

**KEYNOTE ADDRESS**

**Disciplinary Studies in an Interdisciplinary World**

Professor Howard Gardner  
(Professor of Cognition and Education, Harvard Graduate School of Education, USA)

*by interactive video-conference*

**ABSTRACT**

Once students have mastered the basic literacies, the next educational challenge is to master the major disciplinary ways of thinking. In middle and secondary schools, students should learn how to think mathematically, scientifically, historically and artistically. To have a disciplined mind does not mean simply having lots of information in various subjects. The disciplined thinker can approach problems and questions in the way that an expert would; this means being able to bring knowledge to bear appropriately on new issues. In a global era, new educational challenges emerge. Students are bombarded with information from many sources and must know how to evaluate and integrate it. Also, most of the major problems facing the world demand interdisciplinary thinking. Dr Gardner will discuss the pros and cons of introducing interdisciplinary curricula at the precollegiate level; the cognitive and motivational features that aid in interdisciplinary thinking; and the difficulties of evaluating the quality of interdisciplinary work.

*Howard Gardner is the Professor of Cognition and Education at the Harvard Graduate School of Education. He also holds positions as Adjunct Professor of Psychology at Harvard University, Adjunct Professor of Neurology at the Boston University School of Medicine and Chair of Harvard Project Zero's Steering Committee. Howard Gardner has written nineteen books translated into twenty one languages as well as hundreds of articles. He is best known for his theory of multiple intelligences, a critique of the idea that there is a single human intelligence that can be assessed by standard psychometric instruments. During the past fifteen years, Dr Gardner and colleagues at Project Zero have been working on the design of performance-based assessments, education for understanding and the use of multiple intelligences to achieve more personalised curriculum, instruction and assessment. More recently, Dr Gardner has been carrying out intensive case studies of outstanding creators and leaders. He and colleagues are investigating the relationship between cutting-edge work in different areas and a sense of social responsibility for the use and implications of that work. In September 2001 the book resulting from this research was published, entitled **Good Work: When Excellence and Ethics Meet**.*

**AN EDUCATION FOR THE FUTURE:  
The Foundation of Science and Values**

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**I. Introduction**

It is already a cliché to remark that our time is one of tremendous breakthroughs. I refer to new work in technology, nanotechnology, the genetics revolution, robotics, artificial intelligence, perhaps even the creation of new species, by accident or by design.

It is also a cliché to note that education is becoming increasingly important. Anything predictable and rule-governed will be automated. Only those persons who are well and broadly and flexibly educated will be able to function productively in this new world. Around the world, education leads the list of public concerns. Today, I will speak with you about education of children and adolescents; issues of collegiate and professional education deserve separate treatment on another occasion.

**II. Two Dilemmas**

By background, I am a psychological researcher who has studied mind and brain with particular reference to learning and to education. I just mentioned the consensus today about the importance of education. Alas, there is not comparable agreement about WHAT education should be and HOW it should be achieved. I want to mention two dilemmas--both connected to the cognitive, the knowledge agenda of school.

The first dilemma: What should be taught?

What should be highlighted: facts, information? data? If so, which of the countless facts that exist? Subject matters and disciplines--if so, which ones? Which science, which history? Should we nurture creativity, critical thinking? If there is to be an additional focus, should it be arts, technology, a social focus, a moral focus? If you try to have all of these foci, you would break the backs of students and teachers, even given a demanding elementary and secondary school curriculum. If knowledge doubles every year or two, we certainly cannot multiply the number of hours or teach twice as quickly. Some choice, some decisions about what can be omitted, is essential.

The second dilemma: How should we teach?

Even if we could agree on which emphases should be adopted, one must still determine whether to teach all subjects or all students the same way, or to individualize the curriculum for each student or groups of students. How much emphasis should there be on computers, distance education, various media? What should be the role of home, school, the church, the media, or extra-curricular activities? How much responsibility should be placed on teachers, students, peers, parents, the wider community? Issues of pedagogy/instruction turn out to be as vexed as issues of curriculum/content.

**III. Two Firm Foundations**

Since there are far too many possibilities, we must make hard decisions. In making those decisions, I will argue that we should depend primarily on two foundations or bases: the

science of learning, and our own values as human beings living in communities. Let me comment on both.

