Audio Recording).

With repeated experience of Transcendental Consciousness one begins to maintain it as a continual background of awareness throughout the changes of waking, dreaming, and deep sleep. This more integrated and stable style of functioning, which is called Cosmic Consciousness, establishes reliable knowledge of any object on the foundation of the nonchanging consciousness of the knower.

Education that pursues objective knowledge alone has another limitation: it cannot deliver complete knowledge of the object. Maharishi points out that as sophisticated as scientific tools become they will not be able to penetrate to the deepest laws of nature that structure the object. This is because the ultimate reality of what is observed cannot be known as separate from the observer; both observer and observed have
their basis in the unified field of natural law. It is a fundamental precept of Maharishi Vedic Science that in order to fully know any object—its manifest and unmanifest structure and function—the knower has to know the basis of the object, the unified field, experienced as the simplest form of the knower’s own awareness.

In this state, according to Maharishi, one fully knows the rose, from the surface appearance of its yellow petals, to the unmanifest laws of nature that give rise to the rose. Furthermore, one experiences it not as a phenomenon apart from oneself, but as expressions of one’s Self, of the “unbounded infinity of the observer” (Maharishi Mahesh Yogi, 1985, Lecture).

In a lecture on this topic given in London in 1959, Maharishi said,

All the universities are simply hovering on the surface of knowledge. If, along with the study of each subject, the experience of [pure consciousness] is taught to the students, then they will be able to fathom the deeper levels of that subject, and the whole range of that subject will be studied properly. When the two extremities of that subject—the gross, expanded value and the transcendental value—are connected, then the field of that subject will be complete, and the study of that subject will bring something real and useful in life. (Maharishi Vedic University, 1986, p. 269)

Maharishi further explains that only when one experiences the transcendental reality at the basis of the object of study, can one cognize the most fundamental laws of nature governing that object. These laws are discovered in one’s own most settled state of consciousness, when one realizes the deepest reality of the object to be one with the deepest reality of the Self. With this level of awakening, one’s mastery of natural law extends from one area of study to all areas of life:

Knowledge of the universe can’t be gained fully and precisely unless the underlying unified reality is known. The very word “universe” indicates variety and unity coexisting; the huge variety of the universe is sustained in unified wholeness. Knowledge of the universe is necessary for anyone to be successful in the universe. You must know the territory you are in if you want to be master of it. The better you know the territory, the better you govern it. (Maharishi Mahesh Yogi, Lecture, November 8, 1983)

The practical value of gaining knowledge of the territory is that one gains greater organizing power. For example, if children with a chemistry set try to carry out a chemistry experiment with no set procedures
and no formula, they have little organizing power. When students follow an established procedure they gain greater organizing power. Knowing chemical laws so thoroughly that they can conduct their own experiments brings even greater organizing power; but to know how the unified field gives rise to those basic laws of chemistry yields the greatest organizing power. That is why Maharishi urges schools and universities to offer the knowledge of the unified field:

Knowledge has organizing power. The Unified Field is the field of all knowledge in seed form. All the Laws of Nature are absolutely vital on that level. It is the source of all organizing power, the source of all streams of power. Once human awareness is open to the field of all knowledge in the Unified Field, then human awareness is lively in all the organizing power of Nature. (Lecture, November 8, 1983)

Maharishi explains that unified field-based knowledge of the object is not only complete; it is personally fulfilling. It brings bliss to the subject, the knower, while conferring the full range of organizing power available at that finest level of natural law. For all the above reasons Maharishi (1986) recommends that modern science expand its areas of investigation:

If progress is to continue, a shift is required from the science of one category to a total science. Vedic Science is that total science. It uncovers the knowledge of the total potential of Natural Law in its completeness. . . . The very methodology of gaining knowledge through Vedic Science is such that as one sees the knowledge of Natural Law on the intellectual level one begins to live that Natural Law in daily life in a most spontaneous way. . . . If human intelligence is to proceed on the more fulfilling levels of knowledge and existence on earth, now is the time for the complete knowledge of life to be brought to human awareness. (pp. 32–35)

Disproportionate emphasis on objective knowledge not only leaves the individual inept in many areas of life, but gives rise to imbalance in the whole collective consciousness of the nation or world. Knowledge of the electronic and nuclear levels of natural law, for example, has led to expansion of destructive nuclear power without commensurate expansion of the ability to create harmony and lasting peace. As in the previous cases, Maharishi (1986) locates the source of this problem in insufficient knowledge:
If survival is perceived as a problem, it is because modern science has only the objective approach to knowledge of natural law. If the existence of the world is threatened, it is because the knowledge of natural law is superficial; it is knowledge of only the electronic and nuclear levels. (p. 32)

How is it possible to use the laws of nature only for the good of the world, never for the destruction of life? The history of this century demonstrates that this competence cannot be gained only by the objective study of laws of nature. According to Maharishi (1986), the ability to spontaneously gain and apply knowledge in a manner that always nourishes oneself and the whole environment has its basis in knowledge and direct experience of the unified field:

... the conscious mind identifies itself with the self-referral unified field, the fountainhead of all streams of activity in nature. As we gain more and more familiarity with that self-referral performance, our thoughts and actions spontaneously begin to be as orderly and evolutionary as all the activity of nature. (p. 97)

This quality of action naturally results from one who fathoms the full range of the object of knowledge, the known. Maharishi (1977, p. 144) states that a single individual possessing this knowledge does a lifetime of good in society; and that many such individuals can reset the trends of history, establishing the conditions for creating and perpetuating an ideal society.

**The Process of Knowing**—The processes of knowing are the different perceptual and cognitive systems the knower uses to assimilate the known. These can be arranged hierarchically, from least to most powerful processes of knowing: sense perception, thought, intellect, and intuition. (See Figure 1.) This section describes the types of knowledge that can be gained from these different processes of knowing, considers the limits to which current education develops the knowing process, and describes the full development of the process of knowing, as found in Maharishi Vedic Science.

Maharishi has pointed out that the subtler the process of knowing, the greater command over natural law it confers. For example, the senses perceive the sun sinking into the sea. Knowledge of the sun gained from this level of sense perception doesn’t bring much mastery, since on a cloudy day the sun cannot even be located. Through thought, a subtler
process of knowing, one can know that the earth moves around the sun whether the eye sees it or not. The discriminating intellect understands the equations describing the planets’ orbits around the sun; finer processes of knowing bring greater reliability and predictive power, and therefore greater mastery.

Intuition, a process of knowing using a still more refined level of intellect and feeling, can yield insights into the workings of the cosmos that transcend and unify previous knowledge of individual laws of nature. An example is the initial intuition of Newton that planetary motion and motion due to gravity on the surface of the earth are both expressions of a single force. The intuitive level of knowing is spontaneously employed by the greatest minds of every age, and bestows a level of mastery and satisfaction that is rare. Even though these insights still must be validated, intuition is a powerful source of original and fruitful ideas in all areas of human activity.

As indicated in Figure 1, each of these processes of gaining knowledge involves particular physiological and psychological structures of the knower. Jean Piaget’s work has shown that cognitive abilities develop in stages from infancy to adolescence in the direction of more abstract, more powerful processes of knowing—from senses to mind to intellect (Piaget & Inhelder, 1969). The stages of growth in cognitive ability also are associated with measurable developments in brain maturation (Epstein, 1974, 1980).

Educators sequence learning experiences to culture more subtle processes of knowing. In learning mathematics, for example, the student progresses from manipulating colorful blocks, to adding and subtracting numbers, to proving theorems. Yet even the most advanced instructional techniques have not been successful in fostering the most subtle processes of intellect and intuition in the general population of students. This is unfortunate because research indicates that the most creative and innovative people in every area of life rely on their intuition and fine level of discrimination to guide their thinking (Ghiselin, 1952; Maslow, 1968).

Furthermore, it is rare to find, even among these people, creative inspiration continuously bubbling up; dry spells are common. One works hard and hopes for the illuminating “aha”; but it is the common experience of great scientists and artists that their deepest insights into
natural law and their most sublime artistic expressions occur unexpectedly and briefly (Ghiselin, 1952).

These moments of great awakening have been in the past regarded as fortuitous accidents because the knowledge of how to produce or sustain them has not been available. The educational challenge, therefore, is to develop in the students that refinement of the nervous system that can permanently sustain the most refined and powerful processes of knowing.

Maharishi (1986) has said that it is possible to establish the awareness of the individual permanently in its most creative state, in the completely self-referral state of pure consciousness:

The self-referral state of pure consciousness, while remaining uninvolved with the creative process in nature, is an infinitely dynamic, inexhaustible source of energy and creativity. On that basis the whole creation goes on perpetually in its infinite variety, multiplying itself all the time. . . . Human awareness can identify itself with this most basic, self-referral value of consciousness in the state of . . . Transcendental Consciousness. (pp. 30–31)

Maharishi further explains that when the awareness is permanently identified with the unified field, the use of any process of knowing—senses, mind, intellect, intuition—enlivens the unified field, bringing bliss and great satisfaction to learning.

The process of knowing is never satisfied unless everything is known. . . . When [pure consciousness] is enlivened in the student, in the process of gaining specific knowledge, what is getting enlivened is infinity, self-sufficiency, unbounded affluence, fulfillment. (Lecture, November 8, 1983)

According to Vedic Science, experience of the unified basis of knowing also develops the full potential of each process of knowing; each gains in efficiency and power. Using the full potential of the senses as an example, Maharishi has said that when a person in unity consciousness hears someone speak, “he will experience the total range of the meaning of the word, experiencing it as a fluctuation from the field of bliss consciousness.” The great advantage of this range of perceiving is that it “saves the energy of the listener; he gains life and energy from waves of bliss. When we can hear the full value of the word, it nourishes our heart and soul” (Lecture, July 25, 1977).
Maharishi has described a classroom when students and teachers are both processing information at this level of unity:

The impulse of thought of the professor and the impulse of thought of the student are no longer strangers. Whatever meaning is contained in what the professor says is received without distortion by the student, because the basis of the professor’s thought, that abstract value of pure intelligence [Transcendental Consciousness], is lively in the student’s awareness. Knowledge becomes a delightful exchange of friendly waves of life. (Lecture, February 12, 1971)

Maharishi’s Vedic Science describes extremely refined processes of knowing that are not fully available until the individual experiences the total range of the mind. *Ritam bhara pragya* is defined by Maharishi as a level of infallible intuition, a level of knowing that realizes only truth (Lecture, May 1, 1975).

This quality of knowing occurs spontaneously when awareness is able to operate at the junction point between Transcendental Consciousness and its expression into thoughts. (See Figure 1.) Because Transcendental Consciousness is the seat of all the laws of nature—in Maharishi’s words, the “main switchboard” of natural law—the faintest desire to know something sets in motion the specific laws of nature to bring fulfillment to that desire. Maharishi (1972) explains the practical advantage of this subtle process of knowing for effective action:

*[Transcendental Consciousness] supports a thought with all the necessities that will enable the thought from its sprouting to accomplish its purpose. . . . [It provides] the computing that makes any particular thought most life-supporting for the thinker and for the environment. . . . The sprouting of the thought will include the values which are necessary for its greatest productivity and maximum usefulness. (pp. 24–17, 24–18)*

According to Maharishi, when this process of knowing is a permanent feature of life, the individual becomes a fountainhead of creativity. Every thought is useful. New solutions and insights, creative responses to changing circumstances, and efficient conversion of thought to action are the reality of daily life. No longer does one wait and hope for flashes of clarity; the field of inner awareness is permanently lit.

In Maharishi’s exposition of Vedic Science, a process of knowing even more powerful than *ritam bhara pragya* is available when individ-
ual awareness is permanently established in Transcendental Consciousness—when the unified field of natural law permeates every perception. Then the unified field is its own “process of knowing”; knower, known, and process of knowing are unified in one holistic structure within Transcendental Consciousness. Maharishi (1986) describes this phenomenon, when Transcendental Consciousness is fully awake within itself:

The functioning of transcendental pure consciousness is the functioning of natural law in its most settled state. The conscious human mind, identifying itself with this level of nature's functioning, gains the ability to perform in the style with which nature performs its activity at its most fundamental level. Completely identified in Transcendental Consciousness with the full potential of natural law, the human mind is a field of all possibilities. (p. 31)

In this state, on the background of Transcendental Consciousness, the most subtle workings of nature are spontaneously cognized. In Maharishi’s analogy, one is aware of the sap of the flower together with the transformations of the sap into red petal and green leaf. This is the culmination of the knowing process: awakening to the totality of natural law and its organizing power within the wholeness of one’s own awareness:

The knowing process finds its fulfillment when the object of knowing is known to the subject so thoroughly that the object becomes the subject, the subject becomes the object. This is the climax of knowing—to know the object as intimately as one knows one’s self. (Maharishi Mahesh Yogi, Lecture, February 2, 1982)

The preceding analysis of the threefold nature of the educational process suggests that more effective education requires more profound development of human potential. Maharishi Vedic Science offers the knowledge and technology to develop this vast potential, and thereby significantly raise the quality of knowledge, action, achievement, and fulfillment in education and in society as a whole. Central to this development is a systematic method for students and teachers to experience the most silent and dynamic level of their own existence, pure consciousness.

Practical experience and theoretical knowledge of pure consciousness will eliminate the great lack in education. Then both sides of knowing, the knower and the object, will be in the light of knowledge. When
both are open to one’s awareness education will be complete and life will
be complete. (Maharishi Mahesh Yogi, 1973)

Realizing the Full Potential of Education
through the Maharishi Technology of the Unified Field:
The Maharishi Unified Field-Based
Integrated System of Education
The Transcendental Meditation and TM-Sidhi programs are used in
unified field-based education to enliven and stabilize Transcendental
Consciousness in the awareness of students and teachers. Extensive
research and educational experience have established the value of these
programs for human development. (See Section 4.) These techniques
are simple, universally applicable procedures for improving the function-
ing of the human nervous system. As a result of continued practice,
individuals think and behave with increasing competence, success, and
benefit to others.

This section describes Maharishi’s unified field-based education as
it is used in higher education and secondary and elementary levels.
Unified field-based education has three features: the standard aca-
demic curriculum, the Transcendental Meditation and TM-Sidhi
programs, and the Science of Creative Intelligence, which integrates
the different fields of study and includes specific teaching methods
and materials to help the students relate the objective knowledge they
are gaining to the expansion of their own creative intelligence and
inner happiness.

Maharishi has said that the discovery of the unified field and the
subjective technology for experiencing it provide education with a pro-
found new approach that enables students to make use of the most uni-
fied and powerful levels of natural law. He states:

Education is always progressive. When any new discovery about
nature’s functioning is gained through modern science it is immediately
incorporated in education. This has been the basis of progress in every
generation. Now that the self-interaction of the unified field has been
discovered as the most fundamental activity in nature, it is time for a
new basis to education. . . . It is time for science-based education to
become unified field-based education. (American Association for Ideal Education, 1985, p. 6)

The Maharishi Technology of the Unified Field as the Foundation of Unified Field-Based Education—Students learn the Transcendental Meditation program from the age of 10; until then they learn a technique suited to younger children. The Transcendental Meditation technique is practiced for a few minutes at the beginning and end of the academic day, ideally in the classroom. Experience in over one hundred countries with people from all cultural backgrounds has shown that the Transcendental Meditation technique is practical for any educational system. It does not require changing the school’s established curriculum. It is easily learned in a few hours and is simple and effortless to practice. The positive effects of the technique, as demonstrated by research, begin immediately and are cumulative (Maharishi International University, 1984a). The Transcendental Meditation technique is taught in a systematic, standardized way by professional Transcendental Meditation teachers of which there are more than 20,000 worldwide.

The practice of the Transcendental Meditation technique requires no change in belief or lifestyle and is effective irrespective of educational background, level of intelligence, or belief in its reported benefits. It is not a religion; it is not a form of prayer; it involves no contemplation of particular ideas, or concentration. It is a universal, scientific approach to human development whose effects result from the body becoming deeply rested and the mind experiencing more of its creative potential.

The Transcendental Meditation program has been introduced into public and private schools in many countries, including institutions with religious affiliations. The St. Paul’s School in Covington, Louisiana, is an example. Its principal and headmaster, Brother Jeffrey L. Calligan, F.S.C., writes:

In my life and the lives of the students and teachers who practice Transcendental Meditation in our school, we’ve noticed greater composure and peacefulness and more ability to handle times of stress and difficulty. The students are more in touch with themselves, their world, and one another. Transcendental Meditation is a marvelous aid to balanced growth, and fits into any cultural or religious tradition. (American Association for Ideal Education, 1986, p. 7)
The TM-Sidhi program, the advanced practice of the Maharishi Technology of the Unified Field, enhances the effects of the Transcendental Meditation technique by developing the individual’s ability to perceive, think, feel, and act while maintaining Transcendental Consciousness. Maharishi describes the TM-Sidhi program:

Through Transcendental Meditation we experience Transcendental Consciousness, the perfectly balanced state where intelligence is open to itself. Through the TM-Sidhi program, we learn to operate in that state of absolutely balanced intelligence, which in its nature is immortal, eternal bliss, satisfaction, and fulfillment. It is a field of the total potential of natural law from where any desire is completely supported by nature. . . . As the practice advances, that perfectly balanced state of pure awareness becomes more infused in daily life. (Maharishi Mahesh Yogi, 1985, Lecture)

Maharishi comments on how practice of the Transcendental Meditation and TM-Sidhi programs helps achieve a fundamental goal of education:

The ideal of education is to give the fruit of all knowledge to every student while he is still growing in specific knowledge of the different disciplines. The fruit of all knowledge is the ability to accomplish anything and to spontaneously live life free from mistakes. This results naturally from the development of full creative potential and full support of nature brought about by the identification of the conscious mind with the unified field. (World Parliament of the Age of Enlightenment, 1984, p. 4)

The practice of the Transcendental Meditation and TM-Sidhi program benefits the society as well. Many studies in the past 15 years have shown that sufficiently large groups practicing this program together in one place produce measurable positive changes in the city, state, nation, and world (Orme-Johnson & Dillbeck, 1987a). The implications for society of a large school or university participating in the group practice of the Maharishi Technology of the Unified Field are discussed in Section 4 of this paper, together with other education-related research findings.
Teaching Techniques in Unified Field-Based Education that Connect the Knower with the Wholeness of Knowledge—Unified field based education also includes a number of instructional materials and techniques. These have been designed by Maharishi and the faculty of Maharishi University of Management to help students relate the specific laws of nature they are studying in the different disciplines to the deepest, most universal level of natural law, which they experience as their own Self during the practice of the Transcendental Meditation technique. Maharishi (1986, pp. 164–165) has noted that with these teaching techniques learning becomes more personally satisfying; every point of knowledge is integrated with the wholeness of life. The student’s mind does not get absorbed in the limited details of any discipline to the extent of forgetting his own unbounded possibilities.

Unified Field Chart: The Unified Field Chart is the most comprehensive of the classroom charts that connect the parts of knowledge with the wholeness of the Self. (See chart on previous pages.) This wall chart is divided vertically into two main sections. The left side represents the objective approach to knowledge through the modern sciences and other disciplines; the right side represents the subjective approach to knowledge through Vedic Science.

The left side of the chart diagrams the whole discipline being studied, from its most abstract foundational areas (at the bottom) to its most applied areas that serve society (at the top), and depicts how the whole discipline emerges from a unified basis of natural law. Each level gives rise to the next more expressed and diversified level according to an ordering principle. For example, the Unified Field Chart for physics is organized according to time and distance scales: the force and matter fields at the Planck scale of $10^{-33}$ cm give rise to elementary particles and physical structures at larger scales which eventually give rise to the level of nuclear physics, quantum physics, and atomic physics, and so on. All the important principles and areas of the discipline can thus be located in the context of the whole discipline.

On the right side of the chart is a cone-shaped diagram representing the experience of the Transcendental Meditation and TM-Sidhi programs, during which the mind settles down from its more excited levels to the least excited state of awareness, Transcendental Consciousness.
This subjective approach to knowledge gives the direct experience of the unified field. Both sides of the chart are visually unified by the band across the bottom of the whole chart, illustrating that the unified field of natural law is the common source of both approaches to knowledge.

The teacher uses the Unified Field Chart at the beginning of each course, and briefly during each class to locate the lesson of the day with reference to the whole discipline and the source of the discipline, the unified field, which the students experience twice daily in their practice of the Maharishi Technology of the Unified Field.

Faculty who work with Unified Field Charts in secondary and university classrooms have found them highly effective. The construction of these charts challenges them to think deeply about their fields; many teachers create a Unified Field Chart for each course they teach. For the students, the chart puts the day’s discussion in the larger context of the whole discipline. It connects them to the holistic basis of the subject they are studying and reminds them of their personal, directly experienced connection with the knowledge. Maharishi comments on the value of this chart:

Unless knowledge is learned with reference to the universe and to oneself, it will leave the mind in doubt. “What is the connection of this to everything else? And to me?” Unless this is made clear the thirst for knowledge will never be satisfied. (Lecture, August 1, 1986)

When combined with the practice of the Maharishi Technology of the Unified Field, Unified Field Charts develop in the student a more intimate relationship with the disciplines and a greater interest in understanding them more deeply. This approach helps solve two persistent problems in education: students feeling dissociated from what they are studying and perceiving knowledge as fragmented (American Association for Ideal Education, 1985). These problems have been recognized for at least fifty years:

Knowledge which is mainly second-hand, other men's knowledge, tends to become merely verbal. It is no objection to information that is clothed in words; communication necessarily takes place through words. But to the degree in which what is communicated cannot be organized into the existing experience of the learner, it becomes mere words: that is, pure sense-stimuli, lacking in meaning. . . . [One’s] acquisition of knowl-
Students bound from course to course, year to year, lecture hall to lecture hall, term paper to term paper, quiz to quiz, participating in an unending series of discrete educational events. They are learning, for sure. . . . Education, in depth, however, is an experience of learning of a different order. (Association of American Colleges, 1985, pp. 23–24)

Unified Field Charts help solve these problems by connecting the knowledge presented to the students with the most profound, intimate, and comprehensive level of their own experience, pure consciousness. By understanding and experiencing the unified basis of all disciplines as nothing other than their own Self, the process of being educated satisfies both mind and heart. The Unified Field Chart is one of Maharishi’s great contributions to pedagogy.

Other Instructional Techniques for Connecting the Subject of Study with the Self—Maharishi’s emphasis on connecting the parts of knowledge with the wholeness of knowledge has led to the development of several other instructional techniques for unified field-based education.

Main points chart: This is a wall chart of the three or four main ideas of the lecture from the discipline. To the right of each point is a corresponding point that gives a more universal perspective on that idea (see example below). This broader perspective, which relates the lecture topic more directly to the student’s growth of consciousness, is provided by Maharishi Science of Creative Intelligence (SCI). SCI is the science of consciousness. It links objective and subjective approaches to knowledge—modern science with Vedic Science, through the use of principles that promote orderly change both in nature and in human consciousness. These principles are found common to all areas of study and to human life.

By identifying the main concepts of the lecture, main point charts help students connect specific bits of information to the comprehensive ideas within the field; and then, through the Science of Creative Intelligence perspectives, students connect these ideas with the dynamics of their own consciousness. See below for an example of a complemen-
tary pair of main points from a lecture on the Central Limit Theorem in an introductory course on statistics at Maharishi University of Management.

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Science of Creative Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Central Limit Theorem is the basis of the practical success of many areas of statistical inference. It states that when many equal-sized random samples are drawn from an infinite population, the distribution of the sum or mean of each sample will always form a normal distribution. This theorem may be taken as an explanation of why many phenomena in nature are normally distributed: they are the result of the sum of many independent factors.</td>
<td>The orderliness of nature is the basis of statistical inference. This orderliness allows us to infer nature’s behavior. At a deeper level, the ability to infer from the orderliness of nature is based on the common functioning of orderliness, or intelligence, in nature and in man. At the deepest level, the common basis of intelligence in man and nature is the unified field of natural law, identified by the Science of Creative Intelligence as the field of pure consciousness.</td>
</tr>
</tbody>
</table>

**Unity chart:** This chart, which is used at the conclusion of each lecture, is designed to summarize the main idea of the lesson from four different perspectives, each reflecting greater subtlety and power.

The first two points present the perspective of the discipline; the second two, the perspective of the Science of Creative Intelligence (see example following). The first of the four perspectives offers the common “textbook” understanding of the main theme of the lesson; the second represents a more subtle and profound perspective available in the discipline. The third level relates the theme to the experience of Transcendental Consciousness. The final level views the theme from the perspective of the highest state of human consciousness, unity consciousness, when all activity is perceived as the dynamics of one’s own consciousness—“wholeness moving within itself.” The arrow drawn up from the fourth level to the first level reminds the student that when unity consciousness is a living reality every part of life, including the discipline, is experienced as an expression of one’s Self.

Here is an example of a concluding unity chart from an opening lecture entitled “Scientific Knowledge and the Scientific Enterprise,” part of an course on Philosophy of Science:
Connecting the Parts of Knowledge with the Wholeness of Knowledge: Gaining Scientific Knowledge

1. The scientist establishes objective facts and makes reliable predictions.

2. In the interplay of theory and observation, the scientist uncovers deeper and deeper laws of nature, without comprehending the total range of their applications.

3. Transcendental Consciousness is the fountainhead of natural law, the unified field of all the laws of nature.

4. Wholeness moving within itself: Established in the unbounded continuum of pure consciousness, the scientist perceives each law of nature he discovers to be an impulse of his own Self and spontaneously contributes to the balanced progress of civilization.

The Science of Creative Intelligence Curriculum for Elementary and Secondary Education—Elementary and secondary students participating in unified field-based education take a Science of Creative Intelligence (SCI) course designed by Maharishi and other educators for grades 1 through 12. In addition to their usual academic classes students have classes in the Science of Creative Intelligence three to five times per week for about 20 minutes. The “laboratory” component of this course is the twice-daily practice of the Transcendental Meditation technique.

The stated goal of the Science of Creative Intelligence curriculum is “to provide understanding and experience of creative intelligence and thereby develop the physiology and psychology of every student for full expression of creative intelligence in practical life. . . . [The curriculum] unfolds in a sequence of themes that expand the student’s awareness to encompass the entire range of life” (Maharishi International University, 1974, p. 10). This deepened understanding of oneself and nature is accomplished in the Science of Creative Intelligence class by focusing the students on principles and qualities of creative intelligence.
(explained in the “main points” description above) stated in simple lan-
guage, appropriate to the students’ grade level.

In the course of the whole Science of Creative Intelligence curricu-
lum the students locate these universal principles and qualities in their
own lives, in the community, in nature, in myths, in the lives of great
men and women, in the different subjects of study, and in their prac-
tice of the Maharishi Technology of the Unified Field. The materials,
language, and learning activities of the Science of Creative Intelligence
curriculum are suited to each age group. The Science of Creative Intel-
ligence principles for younger elementary students, for example, are
conveyed through stories, songs, and plays.

A lesson for tenth graders on the “stable and adaptable” qualities of
creative intelligence, for example, might ask students to analyze these
two complementary qualities as found in the country’s political system:
in the United States the Constitution provides the stable principles on
the basis of which the three major branches of government adapt to the
changing needs and values of the American people.

The coexistence of stability and adaptability could also be found
in the students’ relationships with others: on the ground of stable
friendships, they more easily accommodate to each other’s needs and
differences. These complementary qualities can be found in great ten-
nis players, whose stable repertoire of skills allows them to adapt to
any unpredictable shot; or in the way that plants adapt to changing
environmental conditions on the basis of stable biological structures.
Finally, the class would typically discuss how these qualities are more
fully expressed in the students’ own lives as they rise to higher states
of consciousness through their practice of the Maharishi Technology
of the Unified Field; as they become stabilized in the nonchanging
field of pure consciousness, they more easily adapt to the changing and
unexpected circumstances of everyday life.

Here are some further examples of Science of Creative Intelligence
principles and qualities taught at different grade levels:

Grades 1–3: The nature of life is to grow; Order is present every-
where; Life is found in layers.

Grades 7–9: Outer depends on inner; Thought leads to action, action
leads to achievement, achievement leads to fulfillment; Harmony exists
in diversity; Rest and activity are the steps of progress.
Grade 12: Introduction to 24 academic disciplines interconnected and made relevant to the students’ experience through the application of SCI.

The Science of Creative Intelligence curriculum thus provides a framework of natural laws that help students interrelate the subjects they study and connect them to their own lives. Teachers in schools where the Science of Creative Intelligence is taught comment on the students’ enthusiasm for these concepts and facility in using them both in and out of the classroom.

The unified field-based methods and curriculum outlined above are quite simple; yet experience has shown that their effect on both student and teacher is profound. Maharishi summarizes how this approach to education, which connects the part to the whole and the whole to the student’s Self, has several advantages that contribute to academic success and personal satisfaction:

1. The students get the total picture of knowledge. Spontaneously they maintain broad awareness when they are focusing sharply in one area. This growth of the ability to maintain the whole while attending to the part cultures ideal citizenship, the ability to fulfill individual interests without losing sight of the interest of the whole society.

2. When every wave of knowledge gained is connected with the Self, that knowledge becomes a living reality of daily life. It develops one’s feeling of being familiar and intimate with everything and everyone, so that no sphere of life remains strange to the students. This growth of self-confidence and self-sufficiency creates a balanced and integrated personality.

3. Every discipline becomes a means to develop the creative potential of the conscious mind, to enliven the Self. Whatever the students study, in the process of gaining specific knowledge of different subjects, they grow in the awareness that the center of all knowledge is present within themselves. This means that if they study 30 different disciplines, then 30 times the Self is connected with the discipline, and with this, all the knowledge remains intimately connected with the knower.

4. Since the Self is the unified field of all the laws of nature, the intellect becomes more and more surcharged with the totality of
Consciousness-based education

knowledge. The conscious mind becomes fully alert and lively in creative intelligence, more familiar with the total potential of natural law. The result is that the students become capable of meeting successfully with any situation. Their thoughts will always be evolutionary and positive and they will not make mistakes. They will not pollute the environment. Their behavior will be ideal. (Personal communication, July 26, 1983)

The Endpoint of Educational Development: Unity Consciousness—
The ultimate goal of Maharishi’s integrated approach to education is to develop students and teachers to the highest level of consciousness, to full enlightenment, and through this process of development to create an ideal society. Maharishi (1977) describes enlightenment as the total awakening of human consciousness, a psychophysiological state of perfect mind-body integration and balance. The depth and power of knowledge conferred by this state of consciousness raise the individual to heights of mastery and bliss that have rarely been known in modern times. In the state of enlightenment the knower, known, and process of knowing are experienced as one unified wholeness—as pure knowledge. In the state of pure knowledge the knower perceives the transcendent reality of the known and experiences it as his own consciousness. One sees the rose; but at that level of awakening what dominates perception is not the difference between the rose and the viewer, but the sameness at the basis of the rose and the viewer (Maharishi Mahesh Yogi, 1985, Lecture).

Established in that fully awakened state of unity, one cognizes all the diverse laws of nature—those giving rise to the rose, to the knower, to the whole universe—as the dynamics of one’s own consciousness. Maharishi comments on the value of such holistic awareness:

Here, in this state of Transcendental Consciousness, intelligence minds the source of all divergence. . . . If we want to control at will all the laws of nature engaged in the creative process, we had better sit at that level where the total potential of natural law is available. From there, within ourselves, we command all the diverging values of natural law. Once we have command over the laws of nature, everything will go well in the direction of evolution. (Maharishi Mahesh Yogi, 1985, Lecture)
How can we know that such a level of mastery and immense organizing power will always be directed toward good, toward progress? Maharishi explains that within the unified field all the laws of nature are unfolding in perfect sequence, forming the basis for the orderly display of natural law in the infinite variety of the universe. When the individual’s awareness is identified with these dynamics of the unified field one’s thought and action will always support life, spontaneously expressing the creativity and orderliness of natural law (Maharishi Mahesh Yogi, 1986, p. 32).

Maharishi (1977) also describes the characteristics of a society in which the people are rising to higher states of consciousness. He emphasizes that this description is not merely a projection of hope or good will, but is based on ancient Vedic knowledge, observed results, and scientific validation:

Society . . . will be characterized by the development of self-sufficiency leading to invincibility in a natural state of balance and orderliness. In this state, all activity will be supported by the laws of nature. Trends of life in society will spontaneously remain positive, progressive, and fulfilling. Negative tendencies of sickness, crime, and other weakening habits will naturally fall off, saving national energy and resources to structure the steps of fulfilling progress. Accidents, conflicts, and rivalries will disappear; morals and virtues will grow freely; and pure consciousness will guide the destiny of society for all good to everyone. In this environment of harmony and progress, community leaders will spontaneously make right decisions and steer the course of society in a right direction. Society will grow in its ability to give maximum to, and take maximum from, neighboring societies. Every community will become a joy to every other community. Harmony and happiness will naturally prevail everywhere. (p. 59)

Maharishi founded unified field-based education as the most practical and effective way to advance toward this highest state of individual and social development.
Validation of the Success of Unified Field-Based Education: Results of Scientific Research and Applications of the Maharishi Technology of the Unified Field in Education

A wide range of research has documented the effectiveness of the Maharishi Unified Field-Based Integrated System of Education. This research gives compelling evidence that the Maharishi Technology of the Unified Field, when added to the academic day of any school or university, can create academic excellence and a high quality of life for the students and teachers and can promote positive trends in the whole society.

The research studies on unified field-based education fall into three groups. The first group of studies evaluates the effect of practice of the Transcendental Meditation technique among elementary, high school, and college students who began the practice as individuals independent of a formal academic program. A second group of studies investigates the effect of a class of students beginning the Transcendental Meditation program as an additional part of their curriculum, including the study of the Science of Creative Intelligence (Maharishi Mahesh Yogi, 1972).

Finally, a number of studies have been performed on a model educational system that implements unified field-based education throughout the institution at the elementary, secondary, and post-secondary levels—Maharishi International University (Maharishi University of Management) and Maharishi School of the Age of Enlightenment (MSAE) in Fairfield, Iowa, offering education for kindergarten through grade 12 on the Maharishi University of Management campus. These institutions were founded by Maharishi to fulfill the highest goals of education. They add to the traditional study of the academic disciplines the twice-daily practice of the Maharishi Technology of the Unified Field by everyone on campus—students, faculty, and administrators.

Effects of the Transcendental Meditation Program on Individual Students—Many studies of the effects of the Transcendental Meditation program have used secondary and college students as subjects. These studies verify that the cognitive, affective, and physiological characteristics of the student that contribute to effective learning are enriched as the result of practice of the Transcendental Meditation technique.
Academic and professional attainments of the students and graduates, their own enthusiasm for their education, and the comments of visiting evaluators and educators attest to the extraordinary effectiveness of these institutions.

Table 1
Improvements in Cognitive, Affective, and Physiological Student Entry Characteristics through the Maharishi Technology of the Unified Field

<table>
<thead>
<tr>
<th>Cognitive</th>
<th>Affective</th>
<th>Physiological</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased alertness (1,2)</td>
<td>• Improved self-concept (14-16)</td>
<td>• Increased restful alertness</td>
</tr>
<tr>
<td>• Improved memory (3)</td>
<td>• Increased self-actualization (17-19)</td>
<td>• Reduced breath rate (25, 26)</td>
</tr>
<tr>
<td>• Increased fluid intelligence (4-7)</td>
<td>• Reduced depression, neuroticism, and anxiety (20-23)</td>
<td>• Increased EEG coherence (27-29)</td>
</tr>
<tr>
<td>• Increased field independence (5, 8)</td>
<td>• Reduced aggression and dominance (24)</td>
<td>• Reduced stress hormones (30-32)</td>
</tr>
<tr>
<td>• Increased creativity (6, 9)</td>
<td>• Increased tolerance (6, 24)</td>
<td>• More adaptive response to stress (33, 34)</td>
</tr>
<tr>
<td>• Improved reasoning ability (10, 11)</td>
<td></td>
<td>• Reduced hypertension and hypercholesterolemia (35, 36)</td>
</tr>
<tr>
<td>• Increased academic achievement (12, 13)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Appelle & Osward, 1974
3. Miskiman, 1976
5. Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986
7. Tjoa, 1975
8. Pelletier, 1974
9. Travis, 1979
11. S. Nidich, 1976
12. Kember, 1985
15. Nystul & Garde, 1977
16. Turnbull & Norris, 1982
Educational research has shown that alertness, memory, intelligence, field independence, and abstract reasoning ability are associated with improved academic performance (Anderson, Spiro, & Montague, 1977; Goodenough, 1976; Saltz, 1971). Similarly, the affective characteristics of high self-esteem and emotional stability contribute significantly to classroom performance (e.g., Eriksen, 1974). These cognitive and affective qualities also have physiological correlates, such as flexibility and stability (resistance to stress), which are crucial to effective learning. Educational researchers have found that students’ cognitive and affective entry characteristics noted above account for 75 percent of their outcomes on academic achievement measures, while the quality of instruction accounts for only 25 percent (B. Bloom, 1976).

The ability of the Transcendental Meditation program to foster systematic improvement in these characteristics of the student is highly significant for improving the success of schools and universities. All of these major characteristics that contribute to successful learning have been found to increase among students who learn the Transcendental Meditation program. This includes improvements in alertness, intelligence, memory, field independence, self-concept, emotional stability, greater physiological resistance to stress, as well as improved academic achievement. Table 1 lists the major findings and research references in
each of these areas, demonstrating the beneficial influence of students’ regular practice of the Transcendental Meditation technique.

The results of the Transcendental Meditation program when used by students with special educational problems have also been promising. Among children with learning problems who begin the Transcendental Meditation technique, improved self-regard and decreased general anxiety, test anxiety, and school dislike have been found in contrast to control students (Jackson, 1977; Overbeck & Tönnies, 1975). Mentally retarded children who are taught the Transcendental Meditation technique also show reduced behavior problems (Eyerman, 1981; Wood, 1981).

Reductions in drug and alcohol use are also found among high school and college students who begin the Transcendental Meditation program, as indicated by both retrospective surveys (Shafii, Lavely, & Jaffe, 1974, 1975) and prospective longitudinal studies (Katz, 1976; Lazar, Farwell, & Farrow, 1976; S. Nidich, 1980). Similar benefits have been found in longitudinal studies of students and other young people who volunteer to learn the Transcendental Meditation program in drug abuse treatment centers, in contrast to their previous history and the results of other treatments (Brautigam, 1976; Schenkluhm & Geisler, 1976).

Effects of Implementing Unified Field Based-Education in the Classroom—Several studies have been performed on the implementation of the Transcendental Meditation program as part of a class in the Science of Creative Intelligence. The findings of these studies are consistent with those in studies of students who begin the Transcendental Meditation program outside the school. Levin (1976) found nine-month longitudinal increases in self-concept and improved relations with family members among those learning the Transcendental Meditation program as part of an SCI class, in contrast to controls in a psychology self-development class. Kory and Hufnagel (1976) evaluated the effects of students learning the Transcendental Meditation technique as part of a one-semester SCI course in three high schools, in comparison to control groups taking psychology courses. Although sample sizes were small, meditating SCI students in two of the three schools displayed significant decreases in state and trait anxiety and increases in grade point average during the period of the course.
In two studies, the relative effects of the intellectual and experiential components of the SCI course were evaluated. In the first of these, Shecter (1978) randomly assigned high school students in Ontario to groups involved only in the classroom component of the Science of Creative Intelligence course, only the laboratory component (Transcendental Meditation technique), or both; another group served as a no-treatment control. Both groups learning the Transcendental Meditation technique, when compared to the other two groups, showed an increase over the 14-week course in fluid intelligence, creativity, energy level, innovation, self-esteem, and tolerance, and decreased anxiety and conformity. In a similar study by S. Nidich (1980, 1982), college students taking a course in the Science of Creative Intelligence who also began the practice of the Transcendental Meditation program displayed decreased anxiety and decreased drug and alcohol use, in contrast to control students within the class who did not learn the practice and to students in other classes.

These studies indicate that it is the experience provided by the Transcendental Meditation technique that is responsible for the improvements in physiological, psychological, and behavioral functioning among the students. One of the values of the class in the Science of Creative Intelligence is that it helps the students to understand the principles by which these improvements in their lives take place, thereby helping to ensure their regular practice of the Transcendental Meditation technique and long-term development of higher states of consciousness.

Two studies applied Transcendental Meditation without the Science of Creative Intelligence component in a class setting. The first of these involved teaching the Transcendental Meditation program to a class of high school students in a village in India; experimental subjects showed an improvement in reading comprehension, memory, and concentration in contrast to control classes (Nataraj & Radhamani, 1975). In another study, in England, 20 students in an M.Sc. program were randomly assigned to learn the Transcendental Meditation program or not to learn immediately. The group learning the technique showed improved grade point average the following semester in contrast to control subjects (Kember, 1985).
Effects of School-Wide Implementation of Unified Field-Based Education—Maharishi University of Management and Maharishi School of the Age of Enlightenment were founded as a model university and school making use of unified field-based education throughout the institutions. A number of research studies and evaluations have monitored the results of the Maharishi University of Management educational system. At the college level, cross-sectional studies indicate that Maharishi University of Management students score higher than controls or norms on scales of self-actualization (Orme-Johnson & Duck, 1976), and show higher levels of moral reasoning on Kohlberg’s scale (S. Nidich, 1976) and greater psychological stability (Brown, 1976/1977). One interesting feature of the last study was that Maharishi University of Management students displayed a unique combination of traits not found at either large universities or private colleges: a higher intellectual and scientific orientation along with a greater respect for traditional religious values. In comparison with students in other distinctive private colleges in Iowa, Maharishi University of Management students reported a stronger academic atmosphere outside of the classroom, and greater personal development since matriculation (Baer, S. Nidich, & Abrams, 1988).

Longitudinal studies of Maharishi University of Management undergraduates over four years have demonstrated fluid intelligence increases, in contrast to no change in normative trends (Aron, Orme-Johnson, & Brubaker, 1981; Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986), increased field independence (Dillbeck et al., 1986), and increased social maturity and psychological health as indicated by personality tests (Aron et al., 1981).

Longitudinal studies over shorter periods of the Maharishi University of Management curriculum indicate that students who learn the TM-Sidhi program, compared with matched Maharishi University of Management students who have not yet learned this advanced practice, show significantly increased abstract learning ability (concept learning), increased flexibility of the central nervous system (faster recovery of the paired Hoffman reflex), and increased orderliness of brain functioning as indicated by EEG coherence in frontal brain areas (Dillbeck, Orme-Johnson, & Wallace, 1981; Orme-Johnson, Wallace, Dillbeck, Alexander, & Ball, in press; Wallace, Mills, Orme-Johnson,
Dillbeck, & Jacobe, 1983). These cognitive and neurophysiological developments occur together as an integrated whole (Dillbeck et al., 1981), and higher levels of these traits predict higher academic performance (Wallace, Orme-Johnson, Mills, & Dillbeck, 1984).

Maharishi School of the Age of Enlightenment was founded in 1974 and currently enrolls almost 500 students from kindergarten through grade 12. At Maharishi School the beneficial effects of students learning the Maharishi Technology of the Unified Field at an early age are evident in all areas of their lives, cognitive, affective, and behavioral.

Studies using Piagetian cognitive tasks to assess the pattern of cognitive development among Maharishi School students, in comparison with non-meditating students at other schools, have found consistently positive results. The concept of “conservation” in Piaget’s theory of cognitive development is a defining characteristic of a major transition in childhood to a higher stage of cognitive development. Conservation refers to the ability to identify properties that are invariant under transformation, and success on measures of conservation indicates that the thinking process is less bound by sensory perceptions (Piaget & Inhelder, 1969). For example, before a certain age, when a child watches the water from a wide beaker being poured into a tall, narrow beaker and thus rising to a higher level, he does not “conserve” the quantity of liquid and thinks that there is more water in the taller glass. The conservation of various qualities is established sequentially over a long period of time; conservation of number is found at ages 5–6, conservation of liquid quantity at ages 7–8, conservation of weight at ages 9–10, and not until ages 11–12 is conservation of volume found (Piaget & Inhelder, 1969).

In the first study of conservation among children participating in the Transcendental Meditation program, students at Maharishi School and meditating children from the Cambridge, Massachusetts, area were compared with non-meditating children from a Cambridge school (Alexander, Kurth, Travis, Warner, & Alexander, 1988). The mean conservation score of the meditating and Maharishi School children was significantly higher than that of the control children, statistically controlling for differences in age, gender, grade, and parental socioeconomic status (SES). This finding was replicated in a second
study (Warner, 1986). In the later study, one-third of the students in grades K–5 at Maharishi School were randomly selected, and matched with children from other schools. Children were sequentially given tasks of conservation of volume, weight, substance, and number, each of which involved three different transformations. The Maharishi School children again displayed a significantly higher conservation score than control subjects, covarying for age, education, gender, and parental SES. These studies indicate that children who practice the Transcendental Meditation technique show more rapid cognitive development.

On a test of creativity, the high school students from Maharishi School displayed significantly higher performance than control subjects taken at random from the normative data bank of the test (Zanath, 1985). This finding is also consistent with the conclusion that students practicing the Transcendental Meditation technique show a more advanced pattern of cognitive development than their peers.

As a result of the rapid cognitive development of students at Maharishi School, the level of academic achievement has been extremely high despite the fact that the school maintains a liberal admissions policy. Studies have compared each grade at Maharishi School against national norms for entire grades on the Iowa Tests of Basic Skills (ITBS) (administered to grades K–8) and the Iowa Tests of Educational Development (ITED) (grades 9–12). The comparisons repeatedly show a large majority of Maharishi School classes to be in the top five percent nationally, with many classes, particularly in the upper grades, in the top one percent. Longitudinal research also indicates that students at Maharishi School significantly increase in percentile level on the ITBS and ITED tests over the course of one school year (S. Nidich & R. Nidich, 1986; S. Nidich, R. Nidich, & Rainforth, 1986).

The quality of Maharishi School appears exceptionally high in the affective and behavioral as well as the cognitive domain. Using Harvard’s interview assessment form, high school classes at Maharishi School were found to have a moral atmosphere that was significantly better on several subscales than two “participatory democracy” schools designed specifically to improve moral atmosphere (R. Nidich & S. Nidich, 1985). Maharishi School students showed statistically significant differences on the categories of pro-social behavior by self and pro-social behavior by others than either of the two comparison schools.
This means that although the perceived social norms for right and wrong behavior were comparable at Maharishi School and the participatory democracy schools, a higher proportion of high school students at Maharishi School reported that their own and others' behavior was actually consistent with these norms. Maharishi School students also reported a significantly higher moral atmosphere than they experienced at their previous schools, whether the prior school was private or public. Finally, the moral atmosphere responses of the students regarding themselves were significantly correlated with teachers' ratings of actual pro-social behavior, indicating that student responses were accurate.

Interviews with Teachers at Maharishi School of the Age of Enlightenment—In this section we report previously unpublished results of recent interviews with seven teachers at Maharishi School of the Age of Enlightenment, each of whom had extensive previous teaching experience. This information was gathered in order to give a more detailed and concrete picture of the process of teaching at Maharishi School and also to stimulate further educational research. Although each teacher reported details that were unique, a number of common features emerged as distinctive of Maharishi School students that were consistently reported by almost all teachers. These can be organized under the categories of affective, cognitive, and physiological characteristics.

The teachers most strongly emphasized the affective qualities of Maharishi School students. The most common characteristic reported by all teachers was that the students are more kind—gentle, sensitive to others, and happy—than students they have previously taught who do not practice the Transcendental Meditation program. As a result, teachers reported, mean or cruel behavior and comments were almost entirely absent. Similarly, although Maharishi School students have groups of favorite friends, they tend not to form cliques that exclude other students.

The most experienced of the teachers (27 years teaching) noted that the students are unique in their ability to integrate knowledge with their lives. They also are flexible enough to quickly change behaviors and patterns of interaction that are pointed out as not appropriate, and continually progress to perform beyond their previous limitations. Also
commonly reported was the fact that students at Maharishi School have a quality of inner strength and self-confidence that makes them bold in expressing their thoughts and questions. Teachers reported that these affective qualities were the foundation for the high level of curiosity and vitality expressed in the classroom. Several teachers noted that despite a wide diversity of abilities, interests, and personalities in the classroom, there was a feeling of harmony or “coherence” that allowed each student to more fully contribute to the classroom activity as well as to gain from it. Teachers also stated that classroom harmony allowed the students to work together in groups remarkably effectively.

In the cognitive domain, most teachers reported that the students at Maharishi School are very active learners; they were pictured as perceptive, alert, creative, and receptive to knowledge. They were described as asking many more questions than other students; given the opportunity, Maharishi School students greatly enjoy exploring a topic under the guidance of the teacher. Students were said to participate much more fully in the learning process; for example, in a mathematics class, students enjoy developing alternative ways to solve a problem, with many volunteering more direct solutions in addition to that offered by the teacher. It was noted that even those who were not the best students were never dull but always very alert. Students were described as being less egocentric than is normal for children of their age; this is consistent with the studies of cognitive development previously mentioned, since reduced egocentricity is one characteristic of higher development.

Several teachers also noted that their Maharishi School students were very intuitive as well as intellectually capable. Teachers mentioned that the children, even at a very young age, seem to have “an inner wisdom about life” that helps them locate the essence of an intellectual problem and relate the knowledge to their lives. Teachers stated also that students enjoy connecting the items of learning with the wholeness of the discipline through the Science of Creative Intelligence. Finally, on the physiological level, teachers consistently reported that the Maharishi School children were very energetic, also contributing to a more active level of classroom interaction.
Teachers at Maharishi School of the Age of Enlightenment also reported that since they have begun the Transcendental Meditation program many qualities in their own lives that contribute to effective teaching have improved. Health-related improvements include experiencing more restfulness and greater energy. Teachers also noted the affective changes of greater patience, calmness, and flexibility, the ability to establish deeper relationships with the students, and increased inner happiness. The consequence of these changes was to provide the students with a more positive and comfortable learning environment. Among the cognitive developments reported personally by the teachers were increased awareness, greater ability to focus, increased creativity, and a broader perspective. They reported that the development of these qualities enabled them to more easily respond to the individual needs of the students, to better appreciate students’ points of view, and to talk to them on their level. The teachers also report that they are more confident and successful in following their intuition about the directions to take in the classroom. One outstanding teacher with over 25 years of experience said that after learning the Transcendental Meditation technique her extensive knowledge of teaching skills became more integrated with her classroom experience, so that she could more successfully apply the right knowledge at the right time.

When everyone in a school practices the Maharishi Technology of the Unified Field, an environment is produced that is uniquely effective in fostering personal growth and academic achievement. In regard to their own careers, the school faculty members expressed great excitement and satisfaction in teaching at Maharishi School; one teacher reported that in the process of teaching at Maharishi School, “I feel as though I’m getting the education I always wanted.”

The categories of cognitive, affective, and physiological development reported by Maharishi School teachers for themselves, their students, and the classroom are charted in Table 2. This table provides a model to explain how unified field-based education stimulates the holistic development of student and teacher, and in so doing contributes directly to a more ideal classroom environment.
Comments on Unified Field-Based Educational Institutions by Students, Teachers, Administrators, and Visitors—This section reports impressions of students, teachers, and educational administrators on the results of implementing unified field-based education at Maharishi University of Management, Maharishi School, and elsewhere.

Kristel Bach-McQueen, a psychology major at Maharishi University of Management, notes:

Before I came to Maharishi University of Management I was interested only in literature. I considered every science beyond me. After the first year I was inspired to choose psychology as my major. Now I find that even statistics is fascinating. Maharishi University of Management has
truly expanded my vision of what a college education should be—and of what I can be.

Samuel Boothby, Maharishi University of Management alumnus and Ed.D. Candidate at the Harvard University Graduate School of Education, writes:

My education at Maharishi University of Management was an excellent preparation for graduate studies. The knowledge presented was the most fundamental and significant for my field. Most importantly, because the knowledge was presented in terms of my own experience, I don’t have to go back to my notes when I need the knowledge—it’s a part of me.

June Aherne, science teacher at Maharishi School in Fairfield, interviewed shortly after 25 students in the School received top awards in the state science fairs in 1987, stated:

I find that these children have an extraordinary feeling for how nature works. I barely had to help them at all in their projects for the fair. They had a clear vision of where they were going and what they were looking for. I’ve never had students with this kind of a feeling for science.

Dr. Norman Brust, former Superintendent of Schools in a St. Louis school district and Principal of Garfield School in St. Louis, remarks:

At Maharishi School what is most extraordinary is the creative attitude of parents, teachers, and students towards every aspect of activity. This, and the harmonious relationships among everyone, all come together to make the kind of environment where learning can really take place. I encourage all public school administrators to explore the implications of this approach for public education.

Dr. Louis Albert, Director of Special Projects for the American Association for Higher Education, commented:

As a visitor to Maharishi University of Management, I have been impressed with the growth of the students. They go through a remarkable transformation. One is forced to ask, “How do students get to be this way?” Maharishi University of Management provides a rich traditional academic program like other schools, but what makes the difference at Maharishi University of Management is the unified field-based approach.

Based on the success of Maharishi University of Management and Maharishi School of the Age of Enlightenment in Fairfield, the
Maharishi Technology of the Unified Field has been introduced on elementary, secondary, and post-secondary levels of education to many thousands of students in over 20 countries, including Australia, Brazil, Denmark, the Dominican Republic, Great Britain, India, Kenya, Korea, the Netherlands, Norway, the Philippines, Puerto Rico, Taiwan, and Thailand.

Mrs. Y.G. Parthasarathy, the Director of Padma Seshadri Bala Bhavan Senior Secondary School in Madras, India, where all 5,000 students and teachers have been practicing the Maharishi Technology of the Unified Field since 1980, reports:

When I heard that the Transcendental Meditation technique improved alertness, memory, and concentration in students, and that it would improve their performance in classes, I decided that all my students and teachers should learn. Right away I noticed that discipline improved tremendously in all classes, and the students seemed brighter and happier. Then the results on their public exams showed they scored in the top 10 percent of the nation. More students in the upper grades of our school have achieved national academic honors than any other non-governmental school in India. . . . Also the problems we used to have with our staff have just cleared up naturally. Negative influences are just neutralized by the positivity in the whole school atmosphere.

**Sociological Effects of School-Wide Implementation of Unified Field-Based Education**—One of the primary goals of every educational system is to create a positive influence on the society that it serves. As noted in the beginning of this article, because educational systems do not fully develop the knower, their positive influence on the environment is at best limited, as reflected in the troubled state of societies in all parts of the world.

With the implementation of unified field-based education, however, a school or university can generate an immediate and measurable positive impact upon the quality of life of the entire society. Moreover, the range of influence of the educational institution is limited only by its size; a school or university with more than 7,000 students could improve the quality of life of the entire world, laying the foundation for world peace.

The basis of this bold assertion is a principle that has repeatedly been demonstrated by scientific research: a group equal in size to the
square root of one percent of a society’s population practicing the Transcendental Meditation and TM-Sidhi programs together in one place generates an influence of coherence in the collective consciousness, immediately neutralizing stress and negative tendencies in the whole society (Dillbeck, Cavanaugh, Glenn, Orme-Johnson, & Mittlefehldt, 1987). Coherence in collective consciousness can be operationally defined in terms of improved quality of life indicators, such as reduced crime, accidents, and violence, and improved economic and health trends. This holistic improvement in the quality of life is known as the Maharishi Effect in honor of the founder of the Transcendental Meditation and TM-Sidhi programs (Borland & Landrith, 1976).

Many studies have documented the Maharishi Effect on the city, state or provincial, national, and global scales in the past 12 years. These studies include time series analyses of the effect of over 1600 participants in the Maharishi Technology of the Unified Field at Maharishi University of Management (the square root of one percent of the U.S. population) on the quality of life of the United States as a whole, and similar results in other countries (Burgmans, Burgt, Langenkamp, & Verstegen, 1989; Dillbeck et al., 1987; Dillbeck, Larimore, & Wallace, 1989; Dillbeck, 1990; Orme-Johnson, Alexander, Davies, Chandler, & Larimore, 1989). During three periods when the number of participants in the technology at Maharishi University of Management and at other locations exceeded or approached 7,000—the square root of one percent of the world’s population—time series analysis showed reduced international conflicts and improved economic indices worldwide (Orme-Johnson & Dillbeck, 1987b). A detailed review of these studies and the principles underlying this effect can be found in Orme-Johnson and Dillbeck (1987a).

The mechanism proposed by Maharishi to explain this effect is that when large groups of participants in the Maharishi Technology of the Unified Field experience the unified field of all the laws of nature, a field effect is generated that spreads coherence through the entire society. As a result of this effect, the thoughts and actions of everyone in the society begin to be more in accordance with the full range of the laws of nature available in the unified field. As a result, the behavior of citizens begins to promote progress and harmony in society rather than stress and conflict (Maharishi Mahesh Yogi, 1986, pp. 94–101).
Through the Maharishi Effect, it is possible for any educational institution to immediately have a profoundly holistic and positive influence on the entire society and nation through the group practice of the Transcendental Meditation and TM-Sidhi programs. Maharishi Mahesh Yogi is now establishing in India an educational institution of over 7,000 students and faculty collectively practicing the Maharishi Technology of the Unified Field to create a permanent influence of coherence in world consciousness and thereby establish a lasting state of world peace. Any school or college of comparable size has the potential to magnify this same effect by creating a similar large group of students collectively practicing this technology at the beginning and end of the school day.

Unified field-based education has thus raised the dignity of educational institutions so that students and teachers, even as they are unfolding their own inner potential and creating a dynamic and positive school environment, are also immediately improving the quality of life of the entire society and contributing to world peace.

**Meeting Current Educational Challenges**

The purpose of this section is to suggest how use of the Maharishi Technology of the Unified Field solves widely recognized problems in education today. When students and teachers are more comprehensive in their thinking, more engaged in learning, and more fulfilled in their achievements, many of the current concerns in education are naturally resolved. In this section educational problems identified in the areas of curriculum, students, and teachers are expressed in quotations from contemporary educators. The solutions presented here are based on the research, educational outcomes, and experience with Maharishi’s unified field-based education.

Universities and schools are not providing a coherent curriculum:

The absence of a rationale for the major [field of study] becomes transparent in college catalogues where the essential message embedded in the fancy prose is: pick eight of the following. And “the following” might literally be over a hundred courses, all served up as equals. The chairman of the Committee on Economic Education for the American Economic Association, in a letter to AAC, recently admitted that . . . it is unlikely, whatever the major or institution, that the average graduating senior “has
any integrated sense of his major discipline and its links to other fields of inquiry.” (Association of American Colleges, 1985, p. 2)

The fundamental element that provides meaning and coherence to a curriculum is the consciousness of the student. Even though courses may be offered to the students in a planned sequence and main themes brought out to integrate different disciplines, the potent and enriching ideas of these courses remain in the books or in the minds of the professors when the students’ thinking is not clear, profound, and integrative. The more expanded their awareness, the more easily they can comprehend fundamental principles, make profound connections, and bring a clear sense of values to whatever they study. Breadth of vision, depth of insight, a fruitful imagination—these directly contribute to the student’s ability to experience knowledge as an integrated whole.

With the experience of deeper levels of consciousness students and faculty feel more “at home” with the laws of nature; their understanding of their subjects becomes more subtle and expanded. Eventually they become aware of the unity of all knowledge within their own consciousness. Unified field-based education thus gives a new basis for curriculum integrity: the common ground of student and subject matter, experienced as the simplest form of the students’ awareness. With fully awakened and unbounded comprehension, students fully appreciate and integrate the different fields of knowledge.

Specialization and professional training result in fragmentation of knowledge:

Majors have deflected attention from the serious business of creating an intellectual environment that makes a central concern the quest for the powers of informed judgment and for the dual capacities of appreciation and criticism. . . . [Majors have] been proliferating, especially in the vocational and technical fields, where the appeal of jobs has blinded institutions and students to the ephemeral nature of much that is contained in the new majors. In the meantime, students are being shortchanged, denied the intellectual experiences that will enable them to comprehend their world and to live in it freely, courageously, happily, and responsibly. (Association of American Colleges, 1985, p. 27)

To become an expert in a highly complex society one has to specialize. Unfortunately, specialization has required sacrificing knowledge of the breadth of human experience to gain depth and command of one
limited area. Until now there has been no practical way to expand one's knowledge of the whole of life while one is specializing in a part of life. Transcendental Consciousness is the experience of the unified basis of all the laws of nature. When one is stationed at this level of unbounded awareness, success in life is not restricted to isolated areas of knowledge and activity; all thoughts and actions are spontaneously upheld by the totality of natural law. Students participating in unified field-based education continue their training as expert professionals in a focused area while they are growing in wisdom and enjoyment of the wholeness of life. They respond to the changing demands of the environment more creatively, growing in the ability to make right decisions in the entire sphere of their activity, not just in the area of their expertise.

Institutions lack a common purpose to unify their programs and give direction to their decisions:

Is it possible for administrators, faculty, and students with their separate interests to agree on a vital mission for undergraduate education? Can the curriculum serve individual interests while providing a coherent view of the human conditions? ... Above all, can the liberal and useful arts be blended during college, as they must inevitably be blended during life? (Boyer, 1987, p. 19)

A high school, to be effective, must have a clear and vital mission. Students, teachers, administrators, and parents at the institution should have a shared vision of what, together, they are trying to accomplish. But is it possible to serve all students and also find a coherent purpose for our schools? (Boyer, 1983, p. 58)

The knowledge of the full potential of life and the technology to achieve this potential give a new purpose to education: to raise every student and teacher to enlightenment, the fully developed state of human life, and thereby establish a creative and peaceful society. This purpose embraces and fulfills all other educational aims. With the growth of higher states of consciousness through the Maharishi Technology of the Unified Field, students and teachers grow toward the full expression of their creative intelligence and happiness. The experience of the unity that underlies and connects everyone and everything naturally gives rise to loving behavior, harmonious relationships, and exemplary citizenship.
Education that truly serves all its students and the needs of society awakens students and teachers to the infinite possibilities inherent in their own consciousness. Such an education frees the individual from error and wrongdoing. It expands the range of perception and thought, and develops the capacity to live a life that is blissful, happy, and most useful to others. Unified field-based education offers the practical means to fulfill this sublime purpose.

Education does not develop high principles and deep values in students:

The kinds of questions children ask: Is there a God? Is there freedom? Is there punishment for evil deeds? Is there certain knowledge? What is a good society? were once also the questions addressed by science and philosophy. But now the grownups are too busy at work, and the children are left in a day-care center called the humanities, in which the discussions have no echo in the adult world. Moreover, students whose nature draws them to such questions and to the books that appear to investigate them are very quickly rebuffed by the fact that their humanities teachers do not want or are unable to use the books to respond to their needs. (A. Bloom, 1987, pp. 372–373)

The principle, “knowledge is structured in consciousness,” from the Science of Creative Intelligence, implies that the degree of wakefulness of the knower determines the significance of the knowledge he can give or gain.

Teaching, appreciating, and realizing the most profound wisdom of the culture require a level of awakening that has not previously been fostered through education. Exposing students to the highest cultural, scientific, artistic, and humanistic values does not reliably enliven these values. If the thinking of the students is shallow, they will not be able to appreciate the richness of ideas that underlie our traditions and have shaped our way of life. The students themselves must acquire the level of understanding and sensitivity to discover these ideas as true.

Until recently the quality of awareness of the student has not been subject to systematic development. The result has been that liberal education, which aspires to actualize the good life through knowledge, has fallen short of its goals.

With the use of the Maharishi Technology of the Unified Field, students and teachers gain greater depth of thought and feeling. This technology expands their awareness of the fundamental level of existence.
that unifies the infinite diversity of life. Increasingly students experience the connection between themselves and the world around them. This growing unity is reflected in their speech and behavior. They feel a greater affinity with those ideas from past and present that support life and progress. As they become familiar with the deepest and most universal levels of their own existence, the enduring values of the civilization take on more meaning and are more naturally lived.

Education does not sufficiently involve students in learning and is not found to be relevant or fulfilling:

The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement in learning.

(National Institute of Education, 1984, p. 19)

Students are involved in learning when they can see the content of their classes as potentially useful for progress in their lives. For students to be as absorbed in their subjects as their teachers are, they should feel a similar familiarity and enjoyment of the area of study, and an appreciation of its value for their growth. Only then can they adopt the teachers’ standards as their own.

Years of experience with unified field-based education suggest that this close relationship between the student and the object of study can be attained in two mutually enriching ways: through direct experience of the unified basis of self and subject matter, and intellectually through the use of the specific teaching methods described earlier, such as Unified Field Charts.

With these additions to the curriculum, students more easily integrate the knowledge they are studying. In Maharishi’s words, students come to perceive all branches of knowledge as different modes of their own intelligence. This intimacy between student and content produces a classroom atmosphere of intellectual excitement, and the desire to probe more deeply into the discipline. (See Section 4.) Students become more active learners, creators as well as receivers of knowledge.

Maharishi (1973) describes this growth:
When the practice of Transcendental Meditation is introduced along with the study of any discipline, the knower becomes more and more wide awake within himself as he is amassing knowledge. . . . Then any knowledge that comes from outside is experienced as a wave of one’s own consciousness. . . . This is how to build up the student’s personality in knowledge. When knowledge becomes part of one’s breath, of one’s awareness, then every wave of knowledge is a wave of happiness, a wave of fulfillment.

The effectiveness of schooling is diminished by antisocial behavior and student dropouts:

The main reason students want to leave school is that they are discouraged and doing poorly. “Not interested in school” was mentioned most frequently by young white men as the reason for dropping out. . . . (Boyer, 1983, p. 244)

The threat of physical violence in the schools has received considerable attention. The problem is, in fact, very real. (Boyer, 1983, p. 159)

Maharishi has said that the youth in schools everywhere have a thirst that is not being satisfied. This thirst is for knowledge—knowledge that will bring happiness and fulfillment to their lives. When their education fails to provide this knowledge, students become uninterested, destructive, or seek temporary relief through activities that damage their physical and mental health.

Irrespective of the background of its students, any school can begin to build the receptivity, self-esteem, creativity, and emotional stability students need to benefit most from their education. These traits are nurtured by the experience of the deepest, most stable and blissful level of their own existence, Transcendental Consciousness. Research has shown that practice of the Maharishi Technology of the Unified Field develops in students a greater sense of well-being, more life-supporting thoughts and behavior, and more effective and fulfilling activity, which raises the quality of their lives both in and out of school. (See Section 4.)