First, the Science of Learning: Today I want to dwell on two major findings from the field of cognitive studies, findings with which I have been personally involved.

First finding: As human beings we have many different ways of representing meaning, many kinds of intelligence. Since the beginning of the last century, psychologists have spoken about a Single Intelligence that can be measured by an IQ test; my research has defined 8 or 9 human intelligences (linguistic; logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, naturalist, possibly an existential intelligence). We all possess these several intelligences, but no two of us--not even identical twins--possess the same profile of intelligences at the same moment. In most countries throughout history, school has focussed almost exclusively on language and logic. Formal education has virtually ignored other forms of mental representation--artistic forms (musical), athletic (bodily), personal (knowledge of others and self); knowledge of natural world; knowledge of big questions. All of these "Frames of Mind" are there to be mobilized; if they are not, one could well call education "half-brained."

Second finding: Facts are easy to memorize, and some of us are good at remembering them--this facility can help us win money, in fact nowadays one can win millions of dollars, on a television quiz show in the U.S. But Disciplinary Understanding is much more elusive, much more difficult to bring about. Over the millenia, human beings have developed several powerful disciplines or ways of knowing the world--chief among them scientific, humanistic, historical, artistic, mathematical forms of thought. How desirable it would be if we could simply explain these to young people ("here are the three steps to think scientifically" or "this is what it takes to think historically"), even better if we could give youngsters a shot or a pill ("here, take this mathematics pill before you go to bed on Wednesday evening"), and the students would then have mastered the discipline. In fact, however, disciplinary learning proves difficult and takes many years of guided practice and apprenticeship.

Our research has suggested one reason why. When children are young, without help from others, they develop powerful theories about the world. They develop theories of matter (e.g., if you break an object into small bits, and you keep cutting these bits up into smaller bits, eventually there is nothing left; or, when dropped, heavier objects accelerate to the earth more rapidly than lighter objects); theories of life (if it moves, it is alive; if it does not move, it is dead; if it is on a computer screen, one can't be sure if it is living or dead; or, to choose another biological example, all animals were created at the same prehistoric moment and none has evolved since); and theories of mind (you have a mind and I have a mind; if you look like me, then your mind is like mine and you are good; but if you look different from me, then you have a different kind of mind and you are bad).

Many of the theories espoused by young children are wonderful; some are charming; but as you have just heard, some of them are Dead Wrong from the point of view of physics, biology, psychology, history. Unfortunately, these erroneous theories are also very powerful. Even the best students in the best schools adhere to these theories. In fact, when, outside the content of school, they are asked to explain a phenomenon, they typically do so in the same way as students who have never studied the subject. In education, if we want to develop better and more disciplined ways of thinking, we must first rub out or eliminate the misleading theories that children have constructed on their own. And then gradually we must help children adopt - a more accurate work is "construct"--better theories, such as the scientific theories used by contemporary biologists or physicists, many of which go directly against common sense. It does not seem sensible that human beings evolved from earlier primates; it does not seem sensible that matter exists even if it cannot be seen by the naked eye or that you could become very ill by exposure to a germ that you cannot see; it does not seem sensible

that those who look very different from us could become our friends--but each of these statements happen to be true. We must help students to eradicate the wrong theories and gradually replace them with more adequate disciplinary ways of thinking.

To summarize what I've introduced thus far: To begin with, disciplinary understanding is important--perhaps, in fact, it is the best justification for 10-15 years of school! (We could keep youngsters off the street for eight hours a day with much less money). Disciplinary understanding is also hard to achieve. Next, as human beings, we all have available different ways of representing the world, different intelligences, so to speak. The question is: Can educators build on this recently established knowledge about how human beings learn? In a word, I believe that the answer to this question is "yes" and shortly, I will try to justify my answer.

Let me turn now to the second major foundation, complementing the science of learning -- That is the sphere of Values:

As a teacher or educational policy maker, you could know all of the scientific facts about learning, and it would still not tell you what to do in class on Monday morning. That is because such decisions about a course of action always involve value judgments. For example, let us say that you accept the claim that there are multiple intelligences. You could decide that you still want to make individuals as similar as possible, and so you would minimize or ignore the pluralism of intellect. Multiple intelligences are then seen as an obstacle. Many in the U.S. and the Netherlands would take that "uniform" position. To honor the finding about multiple intelligences, you could decide to teach every topic in seven or eight ways. You could decide to put together all the children who are strong in a given intelligence, or, for that matter, if you are a pessimist put together all of the children who are weak in a given intelligence. You could try to strengthen those intelligences that are weak, or ignore weaknesses and build instead on areas of strength. You could decide to learn about each child and personalize education as much as possible. That last option is what I personally favor--and in the age of the computer, it is at least feasible to personalize education for every child, and not just for those from wealthy families who can afford the latest hardware and software.

Take note: ALL these decisions entail value judgments; none of them can be decided simply because one has established that there are multiple intelligences.

So taking advantage of this august occasion, and throwing caution to the winds, let me indicate my own wishes, my own value system, for education in the future. I believe that the best education must build on what has worked in the past. At the same time the best education must take into account the most contemporary findings and the needs of future generations. I put forth these views not because I'm certain they are right, but to encourage discussion and debate.

#### **IV. Looking in Both Directions**

##### **Drawing on the Past**

Let me first draw on the legacies of the past. I believe that the primary cognitive purpose of education for the young should be to help students understand the world around them--the physical world, the biological world, the social world, the world of personal experiences. This is best done by first training them in the three basic literacies (Reading, Writing, Calculation) -- nowadays we might add computing; and then introducing them to the major families of disciplines: science, which seeks the truths about the physical, social, and biological worlds, and which uses the powerful tools of mathematics; the study of art and nature, which tells us about the beauties of the natural and the manmade worlds and which give us the tools to produce objects that we ourselves cherish; and history and literature, which tell us about the

human past, document the good and evil choices that humans have made and the consequences of these choices, and help us to determine what we ourselves should do when faced with dilemmas. In sum, the disciplines represent humanity's most determined efforts to learn and to understand what is true, beautiful and good, and by extension to spurn falsehood, to turn away from what is repulsive, and to avoid evil deeds.

Thus far, my prescription for precollegiate education is traditional and conservative, and I make no apologies for that. Indeed, it resembles the "four profiles" that you offer in secondary school in the Netherlands. But my claim to be an "educational conservative" does not last long. I believe that students are most likely to develop disciplinary understanding if they investigate a limited number of topics in great depth; that is, if they give up the false dream of "coverage" (from Plato to NATO in 36 weeks) in favor of intimate knowledge of a limited number of really important issues--for example, the theory of evolution in biology, or the meanings of political revolution in history, or the mastery of one art or craft. Also, I do not value the memorization of vast amounts of information. Tomorrow, or perhaps even today, we can get all the information that we need on a single CD or a palm pilot that one can carry around in one's hand--thus freeing us to focus on important knowledge, important understanding, important wisdom, which cannot be so readily "packaged" in that way. You can have the list of all Dutch sovereigns or prime ministers at your fingertips; but you can't click a mouse and suddenly think scientifically or historically, let alone make judicious decisions. I am not arguing against cultural literacy -- I'm arguing in favor of mastering the intellectual tools of the major disciplines.

The capacity to think intelligently is very different from knowing lots of information. Such intelligent thinking, such understanding is likely to come about only if one has rounded, three-dimensional familiarity with a subject, so that one can probe it in many different ways. And here at last is where our multiple intelligences can make their contribution. If we are willing to spend time on a topic and probe it penetratingly, we do not have to approach it in just a single way (which is almost always through written texts or lectures). Instead we can learn about it in many different ways, using our multiple intelligences, and that concept or topic is much more likely to remain with us, embedded in our neural networks, and to be usable in flexible and innovative ways. In fact, I would guess that if you were asked to remember material from Dutch history, you wouldn't remember long time-lines, but rather a few events -- the Golden Age of the 17th century or the Resistance of World War II -- that you studied in detail.