Teachers are unable to promote excellence and equality of educational opportunity simultaneously:

The charge to provide quality and equality simultaneously is formidable under the best of circumstances. Given present circumstances, we must
address seriously the question of whether our system of schooling is up to it. (Goodlad, 1984, p. 45)

No modern society can hope to become a just society without a high level of universal literacy. Putting aside for the moment the practical arguments about the economic uses of literacy, we can contemplate the even more basic principle that underlies our national system of education in the first place—that people in a democracy can be entrusted to decide all important matters for themselves because they can deliberate and communicate with one another. Universal literacy is inseparable from democracy . . . . (Hirsch, 1987, p. 12)

The practice of the Maharishi Technology of the Unified Field directly develops the creative intelligence of every student without requiring attention from the teacher. The universal effectiveness and ease of practice of this technology recommend it as the most practical and cost-effective means available for students of any background to become self-sufficient and motivated learners.

When students and teachers begin practicing this technology, the atmosphere of the whole class is more conducive to learning. Teachers find it easier to meet a wide range of individual needs, attending to the slower students while maintaining high standards and stimulating the most gifted minds. Research has shown that students practicing the Maharishi Technology of the Unified Field improve in intelligence, creativity, learning ability, and academic performance. (See Section 4.)

Teachers find it difficult to maintain a classroom that is both orderly and creative:

Most [students] graduate without being stretched to their potential. At Ridgefield and elsewhere, there is a kind of unwritten, unspoken contract between the teachers and the students: Keep off my back, and I'll keep off yours. (Boyer, 1983, p. 16)

It is stress in the lives of students and teachers and in the environment that blocks the flow of their creativity and leads to hostility and disorder. When teachers respond to the threat of disorder in the classroom in a way that engenders fear or mistrust, they inhibit both their own and students’ natural creativity and spontaneity.
As demonstrated by extensive research, the practice of the Maharishi Technology of the Unified Field eliminates stress, stimulates creativity, and develops a neurophysiological state of restful alertness. (See Section 4.) The individual becomes wide awake and calm. As stress is eliminated from individual and collective life, the whole classroom spontaneously becomes more orderly, purposeful, and lively; self-discipline and enthusiasm harmoniously coexist. This has been the experience in many countries with schools and colleges using unified field-based education.

Teaching is often mentally and physically exhausting:

In sum, the teacher’s world is often frustrating, frequently demeaning, and sometimes dangerous. The result for many teachers is a sense of alienation, apathy, and what is now . . . called “teacher burnout.” (Boyer, 1983, p. 159)

The natural desire of teachers to share what they know for the good of society is thwarted when students are not receptive. Unruly and inattentive behavior, which is the expression of stress in the students and in the atmosphere of the school, is a drain on teachers and diminishes their ability to give.

Similarly, teachers who are stressed and fatigued cannot be as sensitive to the needs of their students or as creative in designing the most stimulating ways to bring about learning. Stress inhibits the spontaneous expression of creativity, flexibility, clarity, and compassion that characterize teaching at its best.

When the practice of the Maharishi Technology of the Unified Field is added to the daily routine of students and teachers, teaching becomes a more joyful occupation. The students are increasingly alert, enthusiastic, and kind; the teachers become more energetic, healthy, and resourceful. The students are able to meet higher standards, while the teacher can better assess their progress and guide them to deeper understanding, subtler values, more refined skills, and greater success. This is the common experience of teachers who practice the Maharishi Technology of the Unified Field. A mathematics teacher with 31 years of teaching experience comments:

Transcendental Meditation has helped me become aware that there is far more to teaching than just conveying knowledge of mathematics. It
has helped me guide students towards a greater appreciation of wisdom, of beauty, of the people around them, and of themselves; to understand the possibilities that exist, and the amount of control they can have over their own lives. By experiencing the deeper levels of my own being, I am able to respond to the students more as total human beings, and as a result they are very positive and cooperative in the classroom. (American Association for Ideal Education, 1986)

Teachers do not easily apply in their classrooms the accumulated knowledge and research findings on effective teaching:

Much is known about the conditions under which student learning and growth can be maximized. . . . But our colleges, community colleges, and universities rarely seek and apply this knowledge in shaping their educational policies and practices. We contend that the quality of undergraduate education could be significantly improved if America’s colleges and universities would apply existing knowledge [about teaching]. . . . (National Institute of Education, 1984, p. 17)

It appears that even teachers who have been exposed to new practices [which] presumably related very positively to student achievement do not necessarily use them effectively in their classrooms . . . too few of the kinds of engagements we want young people to have with knowledge occur in the classroom setting. (Goodlad, 1984, p. 192)

Teachers who readily apply new knowledge and research findings in their classrooms seem to possess certain qualities: inner stability, which gives them the confidence and boldness to try something different; adaptability, which makes them open to new possibilities; integration, which enables them to introduce a new idea or approach into their established patterns of teaching, bringing new and old ideas together; purification, the ability to discontinue types of behavior or activities that are not producing the results they want; and growth, continuous mental, physical, and spiritual development.

Maharishi has identified these five qualities as the “Fundamentals of Progress.” Scientific research and experience with teachers who practice the Maharishi Technology of the Unified Field have shown that it fosters the physiological and psychological growth of these fundamentals. (See Section 4.) When students also practice the technology, a classroom environment is created that inspires teachers to give their best.
New Principles of Education Based on Knowledge and Experience of the Unified Field

Students and teachers respond to education in new ways as their awareness expands and they command more of their inner potential, just as someone who is wide awake evaluates his surroundings differently than when he is drowsy. The knowledge, technology, research, and experience with the Maharishi Technology of the Unified Field have given rise to new conceptions about education—all based ultimately on the experience of Transcendental Consciousness.

Principles that have been guiding education in the past are being replaced or expanded with new principles based on a more complete understanding of the nature, range, and development of human consciousness. These new principles, which derive from Maharishi Vedic Science, currently guide teachers and administrators who are applying unified field-based education. The contrasts between old and new principles are summarized below, and also serve to recapitulate basic concepts of Maharishi’s theory of education.

Purposes of Education

Old Principle: The purpose of education is to prepare students with the knowledge, skills, and values they need to achieve their personal and professional goals and to uphold the values of society.

New Principle: The primary purpose of education is to develop higher states of consciousness, in which thought and action are spontaneously in harmony with natural law, desires are achieved without strain or accumulation of stress, and life is lived in happiness, health, and fulfillment. With this level of enlightenment all the current purposes of education can be most easily achieved.

Old Principle: Mistakes are natural to life. We educate ourselves in order to minimize the number and severity of mistakes we make and to gain increasing control over the circumstances that confront us.

New Principle: Mistakes are unnatural; they result from stress and the limited use of one’s full creative potential. When students are trained to function from the unified field of all the laws of nature, their thoughts and actions are spontaneously right for the circumstances and life is lived free from mistakes.
Old Principle: Centers of learning thrive on opposition and controversy.  
New Principle: Centers of learning are centers of coherence, radiating a purifying influence to the whole society through the Maharishi Effect. Diversity and creativity flower on the ground of the underlying unity of the unified field.

Knowledge

Old Principle: The best preparation for success in life is exposure to the most important knowledge, which is preserved in great books or embodied in great teachers.  
New Principle: The best preparation for success in life is regular experience of Transcendental Consciousness, which, when added to traditional education, leads to the full unfoldment of the student’s intellectual and emotional maturity.

Old Principle: A curriculum structures the path of knowledge and experience that leads students toward a greater range and depth of knowledge.  
New Principle: A curriculum structures a path of knowledge and experience that systematically expands the student’s awareness, so that all the diverse parts of knowledge become integrated into one wholeness of knowledge, which the student realizes as his or her own Self.

Old Principle: Objective scientific knowledge is the foundation of education since it alone has proven reliable for advancing the progress of society.  
New Principle: Subjective and objective knowledge of the unified field of natural law is the foundation of education, since experience of the unified field alone has proven reliable in bringing individual and collective life into balance and out of suffering.

Old Principle: Fragmented and limited knowledge is an unfortunate but necessary consequence of specializing in a particular field.  
New Principle: Higher education develops higher consciousness in which all disciplines are perceived as expressions of one’s own intelligence. Life is experienced as one unbroken wholeness, even as one becomes an expert in a specialized area.
Old Principle: The values and knowledge in society in a given era determine what the schools teach.
New Principle: By creating coherence in collective consciousness through the Maharishi Effect, schools can lead society to higher knowledge and values, and greater progress, cultural integrity, and invincibility.

Old Principle: All knowledge should be available on one campus.
New Principle: All knowledge is available in one human brain when the individual’s awareness is established in the unified field.

Teaching and Learning

Old Principle: The potential of the human mind and the capacity for its development are limited.
New Principle: The capacity of the human mind is unlimited. Its full creative potential, experienced in higher states of consciousness, can be systematically unfolded through the Maharishi Technology of the Unified Field.

Old Principle: A student’s academic success is determined primarily by parental influences and the skill of the teacher.
New Principle: A student’s academic success is determined primarily by his or her level of awareness, which can develop day by day through the experience of the most profound and powerful level of existence.

Old Principle: The best way to involve students in learning is to maintain a lively interaction with them and give them opportunities to speak, write, and participate in group projects.
New Principle: The best way to involve students in learning is to give them the experience of the deep silence of Transcendental Consciousness, the basis of dynamic activity and the common ground of knower and known, so that students come to perceive all subjects of study as expressions of themselves. Then their learning activities are most fruitful and fulfilling.

Old Principle: Knowledge is made relevant by referring it to the students’ previous experience.
New Principle: Knowledge is made relevant and satisfying by referring it to the students’ experience of growth of consciousness.
Old Principle: The teacher must often choose between maintaining student enthusiasm and covering the required subject matter.

New Principle: With expanded energy and creativity, the teacher inspires the students’ enthusiasm for the subject matter; students enjoy learning what the teachers want to teach.

Old Principle: Disorderly behavior and negativity are unfortunate but natural in students.

New Principle: Disorderly behavior and negativity are unnatural; they are a product of stress in individual and collective consciousness. Order, which is natural to life, is restored by enlivening the field of perfect orderliness, Transcendental Consciousness.

Old Principle: A healthy self-concept and strong ego are developed in students primarily by giving them continual evidence of their success.

New Principle: Unshakable confidence and inner strength grow naturally from the experience of the deepest and most stable level of the personality, Transcendental Consciousness.

Old Principle: Teaching drains energy.

New Principle: Teachers gain energy from their contact with the limitless energy of the unified field.

Conclusion

Knowledge of the full development of human consciousness provided by Maharishi Vedic Science, together with modern scientific principles, research on the Maharishi Technology of the Unified Field, and teaching experience worldwide, provide convincing evidence that any school or university can achieve its highest goals.

Maharishi’s Unified Field-Based Integrated System of Education directly develops the knower and the processes of knowing in both student and teacher. It gives students a practical method to develop their own creative potential from within themselves, by themselves. It enables them to improve those characteristics that are essential for success in education and in life, yet are beyond the ability of teachers to influence permanently: intelligence, coherent thinking, motivation, self-confidence, focus, self-discipline, creativity, and happiness.
With the development of these qualities, students make best use of their knowledge. They grow in organizing power. They more fully appreciate their teachers, their institution, and the opportunities in their environment. They are able to integrate their experiences inside and outside of class into a meaningful whole, on the ground of their own comprehensive awareness. With such students any school or university can become a vital center for intellectual, emotional, artistic, and spiritual growth. Maharishi comments:

When all students, from their first day in school, practice the Maharishi Technology of the Unified Field as part of their daily academic routine, they will never accumulate stress in their lives. They will be set on the unfailing path to enlightenment, unfolding their creative genius day by day. (World Parliament of the Age of Enlightenment, 1984, p. 5)

The conception of a limited and fixed capacity of the student to assimilate knowledge has become obsolete with the introduction of Maharishi’s technology. Day by day, year by year, the students grow in intelligence and maturity. They become increasingly attuned to the subtler levels of natural law that govern their own progress and the orderly progress of the universe. In practical terms this means that as the students continue to participate in unified field-based education they make fewer mistakes and are better able to achieve their desires. With this approach to education schools and universities can truly fulfill their goal to produce ideal citizens.

If the institution is large enough, the effects of the Maharishi Technology of the Unified Field will extend beyond the individual students and academic environment. Research shows that by practicing this technology as a group, students and teachers of one large university can neutralize negativity in the community, nation, and whole world consciousness, influence the trends and tendencies in society in a positive, life-nourishing direction, and thereby create a permanent foundation for lasting world peace.

Educators everywhere are invited to examine this approach. They are invited to visit Maharishi University of Management and Maharishi Schools of the Age of Enlightenment to see for themselves the extraordinary results of unified field-based education. They are invited to add to their own institutions the practical and powerful technology to raise
students and teachers out of problems to a level of achievement and fulfillment that has not until now even been conceivable.

Maharishi summarizes the value of unified field-based education:

Throughout the world for the last few years there has been a demand for some change in education. We are happy today to present to the world an ideal system of education where not only will the intellect be fed and satisfied, but the basis of intellect, the field of pure intelligence, the source and basis of life, will be fully realized by everyone. The result will be a life that is not baseless but that has a profound basis on the lively field of all possibilities. This is unified field-based life and for that we have unified field-based education. (Maharishi Mahesh Yogi, 1985, pp. 61–62)

Notes

1. In the terms of Maharishi Vedic Science, the unified field of natural law is the field of Veda and the Vedic literature, the fundamental impulses of natural law, whose self-interacting dynamics give rise to the innumerable laws of nature governing the orderly evolution of the universe. Under the guidance of Maharishi Mahesh Yogi, Professor Tony Nader, M.D., Ph.D., has discovered that the 40 fundamental aspects of Veda and the Vedic literature correspond precisely in structure and function to the fundamental aspects of human physiology; and that the planetary bodies and constellations have their counterparts in the structures of the human brain. Dr. Nader’s conclusion from this discovery is that inherent in every human being is the total intelligence of natural law, unlimited creative potential. The Maharishi Technology of the Unified Field—the Transcendental Meditation and TM-Sidhi programs—is the procedure to systematically unfold this potential in daily life. Please refer to Human Physiology: Expression of Veda and the Vedic Literature, 2nd ed., by Tony Nader, M.D., Ph.D. (Vlodrop, The Netherlands, Maharishi Vedic University Press, 1995).

2. By 2000 (13 years after this article was written), more than 600 scientific research studies, conducted at over 200 universities and research institutes in 30 countries have validated the benefits of this technology for individual life and society.

3. Maharishi (1972) expresses this fundamental relationship as “knowledge is structured in consciousness.”
4. “Self” refers to Transcendental Consciousness, the universal level of individual existence, as contrasted with “self,” which refers to the individual ego or personality.

5. Omitted.

6. Recent neuroscience research indicates that these holistic benefits can be understood as the expression of the systematic development of total brain functioning through the Transcendental Meditation program. Please refer to *Consciousness-Based Education for Total Development of the Brain in contrast to Existing Education which Partially Develops the Brain: Summary of Scientific Research* (Vlodrop, The Netherlands: Maharishi Vedic University Press, 2000).

7. The procedures for implementing Unified Field-Based education in any educational setting have been developed by an international team of consultants who have helped establish programs using the Maharishi Technology of the Unified Field in schools and colleges in many countries. Further information on these procedures, or on implementing the Transcendental Meditation program in the context of teacher training or staff development, is available by writing Dr. Susan Dillbeck and Dr. Michael Dillbeck, International Vice Presidents, Maharishi University of Management, Fairfield, Iowa 52557, U.S.A.

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Part II

Research on

Consciousness-Based Education
Effects of *Transcendental Meditation* Practice on Brain Functioning and Stress Reactivity in College Students

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ABSTRACT

This randomized controlled trial investigated effects of Transcendental Meditation practice on Brain Integration Scale scores (broadband frontal coherence, power ratios, and preparatory brain responses), electrodermal habituation to 85-dB tones, sleepiness, heart rate, respiratory sinus arrhythmia, and P300 latencies in 50 college students. After pretest, students were randomly assigned to learn the Transcendental Meditation technique immediately or learn after the 10-week posttest. There were no significant pretest group differences. A MANOVA of students with complete data (N = 38) yielded significant group vs treatment interactions for Brain Integration Scale scores, sleepiness, and habituation rates (p < .007). Post hoc analyses revealed significant increases in Brain Integration Scale scores for Immediate-start students but decreases in Delayed-start students; significant reductions in sleepiness in Immediate-start students with no change in Delayed-start students; and no changes in habituation rates in Immediate-start students, but significant increases in Delayed-start students. These data support the value of Transcendental Meditation practice for college students.

1. Introduction

Experience-related cortical plasticity was first identified during critical periods of development (von Senden, 1960; Hubel and Weisel, 1977), but now has been reported across the lifespan (Donoghue, 1995; Elbert et al., 1995; Buonomano and Merzenich, 1998; Merzenich, 1998; Maguire et al., 2006). Cortical plasticity explains learning (LeDoux, 2002; Zull, 2002). Synaptic connections are strengthened when students learn new facts, skills, and procedures (Mochizuki-Kawai et al., 2006).

Other experiences in college—high pressure, interrupted sleep, and alcohol and drug use—also leave their mark on brain functioning and behavior (Arnedt et al., 2005; Zeigler et al., 2005). Under high stress, the brain “downshifts” to a stimulus/response mode (Caine and Caine, 1991). Stress results in elevated sympathetic reactivity (Weekes et al., 2006), which can interrupt sleep causing excessive daytime sleepiness (Buboltz et al., 2001; Moo-Estrella et al., 2005) and cognitive deteriorations (Lee et al., 2003). High psychosocial stress causes brain regions involved in memory and emotions, such as the hippocampus, amygdala, and prefrontal cortex, to undergo structural remodeling, with
the result that memory is impaired and anxiety and aggression are increased (McEwen, 1998, 2006a,b).

The stress response is a normal response to prepare for emergency situations. However, if the system is not allowed to recover from stressful experiences, then the body becomes sensitized to stress (McEwen, 2004). The stress response may not turn off or it may get triggered by mild experiences (McEwen, 2006a,b).

Transcendental Meditation practice is reported to decrease effects of previous stressful experiences and to help an individual function better in stressful situations. Transcendental Meditation practice is characterized by 1) lower sympathetic tone (Dillbeck and Orme-Johnson, 1987); 2) higher parasympathetic tone, as reflected in amplitude of the high frequency component of heart rate variability, also called respiratory sinus arrhythmia (Travis, 2001); and 3) higher levels of frontal EEG alpha coherence (8–12 Hz) (Dillbeck and Bronson, 1981; Gaylord et al., 1989; Travis, 2002; Travis et al., 2002) and frontalparietal phase synchrony (Hebert et al., 2005). Simultaneous recording of EEG and MEG during Transcendental Meditation practice found that higher frontal and central scalp recorded alpha EEG activity is associated with MEG source location in medial frontal and anterior cingulate cortices (Yamamoto et al., 2006).

These physiological changes during Transcendental Meditation practice are associated with improvements in psychological functioning. A matched longitudinal study reported increases in Cattell Culture Fair IQ scores in college students after two years Transcendental Meditation practice (Cranson et al., 1991), and a random assignment longitudinal study reported increases in multiple measures of intelligence—Cattell Culture Fair IQ, practical intelligence, creativity, field independence and inspection time—after one year Transcendental Meditation practice (So and Orme-Johnson, 2001). A matched design reported greater flexibility in concept learning in college students (Dillbeck, 1982) and faster P300 latency in elderly participants (Goddard, 1989). A meta-analysis of 141 studies reported larger effect sizes for reduction of anxiety through Transcendental Meditation practice compared to other traditional meditation and clinical relaxation responses (Eppley et al., 1989). Another meta-analysis of 101 studies reported

Transcendental Meditation practice is also reported to result in improved health. A series of randomized controlled trials on the effects of Transcendental Meditation practice on prevention and treatment of cardiac heart disease in multi-ethnic groups reported reductions in hypertension, atherosclerosis, left ventricular mass, and CHD morbidity and mortality in high-risk multi-ethnic populations practicing the Transcendental Meditation program, compared to controls (Schneider et al., 1995; Alexander et al., 1996; Castillo-Richmond et al., 2000). Transcendental Meditation (TM) practice also changes brain patterns during challenging cognitive tasks after the meditation session. Nine brain measures including broadband inter- and intrahemispheric coherence (alpha: 8–12 Hz, beta: 12.5–20 Hz, and gamma: 20.5–50 Hz), broadband absolute and relative power, power ratios (alpha/beta and alpha/gamma), and cortical preparatory responses (contingent negative variation) were derived from EEG recorded during simple and choice reaction time tasks in 17 non-TM, 17 short-term (7.1 yrs TM) and 17 long-term Transcendental Meditation participants (24.2 yrs TM). Of these nine brain measures, three measures were entered in a multiple discriminate analysis of group differences: 1) higher broadband frontal (F3–F4) coherence (alpha, beta, and gamma), 2) higher alpha/beta absolute power ratios, and 3) better match between task demands and brain preparatory response (Travis et al., 2000, 2002; Travis, 2002). These empirically identified measures were converted to z-scores and combined to form a scale. This scale was called a “Brain Integration Scale” (Travis et al., 2002).

The Brain Integration Scale derived its name from the long-term Transcendental Meditation participants in this research, who reported the permanent integration of deep meditation experiences with waking, sleeping, and dreaming states. Also, this name was chosen because EEG frontal coherence, which was the first variable entered in the multiple discriminate analysis, reflects structural and functional connectivity between brain areas (Thatcher et al., 1986). Brain Integration Scale scores in these participants positively correlated with emotional stability, moral reasoning, and inner directedness, and negatively correlated with anxiety (Travis et al., 2004). Also, Brain Integration Scale
scores were significantly higher in top-level managers compared to middle-level managers (Travis et al., in review). Thus, the Brain Integration Scale appears to tap brain patterns important for success in life.

Reported effects of Transcendental Meditation practice on psychological and physiological functioning could be beneficial for students and help them manage the stressful experiences of college. The current study uses a random-assignment clinical-trial design with pretest and 10-week posttest to investigate effects of Transcendental Meditation practice on brain functioning, autonomic reactivity, heart rate, sleepiness, and speed of processing. The study hypotheses were that participants randomly assigned to learn the Transcendental Meditation technique, compared to wait-listed controls, would 1) increase in Brain Integration Scale scores; 2) increase in parasympathetic tone as measured by the amplitude of respiratory sinus arrhythmia during paced breathing; 3) decrease in sympathetic reactivity as measured by faster habituation rates to an 85-dB tone; 4) decrease in heart rate; 5) decrease in sleepiness levels as measured by Epworth Sleepiness Scale; and 6) have faster brain response times, as measured by shorter P300 latencies to novel stimuli.

2. Method

2.1. Study design

Pretest data were recorded from 50 students at the beginning of the spring 2006 term. The students responded to signs advertising the research and came to introductory meetings that explained the study. At these meetings, students volunteered to be part of the EEG section of this study. Following baseline recordings, students were randomly assigned, using computer randomization, to either Immediate-start or Delayed-start in Transcendental Meditation instruction. The posttest occurred 10 weeks before finals’ week at the end of spring term. This was a time of maximum stress for the students. The IRB approved the study before beginning recruitment for the study.

The initial design for this study included only the pretest and 10-week posttest. Subsequently, an additional year of funding was obtained. Following the 14-week summer vacation, the Delay-start participants learned the Transcendental Meditation technique, at the beginning of the fall term, and both Immediate-start and Delayed-start participants
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mediated throughout the fall term. A second posttest was conducted at the end of the fall term. However, only 36% of the Immediate-start participants and 60% of the Delayed-start participants were available for the second posttest at the end of the fall term. Many study participants missed the second posttest because they were out of the area on college-related internships. Due to the high attrition, it is difficult to make reliable inferences from the second posttest data. Thus, only data from the pretest and first posttest will be reported in this paper.

2.2. Subjects
This EEG research was a sub-study of research investigating effects of the Transcendental Meditation program on brain functioning, cognitive development, and health in 298 college students in the Washington, D.C. area. The inclusion criteria for entering this study were: 1) being an undergraduate or graduate student, 2) being in school through May 2006 (the study began January 2006), and 3) having blood pressure less than 140/90 mm Hg. During the first six weeks of recruitment for the neurophysiological sub-study, fifty students (13 males and 37 females; average age = 22.4±8.0 years) volunteered to participate in this part of the study. Forty-four were white; five were Asians; and one was Hispanic. These 50 students included 45 students attending American University, and one each attending George Washington University, George Mason University, Walden College, Marymount University, or Johns Hopkins University.

2.3. Procedure
Students came individually for their EEG recording. After completing consent and demographic forms, individuals answered the items on the Epworth Sleepiness Scale, while electrodes were applied. 1) 32 Ag/AgCl sensors were applied in the 10–10 system with sensors on the left and right earlobe for re-referencing offline. While coherence estimates are inflated by an averaged-ears reference (Fein et al., 1988; Travis, 1994), this confound would be the same in both groups and during the three recording sessions, and so would not mask possible group differences. The average-ear reference will also allow comparison with other Transcendental Meditation studies, which used averaged-ear references. 2) An Ag/AgCl sensor was applied on the left wrist to measure

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heart rate. 3) An Ag/AgCl sensor was applied on the palm to measure skin potential responses using the recommended Unibase gel for the palm sensor (Fowles et al., 1981), referenced to a sensor on the forearm after abrading the skin and applied with EC2 crème (Stern et al., 1980).

Physiological variables were recorded at pretest and posttest during 1) 1-min eyes closed, 2) 1-min eyes open, 3) 1-min eyes-open paced breathing at 10 bpm to calculate respiratory sinus arrhythmia, 4) 12-min of computer tasks (three different tasks), and 5) a 10-min eyes-closed session. The pretest data were collected at the beginning of the spring term, and the posttest was recorded one week before the finals’ week of the spring term. Thus, posttest recordings were during the high pressure and stress of approaching finals’ week for the college students.

At pretest, the participants were told to “Close the eyes and sit easily” during the last eyes-closed session. At posttest, participants were told: “Sit with eyes closed for 10 min, or practice the Transcendental Meditation technique for 10 min, if you have been instructed.” Since the researcher recording the data did not know if participants were resting with eyes closed or were practicing the Transcendental Meditation technique during the posttest, he was blind to group membership. Brain patterns during the final eyes-closed/Transcendental Meditation session will be reported elsewhere.

2.4. Intervention: the Transcendental Meditation technique
The Transcendental Meditation technique is a mental technique practiced 15–20 minutes, twice a day sitting comfortably. Transcendental Meditation practice involves a mantra. However, unlike most mantra meditations, any possible meaning of the mantra is not part of Transcendental Meditation practice. Rather, the individual is trained to appreciate the sound value of the mantra at more “refined levels” (Maharishi Mahesh Yogi, 1969). Also, unlike most mantra meditations, the Transcendental Meditation technique is not a process of concentration. Rather, Transcendental Meditation practice is a process of “effortless transcending”—using the mantra as a vehicle to take attention from the ordinary thinking level to the least-excited state of consciousness—consciousness without content, called pure consciousness (Maharishi Mahesh Yogi, 1969; Travis and Pearson, 2000) (see Travis
et al., 2002; Cahn and Polich, 2006 for a discussion of the concept of effortless transcending).

The Transcendental Meditation technique is learned in a standardized seven-step course, including an introductory and preparatory lecture, personal interview, and four days of instruction—1 hour each day (Roth, 1994). The four days of instruction include individual instruction followed by three group meetings. After the initial instruction, students came in individually for verification of correctness of their meditation practice once a month throughout the study. Also, weekly knowledge meetings were available to discuss experiences during meditation practice, application of Transcendental Meditation practice to different areas of life, or scientific research on meditation effects.

2.4.1. Regularity of Transcendental Meditation practice
After data recording for the posttest, the meditating participants completed forms that tallied the number of Transcendental Meditation sessions per week since their last EEG recording. They were asked to put their estimate under a “sure” column or “best guess” column for each week since the last EEG recording.

2.5. Psychological measures: description and analysis

2.5.1. Sleepiness
The Epworth Sleepiness Scale is a valid and reliable measure of sleepiness (Olson et al., 1998; Benbadis et al., 1999; Chervin, 2000; Johns, 2000). It asks for the chance of dozing from 0 (never) to 3 (high chance) during eight common events, e.g. sitting and reading, watching TV, etc. The final score is the simple sum of these responses—from 0 to 24. A score of 11 or higher is considered indicative of heavy sleep debt.

2.6. Physiological measures: description and analysis
All physiological signals were digitized online at 256 points/s, with no high or low frequency filters, and stored for later analyses using Brain Vision Analyzer.
2.6.1. Brain Integration Scale

The Brain Integration Scale consists of brain preparatory response (contingent negative variation tasks) during a simple and choice paired reaction-time task, and broadband frontal EEG coherence (alpha: 8–12 Hz, beta: 12.5–20 Hz, and gamma: 20.5–50 Hz), and alpha/gamma power ratios during a vigilance task—Conner’s Continuous Performance Test.

The simple reaction-time task lasted 2 min and measured attentional vigilance. Students were presented an asterisk (150 ms duration, 1 cm in height) in the center of a computer screen, followed 1.5 s later by S2, a continuous computer-generated tone (1200 Hz, 85 dB), and were asked to press the space bar as soon as they heard the tone. During the trials, participants were asked to focus on the center of the screen, and to rest their eyes after responding to the imperative stimulus. This resulted in very few eye-blinks, as noticed in Fp1 and Fp2, in the beginning 2 s. Two-second epochs were extracted from the data stream beginning 100 ms pre-S1 and ending 400 ms post-S2. Any epochs with artifacts were manually marked and eliminated from the average. Before averaging, the data were passed through a 0.01–6 Hz band pass filter with 48 dB roll off to remove the effects of alpha activity on the averaged waveforms.

The choice reaction-time task lasted 4 min. Students were presented a one- or two-digit number (150 ms duration, 1 cm in height), a 1.5-s blank screen, and then another one- or two-digit number (150 ms duration, 1 cm in height), and were asked to press a left- or right-hand button to indicate which number was larger in value.

The data were analyzed as in the simple trials. Late CNV was measured during both simple and choice trials in microvolts as the average amplitude in the 200 ms window before the second stimulus, relative to the 100 ms baseline. Simple-choice difference-scores were calculated (CNV simple−CNV choice) to assess the impact of the additional cognitive load of the choice trials independent of possible group differences in the simple trials.

Connor’s Performance Task-Identical Pairs task (CPT-IP) measures frontal executive functioning (Cornblatt et al., 1988). Participants were presented a capital letter (1 cm in height, 300 ms duration) every 0.9 s for 2 min. They were instructed to press a left button every time a let-
ter appeared that was different from the preceding letter; and to press a right button every time the current letter was the same as the preceding letter. This task is highly challenging because the letters came quickly and 80% of the letters require a left-hand button press. Thus, participants develop a response bias for left-hand responses. For the rare right-hand responses, the frontal executive system has to inhibit the left-hand response-bias and initiate the correct response.

Data during the CPT-IP task were visually scanned and any epochs with movement, electrode, or eye-movement artifacts, as identified in the Fp1 and Fp2 electrodes, were manually marked and not included in the spectral analysis. The artifact-free data were digitally filtered with a 2–50 Hz band pass filter with 48 dB roll off, and fast Fourier transformed in 2-s epochs, using a Hanning window with 20% onset and offset. Absolute power (uV2/Hz) was calculated from 2–50 Hz at the 32 recording sites in alpha, beta, and gamma bands. Coherence was calculated for the 496 possible combination pairs of 32 recording sites in the same three bands. EEG coherence is the absolute value of the cross-correlation function in the frequency domain and reflects the number and strength of connections between spatially distant brain areas (Thatcher et al., 1987).

2.6.2. Brain Integration Scale calculation
Broadband frontal coherence, alpha/beta absolute power ratios, and the CNV difference scores were added to the normative database from our earlier work (Travis et al., 2002), converted to z-scores, and summed to yield Brain Integration Scale scores. This database included non-TM, short-term Transcendental Meditation and long-term Transcendental Meditation participants. Being a z-score measure, the non-Transcendental Meditation participants scored around −2.3; the short-term Transcendental Meditation participants scored around zero; and the long-term participants scored around 2.2. To make the scale intuitively obvious when measuring nonmeditating populations, such as university students, we made the nonmeditating participants the “zero” level on this scale; otherwise, normal individuals would have “negative” brain integration. While clinical populations could have negative brain integration, it would seem confusing to have normal populations with neg-
ative brain integration. To establish the “zero” level, we simply added 2.3 to each score.

2.6.3. *P300 latency*
Twenty percent of the stimuli in the Continuous Performance Test required a right-hand response. Rare stimuli evoke a P300—a positive component 300 ms after a stimulus that marks categorization processes. P300 latency is a standard measure of cortical speed of processing (Johnson, 1993). Data were binned by rare targets in 1-s windows—200 ms before stimulus onset and 1000 ms after the stimulus. The 39 segments were manually scanned and any segments with artifacts were removed from averaging. The latency of the largest positivity at Pz in a 300–700 ms window after the stimulus was considered the P300.

2.6.4. *Heart rate and heart rate variability*
Heart rate was recorded during the 2 min of paced breathing. We recorded heart rate during paced breathing (10 bpm), because breath rates below 7 bpm dramatically increase the magnitude of respiratory sinus arrhythmia through baroreflex feedback to the heart—-independent of differences in parasympathetic innervation of the heart (Grossman et al., 1991; Grossman and Kollai, 1993). Heart rate and respiratory sinus arrhythmia—the high frequency component of heart rate variability—were calculated during the 2 min of paced breathing at 10 bpm using the moving polynomial algorithm suggested by Porges et al. (1982).