An example. You can't understand the theory of evolution by simply memorizing a definition. Instead you can build mastery of the theory by being exposed to definitions (evolution is...); AND stories (the story of Darwin's voyage on the Beagle or the story of a particular contemporary species, be it mouse or man); AND static pictorial accounts (a tree diagram of different lineages in the hominid line); AND dynamic graphic recreations on a computer (in which one sees species evolving, morphing into others, sometimes thriving, like homo sapiens, and sometimes waning, like Neanderthal); as "entry points" to evolution, one could further mention works of art AND numerical puzzles and demonstrations AND the raising of the most profound existential questions--where do we come from, why are we here, what will happen to us and our species in the future? Each of these "entry points," stimulating different intelligences, can yield a fuller understanding of the processes of evolution. Taken together, they stand as a model of what it might mean truly to understand a topic.

So, my recommendations can be stated simply. First obtain the literacies; then study in depth key topics in the major disciplines; approach those topics in many ways; and give youngsters many chances to master and many vehicles to exhibit their understandings. Let them use their knowledge of evolution to evaluate the discovery of a new set of dinosaur bones or the spreading of a computer virus, as seems to happen each new week, at least on my machine. Various tasks can be left for the university: a specialization in one or another discipline; work

that is explicitly multi- or interdisciplinary; and the mastery of facts that may be useful to know if you want to become an expert in, say, botany or medieval history and, if you happen to lose or misplace your Palm Pilot in which the lists of information had been stored...and had forgotten to "synch it" the previous night.

#### Peering Toward the Future

I turn, finally, to the question of how education may differ in the future. The widespread availability of powerful technologies will be a great boon. Students will be able to get much information on their own, often in vivid form. They will be able to encounter multiple representations of material, for example through hypertext linkages, surfing the world wide web, or experimenting in virtual reality. There will be waning demand for live presentations of "straight, canned lectures"--such as this one!--for such lectures can be recorded and accessed, if one wishes, on the Internet at any time in day or night. In fact, I now post lectures like this on my web site and this past fall I videotaped my entire course on "Cognitive Development" and placed it on a web site at Harvard University.

In the future, students and parents will expect to be able to interact with teachers, in person and via the Internet, including instructors and experts whom they have never met. (We teachers will get even less sleep than we do now!) There may well be more home schooling, and more mixed forms of schooling, with students doing more at home, more with parents, more with ad hoc or planned groups, with only certain kinds of activity occurring each day within a single building. Flexibility is likely to prevail at school, as it is beginning to prevail at the workplace, in both of our countries.

I find these prospects exciting. The challenging of teaching young persons is going to increase in the years ahead. Not only will students be encountering spectacular demonstrations through technology; the world itself, in its technological facets, will continue to change at dizzying rates, as I noted in the beginning. We live during the first time in history when we human beings could destroy the world through nuclear weapons. We also live at the first time in history where--through genetic engineering or nanotechnology--we could create new toxins, or new forms of bioterror, which could destroy the planet.

We also live at the first time in history where we will have machines that are at least as smart as we are in many ways; machines that can plan economies, wage diplomacy, alter politics, and, for all I know, manage our leisure life, our love life, the place and manner of our deaths, and rebirths, how and whether we will be remembered. There will be experiments in cloning organs or whole human beings, and there will be attempts to merge humans and robots, for example, through the implanting of silicon chips in our brains; some will even hope to achieve immortality in that way, by downloading the wet brains into a vast dry database. I will leave it to you to determine whether this prospect of indefinite lives more closely approximates a dream or a nightmare!

I am not saying that these issues--what used to be the stuff of science-fiction--should dominate the curriculum of the school. I am saying something more radical. I am saying that they are already beginning to constitute the curriculum of life each day. Students won't have to learn in school about cloned organs and organisms or silicon implants in the hippocampus because they will see them on television or surf past them on the Internet, or hear them argued about around the dinner table at night or at the cybercafé around the corner.

And so the tasks of educators will become dual and dually challenging: on one hand, to inculcate the traditional disciplines and ways of thinking as I have described them; and, on the other hand, to help students cope with and perhaps take an active role in deciding how to deal with these dazzling developments, which, as I say, are no longer restricted to the pages of science fiction.