2.6.5. *Electrodermal habituation*
Skin potential responses were recorded on the nondominant hand. Participants tapped the space-bar tap by the dominant hand in response to the sixteen 85-dB tones (2 ms rise time, 9 to 11 s ISI) in the first CNV task. Skin potential was measured, rather than skin conductance or skin resistance, because while the BIOSEMI recording equipment includes DC amplifiers, they do not include GSR amplifiers.

Skin potential responses were counted if they fell in a 1–3 s window following the imperative stimulus. The number of tones before the participants stopped responding to three consecutive tones—the criterion for habituation—was recorded and compared between groups. The
participants kept the finger of their dominant hand over the space bar during this task. Thus, there was minimal muscle movement required to press the space bar. EDA was recorded from the nondominant hand, which was at rest by their side during the task. All subjects habituated to the task by the last trial in both pre- and posttests.

Table 1
Gender patterns, and baseline means (standard deviations) for demographics, Brain Integration Scale scores, sleep, habituation, P300 latency, heart rate variability and heart rate

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dropouts from the study (N=12)</th>
<th>Immediate-start (N=19)</th>
<th>Delayed-start (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female = 5, Male = 7</td>
<td>Female = 14, Male = 5</td>
<td>Female = 15, Male = 4</td>
</tr>
<tr>
<td>Age (years)</td>
<td>20.0 (5.7)</td>
<td>25.6 (11.4)</td>
<td>21.8 (4.9)</td>
</tr>
<tr>
<td>Brain Integration Scale</td>
<td>1.5 (1.4)</td>
<td>1.76 (1.1)</td>
<td>1.46 (1.2)</td>
</tr>
<tr>
<td>Sleepiness</td>
<td>7.7 (4.2)</td>
<td>9.1 (3.2)</td>
<td>7.6 (3.0)</td>
</tr>
<tr>
<td>Habituation (number of trials)</td>
<td>4.2 (2.9)</td>
<td>4.2 (3.3)</td>
<td>4.7 (3.6)</td>
</tr>
<tr>
<td>P300 Latency (ms)</td>
<td>491 (76)</td>
<td>466 (80)</td>
<td>457 (60)</td>
</tr>
<tr>
<td>HRV (bpm)</td>
<td>7.9 (1.19)</td>
<td>7.9 (0.88)</td>
<td>7.8 (.89)</td>
</tr>
<tr>
<td>HR (bpm)</td>
<td>78 (10)</td>
<td>74 (10)</td>
<td>74 (10)</td>
</tr>
</tbody>
</table>

Note: There were no significant initial group differences between groups.

Table 2
Completer analysis: means (standard deviations), and effect sizes for the six variables at pretest and posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD) immediate-start (N=19)</th>
<th>Mean (SD) delayed-start (N=19)</th>
<th>Effect size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain Integration Scale</td>
<td>1.76 (1.3)</td>
<td>1.46 (1.4)</td>
<td>.99</td>
</tr>
<tr>
<td>Sleepiness</td>
<td>9.1 (3.2)</td>
<td>7.7 (2.9)</td>
<td>.90</td>
</tr>
<tr>
<td>Habituation (number of trials)</td>
<td>4.1 (3.3)</td>
<td>4.7 (3.4)</td>
<td>.64</td>
</tr>
<tr>
<td>P300 latency (ms)</td>
<td>462 (80)</td>
<td>448 (61)</td>
<td>.01</td>
</tr>
<tr>
<td>Heart rate variability (bpm)</td>
<td>7.9 (.7)</td>
<td>7.8 (.9)</td>
<td>.11</td>
</tr>
<tr>
<td>Heart rate (bpm)</td>
<td>74 (10)</td>
<td>75 (10)</td>
<td>.09</td>
</tr>
</tbody>
</table>

Note: The immediate-start group significantly decreased in sleepiness and habituation rates, and increased in Brain Integration Scale scores.
2.7. Statistical analysis
A MANOVA was used to test pretest group differences in Brain Integration Scale scores, sleepiness, electrodermal habituation, respiratory sinus arrhythmia, heart rate, and P300 latency. In this analysis the six subjects in each group, who did not attend the posttest, were included in the analysis (N = 50). Another MANOVA compared the six variables in the 12 participants who did not come in for the posttest, the 19 Immediate-start participants, and the 19 Delayed-start participants.

A repeated measure MANOVA tested pretest-posttest differences between the 19 Immediate-start and the 19 Delayed-start participants with complete data. The hypothesis tested was that the Immediate-start group would have higher Brain Integration Scale scores, higher respiratory sinus arrhythmia amplitudes, lower reported sleepiness, lower electrodermal habituation rates, lower heart rate, and lower (faster) P300 latency. Significant group×treatment interactions were tested with post hoc analyses. This analysis tested directional hypotheses. Thus, one-tailed p-values will be reported for those analyses.

The Brain Integration Scale is a composite of three EEG variables. A third analysis compared group differences on the three variables that compose the Brain Integration Scale.

3. Results

3.1. Pretest analyses (N = 50)
A MANOVA tested initial group differences. The omnibus F-test of all subjects (N = 50) did not yield significant main effects for group (Wilk’s Lambda F(6,43)b1.0, ns). The F-test of subjects with complete data (N = 38) also did not yield significant main effects for group at pretest (Wilk’s Lambda F(6,32)b1.0, ns). ANOVAs comparing pretest group differences on individual variables also did not yield significant effects—all p values N.19. Table 1 below presents the pretest means and standard deviations for the subjects who did not attend posttests, the Immediate-start and the Delayed-start groups. While there are large mean differences in Brain Integration Report Card and sleepiness between the Immediate-start and the Delayed-start subjects at pretest, these differences did not reach significance due to high variance within groups.
3.2. Repeated measure MANOVA of pretest–posttest scores (N = 38)

A repeated measures MANOVA of pretest–posttest scores (N = 38) for the Immediate-start group resulted in significant three-way measures×group×treatment interactions (F(5,32) = 4.2, p = .005). Thus, individual repeated measure ANOVAs were conducted for each variable. There were no significant main effects or interactions for heart rate, respiratory sinus arrhythmia, or P300 latency (F(1,36) < 1.0, ns). However, there were significant group×treatment interactions for Brain Integration Scale scores (F(1,36) = 17.5, p < .0001), sleepiness (F(1,36) = 10.6, p = .001), and habituation rates (F(1,36) = 6.6, p = .007). Post hoc analyses revealed significant increases in Brain Integration Scale scores for the Immediate-start group (F(1,18) = 14.8, p = .001) and significant decreases in the Delayed-start group (F(1,18) = 4.4, p = .05); significant reductions in sleepiness in the Immediate-start group (F(1,18) = 15.2, p = .001) with no change in the Delayed-start group (F(1,18) = 1.0); and no changes in habituation rates in the Immediate-start group (F(1,18) = 5.2, p = .035). Table 2 presents the means, standard deviations, and effect sizes for these data.

3.2.1. Statistical test of the three components of the Brain Integration Scale

The Brain Integration Scale is a composite of three measures: 1) frontal coherence in alpha, beta, and gamma bands, 2) alpha/beta...
absolute power ratios, and 3) timing and magnitude of brain preparatory responses as reflected in the CNV difference scores. A MANOVA testing group differences in these three measures also resulted in a three-way measures×group×treatment interaction (F(2,35) = 5.2, p = .01). Individual ANOVAs revealed 1) a trend for higher frontal broadband coherence for the Immediate-start group (F(1,35) = 2.3, p = .07); 2) no significant main effects for power ratios (F(1,35) = 1.1, p = .15); and 3) significant group×treatment interactions in CNV difference scores (F(1,35) = 8.1, p = .008). Post hoc analyses revealed significant decreases in CNV difference-scores in the Immediate-start group (F(1,18) = 5.2, p = .035), and significant increases in the Delayed-start group (F(1,18) = 4.3, p = .05).

A negative CNV difference-score is argued to reflect a better match between task demands and brain functioning, as detailed in Discussion.

Table 3 presents the means, standard deviations, and effects sizes for the three components of the Brain Integration Scale. In this table, means and effect sizes of frontal coherence are presented in the three bands analyzed, even though they were combined into a single variable to calculate the Brain Integration Scale. The means are presented for each band to allow the reader to see the effect of Transcendental Meditation practice on coherence in each band.

3.2.2. Correlations between significantly different variables
Scores on the Brain Integration Scale negatively correlated with sleepiness (r(37) = −.56) and with habituation rates (r(37) = −.38).

4. Discussion
Significant differences in Brain Integration Scale scores, sleepiness, and habituation rates were seen after 10 weeks of Transcendental Meditation practice. Lower sleepiness and faster habituation rates were negatively correlated with higher scores on the Brain Integration Scale. This study reports effects of Transcendental Meditation practice compared to wait-listed controls. Future research could compare effects of Transcendental Meditation practice to other programs of stress reduction in college populations. For instance, practice of mindfulness-based stress
reduction has been reported to increase self-reported well-being and decrease self-reported stress (Oman et al., 2008; Shapiro et al., 2008).

4.1. Consideration of significant findings
This study is the first random assignment study of effects of Transcendental Meditation practice on brain and physiological functioning in college students. These results replicate increases in Brain Integration Scale scores reported in a one-year longitudinal study using participants as their own controls (Travis and Arenander, 2006), and in a six-month longitudinal study comparing students practicing the Transcendental Meditation technique to matched controls (Travis, 2002). These two earlier studies tested students at Maharishi University of Management, where twice-daily meditation practice is part of the curriculum. The current random-assignment study extends these findings to include effects of Transcendental Meditation practice in meditating students following a more typical college curriculum.

The variables that changed significantly are functionally related. The Brain Integration Scale includes broadband frontal coherence. Prefrontal executive areas control electrodermal habituation (Hugdahl, 1998; Critchley et al., 2000). The efficient physiology responds initially to any novel stimulus, but then stops responding, once the stimulus has been recognized as being nonthreatening. The posttest was recorded one week before the end of the term. It was a time of high pressure and stress for the students. While the Delayed-start participants showed the expected increase in sympathetic reactivity under high stress, the sympathetic reactivity of the meditating students remained low. Transcendental Meditation practice seemed to buffer effects of the high stress of finals’ week. This replicates findings of faster habituation rates and also faster recovery from stressful stimuli in Transcendental Meditation participants (Orme-Johnson, 1973), and fMRI findings of lower thalamic and lower total brain activation during a temperature stress in long-term Transcendental Meditation participants (Orme-Johnson et al., 2006).

Prefrontal cortices also guide timing and magnitude of brain preparatory responses (Gomez et al., 2007). Higher preparatory responses during simple trials reflect efficient use of resources—participants knew the correct response after the first stimulus, and so could begin prepara-
tory processes. In contrast, during the choice trials, participants did not know the correct response after the first stimulus and so should remain balanced. The control group had higher preparatory responses during the choice trials, which did not indicate efficient use of brain resources.

There was a trend for higher frontal (F3–F4) broadband coherence at posttest in the Immediate-start group. EEG coherence indexes functional connectivity between brain areas. The electrode sites F3 and F4 are over medial frontal and anterior cingulate cortices, which were identified as sources of EEG alpha activity during Transcendental Meditation practice in a MEG study (Yamamoto et al., 2006). The anterior cingulate is important in conflict detection (Carter and van Veen, 2007) and works with the medial prefrontal cortices to control mental flexibility, self-regulation, processing speed, and memory (Pardo et al., 2007). Frontal coherence may support enhanced flexibility and self-regulation, which were not directly measured in this study but have been reported in Transcendental Meditation studies of cognitive functioning (Dillbeck, 1982; Alexander et al., 1991).

Last, the Delayed-start group’s “chance of dozing” in eight common events did not change from pretest to posttest, while there were significant reductions in sleepiness in the Immediate-start group. This finding could reflect the impact of the restfully alert state gained during Transcendental Meditation practice on mind and body after meditation. Also, we could speculate that frontal areas responsible for planning and guiding behavior, which are activated during Transcendental Meditation practice, may lead to better decision-making and lifestyle choices after meditation.

4.2. Consideration of nonsignificant findings

4.2.1. Respiratory sinus arrhythmia—high frequency component of heart rate variability

Changes in respiratory sinus arrhythmia, a measure of parasympathetic tone, were similar in both groups over the three testing periods. In this study, respiratory sinus arrhythmia was calculated from EKG recorded during an eyes-open paced-breathing period, which controls for the effect of slow breath rate on the amplitude of respiratory sinus arrhythmia (Grossman et al., 1991).
A previous randomized controlled trial reported a trend ($p = .07$) for greater respiratory sinus arrhythmia after 16 weeks of Transcendental Meditation practice in an older population with cardiovascular disease (Paul-Labrador et al., 2006). Respiratory sinus arrhythmia calculated over 24 h has been shown to differentiate participants with hypertension, diabetes, and coronary artery disease, and those with myocardial infarction and heart failure (Sztajzel, 2004; Madsen et al.) factors. First, the subject populations differed. The previous study investigated an older clinical population with coronary heart disease, ranging in age from 50–80 years, compared to healthy college age participants measured in the current study. Second, EKG was recorded over different periods. The previous study calculated respiratory sinus arrhythmia over 24 h, which includes effects of lifestyle on the calculated heart rate variability. The current study recorded EKG during a paced-breathing session that controls for these factors (Grossman et al., 2004). The last factor—how respiratory sinus arrhythmia was calculated—probably did not affect the outcome. Spectral power methods, used to calculate heart rate variability in the previous study, yield results similar to those from the polynomial algorithm used in the current study (Berntson et al., 1997). Future research is needed to further evaluate effects of Transcendental Meditation practice on parasympathetic tone.

4.2.2. Heart rate
Heart rate during the paced breathing session also did not change during the study period. The participants were sitting comfortably and not under challenge during the paced-breathing recording session. Thus, metabolic needs were similar during the two recordings.

4.2.3. P300 latency
P300 latencies also did not change during the study period. P300 latency is a brain measure of cognitive functioning—how quickly one categorizes stimuli. Elderly participants practicing the Transcendental Meditation technique for an average of 15 years do not show age related declines in P300 latency (Goddard, 1989). Additional research is needed to investigate possible effects of Transcendental Meditation practice on P300 latency.
4.3. Implication of these findings for education
College is a time of great challenge for the student. Most students are making major lifestyle decisions for the first time. At the same time, the academic, financial, and social demands of the college experience can be highly stressful (Arnedt et al., 2005; Zeigler et al., 2005). These factors add up. In these data, the decrease in Brain Integration Scale scores and the increase in sympathetic reactivity and sleepiness in the Delayed-start group from the beginning of the term (pretest) to just before finals' week (posttest) suggest the substantial effect of the college experience on students. In contrast, Transcendental Meditation practice appeared to buffer effects of the high stress of finals’ week—Brain Integration Scale scores increased; sleepiness decreased—students were less tired, sympathetic reactivity did not change from pretest to posttest. These data support the value of practicing the Transcendental Meditation technique during college.

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References


Three Randomized Experiments
on the Longitudinal Effects
of the Transcendental Meditation Technique
on Cognition

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ABSTRACT

Three studies on 362 high school students at three different schools in Taiwan tested the hypothesis that regular practice of the Transcendental Meditation (TM) technique for 15–20 minutes twice a day for 6 to 12 months would improve cognitive ability. The same seven variables were used in all studies: Test for Creative Thinking-Drawing Production (TCT-DP); Constructive Thinking Inventory (CTI); Group Embedded Figures Test (GEFT); State and Trait Anxiety (STAI); Inspection Time (IT); and Culture Fair Intelligence Test (CFIT). University testing showed that Transcendental Meditation practice produced significant effects on all variables compared to no-treatment controls (p’s ranged from .035 to < .0001). Napping for equivalent periods of time as Transcendental Meditation practice had no effect. Contemplation meditation improved inspection time and embedded figures, but not the other variables. The Transcendental Meditation technique was superior to contemplation meditation on five variables. The effect sizes for Transcendental Meditation practice were in the order of the variables listed above.

1. Introduction

The hypothesis for the present research was that regular experience of the wakeful hypometabolic state produced by the Transcendental Meditation program develops general cognitive ability (Alexander et al., 1990; Dillbeck & Alexander, 1989; Orme-Johnson, Zimmerman, & Hawkins, 1997; So, 1995). This state is called “wakeful hypometabolic” or “restful alertness” because it is a combination of markedly decreased metabolism, heart rate, respiration rate, etc., as in sleep, together with mental alertness, as indicated by increased EEG alpha power and coherence (Dillbeck & Orme-Johnson, 1987; Jevning, Wallace, & Beidebach, 1992; Orme-Johnson, 1973; Travis & Wallace, 1999; Wallace, 1970, 1986). A number of physiological changes during the Transcendental Meditation technique predict cognitive improvement, such as increased blood flow to the brain (Jevning, Anand, Beidebach, & Fernanco, 1996; Jevning, Wilson, Smith, & Morton, 1978) and increased EEG coherence in parameters that are correlated with cognitive improvement (Dillbeck & Araas-Vesely, 1986; Dillbeck & Bronson, 1981; Levine, 1976; Nidich, Ryn-
carz, Abrams, Orme-Johnson, & Wallace, 1983; Orme-Johnson & Haynes, 1981). Studies of the effects of the Transcendental Meditation program on event-related potentials show shorter latency, higher amplitude, and broader cortical representation of sensory and cognitive evoked responses, all predictive of improved cognitive performance (Banquet & LeSevre, 1980; Cranson, Goddard, Orme-Johnson, & Schuster, 1990; Goddard, 1989; Kobal, Wandhofer, & Plattig, 1975; Lyubimov, 1994; Wandhofer, Kobal, & Plattig, 1976). Transcendental Meditation practice has been shown to increase the neuropeptide vasopressin (O’Halloran et al., 1985) and to improve memory (Dillbeck, 1982; Pagano & Frumkin, 1977), which could be expected, since there is evidence that increased vasopressin enhances memory (Van Londen et al., 1998). Transcendental Meditation practice also reduces the major stress hormone cortisol, both during meditation (Jevning, Wilson, & Davidson, 1978) and longitudinally outside of meditation (MacLean et al., 1997; Walton & Levitsky, 1994; Walton, Pugh, Gelderloos, & MacRae, 1995). The relevance of this to cognition is that studies have shown that increasing cortisol levels impair memory (Lupien & McEwen, 1997), and that prolonged cortisol elevation may induce hippocampal atrophy with associated deficits in hippocampal-dependent memory tasks (Lupien et al., 1998).

1.1. Variables studied
The variables chosen for the present research were intended to represent different levels of the mental functioning (senses, mind, intellect, feeling, ego) as described in Maharishi Vedic Psychology (Alexander et al., 1990; Dillbeck & Alexander, 1989; Orme-Johnson et al., 1997; So, 1995). Some of the variables have been used previously in research on the Transcendental Meditation program, and others are studied here for the first time. This is the first time that any of the variables have been studied in a Chinese population.

1.1.1. Culture Fair Intelligence Test (CFIT)
The CFIT is said to be a measure of “fluid intelligence,” the ability to successfully reason in novel situations (Bickley, Keith, & Wolfe, 1995; Horn & Cattell, 1967; McGrew, 1997). Fluid intelligence is correlated with the executive control functions of the frontal lobes, which involve
keeping attention on task requirements that are understood and remembered (Duncan, Emslie, Williams, Johnson, & Freer, 1996; Isingrini & Vazou, 1997). Previous research has indicated that Transcendental Meditation practice increases CFIT performance by approximately two IQ points per year (Aron, Orme-Johnson, & Brubaker, 1981; Cranson et al., 1991; Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986). However, this is the first randomized Transcendental Meditation study on the CFIT.

1.1.2. Inspection Time (IT)
IT is considered to be a paradigm for assessing the speed of information processing at the stage in which the stimulus is encoded or transferred into short-term memory from a sensory register (Brand, 1984; Detterman & Sternberg, 1982; Nettelbeck, 1982; Saccuzzo, Kerr, Marcus, & Brown, 1979; Zhang, Caryl, & Deary, 1989). A number of studies have found that IT and IQ are correlated approximately - 0.5 (Barrett, Petrides, & Eysenck, 1998; Brand & Deary, 1982; Deary & Stough, 1996; Kirby & McConaghy, 1986; Kirby & Thomas, 1989; Nettelbeck & Young, 1989; Zhang et al., 1989) and up to - 0.7 in Chinese students (Zhang, 1990). It has been argued that IT makes a greater contribution to IQ variance than any other single information processing measure (Deary, Caryl, Egan, & Wight, 1989). However, IT does not appear to be correlated with verbal intelligence (Stough et al., 1996). Most investigators consider IT a timed performance of intelligence as a function of mental speed (Brand & Deary, 1982; Deary & Stough, 1996; Juhel, 1991; Nettelbeck, 1986; Vickers, Nettelbeck, & Wilson, 1972; Zhang, 1990). This is the first research on the effects of Transcendental Meditation practice on IT, but previous research has found positive effects of Transcendental Meditation practice on reducing choice reaction time and the standard deviation of choice reaction time (Cranson et al., 1991).

1.1.3. Constructive Thinking Inventory (CTI)
The CTI was designed to assess “practical intelligence,” nonintellectual abilities and attitudes that predict success in work, love, social relationships, and in achieving and maintaining emotional and physical well-
being (Epstein & Meier, 1989). This was the first research of the effects of the Transcendental Meditation technique on the CTI.

1.1.4. Group Embedded Figures Test (GEFT)
The GEFT is a well-known measure of field independence, a cognitive style that is part of a cluster of psychological traits that cuts across many dimensions of cognitive functioning, personality and social behavior (Witkin, Dyk, Faterson, Goodenough, & Kaip, 1962; Witkin, Olman, Raskin, & Karp, 1971). Field independence predicts academic achievement, controlling for fluid intelligence (Tinajero & Paramo, 1997). Previous research has shown that Transcendental Meditation practice increases field independence (Gelderloos, Lockie, & Chuttoorgoon, 1987; Jedrczak & Clements, 1984; Pelletier, 1974).

1.1.5. Test for Creative Thinking-Drawing Production (TCT-DP)
This test is said to measure “whole-brained creativity,” which requires balanced use of cognitive, affective, and conative (volitional) domains (Jellen & Urban, 1986). The TCT-DP is said to reflect such traits as comprehension, analysis, curiosity, unconventionality, synthesis, and chance (risk/avoidance). Previous research has shown that Transcendental Meditation practice increases creativity on Torrance tests of figural and verbal creativity (Jedrczak, Beresford, & Clements, 1985; Travis, 1979). This was the first research of the effects of the Transcendental Meditation technique on the TCT-DP.

1.1.6. State-Trait Anxiety Inventory (STAI)
The STAI is the most widely used measure of anxiety, which is arguably the most basic measure of mental health (Spielberger, Gorsuch, & Banta, 1968). Previous research has shown that Transcendental Meditation practice decreases trait anxiety (Eppley, Abrams, & Shear, 1989). The STAI was included to assess the possible role of anxiety reduction in mediating cognitive change through Transcendental Meditation practice.
2. Experiment 1: Six-month study of first year senior high school students

2.1. Method 1

2.1.1. Subjects
The first study consisted of all the first year senior high Chinese students from four different classes at Chun-Chow Private School in the mid-north of Taiwan (N = 154, 78 boys, 76 girls). As described in the Design and Procedure section below, subjects were given a lecture on the Transcendental Meditation technique, and of those interested in learning, half of those were randomly assigned to learn the Transcendental Meditation technique (the Transcendental Meditation group). The other half was randomly assigned to be a wait list control group who took naps on the same schedule as meditation (the napping group). Those not interested in learning the technique were designated as the no interest group. Their mean age was 16.5 years, S.D. = 0.6: 16.5 (0.6) Transcendental Meditation; 16.5 (0.7) napping; 16.7 (0.6) no interest. The N (males, females) for the Transcendental Meditation group, napping group, and no interest group, respectively, were 56 (25, 31), 58 (28, 30), 40 (25, 15).

2.1.2. Dependent variables
The seven dependent variables were as described in the introduction. Since all of these tests except IT were originally in English, they were first carefully translated into Chinese under the supervision of the first author by three teachers in Taiwan whose native tongue was Mandarin. TCT-DP, CFIT, GEFT, IT, and STAI have been widely used in different cultures and are said to be culture fair. Regarding the CTI, Professor Epstein, one of the developers of the test, confirmed that it could also be applied in the Chinese culture. For the CTI, the 18-item Global Scale was used. For STAI, the 40-item Forms Y-1 and Y-2 were used. For IT, the Parameter Estimate Sequential Test written in BASICA, in Chinese (Zhang, 1990) run on IBM PC/486 compatibles was used to control the IT task and measure subjects’ performance. The computers were provided by the school. A potential measurement problem discovered after the research was completed is that the IT program used may not be accurate for ITs less than 60 ms due to computer
timing difficulties (Barrett & Kranzler, 1994). Most of the mean ITs in the present experiments were near or above 60 ms, so that measurement error would affect shorter ITs, limiting the ability to detect improvement. However, as will be seen below, IT did discriminate between treatment groups and was significantly correlated with IQ in all three studies, indicating it must have been somewhat reliable.

2.1.3. Independent variable
Transcendental Meditation instruction was delivered in a standardized manner by professional teachers trained by the Transcendental Meditation organization. Instruction followed a standard seven-step protocol that has been used to uniformly teach over four million people throughout the U.S. and the world during the last 40 years. The Transcendental Meditation technique is a mental technique that does not involve concentration or control of the mind. It is not a religion and does not require any alteration in lifestyle except for adding two 15- to 20-min sessions of practice to one’s daily routine (Alexander, 1994; Orme-Johnson et al., 1997; Roth, 1987).

The seven steps of the training sessions are: Step 1—a one hour introductory lecture covering research on the benefits of the practice, followed by a question and answer period; Step 2—a one hour preparatory lecture on the mechanics of the technique, its relation to other techniques, its background, and how it is learned, followed by a question and answer period; Step 3—a brief personal interview with the teacher in order for the teacher and student to become better acquainted; Step 4—personal instruction in the Transcendental Meditation technique by a qualified teacher that takes approximately two hours.

Transcendental Meditation practice is taught in an interactive one-on-one session according to the ancient Vedic oral tradition. Students are given an appropriate mantra and taught how to use it properly, i.e., to use it mentally without effort. Transcendental Meditation practice is said to allow the mind to settle to a silent yet wakeful state of inner awareness with no thoughts called “pure consciousness,” which has been correlated with a wakeful hypometabolic state of the physiology (Jevning et al., 1992; Travis & Wallace, 1999; Wallace, 1970, 1986). After personal instruction, subjects were instructed to practice the technique twice a day, once in the morning and once in the afternoon.
or early evening before the evening meal; Step 5—the first two hour group checking meeting to verify the correctness of practice, including further instruction; Step 6—the second two hour group checking meeting on mind and body, consciousness and the physiology, the inward and outward strokes of meditation, the role of thoughts and the mechanics of stress normalization; Step 7—the third two hour group checking meeting on the role of activity in stabilizing the benefits of Transcendental Meditation practice, the importance of regularity of practice, comparison of the physiology of waking, dreaming, sleep, Transcendental Consciousness, and a vision of the goal of a stress-free life.

Further information on the Transcendental Meditation technique and the research on it can be found online at http://www.TM.org and http://www.MUM.edu.

2.1.4. Design and procedure

The first author initiated the study as part of his doctoral dissertation by making a presentation to the principal of the school about the importance of intelligence research and the means available to develop the mental potential of his students.\footnote{The research design was approved through institutional review by the human subjects committee of Maharishi University of Management, who ruled that the paper and pencil tests and IT test posed minimal risk and that the confidentiality of the individual subjects’ results was assured.} The concept of incorporating a meditation technique into a school curriculum to improve general health, intelligence, and moral behavior is an integral part of Chinese culture and was being suggested in the newspapers by educators in Taiwan at the time of the experiment. The principal learned the Transcendental Meditation technique himself before offering it to his school and was motivated by the possibility that the program would help his students. In addition, he was interested to see his students’ standing on the tests, many of which were available in Asia for the first time in this study. The principal appreciated the need for a rigorous randomized experimental design and supported the blind procedure, agreeing not to start any other self-development programs until the Transcendental Meditation study was complete.

With the principal’s permission, after pretesting (see below) teachers from a nearby Transcendental Meditation center gave a standard intro-
Table 1:
Experiment 1: Summary of univariate ANCOVA on posttest scores contrasting Transcendental Meditation practice, napping, and no interest controls on the seven measures.

<table>
<thead>
<tr>
<th>Variable</th>
<th>TM vs. NAPPING</th>
<th>TM vs. NO INTEREST</th>
<th>NAPPING vs. NO INTEREST</th>
</tr>
</thead>
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<tr>
<td></td>
<td>F</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
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</tr>
<tr>
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<td>1, 142</td>
<td>.001</td>
</tr>
<tr>
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<td>.003</td>
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<tr>
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## EFFECTS OF TRANSCENDENTAL MEDITATION TECHNIQUE ON COGNITION

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<th>POST</th>
<th>ADJUSTED POST</th>
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<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
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<td>44.1</td>
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<td>5.1</td>
<td>57.7</td>
<td>4.6</td>
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</table>
-ductory presentation on the Transcendental Meditation program to all four classes of first year students (N = 154) and their teachers. The parents were informed that the students were offered the Transcendental Meditation program and they supported the project. Those who were interested in learning the Transcendental Meditation technique (N = 114), were randomly assigned to the Transcendental Meditation (W = 56) and napping (58) groups. The other 40 students not interested in participating acted as a self-selected nonequivalent no interest control group. The students were told in advance that even though they signed up for learning the Transcendental Meditation program, they might not be taught immediately due to limited resources available. They were told that a group of students would be able to learn the Transcendental Meditation program first, and another group would be scheduled to learn later. The ones who had to wait were the napping group, and they were in fact taught the Transcendental Meditation technique six months later after the posttesting was completed. The student course fee for Transcendental Meditation instruction for this study was approximately fifty dollars, and the students paid half and the school paid the other half.

All students in the school were routinely given up to a 30 minute break each morning for rest in their respective classroom. The students who did the Transcendental Meditation technique went to a school hall and meditated in a group while at the same time the other students in both the napping and no interest groups remained in their respective classroom for napping, with heads on their desks. The Transcendental Meditation technique and napping were practiced approximately 20 min twice a day, morning and afternoon. For the morning Transcendental Meditation practice, the students in the experimental group were guided by their own teachers, who also learned the Transcendental Meditation program. For the afternoon practice, due to time constraints, the students were told to do their respective Transcendental Meditation program or napping at home on their own after school (around 4 p.m.). Surveys from the teachers showed that over 85% of the students followed the schedule regularly.

The school had a regular yearly assessment process, so the dependent variables were just substituted for the tests that were normally used. Only the school principal was aware of the connection between test-
effects of transcendental meditation technique on cognition

The first author trained three schoolteachers to administer the tests. The test administrators were told that the first author was a graduate student interested in evaluating the tests in a Chinese population (which in fact was one of his research interests), and the students did not know of his existence. The subjects were tested in their classroom in a set sequence over three days—(GEFT, CTI), (CFIT, STAI), (TCT-DP, and IT)—two tests per day, one in the morning, one in the afternoon.

Table 2 on the following page shows the correlations between the CFIT and IT, and state and trait anxiety for all subjects.

This sequence let students work on tests of a different nature in one test sitting, which, along with two tests per day, was intended to prevent “fatigue effect” and “carry-over effect.” The GEFT, CTI, CFIT, STAI, and TCT-DP were administered according to the standardized protocols. The IT test was self-explanatory. The students simply followed the instructions shown on the screen of the computer. After a few minutes’ warm-up, they were then tested for 15–20 min. The results were automatically recorded by the computer. One to four students at a time took the IT test in the computer rooms.

After six months the subjects were posttested again in exactly the same way and sequence as the pretests were conducted. The tests were scored by schoolteachers who were also blind to the purpose of the experiment and the group assignments. Attrition, defined as no complete pre/post data set for any measure, was only four students, one from the Transcendental Meditation group, two from the napping, and one from the no interest group. However, the tests were given over three days and there were missing data on individual tests. The Ns (male, female) for each of the individual measures for the Transcendental Meditation, napping, and no interest groups, respectively, were: GEFT: 53 (23, 30), 54 (25, 39), 39 (24, 15); CFIT: 56 (25, 31), 54 (24, 30), 39 (24, 15); IT: 54 (25, 29), 53 (27, 26), 39 (24, 15); TCT-DP: 53 (24, 29), 52 (26, 26), 38 (24, 14); STAI: 51 (23, 28), 52 (22, 30), 36 (22, 14); CTI: 53 (23, 30), 47 (21, 26), 40 (25, 15).

2.1.5. Statistical analyses
The effects of Transcendental Meditation practice on each individual measure were evaluated using analysis of covariance (ANCOVA) of
Table 2:
Correlations between the CFIT and IT, and state and trait anxiety for all subjects.