As I think about the future of precollegiate education, and as I bear in mind some of the issues that I've heard spoken about in the last few days in Amsterdam and The Hague, let me share a few more thoughts with you:

1. Public vs. Private Education Throughout the world, societies are rethinking the relationship between the world of education and the marketplace. In the United States, as you probably know, there are many private initiatives in education. Some individuals would like to have all education choice determined by portable vouchers that pay for one's schooling, and these proponents may even look forward to the disappearance of public education as we know it.

I believe that market control of education would be grave mistake. Public education has much to learn from business, and I for one appreciate the various kind of financial and advisory support that businesses can provide. However, the goal of business--to make a profit--is fundamentally at odds with the goal of education--to have an informed citizenry capable of independent analysis and decisions. Education is also an area of expertise and is becoming increasingly so; just as we should not entrust business people to make medical decisions, we should not allow business people to make educational decisions.

2. Multicultural issues When a country consists primarily of a single culture, then the issues of cultural education are relatively simple. Citizens should come to understand the history, governance, art forms, and values of their particular culture. However, nowadays, two new issues arise. On the one hand, many countries such as the United States no longer have a dominant culture, but are exquisitely multicultural. On the other hand, we are all members of a global society and we all need to be prepared to deal with individuals from a diversity of backgrounds.

It is important to learn about one's own background culture, but in my view that task that can only rarely be undertaken by a school system in a multicultural society. How, in a Los Angeles highschool with individuals speaking 50 or even 70 different languages, can one genuinely provide an introduction to even a small percentage of these cultures? Cultural education is better left to afterschool or weekend options.

While cultural education is an option, introduction to the global society is becoming a necessity. Unless students have some grasp of trends and realities around the globe, and some sense of how to deal with individuals from diverse backgrounds and often conflicting value systems, they will be ill-equipped to survive in the future. In an area like this, we in American have much to learn from nationalities like the Dutch, who have, in a sense, been "globally aware" for centuries.

3. Academic vs. Practical Training In years past, most societies featured a fairly early "tracking mechanism," where the most successful students took an academic "Gymnasium" or "lycee-style" curriculum and had the opportunity for higher education; while the rest either dropped out of school, worked in farms or factories, or entered a vocational track.

Nowadays, it is considered suspect to advocate such a tracking system. After all, most vocations run the risk of being automated; and we are living in a "learning" or "knowledge society" where individuals must be familiar with symbolic or notational systems. Otherwise they will have little chance to benefit fully from the opportunities available in a technologically-sophisticated setting.

However, it is also apparent that not all students want to continue in school beyond the age of 15 or 16, nor that this is necessarily the optimal place for them to spend half of their waking hours at that stage of their life. In many cases, they and the society would be much better off

if they mastered a trade, did community service, became involved in an artistic troupe, or went to work in a developing country.

My own belief is that we should not force all young people to pursue higher education before they reach the age of 20 but that we should extend the option to them throughout their lives. Just as students in all developed countries now have the opportunity for a free primary and secondary education, we should gradually extend this privilege to the tertiary level. In this country, universally-available university education should be the goal. However, it should be up to the student when and even whether to pursue that option. With the explosion of learning opportunities (e.g., distance learning, on the job learning, simulated learning) and with the proliferation of institutions that provide education (e.g., for-profit, corporate, the military), there is no reason for everyone to proceed along a single lockstep route from kindergarten through graduate school.

I should add, finally, that we have probably had too sharp a division between academic and practical learning. Much academic learning can be enlivened and enhanced if it has a "real life" component, or even vivid multimedia facets. Recent Dutch experiments with project-based and theme-related curricula illustrate the power of education that activates the multiple intelligences of the learner. And by the same token, there is every reason to infuse on-the-job training with exposure to general concepts and principles that extend beyond the particular task that is being mastered. One advantage of a "multiple intelligences approach" to education is that it does not simply consist of a set of hurdles designed just to pick out those individuals with a blend of linguistic-logical intelligence--though I suspect that particular blend is well-represented today in this room!

4. Disciplinary and interdisciplinary studies Earlier I took the position that precollegiate education should focus on the major academic disciplines. I stand by that assertion. At the same time, all of us have become aware that so much cutting edge work in the world is focussed on problems, not on disciplines; and that much of the best work combines a number of disciplines, whether it be the intersection of genetics and information science, cognitive science and neuroscience, economics and behavioral science, or arts and computers. Since postgraduate education needs to take an increasingly interdisciplinary stance, what implications might follow for precollegiate education?