<table>
<thead>
<tr>
<th></th>
<th>Correlations between the CFIT and IT at pretest, posttest, and for change scores</th>
<th>Correlations between state and trait anxiety at pretest, posttest, and for change scores</th>
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</thead>
<tbody>
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<td>Posttest</td>
</tr>
<tr>
<td><strong>Experiment 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 115)</td>
<td>-0.72**</td>
<td>-0.72**</td>
</tr>
<tr>
<td><strong>Experiment 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 87)</td>
<td>-0.4*</td>
<td>-0.45**</td>
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<tr>
<td><strong>Experiment 3</strong></td>
<td></td>
<td></td>
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<tr>
<td>(N = 99)</td>
<td>-0.76**</td>
<td>-0.35*</td>
</tr>
</tbody>
</table>

* \(p < .01\)

** \(p < .001\)
Effects of transcendental meditation technique on cognition

posttest scores using pretest scores as the covariate (Systat Manual, 1992). The ANCOVAs were on all the data for each individual measure, as indicated above. Correlation matrices among measures were computed for pretest, posttest, and change scores. Correlations were computed for the subjects within each individual group, as well as for all subjects in all groups combined. The probability values used for correlations were the Bonferroni-adjusted probabilities, appropriate for evaluating large numbers of correlation coefficients, which guarantee that the family comparison error rate will not be larger than a particular critical value selected (Systat Manual, 1992).

2.2. Results 1
Table 1 presents the means and standard deviations of all seven variables at pretest and posttest, and the results of univariate ANCOVAs. Compared to the napping group, the Transcendental Meditation group showed significant improvement on six of the seven tests, with the CFU being nonsignificant \( (p = .165) \). Compared to the no interest group, the Transcendental Meditation group showed significant improvements on all seven variables. The napping and the no interest groups were not significantly different from each other on any measure.

The main significant correlations between variables were an inverse correlation between IT and the CFIT and positive correlations between STAI (see Table 2). The only other significant correlation in Experiment 1 was between the GEFT and the CFIT (pretest, \( r = .31, p < .05 \)). There were no significant negative correlations between change in anxiety and change in the cognitive variables for any group.

2.3. Discussion 1
This randomized study supported the research hypothesis. Napping served as a control since some researchers have suggested that the effects of Transcendental Meditation practice might be due to simple unstructured rest (Druckman & Bjork, 1994; Holmes, 1984) or light sleep (Pagano, Rose, Stivers, & Warrenburg, 1976). The finding that Transcendental Meditation practice showed greater effects than napping for an equivalent duration, schedule, and compliance indicates that the effects of the practice of the Transcendental Meditation technique extend beyond those of ordinary rest. Previous randomized longitudi-
nal studies also found that the Transcendental Meditation technique increased field independence (Pelletier, 1974) and cognitive flexibility (Dillbeck, 1982) compared to unstructured rest.

Experiment 2 was conducted to replicate the results in a somewhat younger population and to compare the Transcendental Meditation technique with another meditation technique, which required structured mental activity that is more parallel to Transcendental Meditation practice than napping.

3. Experiment 2: Six-month study of junior high school students

3.1. Method 2
3.11. Subjects
The second study was of 118 junior high Chinese students from three different classes at Yang-Ming National School in Taipei, in the northern part of Taiwan. Their mean age was 14.6 years, S.D. = 0.4: 14.6 (0.5) Transcendental Meditation; 14.7 (0.5) control; 14.5 (0.5) contemplation. The experimental group consisted of 37 girls, the no treatment control group had 40 girls, and a third comparison group of contemplation meditation had 41 girls. All subjects took the general high school curriculum.

Table 3 on the following pages shows the results of experiment 2, providing a summary of univariate ANCOVA on posttest scores contrasting Transcendental Meditation, contemplation, and no treatment controls on the seven measures.

3.1.2. Dependent variables
The dependent variables were the same as in Experiment 1.

3.1.3. Design and procedure
The procedure was essentially identical with Experiment 1, but the design was somewhat different. In Experiment 2, two classes designated for study were randomized by class (rather than by student) to the Transcendental Meditation technique or no treatment. In addition, because
Table 3: Experiment 2: Summary of univariate ANCOVA on post-test scores covarying for pretest scores contrasting Transcendental Meditation, contemplation, and no treatment controls on the seven measures.

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Effects of Transcendental Meditation technique on cognition.
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of the availability of a teacher interested in another meditation technique in the school, the class taught by that teacher was chosen as a third group to study. This third group took a 5-day course to learn a contemplation meditation technique from the Chinese tradition taught by their class master. Like the Transcendental Meditation technique, this contemplation meditation was practiced mentally, sitting with eyes closed, and was said to eventually lead the mind to experience the “Tao,” which equates with “pure intelligence,” the goal of Transcendental Meditation practice. However, there is a fundamental difference between the two types of meditation in that contemplation requires thinking about the meaning of something, which keeps the mind on the surface level of thinking, while Transcendental Meditation practice does not involve meaning, which allows the mind to settle to pure consciousness with its associated wakeful hypometabolic state (Orme-Johnson et al., 1997).

Once learned, morning meditation (approximately 15–20 minutes) of the Transcendental Meditation technique or contemplation meditation was in the respective classrooms before regular classes began, guided by their teachers, and the afternoon practice was at home, as in Experiment 1.

In this study, the students voted to pay the course fees for the Transcendental Meditation technique and for contemplation meditation from their class budget.

As in Experiment 1, the students, teachers, test administrators, and test scorers were told that testing was part of the normal school evaluation program and did not know that it was for evaluating the effects of meditation, with posttest six months after pretest. Only three students missed all the posttests, one each from the Transcendental Meditation, no treatment, and contemplation meditation groups. The Ns for each individual test and group are given in the following order—TEST-NAME (total Ns/N, Transcendental Meditation, N no treatment, N contemplation): GEFT (115/37, 37, 41); CFIT (109/35, 36, 38); IT (113/36, 38, 39); TCT-DP (110/35, 36, 39); STAI (107/35, 37, 35); CTI (115/37, 40, 38).

3.1.4. Statistical analyses
The statistical analyses were identical with Experiment 1.
3.2. Results 2
Table 3 presents the means, standard deviations, and results of univariate ANCOVAs. Over the six months of treatment, the Transcendental Meditation group showed improvement compared to the no treatment controls on all seven variables.

Univariate testing showed that compared to the contemplation group, the Transcendental Meditation group showed improvement on five variables, creativity (TCT-DP), state and trait anxiety (STAI), inspection time, and the CTI, but no significant difference on the GEFT or CFIT.

The contemplation group improved more than the no treatment control on only two measures, the GEFT and IT.

As with Experiment 1, the main significant correlations between variables in Experiment 2 (for all subjects in all groups) were IT with the CFIT and State with Trait Anxiety (see Table 2). In addition, the GEFT was also correlated with the CFIT (posttest, $r = .37$, $p = .007$) and with the Test for Creative Thinking (pretest, $r = .37$, $p = .007$; posttest, $r = .33$, $p = .040$). Also, Trait Anxiety was negative correlated with the CTI (pretest, $r = -.34$, $p = .026$; posttest, $r = -.36$, $p = .015$). None of the within-group correlations of anxiety with other measures were statistically significant.

3.3. Discussion 2
The significant improvement of the Transcendental Meditation group on all variables compared to the no treatment controls supports the hypothesis and replicates Experiment 1. The contemplation group acted as an active control, in contrast to the no treatment control in the present experiment and the napping control in Experiment 1. Subjects were given something structured to do, another form of meditation. Contemplation meditation also controlled for expectation fostering features because the instructor of the contemplation technique was committed to the technique and she believed that it would give a similar experience as the Transcendental Meditation technique. However, the contemplation group only did better than the no treatment group on two measures, specifically, on field independence (GEFT), and inspection time. There was a tendency for state and trait anxiety to increase in the contemplation group. In contrast, the effects of the Transcendental Meditation
technique were to reduce anxiety and improve cognitive performance on all variables relative to the no treatment group, and to significantly improve on five variables compared to the contemplation group.

This finding that the two different meditation techniques did not produce the same effects is in accord with the conclusion from meta-analysis and random-assignment experiments of some 475 studies involving approximately 20,000 subjects showing that all meditation and relaxation techniques do not have the same effects (Alexander, Robinson, Orme-Johnson, Schneider, & Walton, 1994; Orme-Johnson & Walton, 1998). For example, these studies show that the Transcendental Meditation technique is more effective than other meditation and relaxation techniques in decreasing anxiety (Eppley et al., 1989), reducing hypertension (Schneider et al., 1995), reducing drug and alcohol abuse (Alexander, Robinson, & Rainforth, 1994), and increasing self-actualization (Alexander, Rainforth, & Gelderloos, 1991). Experiment 3 was designed as a further replication of Experiments 1 and 2 in a third population, vocational students, and was conducted over a 1-year period.

4. Experiment 3: One-year study of vocational school students

4.1. Method 3

4.1.1. Subjects
The third study consisted of 99 male vocational students from two classes at Nan-Ying Commerce and Industry Training School in Tainan, in the southern part of Taiwan. Subjects’ mean age was 17.8 years, S.D. = 0.7: 17.8 (0.7) Transcendental Meditation; 17.6 (0.6) control. The experimental group consisted of 51 males while the no treatment control group consisted of 48 males. These students all majored in technical drawing.

4.1.2. Dependent variables
The dependent variables were the same as in Experiments 1 and 2.
4.1.3. Design and procedure
Experiment 3 was essentially the same as Experiment 2, randomized by class to the Transcendental Meditation group or to a no treatment control group, except that posttest was after 12 months instead of six months as in Experiments 1 and 2. There were only two groups in this study, and there was no attrition on any measure. The school principal paid the course fee in this study.

4.1.4. Statistical analyses
The statistical analyses were identical with Experiments 1 and 2.

4.2. Results 3
Univariate testing, shown in Table 4, indicated that the Transcendental Meditation group improved more on all seven variables over the 12-month period than the no treatment control.

As with Experiments 1 and 2, the strongest correlations (for all subjects in all groups) were between CFIT and IT and STAI (see Table 2). Also, at pretest in Experiment 3, the GEFT was correlated with the CFIT ($r = .48, p < .001$), with IT ($r = -.35, p < .001$), and with the TCT-DP ($r = .28, p = .009$). At posttest, however, only the correlation between the GEFT and the CFIT was significant ($r = .44, p < .001$), and none of the other change scores correlations reached significance. There were no significant negative correlations between change in anxiety and change in the cognitive variables for the Transcendental Meditation group and a single correlation of -0.38 between state anxiety and the TCT-DP for the control group.

Table 4 on the following page shows the results of Experiment 3, providing a summary of univariate ANCOVA on posttest scores covarying for posttest scores contrasting Transcendental Meditation and no treatment controls.

4.3. Discussion 3
The finding of significant improvement due to Transcendental Meditation practice on all variables replicates the results of Experiments 1 and 2.

To provide an overview of the three studies, some general analyses were conducted.
Table 4: Summary of univariate ANCOVA on posttest scores covarying for pretest scores contrasting Transcendental Meditation and no treatment controls.

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**Means and Standard Deviations**

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5. Analysis of the three studies taken together

5.1. General methods

To take full advantage of the statistical power afforded by three studies, the overall results for each variable across the three experiments were calculated using Stouffer’s method (Hunter & Schmidt, 1990):

\[ z = \frac{\sqrt{F_1} + \sqrt{F_2} + \sqrt{F_3}}{\sqrt{N}} \]

where \( z \) is the standardized z-statistic for the three studies combined for each variable, \( F_1, F_2, \) and \( F_3 \) are the univariate F statistics comparing the Transcendental Meditation group with the randomized controls for the three experiments (i.e., comparison of Transcendental Meditation with napping for Study 1, and no treatment for Studies 2 and 3), and \( N \) is the number of experiments.

The effect size for each test was also calculated for each variable in each experiment, where effect size was defined as: \( ES = \frac{M_{E\text{post}} - M_{C\text{post}}}{S.D._{\text{pool}}} \) where \( M_{E\text{post}} \) is the adjusted mean posttest score for the experimental group (Transcendental Meditation), adjusted by the ANCOVA for pretest scores, \( M_{C\text{post}} \) is the adjusted mean posttest score for the control group (e.g., napping), and \( S.D._{\text{pool}} = \frac{S.D. \cdot 1 \times df1 + S.D. \cdot 2/2 \times df2 + S.D. \cdot 3 \times df3}{df1 + df2 + df3} \), where \( S.D. \cdot 1 \) is the posttest S.D. for Group 1, etc. and \( df_i \) is the df for Group 1 \((N-1)\), etc. for the three groups in the study. As is standard practice, a positive effect size indicates change in the predicted direction, i.e., the ES’s were inverted for anxiety and IT. The average effect size across the three experiments for each variable was then calculated.

5.2. General results

The Transcendental Meditation subjects showed highly significant improvement relative to randomized controls on all variables. The three studies combined were statistically significant at \( p \) values ranging between \( 10^{-3} \) and \( 10^{-16} \).

Fig. 1 shows the average statistical effect size for the three studies for each variable. The creativity variable (TCT-DP) had the largest effect size, followed by practical intelligence (CTI), field independence
effects of transcendental meditation technique on cognition

(GEFT), and state and trait anxiety (STAI), with inspection time (IT) and fluid intelligence (CFIT) having the smallest effect sizes.

5.3. General discussion

These three studies strongly support the hypothesis that the Transcendental Meditation program improves performance on a number of cognitive and affective measures. The random assignment, low attrition, and the blinded test administration and scoring eliminated most threats to validity. The results were similar for all studies whether subjects were randomly assigned by subject (Study 1) or by class (Studies 2 and 3). The results held for males and females (Study 1), females only (Study 2), or males only (Study 3). They also held for different age groups (from 14 to 18 years), for public as well as private schools, for different geographic locations, and for students who paid to learn the Transcendental Meditation technique (Studies 1 and 2) or who did not pay (Study 3). The results cannot be accounted for by differences in teaching methods and academic curricula because the groups were taught the same academic subjects the same way in their respective schools.

The general lack of positive correlation among the tests used in these studies appears to be because these tests were created to be uncorrelated with other cognitive measures. Field independence (GEFT), the creativity measure (TCT-DP), and practical intelligence (CTI) were all explicitly designed to try to measure something other than g and the low intercorrelations found in the present studies are similar to what has been previously reported (Epstein & Meier, 1989; Jellen & Urban, 1986; Witkin et al., 1962, 1971). On the other hand, the mean correlation over the three experiments of IT with g (CFIT) was -0.53, which is similar to the correlations of approximately -0.5 that have been previously reported. In addition, the mean correlation over the three experiments between state and trait anxiety of 0.65 is expected because individuals with high trait anxiety tend to view the current situation in an anxious way (Spielberger et al., 1968).

Some of the effects of Transcendental Meditation practice on cognition can be expected from its ability to reduce stress. There is strong evidence that anxiety degrades cognitive performance (Eysenck, 1997), and the present studies and previous research indicate that Transcendental Meditation practice is effective in reducing anxiety (Eppley et
consciousness-based education al., 1989). However, the low correlations found in the present three experiments between change in anxiety and change in the cognitive variables do not support the hypothesis that decrease in anxiety alone is responsible for improved cognitive functioning. It may well be that anxiety reduction is one of the factors mediating improved cognitive performance for anxious subjects. However, the low correlations suggest that even nonanxious subjects who do not change on anxiety may still improve on cognitive variables. Any or all of the cognitively related physiological changes known to be produced by Transcendental Meditation practice could contribute to its cognitive effects. These changes, which were reviewed in the introduction, include: decreased somatic arousal, increased EEG coherence, changes in event-related potentials, increased vasopressin, and decreased cortisol—all parts of a pattern called a “wakeful hypometabolic state.”

**Differential Effect Sizes of the Transcendental Meditation Technique on the Dependent Variables**

![Graph showing effect sizes](image)

Fig. 1. These effect sizes are the means of three experiments for the Transcendental Meditation groups compared to the randomized control groups, e.g., the mean of the Transcendental Meditation group compared with the napping group in Experiment 1 and the no treatment groups in Experiments 2 and 3.
We speculate that the cognitive effects of Transcendental Meditation practice are analogous to a good night’s sleep. When one awakens (or comes out of meditation) one is more rested and integrated and performs better on that basis. However, the state produced by the Transcendental Meditation technique is physiologically different from ordinary rest or sleep stages (Dillbeck & Orme-Johnson, 1987; Mason et al., 1997; Travis & Pearson, 1999; Wallace, 1970), which may explain its differential effects on cognition compared to napping found in Experiment 1. The finding in Experiment 2 that contemplation meditation produces a different pattern of results than Transcendental Meditation practice (i.e., increased performance on inspection time and field independence, no change in creativity, practical intelligence, or fluid intelligence, and a trend of increased anxiety) indicates that its effects may be due to a different mechanism, perhaps through exercising the abilities that show improvement. In any case, the data indicate that all meditation techniques do not have the same effects, a conclusion that is also supported by a wide range of empirical research (Orme-Johnson & Walton, 1998).

The statistical effect sizes for the three studies combined indicate that Transcendental Meditation practice did not affect all variables equally. In the behavioral sciences, an effect size of 0.8 or greater is considered as large, an effect size of 0.5 as medium, and 0.2 or less as small (Cohen, 1988). In this context, the mean effect size over the three studies of 0.77 for creativity approaches the strong range, and the effect sizes ranging from 0.62 to 0.52 for practical intelligence, field independence, trait and state anxiety are high medium.

These variables on which Transcendental Meditation practice had the strongest effects (creativity, practical intelligence, and field independence) all have in common that they reflect integration of many factors that impact cognitive processing. The TCT-DP, for example, is said to be more comprehensive than other creativity tests because it not only evaluates convergent and divergent thinking processes (as, for example, the Torrance tests also do), but, in addition, it reflects affective and volitional domains, such as sensitivity, passion, humor, unconventionality, boundary-breaking, and willingness to take chances (Jellen & Urban, 1986).

The CTI appears to measure another aspect of integration, i.e., practical intelligence centering around nonintellective factors. A factor ana-
lytic study conducted on the CTI with a variety of other tests found both intellective and nonintellective factors. But the CTI loaded more strongly on the nonintellective factors than any other test. The CTI includes items that reflect optimism and a positive outlook on life and it is correlated with well-established criterion variables of success in work, love, social relationships, and maintaining emotional and physical well-being, but not academic achievement, the only criterion with which the measures of IQ correlated strongly (Epstein & Meier, 1989).

A wide range of evidence suggests that increased field independence (GEFT) may indicate increased inner-directedness and more self-monitoring (Leventhal & Sisco, 1996), and more “psychological differentiation,” i.e., being good at creating structure in ambiguous situations, more flexible in seeing others’ perspectives, more resistant to peer pressure, and better leaders (Witkin et al., 1962, 1971).

The effect sizes of Transcendental Meditation practice on IQ-related measures, inspection time, and fluid intelligence were in the low medium range 0.39 and 0.34, respectively. Inspection time is believed to reflect attentional control processes rather than specific abilities (Alcorn & Morris, 1996; Morris & Alcorn, 1995; Nettelbeck & Young, 1989), and the wakeful hypometabolic state produced by Transcendental Meditation practice may influence these processes. Given the common findings that intelligence is not particularly malleable (Loehlin, Horn, & Willerman, 1997; Rowe, 1997) and does not typically increase after adolescence (Barton, 1973; Horn & Cattell, 1967; Hundal & Singh, 1971), it is notable that Transcendental Meditation practice measurably increased intelligence over 6 to 12 months in the high school students in these studies.

**References**


Effects of Transcendental Meditation Technique on Cognition


This article, “Three Randomized Experiments on the Longitudinal Effects of the Transcendental Meditation Technique on Cognition,” by Kam-Tim So, Ph.D., and David W. Orme-Johnson, Ph.D., here revised/updated, and reprinted with permission, was originally published in *Intelligence 29* (2001), 419–440.
The Transcendental Meditation Program
and Postconventional Self-Development:
A 10-Year Longitudinal Study

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ABOUT THE AUTHORS

Howard M. Chandler, Ph.D., graduated magna cum laude from Harvard University in 1981 and received his Ph.D. in Vedic Psychology from Maharishi University of Management in 1990. He has authored and coauthored papers and book chapters on human potential in, among others, *Journal of Personality and Social Psychology; Journal of Conflict Resolution; Journal of Social Behavior and Personality*. Since 1984 he has been a member of the Maharishi Purusha Program, including nine years in India where he helped establish the Maharishi Institute of Management in Chennai, introduced the Maharishi Corporate Development Program in many top companies, and spent five years in silence in Uttar Kashi in the Himalayas. He presently is an administrator of the Global Country of World Peace.

Dr. Charles “Skip” Alexander, Ph.D., (1950-1998), showed theoretically that four higher states of consciousness described by Maharishi Vedic Psychology logically extend the developmental sequence delineated by twentieth-century psychology. His empirical research found that the Transcendental Meditation technique provides the direct experience of Transcendental Consciousness (the first higher state, which is the silent basis of the mind) and that this practice accelerates development in children, “unfreezes” development in prison inmates, advances ego development in adults, increases productivity in businesses, decreases blood pressure, increases longevity, effectively treats substance abuse, and reduces prison recidivism. Skip and colleagues were the first to discover the EEG signature of Cosmic Consciousness (the second higher state), and he showed that developmental advances in individuals impact the larger society via a common field of collective consciousness, including decreasing armed conflicts and improving the quality of life. Dr. Alexander was Chairman of the Department of Psychology at Maharishi University of Management.

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of development, and peak performance. He has been directing Ph.D. students’ research in areas of socially and environmentally responsible business, including the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.
ABSTRACT

The present study explored the effects of the Transcendental Meditation technique on self-development as measured by Loevinger’s Washington University Sentence Completion Test of ego development, McAdams’ measure of intimacy motivation, and Rest’s measure of principled moral reasoning. Ten-year longitudinal data indicated that Transcendental Meditation participants increased markedly in ego development in contrast to three control groups matched for gender and age over the same time period (N = 136, p < .0001). At posttest 38% (N = 34) scored at or beyond the Autonomous level versus 1% of controls (p < .0001). Transcendental Meditation participants also increased to very high levels of principled moral reasoning (p = .002) and intimacy (p = .02). The findings suggest that postconventional development is stimulated by systematically transcending representational thought to experience pure consciousness.

Postconventional Development

While conceptions about the most advanced levels of development vary (Alexander & Langer, 1990; Miller & Cook-Greuter, 1994), there is a general recognition that most adults do not fully unfold their potential for meeting the cognitive and interpersonal demands of modern life (Kegan, 1994). Yet, high levels of self-development are critical not only for the individuals who would benefit from such development but also for society as a whole (Csikszentmihalyi & Rathunde, 1990). Maslow (1976) observed that those at the highest levels of psychological development are more capable of contributing to the moral, aesthetic, intellectual, and social progress of human civilization. Thus the investigation of practices which could promote high levels of psychological development has far-reaching importance.

Alexander and Langer (1990) survey a variety of hierarchical developmental theories in which later stages in some way encompass and reorganize their predecessors (e.g., Richards & Commons, 1990; Souvaine, Lahey, & Kegan, 1990; Gilligan, Murphy, & Tappan, 1990), as well as more circumscribed and domain-specific nonhierarchical models of development, such as Langer et al. (1990), Levinson (1990), and McGuiness, Pribram, and Pirnazar (1990). They identify a range of development which has been called “postformal” because cognition is
said to move beyond Piagetian formal operations (Arlin, 1990; Fischer, Kenny, & Pipp, 1990), and also “postconventional” because the individual has differentiated the self from roles and expectations of authorities and defines moral values in terms of self-chosen principles (Colby & Kohlberg, 1987). This postconventional range of development has been described in terms of psychological autonomy and integration (Loevinger, 1976; Labouvie-Vief, 1990), self-actualization (Maslow, 1976; Pascual-Leone, 1990), wisdom (Clayton & Birren, 1980; Kramer, 1990; Orwoll & Perlmutter, 1990), greater access to feelings and intuition, and greater integration of cognition and affect (Miller & Cook-Greuter, 1994; Alexander, Davies et al., 1990; Gilligan, Murphy, & Tappan, 1990).

Loevinger’s Washington University Sentence Completion Test (WUSCT: Loevinger, 1985) is a widely used measure of developmental differences. It is said to assess ego development—encompassing impulse control, character development, conscious preoccupations, cognitive complexity, and interpersonal style. Cook-Greuter (1994) has classified Loevinger’s Conformist, Self-Aware, and Conscientious stages as conventional, and Individualistic, Autonomous, and Integrated as postconventional. Self-Aware is the modal level for adults in our society, with the mean—at least for well-educated adults—falling between Self-Aware and Conscientious. Evidence indicates that most adults do not progress to postconventional levels of ego development. Two large surveys of adults of various ages have both reported 8% of participants at or above the Individualistic level in ego development (Loevinger & Wessler, 1970, N = 1640; Cook-Greuter, 1990, N = 1996); these same surveys reported only 2–3% of adults scoring at or above the Autonomous level. Parallel findings have been reported for postconventional moral development as assessed by Kohlberg’s interview measure, on which about one eighth of U.S. males in their thirties scored at post-conventional stage 4/5 or 5 (Colby & Kohlberg, 1987, p. 101).

While ego development increases predictably during childhood and adolescence (Redmore & Loevinger, 1979), it appears to stop or slow dramatically after adolescence, usually by about 18 years of age (Adams & Fitch, 1982; Kitchener, King, Davison, Parker, & Wood, 1984). Having reviewed these and other findings, Loevinger et al. (1985) concluded: “If the foregoing studies justify a single general conclusion,
it is that whatever the SCT measures is relatively stable in adult life, approximately after high-school graduation” (p. 960). Cross-sectional data also indicate that adult ego development remains relatively stable (McAdams, Reutzel, & Foley, 1986; McCrae & Costa, 1980; Cohn, 1998). See Figure 1.

Figure 1: Scatterplot of 252 Sample Means by Age of Sample (data recovered from 79 studies involving 11,032 participants)

Key: 3 = Self-Protective; 4 = Conformist; 5 = Self-aware; 6 = Conscientious. Figure reproduced from Cohn (1998) with permission of Lawrence Erlbaum Associates.

Investigators do not know why development appears to cease relatively early in adult life; nor do they know what experiences promote postconventional development among adults (Cohn, 1998). Interventions expected to promote maturity (e.g., special academic curriculum) have at best resulted in modest developmental gains among initially low scoring participants, usually at the Conformist level (e.g. Hurt, 1977; Locke & Zimmerman, 1987; Loxley & Whiteley, 1986). Growth is not usually observed among participants at the Conscientious level or above. For instance, nurses at or above the Conscientious level either
stayed the same or decreased on ego development during an advanced two-year training program, whereas gains were much more frequent among participants starting at lower points (White, 1985).

**A Proposed Pacer for Postconventional Development**

Meditation practices based on Eastern traditions have been suggested by some psychologists as possible means to promote development of higher potentials (e.g., Maslow, 1976; Fromm, 1960; Jung, 1969; and James, 1902). The present study investigated whether long-term practice of the Transcendental Meditation technique serves as a pacer for advanced levels of development, as indicated by a composite of three psychological measures: ego development, principled moral reasoning, and intimacy motivation.

The Transcendental Meditation technique is an applied aspect of Maharishi Vedic Science. The theory of Maharishi Vedic Science explains that the experience of Transcendental Consciousness is “the experience of the unified level of the functioning of nature itself, the unified field of natural law” (Orme-Johnson, 1988, p. 149). This theory predicts that experience of that basic level of life promotes holistic changes in mind, body, and behavior: “Through the Transcendental Meditation and TM-Sidhi programs all aspects of life come to be always in the direction of evolution” (Maharishi Mahesh Yogi, 1986, p. 32).

The Transcendental Meditation technique is said to be easy to learn and to require no change in lifestyle or beliefs (Maharishi Mahesh Yogi, 1963; Roth, 1994). It is normally practiced for 20 minutes twice daily sitting quietly with the eyes closed. In this technique a specific sound or mantra—utilized for its sound value without reference to meaning—is used to shift attention away from its habitual outward direction. During meditation the mantra is experienced at progressively deeper and finer levels until thought is completely transcended in the state of Transcendental Consciousness—“a state of inner wakefulness with no object of thought or perception, just pure consciousness aware of its own unbounded nature” (Maharishi Mahesh Yogi, 1976, p. 123).

Why might such a practice be considered a possible pacer for postconventional development? Postconventional development entails an increasingly intrinsic sense of self that provides personal autonomy and
identity. The postconventional individual begins to experience ideals and values as coming from “inside,” e.g., as intuition (Clayton & Birren, 1980), instead of orienting to and internalizing rules and norms that are “outside” of oneself. The Transcendental Meditation technique facilitates experience of deeper intrinsic levels of the mind and of pure consciousness, the “I” or subject of experience. This experience may bring about a shift in the frame of reference of the individual to a more postconventional orientation.

In the absence of such transcendental experience, all one can know is representational notions about one’s self—which is how identity is constructed at conventional stages of development. The inability of ordinary waking consciousness to experience the “I” may explain why most adults do not progress to postconventional stages. As the founder of the Transcendental Meditation technique has explained: “Since [the mind] ordinarily remains attuned to the senses, projecting outwards towards the manifested realms of creation, [it] misses or fails to appreciate its own essential nature, just as the eyes are unable to see themselves” (Maharishi Mahesh Yogi, 1963, p. 25).

Alexander et al. (1990) propose that a systematic practice for experiencing transcendence may be fundamental for “unfreezing” development so that postconventional levels can be attained. In their model, the prerepresentational functioning of the sensorimotor period is followed by a tier of representational development characterized by increasingly complex conceptual reasoning. Postconventional development begins a major developmental transformation toward what they term a “post-representational” tier of development. One feature of this transition is a growing realization of one’s identity in terms of nonconceptual awareness of the subject of experience, rather than in terms of concepts about oneself as object. Cook-Greuter has presented evidence of a rare advanced stage like this, in which one is not identifying oneself with any of the changing contents of awareness. She refers to this as a “fluid, postobjective” self view (1994, p. 134).

Alexander et al. (1990) argue that just as the learning of language and symbol use (Bruner, 1972) is the fundamental cultural support for growth from the sensorimotor mode of infancy, a technology for experiencing transcending is a fundamental mechanism for promoting development beyond the representational tier. Whereas language
acquisition frees attention from the control of immediate sensory stimuli, the Transcendental Meditation technique frees attention from the habitual domination of symbolic representation.

**Prior Research on the Transcendental Meditation Program**
Over five hundred prior studies have found evidence of distinct effects during the practice of the Transcendental Meditation technique, as well as long-term psychological and physiological benefits from the practice. Research on physiological markers of self-reported episodes of Transcendental Consciousness during the Transcendental Meditation practice has found evidence of decreased skin conductance, reduction in volume and rate of respiration, and EEG changes—increased power in alpha frequencies and decreased power in theta frequencies (Badawi, Wallace, Orme-Johnson, & Rouzere, 1984; Farrow & Hebert, 1982; Travis & Wallace, 1997). Travis and Wallace (1997) confirmed the findings regarding skin conductance and respiration but did not obtain significant EEG results due to small sample size (n = 11) and large interparticipant variability. An earlier observation of suspension of respiration for periods of a few seconds was found by Kesterson and Clinch (1989), using a spyometer, to be slow inhalation or apneusis.

Research on the cumulative effects of Transcendental Meditation practice has found physiological changes indicating increased ability to maintain restful alertness during activity: significantly lower resting baselines of spontaneous galvanic skin response, respiration rate, heart rate, and plasma lactate (Dillbeck & Orme-Johnson, 1987); and enhanced autonomic stability during mental tasks or in response to stressors (Alexander et al., 1993; Orme-Johnson, 1973). Evidence of growing alertness of the mind includes improvements on intelligence tests and perceptual and cognitive tasks (Dillbeck, 1982; Cranson, Orme-Johnson et al., 1991; Aron, Orme-Johnson, & Brubaker, 1981; Travis, 1979; So & Orme-Johnson, 2001).

Druckman & Bjork (1994) questioned if the effects attributed to the Transcendental Meditation technique may be the result of non-specific aspects of a daily routine of meditative practice. To control for nonspecific factors, a number of studies have involved random assignment of participants to the Transcendental Meditation technique or to alternative regimens involving equivalent time commitment for both
instructor contact and daily practice. In these randomized designs, the Transcendental Meditation technique had significantly greater impact in reducing high blood pressure than did Progressive Muscle Relaxation (Schneider et al., 1995), in reducing carotid atherosclerosis in hypertensive African-Americans than a control treatment of health education (Castillo-Richmond et al., 2000), in promoting longevity and mental functioning in an aged population compared to other mental techniques (Alexander, Langer, Newman, Chandler, & Davies, 1989), and in development of multiple aspects of intelligence in Chinese students compared to a contemplative meditation technique (So, 1995; So & Orme-Johnson, 2001). In addition, the meta-analysis by Eppley, Abrams, & Shear (1989) found that the Transcendental Meditation program produced three times the effect size of other techniques, controlling for frequency of practice.

Prior studies suggest that the Transcendental Meditation technique is also associated with developmental advances, as measured by a variety of instruments with different participant populations. Alexander, Rainforth, and Gelderloos (1991) conducted an exhaustive meta-analysis of 42 independent self-actualization outcomes (measured in most cases by the Personal Orientation Inventory or POI). The Transcendental Meditation technique was found to produce three times the effect size (ES = .78 standard deviations) of other forms of meditation (.26) and relaxation (.27) on self-actualization, controlling for duration of treatment and strength of experimental design.

Several studies have reported accelerated development on age-dependent cognitive tasks among children practicing the Word of Wisdom technique, learned by children ages 4–9 before they are old enough to learn the Transcendental Meditation technique (Dixon et al., 2005; Warner, 2005; Alexander, Kurth, Alexander, & Travis, 2005; Gelderloos, Lockie, & Chuttoorgoon, 1987). In a cross-sectional study on the Transcendental Meditation program and moral development in college students, Nidich (1975) found that Transcendental Meditation practitioners scored higher than students who had not learned the Transcendental Meditation program, that longer-term meditators scored higher than short-term practitioners, and that there were no differences between nonmeditators who were interested in starting the practice and other nonmeditating students.
Alexander (1982; Alexander, Walton, & Goodman, 2003) reported that prison inmates practicing the Transcendental Meditation technique for 20 months scored a full level higher cross-sectionally on Loevinger's ego development (Self-Aware vs. Conformist) than did nonmeditating inmates interested in learning the Transcendental Meditation technique or inmates in other treatment programs. After 17 months, this initial Transcendental Meditation group increased another level (to Conscientious), and a new group that learned the Transcendental Meditation technique grew one full level from Conformist to Self-Aware. No longitudinal increases were found in other treatment groups or demographically similar controls wait-listed to learn the Transcendental Meditation technique. Regular meditators also decreased significantly in aggression, schizophrenia, and trait-anxiety, compared to controls (Alexander & Orme-Johnson, 2003).

A Longitudinal Study of Advanced Self-Development

Hypotheses
The present ten-year longitudinal study investigated whether the Transcendental Meditation program serves as a pacer for postconventional development. This study hypothesized that college alumni practicing the Transcendental Meditation technique would progress more than controls in ego development, and that among Transcendental Meditation participants there would be more postconventional ego development than observed in normal adult samples. The study also hypothesized that the experimental participants would increase in principled moral reasoning and in intimacy motivation.

Participants
Experimental participants were from Maharishi University of Management (formerly Maharishi International University), an accredited, nondenominational educational institution offering undergraduate, masters’ and doctoral degree programs in the arts, sciences, humanities, business, engineering, and computer science to students at its Fairfield, Iowa, campus, and at-a-distance around the globe. Participants originally pretested as undergraduates at Maharishi University of Man-
management were described as a representative mix of undergraduates. At pretest, Maharishi University of Management participants practiced the Transcendental Meditation technique twice daily and were enrolled in traditional academic majors. At posttest 94% reported having practiced the Transcendental Meditation technique or the advanced TM-Sidhi program daily for most or all of the 10-year intervention period.

The control groups were from a respected Midwestern liberal arts university (LibArt: Loevinger et al., 1985), a major northeastern technical university (Tech: Loevinger et al., 1985), and Utah State University at Logan (Utah: Adams & Fitch, 1982). All had been pretested in the late 1970s as part of previously published studies on student development.

All participants were unpaid volunteers and were described by the original authors as a representative cross-section of undergraduates. Maharishi University of Management participants had a median verbal SAT score of 500, and Utah’s, Tech’s, and LibArt’s were estimated as 425, 540, and 570 by their respective admissions offices.

For posttesting, participants’ current addresses were obtained from alumni offices and, for Maharishi University of Management, from the registrar’s office and/or friends and family in order to ensure the largest possible sample. Response to our by-mail solicitations was about 60% for all four schools. To further increase the final sample size, non-responding Maharishi University of Management participants were also contacted by telephone, raising the final Maharishi University of Management response to 84%. Because less-motivated participants tend to score below their actual ego level (Loevinger et al., 1985; Redmore, 1976), this added effort to increase response rate may have worked against our experimental hypotheses by artificially depressing some Maharishi University of Management posttest scores.

Table 1 gives the number of respondents in each group. At the time of posttesting, current contact information was available for 43 of the original Maharishi University of Management participants; of these, 36 (84%) provided posttest responses. Of the 36 Maharishi University of Management respondents, one was dropped because English was not his first language, and another because her pretest WUSCT data turned out to be missing. This left 19 men and 15 women. From each of the other pools of respondents, 34 were selected to match the Maharishi
University of Management sample according to the following variables in order of priority: gender, age, and college year at the time of pretest. Pretest WUSCT scores were not considered in selecting the posttest sample. Gender was used as the primary matching variable because research has sometimes found difference in the rate of development for males and females (Loevinger et al., 1985; Loxley & Whiteley, 1986). All control participants spoke English as their first language. Pretest ego development scores for the matched control groups selected did not differ from the scores of the larger original pretest groups at their respective colleges.

Table 1 shows that Maharishi University of Management and Utah matched closely on pretest age, while LibArt and Tech were slightly younger due to the absence of participants over the age of 22 years. These small age differences were not important because when age was included as a covariate in the analyses described below, it made no significant contribution to the overall model.

### Table 1

**Characteristics of the University Samples**

<table>
<thead>
<tr>
<th>Group</th>
<th>Academic year(s) of pretest&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Mean years pre-to-post</th>
<th>Number of responses&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Response rate</th>
<th>Mean pretest age of final samples (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LibArt</td>
<td>1976–1979</td>
<td>11</td>
<td>81</td>
<td>56%</td>
<td>20.9 (19–22)</td>
</tr>
<tr>
<td>Tech</td>
<td>1976–1979</td>
<td>11</td>
<td>104</td>
<td>56%</td>
<td>20.9 (19–22)</td>
</tr>
<tr>
<td>Utah</td>
<td>1976–1977</td>
<td>12</td>
<td>56</td>
<td>60%</td>
<td>21.6 (18–28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Different participants pretested during different academic years at LibArt and Tech  
<sup>b</sup> Number of potential participants who completed and returned posttest materials
Dependent Variables
Three measures of self-development were selected to achieve a richer, convergent representation of the effects of the Transcendental Meditation program than could be available within the theoretical framework associated with just one specific measure.

Ego development. Ego development represents the evolution of “a person’s frame of reference” (Loevinger, 1984, p. 57), of how the individual understands or makes sense of his or her world and own self. This concept of ego development encompasses impulse control, character development, conscious preoccupations, cognitive complexity, and interpersonal style. There are nine levels of ego development representing successive degrees of complexity and sophistication in the organization of experience (Hy & Loevinger, 1996). The Symbiotic level of infancy (E1) is not applicable to adult participants. At the highly egocentric Impulsive (E2) and Self-protective (E3) levels, individuals lack self-control and are focused on short-term self-gratification. With growth to the Conformist (E4) level, concern shifts from material and physical rewards and punishments to social reinforcements such as approval and belongingness. Self-definition stems from membership in the social group. The emergent ability to take oneself as an object of thought marks the Self-Aware (E5) level, along with growing appreciation of multiple possibilities. Objectification of self and world reaches the extreme at the Conscientious (E6) level. At the Individualistic (E7) level—which marks the transition from conventional to postconventional functioning—there is concern with psychological causality and personal development and there is greater tolerance for differences in context and point of view.

In this article, the highest Autonomous and Integrated levels (E8 and E9) are considered as a single fully postconventional category. Loevinger (1976, p. 140) links these levels to Maslow’s notion of self-actualization. They are characterized by the emergence of a deep appreciation for the autonomy and identity of self and others. Inner conflict—defined as “conflicting needs, conflicting duties, and the conflict between needs and duties” (Loevinger, 1976, p. 23)—is no longer projected onto other people and the environment. Rather it is realized, coped with, and ultimately resolved as the ability to “transcend” polari-
ties and allows one to unite and integrate ideas that appeared incompatible at earlier levels.

Ego development was measured at pre- and posttest for all participants by the 36-item Washington University Sentence Completion Test (WUSCT: Loevinger, 1985; Loevinger & Wessler, 1970). Interrater reliabilities on the WUSCT typically exceed .85, and test-retest correlations as high as .63 have been found for periods of up to four years (Kitchener, King, Davison, Parker, & Wood, 1984; Loevinger et al., 1985; Redmore, 1983). The WUSCT’s impressive construct validation is reviewed in detail elsewhere (Hauser, 1976, 1993; Loevinger, 1979; Loevinger & Wessler, 1970). Participants in different groups were tested with slightly different versions of the form, because the original testing for the control groups had been conducted by independent researchers. Professor Loevinger observed that for this research, “it seems to me to be trivial whether the same or different forms are used” (personal communication, October 6, 1988).

Moral development. Longitudinal data on moral development were collected for the Maharishi University of Management group for the Defining Issues Test of principled moral reasoning (DIT: Rest, 1979, 1986). The DIT employs multiple choice responses to moral dilemmas to determine a participant’s developmental stage according to a conceptualization similar to that of Kohlberg (1969), in which stages 5 and 6 are considered principled and postconventional. At stage 5, moral right is determined by reference to the community good as formally structured in the institutional framework of social law. The individual places primary importance on the moral contract associated with being a member of society. At Stage 6, internal principles of conscience guide behavior, and morality is understood to be rooted in natural or universal law from which human law is derived. The most frequently used DIT index is the composite P% score (percentage of principled reasoning). Long-term test-retest correlations exceed .75 (Kitchener et al., 1984; Rest & Thoma, 1985). Rest (1986) reports that formal education rather than age is by far the single most powerful predictor of adult P%. Consistent with this, Mentkowski et al. (1991) found steady annual increases in P% during college but no increase during the five years following graduation.
Noting that principled reasoning is very rare in Kohlberg’s system of assessment, Rest (1986, pp. 197–200) acknowledges that the DIT “is vulnerable to overestimation” because its multiple-choice format allows participants to express a preference for reasoning more advanced than their own. Indeed, samples only slightly above the Individualistic level in ego development have scored high on P% (Kitchener et al., 1984; Mentkowski & Strait, 1983), which suggests that the DIT is not well-suited for measuring postconventional development. While Kohlberg’s interview format may be better than the DIT at assessing advanced moral development, the group-administration procedures of the DIT rendered it more feasible. Moreover, including the DIT strengthened our design because it would be difficult to argue that Maharishi University of Management participants grew holistically in self-development if they did not achieve very high P% scores by posttest.

**Intimacy motivation.** Pre- and posttest Thematic Apperception Test (TAT) data were collected for Maharishi University of Management participants. They were asked to spend five minutes writing an imaginative story in response to each of five standard picture cues, thus providing projective insight into their personalities that was relatively free of demand characteristics (McClelland, 1975). In sequence, the pictures showed: (a) two female lab technicians, (b) a man and a woman with a horse, (c) a man at a desk, (d) two men in front of a ship, and (e) two trapeze performers.

TAT stories were scored for intimacy motivation (McAdams, 1982), a measure of interpersonal warmth, caring, and communion. Intimacy motivation is described by McAdams as an improvement on the older TAT motive score for affiliation, with which it correlates from .25 to .58 (McAdams, 1982; McAdams & Constantian, 1983). Interrater reliabilities for intimacy motivation are in the .90 range (McAdams, 1982), and Lundy (1985) found a one-year test-retest correlation of .48. In contrast to lower scoring participants, people high in intimacy motivation report more positive affects in interpersonal situations (McAdams & Constantian, 1983); display more dyadic friendship episodes, more listening, and more concern for the well-being of friends (McAdams, Healy, & Krause, 1984); and are perceived by others as especially
likable, loving, and natural, and as less dominant and manipulative (McAdams & Powers, 1981).

This measure is not typically associated with development and there is no data to evaluate how maturational processes influence it. However, postconventional development has been described in terms of greater access to feelings and intuition, and greater integration of cognition and affect (Miller & Cook-Greuter, 1994, Alexander et al., 1990; Gilligan, Murphy, & Tappan, 1990). The present study included intimacy motivation because the experience of transcendence is said to specifically develop positive emotional and interpersonal qualities: “This quality of kindness and delicacy of the heart develops as the heart begins to melt from the experience of bliss and the great happiness of transcendental Being” (Maharishi Mahesh Yogi, 1963, p. 153).

Although ego development includes affective functioning within its scope, factor analyses have found that intimacy and affiliation motivations load highly on an “interpersonal relations” factor whereas the WUSCT and DIT form part of a separate general “cognitive-developmental” factor (Alexander, 1982; Mentkowski & Strait, 1983). Thus the inclusion of this measure could provide data about a dimension of positive emotions which is not necessarily associated with structural development as assessed by the WUSCT and the DIT.

Procedure

Data collection. All participants had completed the pretest WUSCT according to standard procedures in small groups. For posttesting, Maharishi University of Management participants were sent two packets of research materials, and controls received one. The first Maharishi University of Management set included a cover letter, an informed consent form, the WUSCT, the DIT, and a stamped return-envelope. The second set was sent four months later to participants who had returned the first packet. It included a cover letter, the TAT, a questionnaire collecting demographic information and some exploratory data outside the context of the present research, and a stamped return-envelope. Control participants received the cover letter, the informed consent form, the WUSCT, the questionnaire, and a stamped return-envelope. The TAT and DIT were not sent to controls because they had not taken these instruments at pretest. Potential participants who did
not promptly respond received two follow-up letters emphasizing the importance of the research.

The research packets were taped closed to discourage previewing, and the cover sheet said not to open the packet before actually sitting down to complete it. Once started, participants first encountered the informed consent and then the WUSCT. They were instructed to complete all WUSCT items at a single sitting, to use only the paper provided, and to not edit their responses at a later time such as the next day. The WUSCT instructions concluded: “We want this to simulate the original conditions at [participant’s university]; just as if you walked into a quiet room, were given these materials, completed them, and immediately returned them to the administrator.” For Maharishi University of Management participants, the DIT followed the WUSCT, and instructions and formats for both the DIT and TAT (in the second mailing) were standard and identical to pretest.

Participants were not paid, so there would have been little motivation to have another person complete the materials. Moreover, all participants answered “no” when asked at the end of the WUSCT if they had received “any help at all or any input from family or friends.”

Data preparation and scoring. Pre- and posttest WUSCT responses were typed into text files. Separate files (with 20–25 participants in each file) were created for item-by-item ratings and total protocol ratings (TPR). Pre- and posttest data for the four university samples were randomly intermixed. In a few cases, specific identifying words were replaced, following the suggestion of Loevinger and Wessler (1970). To ensure reliable rating, and also to avoid potential scoring bias, an independent expert who had scored over 2500 WUSCT protocols was employed to score pre- and posttest WUSCTs for all groups. This rater has published extensively on the interpretation of higher stage responses on the WUSCT (Cook-Greuter, 1990, 1994). She was blind to the experimental design and hypotheses and was not a Transcendental Meditation practitioner. While Loevinger and Wessler (1970, p. xii) recommend that the WUSCT be scored by two raters, they allow for an exception in the case of an individual rater of “demonstrated competence.”
Of the 68 LibArt and Tech pretest WUSCTs, 54 already had been intensively analyzed by Loevinger’s research group. The scorer for this study had 100% agreement within one WUSCT level, and 72% complete agreement with the prior ratings of those 54 pretest WUSCTs. The interrater correlation was $r = .86$. These figures compare favorably to accepted standards (Loevinger & Wessler, 1970; Loevinger et al., 1985), confirming the reliability of the current WUSCT scores.

Pretest DIT P% scores for Maharishi University of Management participants were obtained from a computer file, and posttest DIT answer sheets were machine-scored by the Center for the Study of Moral Development (Rest, 1986). For intimacy motivation, pre- and posttest stories for each TAT picture were randomly intermixed and blind-scored by an experienced independent rater “whose reliability vis-a-vis the intimacy scoring manual is very good ($r = +.90$)” (D.P. McAdams, personal communication, May 24, 1989).

**Results**

The results clearly support the experimental hypotheses that the Transcendental Meditation technique would promote a greater degree of developmental change, relative to controls, and that among Transcendental Meditation participants there would be more postconventional development than would normally occur in the absence of a technique for experiencing Transcendental Consciousness. On all three measures, Transcendental Meditation practitioners showed marked pre- to posttest gains and scored at very high posttest levels.

**Ego development.** Even over the 10-year period, pre- and posttest WUSCT scores were substantially correlated, $r(134) = .56$, $p < .0001$, demonstrating the WUSCT’s long-term reliability. None of the following variables correlated significantly with pre- or posttest WUSCT scores: years of education attained by participants at posttest, parent’s education (available for Tech and LibArt only), or, for Maharishi University of Management only, pretest total WAIS IQ scores, DIT P%, or intimacy motivation. A multivariate Group $\times$ Gender analysis of covariance (ANCOVA) of posttest WUSCT scores covarying for pretest WUSCT showed no main effect for gender and no significant interaction of gender with group.
Tables 2 and 3 report summary statistics and Total Protocol Rating distributions for ego development. A planned comparison of posttest WUSCT change-scores covarying for pretest WUSCT tested whether the Transcendental Meditation sample experienced greater pre-to-post change.

The experimental sample was assigned a contrast coefficient of +3, and each control group a -1. A priori contrasts of this type are considered preferable to nonspecific, omnibus F tests (Rosenthal & Rosnow, 1984, pp. 344–345). Covarying for pretest controlled for initial differences within and between groups—a more precise and, hence, statistically more powerful approach than the use of simple change-scores (Judd & Kenney, 1981). Controlling for pretest differences was important because—although paired contrasts showed no significant difference between Maharishi University of Management and LibArt, nor between Tech and Utah—LibArt and Maharishi University of Management were both significantly higher than Tech and Utah. The appropriateness of ANCOVA was shown by the finding that the assumption
of homogeneity of slopes was not violated (Group × Covariate interaction, \(F(3, 128) = .57, \text{n.s.}\)).

In contrast to the control groups, the Transcendental Meditation sample increased significantly in ego development, \(t(131) = 5.30, p = .0000004\) (two-tailed). The effect size associated with this change was large: \(d = .9\), where .8 is a large effect (Rosenthal & Rosnow, 1984, pp. 357–361). Consistent with previous findings reviewed above, ego level was more likely to increase for initially lower scoring participants than for higher scoring ones, especially among nonexperimental participants. This meant that both Maharishi University of Management and LibArt were “handicapped” by their relatively high pretest means. Figure 3 shows what change would have been (as estimated by ANCOVA) if all four groups had started from the same pretest level (the grand mean).

Post hoc contrasts (Fisher’s LSD) were used to determine pairwise group differences. Because of multiple comparisons, a critical alpha level of .01 was used. The Transcendental Meditation group increased significantly in contrast to each of the other groups, covarying for pretest WUSCT (\(p = .000014, p = .0004, \text{and } p = .00004\), two-tailed, for LibArt, and Tech, and Utah respectively). None of the pairwise contrasts among the other university samples, which were two-tailed in the absence of specific predictions, approached significance.

### Table 2
Summary Statistics for Ego Development

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Adjusted Change</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>LibArt</td>
<td>6.0</td>
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</tr>
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<td>MUM</td>
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<td>Utah</td>
<td>5.0</td>
<td>1.01</td>
<td>5.2</td>
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</table>

Note: On the scale of ego development used: E5 = Self-Aware; E6 = Conscientious; E7 = Individualistic
To examine whether each group changed significantly, independent of comparative between-group differences, a critical alpha level of .01 was applied because of the multiple comparisons. Only MUM’s increase was significant, \( t(33) = 3.36, p = .002, \) two-tailed, whereas LibArt actually decreased significantly, \( t(33) = -3.12, p = .004, \) two-tailed.

Figure 3: Mean Ego Development Change Scores—Adjusted by ANCOVA to Control for Pretest Levels—for Four Groups of University Alumni Retested after 10 Years.

In the most critical test of our experimental hypotheses, the Transcendental Meditation and the pooled non-Transcendental Meditation samples were divided according to whether posttest scores were below, at, or above I-4/5, the transition point from conventional to postconventional functioning. This allowed us to explicitly test whether experimental participants showed more postconventional ego development than controls at the end of the intervention period. A 2 × 3 contingency table yielded a highly significant result \( \chi^2(2, N = 134) = 40.1, p < .0001. \) The corresponding effect size was very large: \( w = .6, \) where .5 corresponds to a large effect (Rosenthal & Rosnow, 1984, pp. 360–363).

Underscoring the significance of Maharishi University of Management’s longitudinal gains, the control group (LibArt) with the most similar pretest mean to Maharishi University of Management actually regressed substantially. At posttest, the Transcendental Meditation sample scored on average near the Individualistic level, which was 1.2 to 1.7
### Table 3:
Ego Level Distributions

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<th></th>
<th>N</th>
<th>&lt;E5</th>
<th>E5</th>
<th>E6</th>
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<th>E8+</th>
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<td>MUM</td>
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<td>Utah</td>
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<td>0% (9%)</td>
<td>0% (3%)</td>
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</table>

**Note:** Pretest number and pretest percentage followed by posttest in parentheses.  
On the scale of ego development used: R5 = Self-Aware; E6 = Conscientious; E7 = Individualistic; E8 = Autonomous
levels above the controls. Table 3 shows that 53% (18 of 34) of Transcendental Meditation participants achieved postconventional ego development—E7 or higher—(up from 30% at pretest). Of these, 38% (13 of 34) were at the Autonomous E8 level or higher (up from 9% at pretest), compared to between 0% and 3% of the control samples at posttest.

**Principled moral reasoning (Maharishi University of Management only).** Maharishi University of Management alumni increased on DIT P% from a mean of 50.9 (SD = 12.1) to 58.0 (SD = 10.6). This significant increase (t(33) = 3.38, p = .002, two-tailed) reflected a medium to large effect (d = .62), despite the fact that posttest scores were clearly limited by a ceiling effect at posttest, when a distribution skewed toward the upper end reflected over 80% of participants scoring at “high” levels as defined by Rest (1987). Even with this ceiling effect, the posttest mean was approximately one-half standard deviation above an education-adjusted norm of 52.3 (see Chandler, 1991, p. 141, for derivation from Rest, 1987). The test-retest correlation was r(32) = .425, p = .006. Participants’ highest education level attained by posttest was not significantly correlated with P% at either pre- or posttest, r(32) = -.26 and -.20 respectively; nor was amount of change significantly correlated with education (r = .09), suggesting that ceiling effects may have obscured education-related patterns of change previously reported by Rest (1986). In the absence of control data, caution is required in drawing conclusions about the source of the observed DIT score changes.

**Intimacy motivation (Maharishi University of Management only).** Maharishi University of Management participants increased significantly in intimacy motivation from a mean of 3.77 (SD = 2.64) to 5.12 (SD = 2.49), t(25) = 2.48, p = .02, two-tailed. This was a medium-sized effect, d = .52. (The sample was smaller because eight participants did not complete the second research packet.) The Maharishi University of Management posttest mean of 5.1 was also over one-half a SD higher than the score of 3.5—the cumulative adult norm for the five stories used in this study (McAdams, 1984). Further comparisons were not possible because all other research has used alternative combinations of TAT cues. The test-retest correlation was r(24) = .42, p = .02.

Word length changed significantly from a pretest average of 64 lines of text per set of five stories to a posttest average of 94 lines, t(25) =
5.549, \( p = .00001 \). However, word length was not correlated with intimacy motivation at pretest or posttest, \( r(24) = -.06 \) and \( .26 \) respectively, and change in word length did not predict intimacy motivation, \( r(24) = .15 \). These findings indicate that the results were not due to participants simply spending more time on the TAT at posttest than at pretest. Indeed, when queried as to whether he felt that something other than participants’ Transcendental Meditation practice might account for the intimacy motivation increase, McAdams responded: “I have no [other] reason—theoretical or empirical—to explain why intimacy scores should rise during the 20s” (personal communication, June 16, 1989, emphasis in the original). He further noted that in contrast to the present results, cross-sectional intimacy scores decreased gradually for females and remained the same for males in a nationwide sample of over 1200 adults (McAdams & Bryant, 1987). Nevertheless, the conclusion that the Transcendental Meditation technique was behind the experimental participants’ increase in intimacy motivation remains qualified by the absence of control data. In any case, the finding that Maharishi University of Management alumni’s posttest intimacy motivation scores were “high” (D.P. McAdams, personal communication, June 11, 1990) is significant not only because it indicates an immediate capacity for warm, giving interpersonal relationships, but also because high intimacy scores at age 30 have been shown to predict good psychosocial adjustment 17 years later (McAdams & Vaillant, 1982).

**Discussion**

**Alternative Explanations**

A number of potential confounds to the ego development results were eliminated by matching between groups on gender and age. Other variables were not meaningfully correlated with ego development in this sample, including pretest college class (e.g., junior vs. senior), intelligence, parental education, and participant’s endpoint level of education. Minor between-group differences in participants’ college class (e.g., Class of 1977 vs. Class of 1978) also appear irrelevant because Loevinger et al. (1985) have concluded that concerns about cohort effects should be “reserved for wider intervals, perhaps decades” (p. 956).
Every effort was made to preclude contamination from potential biases. For instance, to avoid potential scoring-bias, blind experts were employed to score the WUSCT and the TAT. The use of a single rater for each of these tests is a limitation. Future studies could be further strengthened by the use of multiple raters for the WUSCT and TAT.

Several other alternative explanations still need to be considered. One might also ask whether Maharishi University Management’s high posttest WUSCT scores might have resulted from participants’ desire to do well rather than from their true ability or capacity. Research unambiguously supports the theoretical understanding that people of lower ego levels simply cannot comprehend—let alone fake—the reality of higher levels (Loevinger, 1976; Redmore, 1976). In any case, all four of our groups appear to have been highly motivated at posttest, as evidenced by participants’ willingness to volunteer time and by the fact that most asked to receive more information about the research.

Might some other aspect of the classroom and social experience at Maharishi University of Management have accounted for the growth in the Maharishi University of Management participants? For instance, while pursuing a traditional arts and sciences curriculum, Maharishi University of Management students took classroom courses that offered intellectual and theoretical considerations of Transcendental Consciousness and related topics. The design of the present study is not sufficient to conclude unambiguously that the developmental positions observed in the Maharishi University of Management alumni are attributable exclusively to the Transcendental Meditation technique and not to other aspects of the intellectual and social experience of the Maharishi University of Management educational experience. However, the experimental participants were in the Maharishi University of Management environment for only a small portion of the 10-year intervention period. At posttest, less than 20% reported recent participation in activities sponsored by Maharishi University of Management or the organization teaching the Transcendental Meditation technique. 94% (32 of 34 participants) reported at posttest that they had been regularly practicing the Transcendental Meditation technique or the advanced TM-Sidhi program daily for most or for all of the 10-year intervention period.

Previously, Shecter (1977) compared whether the Transcendental Meditation technique or a related intellectual component was respon-
sible for personality and cognitive growth in a high school setting. The study involved random assignment to one of three groups: One group learned the Transcendental Meditation technique, one group learned the Transcendental Meditation technique and took a 14-week intellectual course on the Science of Creative Intelligence (SCI), and the third group only took the SCI course. A fourth matched control group took no course. The group that received the Transcendental Meditation technique alone and those who received the Transcendental Meditation technique plus the intellectual component improved significantly, compared to those who had the intellectual component only and non-Transcendental Meditation controls. In that study the intellectual component had no independent effect. Similarly, Hanley and Spates’ (1978) study of meditating students at four different universities found positive psychological changes to be associated with years of practice but not with intensity of exposure to philosophy.

Might the Maharishi University of Management students have been disposed to grow to postconventional levels of self-development regardless of their Transcendental Meditation practice? A highly self-selected sample of yoga practitioners, who were demographically similar to our Maharishi University of Management sample and who were long-term residents of a community oriented toward “striving for states of heightened awareness” (Rosen & Nordquist, 1980, p. 1155) found no postconventional WUSCT scores. Moreover, the Transcendental Meditation technique has been found to promote ego development even in a maximum security prison (Alexander & Orme-Johnson, 2003; Alexander, Walton, Goodman, 2003) which is not an environment comprised of individuals self-selecting for a disposition toward developmental change. The unprecedented finding of 38% at or above the Autonomous level compares to the highest previously reported percentages at the Autonomous level in college alumni samples—8% for Mills College (N = 34) mean age 43, (Helson & Wink, 1987) and 10% for Harvard University (N = 107, mean age = 55, Vaillant & McCullough, 1987)—both of which are highly selective universities. Thus, the Maharishi University of Management outcome appears to call for an explanation other than selection.

If the Transcendental Meditation technique is, in fact, causally related to the observed growth in self-development, it is important to
determine if the same effect might have been created by some other, ostensibly similar, mental technique. There are, at this time, no comparable longitudinal data from studies of other mental techniques. However, comprehensive meta-analyses of self-actualization (42 independent outcomes: Alexander et al., 1991) and reduced trait anxiety (146 independent outcomes: Eppley et al., 1989) both found that the overall effect size of the Transcendental Meditation technique was two to three times larger than that of other mental techniques and meditation practices. Furthermore, these other techniques were no more effective than placebo treatments, presumably because they failed to provide the experience of Transcendental Consciousness (see also Alexander et al., 1989).

**Directions for Further Research**

The present study has found evidence of unprecedented advances to post-conventional development in one sample of 34 experimental participants. These findings certainly warrant follow-up with additional samples.

There is ample evidence from other research that the Transcendental Meditation practice by itself promotes psychological growth, independent of the educational context of Maharishi University of Management. Nevertheless, the design of the present study is not sufficient to conclude that the developmental positions observed in the Maharishi University of Management alumni would be found in other samples that learn the Transcendental Meditation technique in non-Maharishi University of Management educational institutions or in the community at large. Unique self-selection characteristics of these Maharishi University of Management alumni may have been a factor in their development to advanced stages.

Generalizability of an association between Transcendental Meditation practice and postconventional development can be strengthened by replications including additional participants from MUM, participants learning the Transcendental Meditation program at other educational institutions, participants involved in other educational interventions aimed at personal development, as well as participants in standard higher education programs. Posttesting before graduation, as well as a number of years subsequent to the college experience, may help to determine what effect comes from practice of the personal development program by itself or practice in the context of the overall institutional
environment. In such replications, it would be valuable to have additional subjective and objective data in order to examine the functional significance of postconventional development in the lives of the participants.

Implications
Present methods of education have not been successful in cultivating postconventional development for the vast majority of adults in society. In our analysis, an explanation for this is that formal education emphasizes symbolic knowledge, and students and adults are continually involved in active mental processes. Development toward the higher reaches of human potential requires a means to systematically transcend thought. Because they have not been taught to transcend, graduates such as our control groups remain within the range of the conventional stages and highly susceptible to environmental influences. We suggest that the incorporation of the Transcendental Meditation program as an adjunct to the curriculum of any program of postsecondary education could produce adults characterized by growing values of autonomous personality, principled moral reasoning, and personal caring, as found in our experimental participants.

In discussing the stability of developmental levels during adulthood, Cohn (1998, p. 142) raises questions about why development stops for most adults and what types of experiences might act as pacers for continued development. He asks:

Are there any social experiences, shared by large segments of the adult population that could facilitate adult development beyond the Self-Aware or Conscientious stages? Thus far, no such pacers have been identified or even proposed.

It is interesting to note that the Transcendental Meditation program is not in the domain of social experience where Cohn implies a pacer for postconventional development would be found. While social experiences do pace development to conventional levels, an implication of the present research is that the stimulus for development to postconventional levels may be an inward experience of one’s own Being.
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This article, “The Transcendental Meditation Program and Postconventional Self-Development: A 10-Year Longitudinal Study,” by Howard M. Chandler, Ph.D., et al., here revised/updated, and reprinted with permission, was originally published in *Journal of Social Behavior and Personality, 2005, 17*(1) 93–121.
Part III

Appendices
Modern Science and *Vedic Science*:
An Introduction

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ABOUT THE AUTHOR

Kenneth Chandler holds a Ph.D. in Philosophy from the University of Texas at Austin. He served as Head of the Department of the Science of Creative Intelligence at Maharishi International University (today, Maharishi University of Management). Dr. Chandler continues his research into consciousness and is currently at work on a book on descriptions of the experience of transcending and pure consciousness in the mainstream classics of philosophy, science, religion, and the arts. It will be a three-volume set covering from the Vedic tradition to the present.
(The following article served as the Introduction to the inaugural issue of the journal *Modern Science and Vedic Science.*)

**Modern Science and *Vedic Science:* An Introduction**

*This journal (*Modern Science and Vedic Science*) provides a forum for research on the forefront of mankind’s expanding knowledge of the universe. It is devoted to exploration of the unified field of all the laws of nature through the combined approaches of modern science and ancient Vedic science, as brought to light by Maharishi Mahesh Yogi. The identification of the unified field by modern physics is only the first glimpse of a new area of investigation that underlies all disciplines of knowledge, and which can be explored not only through objective science but through a new technology of consciousness developed by Maharishi.*

The unified field is now beginning to be understood through modern physics as the unified source of the entire universe, as a unified state of all the laws of nature from which all force and matter fields sequentially emerge according to exact dynamical principles. As each science and each academic discipline progresses to uncover its own most basic laws and foundational principles, each is beginning to discover that the roots of these laws and principles can be traced to the unified field.

This journal recognizes a new method of gaining knowledge of the unified field that combines the approach of the modern sciences with that of the most ancient of sciences, the ancient tradition of Vedic science. Many thousands of years ago, the seers of the Himalayas discovered, through exploration of their silent levels of awareness, a unified field where all the laws of nature are found together in a state of wholeness. This unity of nature was directly experienced to be a self-referral state of consciousness which is unbounded, all-pervading, unchanging, and the self-sufficient source of all existing things. They experienced and gave expression to the self-interacting dynamics through which this unified field sequentially gives rise to the diversity of all laws of nature. That experience is expressed in the ancient Vedic literature.
In our own time, Maharishi has brought to light the knowledge of this ancient science and integrated it with the modern sciences in such a way that Vedic science and modern science are now seen as complementary methods of gaining knowledge of the same reality—the unified field of all the laws of nature. The knowledge of this ancient science that Maharishi has brought to light is known as Maharishi Vedic Science.

Maharishi Vedic Science is to be understood, first of all, as a reliable method of gaining knowledge, as a science in the most complete sense of the term. It relies upon experience as the sole basis of knowledge, not experience gained through the senses only, but experience gained when the mind, becoming completely quiet, is identified with the unified field. This method, examined in relation to the modern sciences, proves to be an effective means of exploring the unified field of all the laws of nature. On the basis of this method, complete knowledge of the unified field becomes possible. It is possible to know the unified field both subjectively on the level of direct experience through exploration of consciousness and objectively through the investigative methods of modern science. Maharishi Vedic Science gives complete knowledge of consciousness, or the knower, complete knowledge of the object known, and complete knowledge of the process of knowing. In knowing the unified field, all three—knower, known, and process of knowing—are united in a single unified state of knowledge in which the three are one and the same.

Maharishi has developed and made available a technology for the systematic exploration of the unified field. This technology is a means by which anyone can gain access to the unified field and explore it through experience of the simplest and most unified state of consciousness. As this domain of experience becomes universally accessible, the unified field becomes available as a direct experience that is a basis for universal knowledge. The technology for gaining access to the unified field is called the Transcendental Meditation technique and its advanced programs, and the science based on this experience, which links modern science and Maharishi Vedic Science in a single unified body of knowledge, is called the Science of Creative Intelligence.

Maharishi is deeply committed to applying the knowledge and technology of the unified field for the practical benefit of life. He has
developed programs to apply this knowledge to every major area of human concern, including the fields of health, education, rehabilitation, and world peace. These applications of Maharishi’s technologies of consciousness have laid it open to empirical verification and demonstrated its practical benefit to mankind. Hundreds of scientific studies have already established its usefulness. From these results, it is clear that Maharishi’s technologies of consciousness are far more beneficial than technologies based on present day empirical science; they promise to reduce and even eliminate war, terrorism, crime, ill health, and all forms of human suffering.

These technologies, which are the applied value of Maharishi Vedic Science, represent a great advance in methods for gaining knowledge. Past science was based on a limited range of knowledge gained through the senses. This new technology opens to mankind a domain of experience of a deeper and more far-reaching import. It places within our grasp a new source of discovery of laws of nature that far exceeds the methods of modern science, yet remains complementary to these methods.

Modern science and Maharishi Vedic Science, explored together, constitute a radically new frontier of knowledge in the contemporary world, opening out vistas of what it is possible for mankind to know and to achieve, which extend far beyond present conceptions, and which demand a re-evaluation of current paradigms of reality and a reassessment of old conceptions of the sources and limits of human knowledge.

This introductory essay will provide a preliminary understanding of what the unified field is, what Maharishi Vedic Science is, and how Maharishi Vedic Science and modern science are related. It also defines fundamental concepts and terminology that will be frequently used in this journal and surveys the practical applications of this new technology. We begin with a description of the unified field as understood in modern science.

**The Unified Field of Modern Science**

Within the last few years, modern theoretical physics has identified and mathematically described a unified field at the basis of all observable states of physical nature. Einstein’s hope of finding a unified field theory to unite the electromagnetic, gravitational, and other known
force fields has now been virtually realized in the form of unified quantum field theories. Instead of having several irreducible and distinct force fields, physics can now mathematically derive all four known force fields from a single supersymmetric field located at the Planck scale ($10^{-33}$ cm or $10^{-43}$ sec.), the most fundamental time-distance scale in nature. This field constitutes an unbounded continuum of non-changing unity pervading the entire universe. All matter and energy in the universe are now understood to be just excitations of this one, all-pervading field.

Physics now has the capacity to describe accurately the sequence by which the unified field of natural law systematically gives rise, through its own self-interacting dynamics, to the diverse force and matter fields that constitute the universe. With a precision almost undreamed of a few years ago, the modern science of cosmology can now account for the exact sequence of dynamical symmetry breaking by which the unified field, the singularity at the moment of cosmogenesis, sequentially gave rise to the diverse force fields and matter fields. It is now possible to determine the time and sequence in which each force and matter field decoupled from the unified field, often to within a precision of minute fractions of a second. This gives us a clear understanding of how all aspects of the physical universe emerge from the unified field of natural law.

Mathematics, physiology, and other sciences have also located a unified source and basis of all the laws of nature in their respective disciplines. In mathematics, the foundational area of set theory provides an account of the sequential emergence of all of mathematics out of the single concept of a set and the relationship of set membership. The iterative mechanics of set formation at the foundation of set theory directly present the mechanics of an underlying unified field of intelligence that is self-sufficient, self-referral, and infinitely dynamic in its nature. Investigations into the foundations of set theory are ultimately investigations of this unified field of intelligence from which all diversity of the discipline emerge in a rigorous and sequential fashion. In physiology, it is the DNA molecule that contains, either explicitly or implicitly, the information specifying all structures and functions of the individual physiology. In this sense, therefore, it is DNA that unifies the discipline by serving as a unified source to which the diversity of physiological functioning can be traced.
Each of the modern sciences may indeed be said to have glimpsed a unified state of complete knowledge in which all laws of nature are contained in seed form. Each has gained some knowledge of how the unified field of natural law sequentially unfolds into the diverse expressions of natural law constituting its field of study. Modern science is now discovering and exploring the fundamental unity of all laws of nature.

**Maharishi Vedic Science**

Maharishi Vedic Science is based upon the ancient Vedic tradition of gaining knowledge through exploration of consciousness, developed by the great masters in the Himalayas who first expressed this knowledge and passed it on over many thousands of years in what is now the oldest continuous tradition of knowledge in existence. Maharishi’s work in founding Maharishi Vedic Science is very much steeped in that ancient tradition, but his work is also very much imbued with the spirit of modern science and shares its commitment to direct experience and empirical testing as the foundation and criterion of all knowledge. For this reason, and other reasons to be considered below, it is also appropriately called a science. The name “Maharishi Vedic Science” thus indicates both the ancient traditional origins of this body of knowledge and the modern commitment to experience, system, testability, and the demand that knowledge be useful in improving the quality of human life.

The founders of the ancient Vedic tradition discovered the capability of the human mind to settle into a state of deep silence while remaining awake, and therein to experience a completely unified, simple, and unbounded state of awareness, called pure consciousness, which is quite distinct from our ordinary waking, sleeping, or dreaming states of consciousness. In that deep silence, they discovered the capability of the mind to become identified with a boundless, all-pervading, unified field that is experienced as an eternal continuum underlying all existence. They gave expression to the self-sufficient, infinitely dynamic, self-interacting qualities of this unified state of awareness; and they articulated the dynamics by which it sequentially gives rise, through its own self-interacting dynamics, to the field of space-time geometry, and subsequently to all the distinct forms and phenomena that constitute the universe. They perceived the fine fabric of activity, as Maharishi explains it, through which this unity of pure consciousness, in the pro-
cess of knowing itself, gives rise sequentially to the diversity of natural law and ultimately to the whole of nature.

This experience was not, Maharishi asserts, on the level of thinking, or theoretical conjecture, or imagination, but on the level of direct experience, which is more vivid, distinct, clear, and orderly than sensory experience, perhaps much in the same way that Newton or Einstein, when they discovered the laws of universal gravitation or special relativity, enjoyed a vivid experience of sudden understanding or a kind of direct “insight” into these laws. The experience of the unified field of all the laws of nature appears to be a direct experience of this sort, except that it includes all laws of nature at one time as a unified totality at the basis of all existence—an experience obviously far outside the range of average waking state experience.

The ancient Vedic literature, as Maharishi interprets it, expresses, in the sequence of its flow and the structure of its organization, the sequence of the unfoldment of the diversity of all laws of nature out of the unified field of natural law. The Veda is thus to be understood as the sequential flow of this process of the oneness of pure consciousness giving rise to diversity; and Maharishi Vedic Science is to be understood as a body of knowledge based on the direct experience of the sequential unfoldment of the unified field into the diversity of nature. It is an account, according to Maharishi, of the origin of the universe from the unified field of natural law, an account that is open to verification through direct experience, and is thus to be understood as a systematic science.

These ancient seers of the Vedic tradition developed techniques to refine the human physiology so that it can produce this level of experience, techniques that were passed on over many generations, but were eventually lost. Maharishi’s revival and reinterpretation of ancient Vedic science is based on his revival of these techniques which have now been made widely accessible through the training of thousands of teachers of the Transcendental Meditation program. He has thus provided a reliable method of access to this field of direct experience where the oneness of pure consciousness gives rise to the diversity of the laws of nature; and he has also developed applications of this technology that render it open to experimental testing. These applications will be considered below.
Maharishi describes the experience of this unified field of consciousness as an experience of a completely unchanging, unbounded unity of consciousness, silently awake within itself. Gaining intimate familiarity with the silence of pure consciousness, Maharishi holds, one gains the ability to experience within that silence an eternal “fabric” or “blueprint” of all laws of nature that govern the universe, existing at the unmanifest basis of all existence. This unmanifest basis of life, where all laws of nature eternally reside in a collected unity, is experienced as the fabric of the silent field of consciousness itself, which is not in space and time, but lies at the unmanifest basis of all manifest activity in space and time. Through Maharishi’s work, this experience comes to be understood (as we see below) as a normal state of consciousness that arises in the natural course of human development.

Glimpses of this universal domain of experience, where all possibilities reside together in an eternally unified state, have been reported in almost every culture and historical epoch, from Plato to Plotinus and Augustine, and from Leibniz to Hegel and Whitehead. Scientists like Kepler, Descartes, Cantor, and Einstein also appear to have written of it and seemingly drew their insights into the laws of nature from this experience. Descartes (1908) writes, for example, of an experience that he had as a young man of “penetrating to the very heart of the kingdom of knowledge” and there comprehending all the sciences, not in sequence, but “all at once.” Scientists and writers from many traditions have described this experience of unity, which confirms that it is completely universal, and not a product of a particular cultural tradition. Just as the Vedic tradition has been misunderstood, however, so have those descriptions of consciousness found in these different cultural traditions; for without a technique that makes the experience systematically accessible to everyone, the understanding that this is a universal experience of the most fundamental level of nature’s activity has been obscured, and has not before now emerged into the light of universal science.

According to Maharishi Vedic Science, it is not only possible to gain direct experience of the unity of natural law at the basis of the manifest universe, but one can also directly experience the unity of nature sequentially giving rise to the diversity of natural law through its own self-interacting dynamics. Maharishi’s most recent research has
centered on delving deeply into the analysis of these self-interacting dynamics of consciousness.

The Self-Interacting Dynamics of Consciousness

When one gains the capability, through practice of the Transcendental Meditation technique, of remaining awake while becoming perfectly settled and still, one gains the ability to experience a completely simple, unified, undifferentiated, self-referral state of pure consciousness, which is called Saṃhitā in the Vedic literature, in which knower, known, and process of knowing are one and the same. Consciousness is simply awake to itself, knowing its own nature as simple, unified pure consciousness. Yet in knowing itself, the state of pure consciousness creates an intellectually conceived distinction between itself as knower, itself as known, and itself as process of knowing. In Vedic literature, this is reflected in the distinction between Rishi (knower), Devatā (process of knowing), and Chhandas (object of knowledge). According to Maharishi, from the various interactions and transformations of these three intellectually conceived values in the unified state of pure consciousness, all diverse forms of knowledge, all diverse laws of nature, and ultimately all diversity in material nature itself sequentially emerge.

The conscious mind, awake at this totally settled and still level of awareness, can witness the mechanics by which this diversification of the many out of the unity of pure consciousness takes place. The mechanics of Rishi, Devatā, and Chhandas transforming themselves into Saṃhitā, Saṃhitā transforming itself into Rishi, Devatā, and Chhandas, and Rishi, Devatā, and Chhandas transforming themselves into each other are the mechanics by which the unity of pure consciousness gives rise to the diversity of natural law. These mechanics are expressed in the sequential unfoldment of Vedic literature. These are the self-interacting dynamics of consciousness knowing itself, which, Maharishi asserts, sequentially give rise to all diversity in nature.

Maharishi (1986) describes this self-referral state of consciousness as the basis of all creative processes in nature:

This self-referral state of consciousness is that one element in nature on the ground of which the infinite variety of creation is continuously emerging, growing, and dissolving. The whole field of change emerges from this field of non-change, from this self-referral, immortal state of pure consciousness.
consciousness. The interaction of the different intellectually conceived components of this unified self-referral state of consciousness is that all-powerful activity at the most elementary level of nature. That activity is responsible for the innumerable varieties of life in the world, the innumerable streams of intelligence in creation. (pp. 25–26)

**The Structure of Maharishi Vedic Science**

One of Maharishi’s most important contributions to Vedic scholarship has been his discovery of the *Apaurusheya Bhashyā*, the “uncreated commentary” of the Rk Veda, which brings to light the dynamics by which the Veda emerges sequentially from the self-interacting dynamics of consciousness. According to Maharishi’s analysis, the Veda unfolds through its own commentary on itself, through the sequential unfoldment, in different-sized packets of knowledge, of its own knowledge of itself. All knowledge of the Veda is contained implicitly even in the first syllable “Ak” of the Rk Veda, and each subsequent expression of knowledge elaborates the meaning inherent in that packet of knowledge through an expanded commentary. The phonology of that syllable, as analyzed by Maharishi, expresses the self-interacting dynamics of consciousness knowing itself. As pure consciousness interacts with itself, at every stage of creation a new level of wholeness emerges to express the same self-interacting dynamics of Rishi, Devatā, and Chhandas.

Thus the body of Vedic literature reflects, in its very organization and structure, the sequential emergence of all structures of natural law from the unity of pure consciousness. Each unit of Vedic literature—Rk Veda, Sāma Veda, Yajur-Veda, Atharva Veda, Upanishad, Āraṇyakas, Brāhmaṇa, Vedāṅga, Upāṇga, Itihās, Purāṇ, Smṛiti, and Upaveda—expresses one aspect or level of the process. As Maharishi (1986) describes it:

> The whole of Vedic literature is beautifully organized in its sequential development to present complete knowledge of the reality at the unmanifest basis of creation and complete knowledge of all of its manifest values. (p. 28)

Veda, Maharishi asserts, is the self-interaction of consciousness that ultimately gives rise to the diversity of nature. The diversity of creation sequentially unfolding from the unity of consciousness is the result of
distinctions being created within the wholeness of consciousness, as consciousness knows itself. Thus from the perspective of Maharishi Vedic Science, the entire universe is just an expression of consciousness moving within itself. All activity in nature is just activity within the unchanging continuum of the wholeness of consciousness.

Through the texts of ancient Vedic science, as interpreted by Maharishi, we possess a rich account of the emergence of diversity out of the unity of natural law. On the basis of this account, it becomes feasible to compare the Vedic description of the origin of the universe with that of the modern sciences.

**Modern Science and Maharishi Vedic Science**

When Maharishi heard from major scientists of the recent advances of unified field theory in physics, he asserted that modern science had glimpsed the unified field described in ancient Vedic science. “The knowledge of the unified field,” he said (1986, p. 29), “has been discovered by modern science during just the last few years, but the complete knowledge of the unified field has always been available in the Vedic literature.” Modern science, he proposed, had now arrived at the edge of comprehending, through unified quantum field theories, what Vedic science had described on the basis of exploration of the least excited state of consciousness since ancient times: that all diversity in nature sequentially emerges from a unified source through a precise self-interacting dynamics. Modern experimental science and Maharishi Vedic Science could now be seen as two diverse yet mutually complementary approaches to knowing the same underlying reality—one through the empirical method, the other through the exploration of the least excited state of consciousness. Through Maharishi’s inspiration, this has become a major research program that has engaged the attention of many scientists and that has yielded very rich results.

Over the past decade, Maharishi has participated in numerous symposia with major scientists on the theme of exploring modern science and Vedic science to discover detailed structural similarities in their descriptions of the unified field. These symposia have attracted eminent unified field theorists, mathematicians, and physiologists, including a number of Nobel laureates, as well as many of the most highly recognized Pandits of the Vedic tradition. Out of these interactions has come
a meeting of two traditions, East and West, on the ground of their common theme: the investigation of the unified field. Those who have followed these symposia have recognized a deep and impressive structure of knowledge common to both traditions. Both identify a boundless, all-pervading field underlying all states of matter and energy in the universe; both locate it on the most fundamental time-distance scale of nature; both assign to it the same properties of self-sufficiency, self-interaction, infinite dynamism, unboundedness, and unity, among many other common attributes; both identify a threefold structure at the basis of all nature; and both describe a dynamics by which the diversity of nature sequentially emerges from this unified field according to precise laws. The result of these symposia has been that many scientists, following Maharishi’s lead, now feel confident to assert that the unified field described by physics and the unified field of consciousness described by Vedic science are one and the same.

In the first issue of Modern Science and Vedic Science, the lead article by John Hagelin explored many of the deep connections between contemporary unified field theory in physics and Maharishi Vedic Science from the standpoint of an active field theorist. His work brought these two diverse methods of inquiry into close relation, drawing upon both the latest developments of unified field theories and the direct experience of the unified field.

Dr. Hagelin presented evidence for Maharishi’s assertion that the unified field of consciousness and the unified field of physics are the same. His main empirical evidence for this new paradigm was drawn from experimental research in the social sciences on the “Maharishi Effect”—the measurable effects on society resulting from the practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. As further evidence for the identity of consciousness and the unified field, he cited deep parallels between the descriptions of the unified field found in physics and Maharishi Vedic Science. These strikingly similar descriptions support the conclusion that modern science and Maharishi Vedic Science are two complementary methods of approach to the same underlying unity of nature.
The New Paradigm of the Unity of Nature

It is a common belief that the unified field of physics is an objective reality of nature and that consciousness is a subjective experience, and that the two belong, consequently, to different categories of existence. According to this understanding, one is purely material, the other is purely mental, and the two cannot, therefore, be equated.

Through the experience of pure consciousness described in Maharishi Vedic Science, that unified level of intelligence is experienced, not as a mere subjective and localized phenomenon of thought or sensation, but as a non-changing, unbounded field of Being, pervading all forms and phenomena in the universe on a non-active, silent, unmanifest level. Objective and subjective aspects of nature are seen as but two manifest modes of this unified field at the unmanifest basis of existence. A thorough examination of the nature of the unified field in physics and the descriptions of unbounded consciousness brought to light by Maharishi support the thesis that they are but two complementary modes of apprehending a single underlying reality.

The view of nature as consisting of billiard-ball-type objects, each separate, discrete, and isolated from the other, belongs to the old classical Newtonian view of the world. Quantum field theory in modern physics no longer views nature in this way, but provides a new understanding in which the primary reality is that of quantum fields. All forms of matter and energy are understood to be excitations of these underlying fields. In the last year and a half, the apparently different fields of gravity, electromagnetism, and the weak and strong interactions have been theoretically unified as different levels of expression of one single underlying field. All forms and phenomena in the universe are just modes of vibratory excitation of this one all-pervading unified field.

Today, the success of modern physics in unifying our understanding of physical nature is mirrored in the success of Maharishi Vedic Science in unifying our understanding of consciousness. When the unbounded level of pure consciousness is gained as a direct experience, all activity in nature is experienced as an excited state of that one all-pervading field. Since quantum field theory also describes all activity in the universe as excitations of one underlying field, the simplest interpretation is that there is a single unified field which can be known both
through direct experience and through the objective sciences. In this new understanding of the unity of nature, mind and matter cease to be viewed as ultimately different and come to be seen as expressions of a deeper unity of unbounded consciousness.

The unity of nature is not merely a hypothetical unity, nor a unity of intellectual understanding or interpretation. It is a unity of direct experience that has been described in almost every tradition and every historical epoch. Maharishi Vedic Science only brings to light what has been the experience of many of the greatest minds throughout history. What is radically new is that Maharishi has provided a systematic and reliable method by which anyone can gain access to this level of experience. This method of access is the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying.

The Transcendental Meditation and TM–Sidhi Programs, including Yogic Flying

The Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, have been introduced by Maharishi as an effective means for opening the unified field to all as a direct experience. In this way, the unified field becomes universally accessible to systematic exploration.

The key component of these programs is the Transcendental Meditation technique, which provides a systematic procedure by which the mind is allowed to settle naturally into a state of restful alertness, the self-referral state of pure consciousness, in which the mind is completely silent and yet awake. In this way, the state of pure consciousness, which has been the subject of philosophical speculation throughout the centuries, can now be investigated on the basis of direct experience. Maharishi’s immensely important contribution to the clarification and elucidation of this experience of pure consciousness will be a theme for analysis in future issues of this journal.

This quiet, still level of consciousness has rarely been experienced in the past because no systematic and effective technique has been available for providing that experience. The Transcendental Meditation technique is a simple, natural, and effortless procedure for allowing the awareness to settle into a state of deep silence while remaining awake. It has proved to be uniquely effective in making this level of experience widely accessible. Through the deep rest gained during the
practice of the technique, balance is systematically created on all levels of physiological functioning, and the nervous system is habituated to a more settled, coherent, and alert style of functioning. In time, a state of completely integrated functioning is gained, in which pure consciousness is spontaneously and permanently maintained. Once this state is established, the silent, self-referral field of awareness is always present as a stable, non-changing ground underlying all changing states of awareness. This integrated state of consciousness, Maharishi holds, is the basis of all excellence in life and provides the foundation for the further development of higher states of consciousness through the practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying.

**Maharishi’s Programs for the Development of Higher States of Consciousness**

The ultimate purpose of all aspects of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, and Vedic Science is the development of consciousness, the unfoldment of the full human potential to live life in enlightenment. Enlightenment is that fully developed state of life in which one enjoys complete knowledge and lives in total fulfillment. In this state, one lives in harmony with all the laws of nature, enjoying the full support of natural law to achieve any desire without making mistakes.

Maharishi has identified a specific sequence of higher states of consciousness, each distinct from waking, dreaming, and sleeping, which, he asserts, arise in the normal full course of human development. Each state of consciousness unfolds on the basis of a concrete shift in the mode of the individual’s neurophysiological functioning. These states can be distinguished from waking, dreaming, and sleeping on the basis of their distinct physiological correlates. The higher states of consciousness that arise in this developmental sequence are, Maharishi asserts, a source of greater joy, knowledge, and fulfillment than ordinary waking state life.

The attainment of these higher states of consciousness is the basis for fully understanding and applying the theoretical assertions of Maharishi Vedic Science. Maharishi Vedic Science is just the exposition of the full range of direct experience that unfolds during the course of the natural
development of human consciousness. These states of consciousness are universal stages of human development accessible to everyone through the practice of Maharishi’s technologies of consciousness. What before was shrouded in the veil of mysticism is now scientifically understood as a normal, natural stage of human life available to anyone.

An article in the first issue of *Modern Science and Vedic Science*, by Dr. Charles Alexander and others (1987) examined the empirical evidence, drawn from behavioral and neurophysiological research, for the existence of these higher stages of human development. This article unfolded the scientific basis for understanding and verifying higher states of consciousness from the standpoint of a developmental psychologist, and laid the basis for a new paradigm of human development.

**Research on the Relation between Modern Science and Maharishi Vedic Science**

Each individual nervous system, when refined through Maharishi’s technologies of consciousness, is an instrument through which the silent field of pure unbounded consciousness becomes accessible as a field of inquiry. Since the unified field is all-pervading and everywhere the same, a nervous system finely enough attuned in its functioning can gain the ability, according to Maharishi, to experience and identify itself with that unbounded, undifferentiated, and unified field underlying all activity in nature. By taking one’s awareness from the gross level of sensory objects to perception of finer levels of activity, one gains the ability to experience that level of nature’s functioning at which the unity of pure consciousness gives rise to diversity. Gaining this unified state of consciousness is the means by which anyone can experience and confirm the structure of knowledge and reality described in Maharishi Vedic Science. This is partly what makes Maharishi Vedic Science a precise, verifiable science: All theoretical structures of the science can be verified through a reliable, systematic, effective technology. Other foundational aspects of this science will be considered below.

Maharishi’s technologies of consciousness become, in the modern world, a method for the investigation of the unified field and the most refined level of nature’s activity through direct experience. Modern physics, through its objective method of inquiry, has glimpsed a unified field underlying all of nature, but physics has reached a fundamental
impasse in its ability to experimentally investigate the unified field, because the energies required to probe these finer scales exceed those attainable by any conceivable particle accelerator technology. When physics can go no further, Maharishi’s technologies of consciousness, facilitate inquiry beyond the limitations of the objective approach by providing an effective means of exploring the unified field on the level of direct experience.

This exploration of the unified field through the subjective experience of consciousness is a well-structured program of research. It is guided by the knowledge of Maharishi Vedic Science set forth by Maharishi in conjunction with the modern sciences. When descriptions of the unified field from the standpoint of modern science, of Maharishi Vedic Science, and of direct experience coalesce, the three together provide a basis for complete knowledge. This program of research is based on Maharishi’s exposition of the Vedic literature as a complete and detailed expression of the unified field.

According to Maharishi’s exposition of the Veda, the sequential emergence of the diverse laws of nature from the unified field can be directly experienced in the field of consciousness as a sequence of sounds; these are presented in the sequential emergence of phonological structures of the Vedic texts. Veda is just the structure of the self-interacting dynamics through which the unified field gives rise to the diverse expressions of natural law. Fundamental theoretical concepts in physics and other disciplines, insofar as they are valid descriptions of nature, should therefore correspond to different aspects of Vedic literature that describe these realities from the standpoint of direct experience.

The basic program of research of modern science and Maharishi Vedic Science, as conceived by Maharishi, thus has three major goals: (1) to develop an integrated structure of knowledge by fathoming the depth of correspondence between the principles of modern science and Vedic Science; (2) to provide, from Maharishi Vedic Science, a foundation in direct experience for the most profound theoretical concepts of modern science; and (3) to resolve the impasse faced by the objective approach of modern science through the addition of the subjective approach of Maharishi Vedic Science, which provides complete knowledge of nature on the basis of the complete development of the knower.
In another issue of *Modern Science and Vedic Science* [see Vol. 5, Pt. 1 of this series], Dr. M.H. Weinless (1987) explored set theory and other foundational areas of modern mathematics in relation to Maharishi Vedic Science. In a proposed issue, Drs. R.K. Wallace, D.S. Pasco, and J.B. Fagan (1988) explore the fundamental relationship between Maharishi Vedic Science and the foundational areas of modern physiology, such as molecular biology. Their paper also discusses the extent to which fundamental principles of Maharishi Vedic Science can be used to further investigation of DNA structure and function.

The discovery of deep structures of knowledge and principles common to Maharishi Vedic Science and modern science represents such a profound contribution to our understanding of nature that this journal was founded to foster continued scholarly investigation of the interrelations between these complementary methods of gaining knowledge. Knowledge gained by direct experience of the fine fabrics of nature’s activity, and knowledge gained by the experimental methods of modern science coalesce in a new integrated method of inquiry that offers both the fundamental principles of modern science and the expressions of direct experience in Maharishi Vedic Science as two facets of one reality of nature’s functioning.

Maharishi (1986) sums up the relation between Maharishi Vedic Science, modern science, and his technologies of consciousness:

Maharishi Vedic Science is applied through the Technology of the Unified Field. We speak of the unified field in connection with Maharishi Vedic Science because of the similarity of what has been discovered by physics and what exists in the self-referral state of human consciousness. The Technology of the Unified Field [That is, Transcendental Meditation and TM-Sidhi programs, including Yogic Flying—Eds.]. is a purely scientific procedure for the total development of the human psyche, the total development of the race. This is a time when objective, science-based progress in the world is being enriched by the possibility of total development of human life on earth, and this is the reason why we anticipate the creation of a unified field-based civilization. (p. 35)

On the basis of the universal availability of this domain of experience, an empirical science of consciousness becomes possible for the first time.
The Science of Creative Intelligence: Foundations of a New Science of Consciousness

The unified science that links the objective method of modern science and the subjective method of Maharishi Vedic Science, while preserving the integrity of each, is called the Science of Creative Intelligence (SCI). Maharishi himself has laid the foundations of this new science by showing, first, how a precise subjective science of consciousness is established on the basis of the direct experience of consciousness in its pure form; and second, how the experimental method can be used to test empirically the assertions of the subjective science. Through Maharishi’s work, for the first time in history, the full potential of human consciousness can be investigated both through direct experience and through the objective methods of modern science. The foundations of this new science linking the subjective and objective method will now be considered.

Experiential Foundations

Prior to Maharishi’s work, the term consciousness was considered too vague and indefinite to be allowed into scientific discussion. It was excluded from science as a metaphysical term because consciousness was not objectively observable, and therefore apparently not amenable to scientific investigation. Through Maharishi’s work, the concept of consciousness has been given a precise, well-defined meaning on the basis of direct experience, and its relation to the objective framework of science has been precisely specified.

The experience of pure consciousness, available to anyone through regular practice of the Transcendental Meditation technique, is a basis for precise experiential knowledge of consciousness in its simplest, most fundamental, and most unified state. Even though consciousness can never be an object of experience, when the conscious mind becomes completely settled in a wakeful state, it experiences its own nature as pure wakefulness, pure consciousness, without any activity or objective content. Through the repeatable, systematic experience of this silent but wakeful state of mind, the concept of pure consciousness, which has been subject to conjecture and debate throughout the centuries, is now available to direct experience.
Having laid the basis for introducing consciousness into science as a precise concept, it remained for Maharishi to develop a program of applied research to test theoretical predictions of Maharishi Vedic Science. Identifying consciousness with the unified field provides a precise understanding of where consciousness is located in the framework of the sciences. To create an empirical science of consciousness, however, it was also necessary to account for how consciousness could be investigated through experimental research.

**Empirical Foundations**
Maharishi’s work has laid the foundation for an experimental investigation of consciousness. He has led the way in drawing out predictions of Vedic science that are open to testing, translating discussions of consciousness, derived from experience of higher states of consciousness, into predictions of experimentally observable phenomena. Three examples will illustrate this principle.

Pure consciousness, as was noted above, is experienced during the practice of the Transcendental Meditation technique as a state of pure restful alertness. This purely subjective experience does not, however, establish objectively whether it is in fact a state of deep rest and alertness, or only seems to be. If a person is in a deep state of rest and alertness, Maharishi has asserted, then physiological evidence of deep rest and alertness should be observable. Reduced levels of oxygen consumption, reduced breath rate, and other measures of more refined physiological activity would be predicted. Patterns of EEG coherence in the alpha range, indicative of restful alertness, should also be observed. Early pioneering research by Dr. R.K. Wallace (1986) found that these changes do indeed occur. In this way, statements about the subjective experience of consciousness were translated into empirically verifiable assertions. The basis of this correlation between consciousness and physiology is a principle, fundamental to Maharishi’s thinking, that for every state of consciousness there is a corresponding state of physiological functioning. The range of physiological correlates of the experience of pure consciousness is a subject of continuing research.

Consider a second example. Pure consciousness is understood in Maharishi Vedic Science as a clear and settled state of awareness. Anyone who gains this state is said to have a mind like a placid lake, unrippled
by waves, and thus able to reflect the world in a precise, non-agitated manner. Maharishi drew from this several predictions. One is that a person growing in the ability to experience pure consciousness would experience more stable and orderly physiological functioning. This can be translated into the testable prediction that subjects regularly practicing the Transcendental Meditation program display increased stability of the autonomic nervous system. Another prediction is that the practice of the Transcendental Meditation program will produce greater perceptual clarity and greater orderliness of thinking. Translated into specific terms, this leads to the prediction that practicing the Transcendental Meditation program will produce measurable increases on such scales as auditory discrimination, brain wave coherence, and problem solving ability. Research has been designed, carried out, and reported in the literature which measures the growth of these parameters in groups practicing the Transcendental Meditation program by comparison to control groups, thus providing objective verification of the predicted correlates of the subjective experience of pure consciousness.

A third example of how assertions of Maharishi Vedic Science can be translated into testable form is found in the sociological experiments on the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. The hypothesis is that a group of people practicing this technology in one place, by bringing their awareness to the level of perfect orderliness in the unified field, will enliven qualities of harmony and orderliness in collective consciousness, thus producing measurable positive changes in the quality of societal life. Many experiments have been designed by Maharishi and carried out, demonstrating the power of this technology to produce significant changes in the level of coherence, positivity, balance, and stability in society, even on a global scale. (See Experimental Research, below.) The results of these experiments strongly support Maharishi’s assertion that consciousness is identical with the unified field.

Experimental Research

Over 600 hundred experimental studies in the areas of physiology, psychology, and sociology provide substantial confirmation of many basic assertions of Maharishi Vedic Science in the arena of empirical science. Many of these studies, now published in major scientific jour-
nals throughout the world, have been collected in the volumes called Scientific Research on the Transcendental Meditation Programme: Collected Papers, Vols. 1–6 (1977–1991). This research provides experimental validation of the efficacy of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. Because this research—from over 600 scientific studies at over 300 universities and research institutions in 33 countries, published in more than 100 scientific journals—is too extensive to summarize here, the reader is referred to the Collected Papers for articles cited in this and other professional journals. Overall, this research probably represents the most concerted, well-designed research program on a potential means to benefit mankind ever conceived. Its present standing is that, taken together as a body of research, it is one of the most impressive confirmations of a theory of human potential ever executed.

Although it is beyond the scope of this introduction to go into the details of this research, it is worthwhile to mention some of the broad categories of scientific investigation that have evolved to guide the research program of the Science of Creative Intelligence. The main areas of research include studies on the individual and society. Research on benefits to the individual may be further subdivided into studies of physiological changes (both during and after the practice); cognitive, psychological, and behavioral changes; benefits to health and social behavior; and benefits to athletic performance, performance in business, and academic performance. Research on social benefits through collective practice may be further grouped into research on families, city populations, national populations, and global population. These research studies fall into the categories of crime prevention, accident prevention, benefits to economy, health, violence reduction, and world peace.

On the basis of this research, basic assertions of Maharishi Vedic Science become verifiable through empirical science. There is, moreover, a unity of theory underlying these diverse predictions and tests. These studies, taken as a whole, constitute a coherent research program that tests the prediction that repeated experience of the unified field results in greater orderliness, coherence, and positivity, in both individual and social life. Research on these changes not only tests fundamental theory, but demonstrates the practical benefits of this new
technology. Maharishi’s technologies of consciousness become open to experimental testing precisely because they have significant practical applications in improving every area of human life.

**Practical Applications**

*of the Transcendental Meditation and TM-Sidhi Programs,*

*including Yogic Flying*

Maharishi has frequently asserted that the purpose of Maharishi Vedic Science is to benefit life, not merely to give knowledge for its own sake. Knowledge, he holds, is for action, action for achievement, and achievement for fulfillment. The ultimate purpose of Maharishi Vedic Science and its applied technology is, therefore, to bring human life to fulfillment.

Maharishi’s technologies of consciousness bring fulfillment to individual life by unfolding the full potential of consciousness. When higher states of consciousness are realized, Maharishi emphasized, life is lived in “twenty-four-hour bliss.” Gaining contact with the unified field, one enjoys spontaneous right action, lives life in total accord with all the laws of nature, and accomplishes any life-supporting desire. Violations of natural law cease, and all suffering, which is caused by violation of natural law, comes to an end. Life is lived free from mistakes, in inner and outer fulfillment. Such is the fundamental purpose of the technologies Maharishi has created.

**Perfect Health**

Maharishi’s technologies of consciousness have important practical applications in the area of health. According to Maharishi, sickness arises from imbalance. Perfect health means wholeness, balance on all levels of life. When individual life is established in the unified field of all the laws of nature, all actions are spontaneously in accord with natural law. In terms of physiological functioning, this means perfect integration and balance, from the biochemical and molecular levels to the macroscopic, organismic levels.

Maharishi Ayurveda is an integral part of Maharishi Vedic Science. It is a revitalized form of the ancient ayurvedic science of life and health, restored to its original purity and effectiveness by Maharishi.
According to Maharishi, the cornerstone of Ayurveda is the development of consciousness. Perfect health in mind, body, and behavior is the result of perfect balance in consciousness and physiology. This develops through the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, when the mind identifies itself with the unified field, the field of perfect balance and wholeness.

Maharishi Ayurveda combines Maharishi’s technologies of consciousness with specific procedures to treat and prevent illness and promote longevity. Maharishi Ayurveda Medical Centers have been established in many countries to eliminate the basis of sickness, create perfect health, and reverse the aging process. Over the last fifteen years, research into the effects of Maharishi’s technologies of consciousness, on health have been carried out at research institutions all over the world, and Maharishi’s recent emphasis on Ayurveda provides many new research opportunities for investigating the applications of Vedic Science in the area of health.

Maharishi’s technologies of consciousness also include technologies to accomplish specific goals of individual and social life. The TM-Sidhi program has been founded by Maharishi to utilize the knowledge and the organizing power of the unified field for improving achievements in every area of human endeavor.

Unfolding Full Human Potential through the Transcendental Meditation and TM-Sidhi programs

When one gains the level of experience of the self-interacting dynamics of consciousness, Maharishi holds, one gains command over all the laws of nature. Stationed at the source of all the laws of nature, at the “central switchboard” of nature’s activity, human consciousness can command all the laws of nature to create any desirable effect in the material world. Maharishi has brought forth a program for gaining mastery over all the laws of nature, based on the formulations found in the ancient Yoga Sūtras of Patanjali, one of the principal books of Vedic literature. This is the TM-Sidhi program, in which the mind gains the ability to function from the level of the self-interacting dynamics of the unified field. Once established in pure self-referral awareness through the practice of the Transcendental Meditation program, an individual
gains the ability to draw upon the organizing power of the unified field to accomplish anything. Since the unified field is the source of all existence, its organizing power is infinite, and one who functions from this level has unlimited organizing ability. Established in that unified field of all possibilities on the unmanifest level of existence before consciousness assumes the form of matter, all possibilities open to one’s awareness and one can govern the expressions of the unified field as it transforms itself into matter. As Maharishi (1986) expresses it:

In this program, human awareness identifies itself with that most powerful level of nature’s functioning and starts to function from there. The purpose of the TM-Sidhi program is to consciously create activity from that level from where nature performs. (p. 74)

Through the practice of the TM-Sidhi program, Maharishi predicts, it will become possible to achieve levels of body-mind coordination hitherto deemed impossible. It will be possible, he asserts, to realize the ancient dream of flying through the air, and to develop highly enhanced powers of hearing, seeing, and intuition that extend the senses far beyond the limits currently conceived to be possible. In the Yogic Flying technique, which Maharishi developed from the Yoga Sūtras, the silent state of self-referral consciousness is integrated most fully with outer activity as the body lifts in spontaneous hops, generating inner bliss and maximum coherence in brain functioning. Other Vedic texts describe the ability to move through the air at will as a result of perfection of this Yogic Flying technique. By activating laws of nature that are now hidden to ordinary methods of scientific investigation, the TM-Sidhi program provides a research methodology to explore what is possible for mankind to achieve on the basis of functioning from that level where the conscious mind has become identified with the unified field. This is the basis of a technological revolution more powerful and beneficial to life than any conceived through empirical science.

The Maharishi Effect
The TM-Sidhi program, when practiced in groups, is even more powerful than the TM-Sidhi program practiced alone. The collective practice of the TM-Sidhi program can produce an influence that affects the entire world in measurable ways. This global influence of coherence
generated through the group practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, has been called the “Maharishi Effect.”

As early as 1960, Maharishi predicted that when individuals practice the Transcendental Meditation and TM-Sidhi programs in sufficiently large groups, a measurable increase in orderliness, coherence, and positive trends would be observed in society. By enlivening the life-supporting and evolutionary qualities of the unified field, such as perfect orderliness, infinite dynamism, and self-sufficiency, Maharishi held, these qualities would be enlivened in collective consciousness and this would have positive, measurable effects on a wide social scale.

Over the years, social scientists developed formulas for predicting the size of the group necessary to create a “phase transition” in society to a measurably higher quality of life. These formulas, calculated on the basis of analogous phase transitions, from disorder to orderliness, studied in physics, came out to be approximately one percent of a population practicing the Transcendental Meditation program, and a much smaller percentage, on the order of the square root of one percent, practicing the TM-Sidhi program.

Since 1978, many experimental studies have been performed to measure the effect of large groups practicing the TM-Sidhi program. Experimental confirmation of the principle has been the consistent result. The Maharishi Effect is now as well documented as any principle of modern social science. In creating this technology, Maharishi has provided an effective method of social change that operates from the silent, harmonizing level of the unified field to produce a transformation in the quality of collective consciousness, thereby effortlessly creating coherence on a global scale. Maharishi (1986) describes how this effect is produced:

The transcendental level of nature’s functioning is the level of infinite correlation. When the group awareness is brought in attunement with that level, then a very intensified influence of coherence radiates, and a great richness is created. Infinite correlation is a quality of the transcendental level of nature’s functioning from where orderliness governs the universe. (p. 75)

D. W. Orme-Johnson and M. C. Dillbeck (1987) have summarized the empirical research on the Maharishi Effect. They surveyed
experimental studies documenting the sociological improvements resulting from the group practice of the TM-Sidhi program. Based on these results Maharishi asserts that the collective practice of the TM-Sidhi program in groups of 8000 (the square root of one percent of the world’s population) would produce coherence in the collective consciousness of the entire world. Statistically significant reductions in crime, accidents, fatalities, and disease, and other positive benefits on a global scale observed during experimental periods have established this as an effective means of changing collective consciousness and thereby changing the quality of life in the world—simply by enlivening the source of order and coherence at the basis of nature, from the level of the unified field.

**Maharishi’s Program to Create World Peace**

The most dramatic application of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, is Maharishi’s program to create world peace through the creation of a permanent group of 8000 collectively practicing Maharishi’s technologies of consciousness. These technologies are a basis for eliminating negativity and destructive tendencies throughout the world. Large groups of experts in the TM-Sidhi program, creating coherence, during experimental periods, have provided ample opportunity for scientific research. During these experimental periods, conflict and violence have been reduced in war-torn areas and negative trends have been reversed. Over thirty studies have established the efficacy of this technology to eliminate conflict and promote life-supporting, positive trends throughout the world.

Maharishi clearly lays out the basis of his program to create world peace. Stress, he holds, is the basic cause of all negativity, violence, terrorism, and national and international conflicts. Stress generated by the violation of natural law causes strained trends and tendencies in the environment. Through the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, human intelligence can be identified with the unified field, and violations of natural law will cease. “Reinforcement of evolutionary power in world consciousness is the only effective way,” Maharishi holds, “to neutralize all kinds of negative
trends in the world and maintain world consciousness on a high level of purity” (Maharishi’s Program to Create World Peace, 1986, p. 7).

The global applications of this new science and technology are almost beyond present levels of imagination. Yet scientific research has found measurable reductions in levels of violence, crime, and other indications of negativity during the practice of the TM-Sidhi program in sufficiently large groups during experimental trial periods. Here for the first time in history is a scientific basis for creating world peace, ending terrorism, and reducing the negative trends of society.

On the basis of these studies, Maharishi holds that world peace can be guaranteed now, within a few years, through the establishment of groups of 8000; he holds that perfect health and unlimited longevity can be achieved for individual life, and that balance, coherence and health in society can be established in our generation. War, crime, poverty, and all problems that bring unhappiness to the family of man can be entirely eliminated. Life, he holds, can be lived in absolute abundance and fulfillment. Maharishi has called upon every significant individual in the world to act now to adopt this program for world peace by creating groups of 8000 collectively practicing the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, to establish world peace and guarantee its perpetuation.

The practical benefits that Maharishi foresees through these new technologies are far greater than those achieved by the technology based on present science. As science has investigated deeper levels of nature, from microbes to molecules to atoms, new technologies have emerged which apply the knowledge in areas such as medicine and nuclear power. In drawing upon the deepest and most powerful level of natural law, the level of the unified field, Maharishi Vedic Science lays the basis for much more powerful technologies still. Where modern medicine has been able to eliminate some diseases by drawing upon microscopic levels, Maharishi Vedic Science lays the basis for the elimination of all disease, and more importantly, for the creation of perfect health and reversal of aging. While modern science has produced nuclear technology but no technology for peaceful resolution of conflict, Maharishi Vedic Science draws upon the infinite organizing power of the unified field at the basis of nature to create social harmony.
and world peace while preserving cultural integrity and stimulating prosperity and progress.

Maharishi’s Technologies of Consciousness as a New Method of Gaining Knowledge

The bold assertions about what is practically possible through the application of Maharishi’s technologies of consciousness must be understood in the context of the new method of gaining knowledge that Maharishi has founded. The history of science testifies that as new methods of gaining knowledge of deeper and more unified levels of natural law become available, more powerful and useful technologies become available. Maharishi’s technologies of consciousness are based on the deepest and most unified level of knowledge of nature. It should not be surprising, therefore, that this technology provides a radically new source of organizing power to fulfill the highest goals of mankind.

These technologies of consciousness offer a fundamentally new approach to knowledge that has not been available before. In asserting that it is possible for one individual to know all the laws of nature and the entirety of the universe within his or her own consciousness, Maharishi is well aware that he is introducing an account of human potential that goes well beyond the concept of the limits of knowledge that has dominated in the scientific era. This new paradigm of knowledge must be examined in a new light.

It is a widespread belief in the modern age that the only valid method of gaining knowledge is by moving outward through the senses, that is, through the methods of the empirical sciences. It is, however, only the historical failure of subjective approaches that has led to this belief. It cannot be thought that the senses are the only way of gaining knowledge, and those who cling to the belief that it is, only allow old habits to stand in the way of exploring new possible sources of knowledge.

Subjective approaches to knowledge in the past failed to bear fruit because they failed to provide an effective and reliable method of access to an invariant and universal domain of direct experience. They thus failed to establish independent standards of knowledge, they failed to produce methods of distinguishing truth from error, they failed to produce consensus even among those practicing the same method, and
they failed to produce practical technological benefits through the practice of the method.

Maharishi’s technologies of consciousness are different from subjective approaches in the past, and must therefore be considered on separate grounds. They provide an effective, reliable method of opening the mind to an invariant and universal level of nature which is everywhere, and yet not ordinarily open to experience because the mind usually functions on more active levels. By providing a technology to make this non-active level of nature available as a direct experience, Maharishi has made this domain available to all as a new field of inquiry; and, where there is a new source of experience of something universal, unchanging, and objectively verifiable, a new source of knowledge is available.

The Science of Creative Intelligence gives a new account of how complete knowledge is possible. When the mind becomes completely settled and still, according to this account, it gains the ability to perceive on the most refined levels of nature’s functioning—the all-pervading unified field where all laws reside in a collective totality. It not only experiences this unified field, it becomes identified with it; it is the unified field and thus knows the unified field as its own universal Self. On this level of knowledge, there is no separation of knower from the known. Nothing lies outside the range of the knower. All laws of nature and everything in the universe can be known as intimately as one’s own Self. Mind and body cease to be seen as separate realities. Maharishi (1986) says:

In reality our self-referral state of consciousness is the unified field—not an object of knowledge as a rose is when we say, “I see that rose.” The unified field is not an object in this way; it is the subject itself. The unified field is a self-referral state of awareness that knows itself, and in knowing itself is the knower and the known, both together. (p. 96)

On this account, there is no distinction between the knower and the reality that it knows. Since it is the Self that knows itself, there is nothing ultimately outside the consciousness of the knower, and there are therefore no limits on what can be known. [This unbounded value of the Self is written with an uppercase “S” to distinguish it from the ordinary, localized self we typically experience.] If true, this account of knowledge provides a fundamentally new source of discovery of the
laws of nature, like the empirical sciences, in that it relies on experience as a source of knowledge, but distinct from these sciences in that it draws upon a wider range of experience. As a new source of discovery, it extends the power of scientific investigation; yet it remains within the scope of empirical science by being subject to procedures of objective verification.

**Maharishi University of Management**

Maharishi University of Management, formerly Maharishi International University, was founded by Maharishi in 1971, based on the principles of the Science of Creative Intelligence. One of the major functions of this University is to show how each discipline and each level of natural law arises from the unified field of pure consciousness. The specialty of Maharishi University of Management is the knowledge of the unified field of pure consciousness from the standpoint of each academic discipline. At Maharishi University of Management, each modern discipline traces the diversity of laws back to a unified source in the unified field of pure consciousness and shows how the diversity of laws emerge from this unified field through the self-interacting dynamics of consciousness. Just as physics and mathematics have discovered increasingly unified levels of natural law at the basis of their discipline, thus tracing the diversity of its laws to their source in the unified field, so every academic discipline can ultimately show how its laws derive sequentially from the unified field. This project of unification of knowledge, a long sought goal throughout Western intellectual history, is now being systematically pursued and completed at Maharishi University of Management.

This enterprise includes developing charts to show how each modern discipline arises from the unified field of pure consciousness. For each discipline, a Unified Field Chart has been constructed to show how the discipline sequentially emerges from the unified field through the self-interacting dynamics of knower, known, and process of knowing. These Unified Field Charts constitute a major unification of knowledge, showing at a glance how all the diversity of knowledge emerges from a unified source.

Since the unified field is understood as a field of consciousness, and consciousness is the most fundamental level of each student’s own Self,
the study of the unified field at Maharishi University of Management constitutes a method of systematically relating all knowledge to the student’s Self. The success of Maharishi University of Management’s Consciousness-Based education is due in part to this program of relating all knowledge to the unified field and the unified field to the Self. Because all students and faculty at Maharishi University of Management collectively practice the Transcendental Meditation technique, regularly gaining the direct experience of the unified field of pure consciousness, this unified field increasingly becomes a living reality. This unified field ceases to be an abstract concept and becomes as intimate as the Self. The experience of faculty and students has been that learning and inquiry is joyful and most fulfilling in this environment of Consciousness-Based education.

[The reader is referred to other issues of the journal Modern Science and Vedic Science as well as to other volumes in this book series Consciousness-Based Education: A Foundation for Teaching and Learning in the Academic Disciplines for articles illustrating how Maharishi Vedic Science is transforming our understanding of modern academic disciplines. —Eds.]

Maharishi’s Work in Historical Perspective: An Appreciation

Maharishi has created a major watershed in world intellectual history. He has laid the foundation for a fundamental change both in intellectual history and in the history of technology and civilization itself. His work has created a new paradigm of the unity of human knowledge, and, we may expect, will unify the sciences and humanities in a more integrated way than ever before. He has, moreover, brought to an end the old notion that man is born to suffer and that life is a struggle. The practical programs he has founded provide a scientifically validated basis for reducing and even eliminating crime, war, terrorism, poverty, and other problems that beset mankind; more importantly, his discoveries make it possible to live life in the fulfillment of pure knowledge and permanent bliss consciousness and to achieve the highest goals of human endeavor. He has laid the basis for a new civilization, founded on new principles of complete, reliable, useful, fulfilling knowledge—
the knowledge of the unified field of pure consciousness as the perfectly orderly, unified source of nature.

Maharishi is unique in the world today. He has not offered conjectures and hypotheses about reality and human potential, nor does he set himself up as a final authority on matters of knowledge when he speaks rather of experience as the ultimate basis of knowledge. The experience of which he has spoken is derived from a new source, from the level of fully developed human life gained when one’s awareness is open to the unified field of pure consciousness. Maharishi’s life is an example of that which he taught. Unlike those whose teaching is based solely on the personal authority of the individual, Maharishi has founded universities, sciences, technologies, and other institutions based on universal principles through which any individual can gain the direct experience of the fully unfolded nature of life and validate the truth of what is described in the science. Because of this, Maharishi is held in highest esteem by millions of people around the world.

Maharishi has provided the means of unfolding the dormant creative genius within everyone, and he has established institutions through which the knowledge of how to unfold this potential will be perpetuated generation after generation. He has, moreover, used this knowledge to found programs to create perfect health, progress, prosperity, and permanent peace for the world—programs to end suffering and allow life to be lived in spontaneous accord with natural law. These institutions are not just ideals, but functioning institutions whose practical achievements are now well documented and available for all to examine.

Everyone now has the ability, with the availability of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, to engage in this great experiment of identifying one’s awareness with the total potential of natural law and to spontaneously live in accord with all the laws of nature while established in the awareness of the unified field of pure consciousness. The experience of approximately three million people who have learned the Transcendental Meditation technique testifies to its practicality and its effortlessness and ease of practice. Experimental studies have shown that its benefits are real and concrete. On this basis, Maharishi has foreseen the creation of a new era of civilization—Heaven on Earth—in which life will be lived
in fullness and abundance without suffering. Maharishi’s work eliminates the very basis of stress and suffering and lays the ground for a new civilization, a unified field-based, ideal civilization that draws on the infinite organizing power of the unified field of pure consciousness to bring human life to fulfillment.

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The Science of Creative Intelligence
as the First Science:

Meeting the Needs Expressed by Western Universities

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CONSCIOUSNESS-BASED EDUCATION

ABOUT THE AUTHOR

Dr. Domash received a Ph.D in theoretical physics from Princeton University. He was formerly Professor of Physics and also President of Maharishi International University (now Maharishi University of Management). He is now Director of Optical Materials at Triton, with more than 20 years experience in optical device design and development, leadership of technical teams, and government contracting for small business. Formerly, Dr. Domash was Chief Scientist at Aegis Lightwave where he contributed to the development of a tunable thin film filter for telecom applications. Dr. Domash has more than fifty publications in the optical science literature and holds 11 issued US patents. He is a Senior Member of the Optical Society of America, and currently serves as a peer reviewer for *Optics Letters, Journal of Optical Engineering,* and *Optics Express.*
**ABSTRACT**

This article is based on a talk Dr. Domash gave in 1980 at Maharishi University of Management introducing the basic course taught on videotape by Maharishi Mahesh Yogi. The course, still offered at the University, is entitled *The Science of Creative Intelligence*. In this article Dr. Domash reviews the search throughout Western intellectual history for a science of all sciences, the so-called “First Science.” Domash argues that to qualify as the first science a discipline must be a science of being; a science of dialectic; a science of right action; a science of language; a science of education; a science of social coherence; and a science of unified dynamical structure. With reference to each criterion, Domash argues that the Science of Creative Intelligence meets each criterion, thus qualifying as the First Science sought after by philosophers and scientists throughout the ages. —Eds.

The study of intelligence in the form of the Science of Creative Intelligence certainly seems, on the surface, to be an innovation in the field of education. But a deeper consideration shows that it has its roots in the eternity of knowledge. —Maharishi Mahesh Yogi

The highest interests of human culture demand the development of a rigorously scientific philosophy; consequently, if a philosophy revolution in our times is to be justified, it must without fail be animated by the purpose of laying a new foundation for philosophy in the sense of strict science. —Edmund Husserl, *Philosophy as Rigorous Science*

I have great faith in science—real science: the science that is the science of the soul as well as the science of the body. —Walt Whitman

**The Science of Creative Intelligence**

The Science of Creative Intelligence directly fulfills a classic position in the scheme of knowledge which is explicitly called for in the Western academic tradition that our universities seek to transmit, but which our own age has lacked. This is the position of a “first science,” a science that stands before all others.
What is the definition of a first science? Let us consider the long history of varied and ever-evolving demands, and see how each is fulfilled by the Science of Creative Intelligence.

**A Science of Pure Being**

The First Science concerns itself with objects which both exist separate and are immutable. . . . It is the province of this science to study Being qua Being—what it is, and what attributes belong to it qua Being.


The beginning [of the science of philosophy] . . . is to be made in the element of thought that is free and for itself, in pure knowing . . . the ultimate, absolutely truth of consciousness. . . . The beginning therefore is pure being. . . . This pure being is the unity into which pure knowing withdraws. . . .

— Hegel, *Science of Logic*

Early in the history of Western philosophy, we find Aristotle proposing that the first science should rightly be a science of being, of existence. This was his definition of the term metaphysics: the science that studies the level of reality which remains unchanging in itself and yet impels all change—the “unmoved mover.”

The Science of Creative Intelligence fulfills this Aristotelian definition of a first science in precisely these terms. Maharishi speaks of the level of pure creative intelligence in nature as the Absolute, as pure Being, the level of pure existence—terms that Aristotle would recognize as referring directly to the “unmoved mover.” (An early book authored by Maharishi is entitled *The Science of Being and Art of Living.*) From the standpoint of Aristotle, therefore, the Science of Creative Intelligence is a very good candidate for the role of first science.

**A Science of Dialectic**

When anyone by dialectic attempts through discourse of reason and apart from all perceptions of sense to find his way to the very essence of each thing . . . he arrives at the limit of the intelligible. . . . We have set dialectic above other higher studies to be as it were the coping stone—
no other higher kind of study could rightly be placed above it.

— Plato, Republic VII

Plato’s concept of a first science is completely different from that of Aristotle, and yet it is also fulfilled by an aspect of the Science of Creative Intelligence. For Plato, the first science must be the “dialectic,” defined not as a body of ideas but rather as a systematic technique of mental exploration: by means of the dialectic, one may systematically ascend to what Plato calls the “Idea of the Good,” that inner unified field of awareness within which are nested the fundamental forms of intelligence that structure the essential nature of things.

The Science of Creative Intelligence offers a precise fulfillment of the Platonic search for a method. In the Science of Creative Intelligence, the requirement of the dialectic is perfectly met by the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, which provide the systematic mental process by which the individual mind can reach the “Idea of the Good”—pure consciousness. At this level are found the impulses of intelligence, the fundamental forms, the vibrations of lively awareness which are the laws of nature, the field of creation in the abstract, unmanifest form of pure potentiality, pure knowledge.

A Science of Right Action

The ultimate end is no other than the whole vocation of man, and the philosophy which deals with it is entitled moral philosophy. On account of this superiority which moral philosophy has over all other occupations of reason, the ancients in their use of the term ‘philosopher’ always meant, more especially, the moralist. . . . The legislation of human reason (philosophy) has two objects, nature and freedom, and therefore contains not only the law of nature, but also the moral law, presenting them at first in two distinct systems, but ultimately in one single philosophical system.

— Immanuel Kant, Critique of Pure Reason

Established in Being, perform action.

— Bhagavad-Gita, translated by Maharishi Mahesh Yogi
Later in the history of philosophy, we find the role of the first science conceived of in more practical terms, as one that defines correct behavior, the moral imperative, right action. Again, the Science of Creative Intelligence contains an understanding—and a body of confirming scientific evidence—that meets this need. Maharishi tells us, and many psychological and sociological studies verify, that repeated experience of pure consciousness through the Transcendental Meditation technique purifies the nervous system. This produces that type of awareness which naturally projects thought and activity that is spontaneously successful and life-supporting in all circumstances. This is because pure knowledge, pure consciousness, is in its essence the infinite organizing power of nature. Action initiated on the basis of this level of awareness is always spontaneously right, natural, and evolutionary; originating in the home of all the laws of nature, it is guaranteed to be in accord with all those laws at once. Thus the Science of Creative Intelligence is indeed a first science in these terms, a science of right action.

A Science of Language — Name and Form

Language is interwoven with the whole of our existence. Our speaking is not an isolated event, but functions within the whole of our existence as giver of meaning. . . . In all sciences man brings reality into light through speaking.

— Remy C. Kwant, *Phenomenology of Language*

For Frege, as for all subsequent analytical philosophers, the philosophy of language is the foundation of all other philosophy because it is only by the analysis of language that we can analyze thought.

— Michael Dummett, *Can Analytical Philosophy Be Made Systematic?*

More recently in the history of philosophy we find the idea that knowledge is based in language, and hence that the first science should properly be a science of the structure of language, logic, and meaning. Even this requirement is fulfilled by SCI, which locates the source of speech in the source of thought, and connects the name and form of things on the level of their common origin, pure consciousness. It is this aspect
which is opening the ancient Vedic Science of consciousness, wherein laws of nature are expressed as impulses of sound, to systematic investigation today. Vedic Science is the ultimate fulfillment of linguistic philosophy, because it offers the experience and understanding of the very organizing principles of nature as unmanifest impulses of speech.

A Science of Education

Culture is activity of thought and receptiveness to beauty and humane feeling. . . . What we should aim at producing is men who possess both culture and expert knowledge in some special direction. . . . We have to remember that the valuable intellectual development is self-development.

— Alfred North Whitehead, *The Aims of Education*

The education of tomorrow must bring to an end the cleavage between work or useful activity and the blossoming of spiritual life and disinterested joy in knowledge and beauty.

— Jacques Maritain, *Education at the Crossroads*

The Science of Creative Intelligence fulfills another demand made in the universities of our generation as well: it offers a satisfying interdisciplinary coherence to education without spoiling the integrity of any one field of study. It does this not by mixing disciplines but by adding a new field of study, the study of that one element which all disciplines truly hold in common—consciousness, the field of creative intelligence in its pure, unmanifest form, the natural field of unity.

The Science of Creative Intelligence is a first science of education, one that enlivens the intellect by transcending the intellect, making objective knowledge relevant to personal development and vice versa. It is at once a science of Self and an integrating focus for objective knowledge. In this connection, the Science of Creative Intelligence meets another often expressed need—for bridging the gap between the Western technological tradition and the Eastern path of relation to nature by means of inner development. The Science of Creative Intelligence thus unites the most traditional with the most modern fields of human achievement.
A Science of Social Coherence

The democratic ideal poses, rather than solves, the great problem: How to harmonize the development of each individual with the maintenance of a social state in which the activities of one will contribute to the good of all the others.

— John Dewey, *Ethics*

Only the general will can direct the powers of the State in such a way that its true purpose, which is the good of all, will be achieved.

— Jean Jacques Rousseau, *The Social Contract*

By introducing the concept of collective consciousness—the mind of society—and the practically proven methodology to actually elevate the level of coherence and unity of that collective consciousness, the Science of Creative Intelligence offers for the first time a truly scientific means to bring orderliness and creativity to any society, whatever its government, religion, or political system. The Science of Creative Intelligence offers each part of the world a means to protect and enliven its own precious cultural traditions while at the same time opening itself to the fastest rate of progress. In this it is the element of the awareness of the individual which is the key. By enlivening the ground state of all the laws of nature in the awareness of its individual members, society can gain the advantage of the infinite organizing power of nature in its behalf, and bring realization to its highest ideals.

A Science of Unified Dynamical Structure

Synergy means unique behaviors of whole systems unpredicted by any behaviors of their component functions taken separately.

— R. Buckminster Fuller, *Utopia or Oblivion*

Although all forms, and thus all universes, are possible, and any particular form is mutable, it becomes evident that the laws relating such forms are the same in any universe. It is this sameness, the idea that we can find a reality which is independent of how the universe actually appears, that . . . can lead us beyond ordinary existence, and can show us something of the structure in which all creation hangs together.

— G. Spencer Brown, *Laws of Form*
The old idea of man, the microcosm, mirroring world, the macrocosm, retains all its force: who knows man, knows the universe. In this Outline of a General Theory of Models, I have done nothing but separate out and present the premises of a method that life seems to have practiced since its origin.

— René Thom, Structural Stability and Morphogenesis

We witness today another shift in ways of thinking: the shift toward rigorous but holistic theories. This means thinking in terms of facts and events in the context of wholes, forming integrated sets with their own properties and relationships.

— Ervin Laszlo, The Systems View of the World

To the classical ideas about the characteristics of a first science, our own generation has added new demands brought about by the enormous progress of science and the resultant generation of knowledge. A particular goal sought by many in our time has therefore been a first science to unify and organize laws discovered by the special sciences, a meta-theory of order, a “general structure theory” for dynamical systems, a skeleton key to scientific knowledge. Many attempts, such as those by Buckminster Fuller (“Synergistics”), G. Spencer Brown (“Laws of Form”), Ilya Prigogine (“Dissipative Structures”), Manfred Eigen (“Self-Organizing Systems”), Rene Thom (“Catastrophe Theory”), General Systems Theory, and others are in this direction.

But none of these can be considered complete unless it incorporates what the Science of Creative Intelligence offers from the beginning: a science of consciousness, the natural field of wholeness and unity, the field which necessarily embodies the primary dynamical principle: self-referral. Because it is based on the self-organizing mechanics of consciousness itself, the Science of Creative Intelligence naturally integrates all the more localized laws of nature and provides the overarching principles of evolution which apply throughout the universe.
Conclusion

A theory is the more impressive the greater the simplicity of its premises, the more different kinds of things it relates and the more extended is its area of applicability. — Einstein

Some day there will undoubtedly be a science—it may be the called the Science of Man—which will seek to learn more about man in general through the study of the creative man. — Picasso

In addition to established sciences, we suggest a science as it were of healthy average personalism, on original universal grounds, the object of which should be to raise up and supply through the States a copious race of superb American men and woman . . . ahead of any yet known. — Walt Whitman, Democratic Vistas

From all perspectives, the Science of Creative Intelligence satisfies the classical and modern requirement for a first science. It does so by going beyond the consideration of any special laws of nature to bring our attention to the field of pure knowledge, the home of all the laws of nature in the simplest state of awareness.

The Science of Creative Intelligence is the first science needed by our age.

Pure knowledge is infinite organizing power. In its infinite organizing power it is pure freedom. In its pure freedom it is indestructible. Eternal is the source of creation. Indestructible is the source of all change.

— Maharishi

Expanded from “The Science of Creative Intelligence as the First Science,” a videotaped lecture by Lawrence H. Domash, Ph.D.
Electronic Resources and Publications

LINKS

Education

Maharishi University of Management: www.mum.edu
Maharishi School of the Age of Enlightenment:
   www.maharishischooliowa.org
Maharishi’s Consciousness-Based Education: www.CBEprograms.org
International Foundation of Consciousness-Based Education:
   www.CBEfoundation@ifcbe.org
David Lynch Foundation for Consciousness-Based Education and
   World Peace: www.davidlynchfoundation.org

Transcendental Meditation Program

Maharishi’s Technologies of Consciousness: www.tm.org
Maharishi Channel: www.maharishichannel.in
Maharishi Lectures and Interviews (film clips): www.tm.org/maharishi
Invincible America Assembly: www.invincibleamerica.org
Global Country of World Peace: www.globalcountry.org
Global Good News Site: www.globalgoodnews.com
Fortune Creating Homes: www.FortuneCreatingHomes.com
Sthapatyay Veda: www.sthapathyaveda.com

Research

Center for Brain, Consciousness, and Cognition: www.drfredtravis.com
Truth about TM: www.truthabouutm.org

PHONE NUMBERS

1-888-LEARN TM (1-888-532-7686)
Maharishi University of Management (1-641-472-7000)
PUBLICATIONS

These publications are available from Maharishi University of Management Press: http://mumpress.com and at the MUM Bookstore.

Books by Maharishi Mahesh Yogi

*Science of Being and Art of Living*
*Bhagavad-Gita: A New Translation and Commentary, Chapters 1–6*
*Celebrating Perfection of Education*
*Celebrating Perfection in Administration*
*Vedic Knowledge for Everyone*
*Inaugurating Maharishi Vedic University*

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The series *Consciousness-Based Education: A Foundation for Teaching and Learning in the Academic Disciplines* contains 12 volumes, available in 2011.

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