In America, many middle and high schools claim that they are carrying out interdisciplinary work. Yet, examined more closely, these programs typically involve treatment of a topic from a number of angles, rather than a true blending of more than one discipline in an effort to elucidate a complex topic or problem. Indeed, unless a person has mastered more than one discipline, we cannot properly speak of interdisciplinary work; it would be like calling a person bilingual before she had mastered more than a single language.

So what about efforts at interdisciplinary work before tertiary education? I think it is possible to lay the groundwork for interdisciplinary education in at least three ways:

Among the young: Encourage wide reading (or even wide surfing of the web). This is the best route to cultural literacy. When young individuals pick up ideas informally on many topics approached from many angles, they accumulate a fount of knowledge which later serves them well;

During the middle school years: Feature complex problems which require considerations from a number of different disciplinary perspectives. For example, ask students to consider what would happen if the earth ran out of petroleum or if computers were "hacked" by organisms from outer space. Even when students are not fully versed in a discipline, it is instructive to realize that they will have to bring more than one perspective--and more than one intelligence--to bear on a solution.

In secondary school: Devote a fair amount of time to active efforts at synthesis across disciplines. Most students see secondary school as a series of unrelated topics, as they wander from one class or test to the next one on the schedule. This estrangement is not essential. Particularly if there is coordination among faculty, it is possible to approach some of the same topics (e.g., light, the Renaissance, patterns) from more than one disciplinary perspective. Then, if there are special weeks or classes devoted to efforts to bridging these perspectives, students can begin to gain a feeling for what genuine interdisciplinary work is like. The "theory of knowledge" course of the International Baccalaureate Diploma Programme is a good example of an opportunity to synthesize knowledge at the secondary school level.

Let me stress that, in offering these comments about public/private education, multicultural education, vocational training, and interdisciplinary education, putting forth my own views, even prejudices, I am not speaking as a disinterested expert. Indeed, one cannot even begin to think about such issues unless one puts forth one's own value system. The answers can be guided by findings from research but they can never be dictated solely by the results of scientific or social scientific research.

#### V. Two Crucial Values

In touching upon values, I want to emphasize the enduring importance of two values: the Assumption of Responsibility; and a Respect for Humanity. We encourage students to carry out work, but that work needs to be good in two ways: exemplary in quality but also responsible. More specifically, the work that we do as adults should take into account our responsibilities to five different spheres: to our own personal set of values; to other individuals around us (family, friends, colleagues/peers); to our profession/calling; to the institutions to which we belong; and to the wider world-- people whom we do not know, those who will live in the future, the health and survival of the planet. Attention to these responsibilities is important for any worker, be he or she a physician, physicist, physical therapist or fisherman.

Such responsible education cannot be completed in the early years of life; but it must begin there. Adult years are far too late. And so parents and teachers must embody a sense of responsibility in their own lives and seek to nurture a comparable sense of responsibility in all young people. This is especially difficult to do in uncertain and turbulent times like these: when things are changing very quickly, market forces are very powerful, there are not equivalently potent counterforces, and our whole sense of time and space is being altered by technologies like the world wide web.

Many people in my country and elsewhere are worried about the alienation that many young people experience--alienation from the world of school and, in some sad cases, alienation from the world at large. I lack the expertise to discuss this national and perhaps world-wide phenomenon. But I do know that we must help students to find meaning in daily life, to feel connected to other individuals and to their community--past, present, and future; and to feel responsible for the consequences of their actions. We must help them to achieve the state of flow--the balance between skills and challenges--which motivates individuals to return to a pursuit time and again. Plato understood this 2500 years ago when he stated, "Through education we need to help students find pleasure in what they have to learn."

The second value is an appreciation of what is special about human beings. Human beings have done many terrible things but countless members of our species have done wonderful things as well: works of art, works of music, discoveries of science and technology, heroic acts of courage and sacrifice. One only need walk around the Rijksmuseum or the Stedelijk, or to spend hours in and around the buildings on Dam Square to be reminded of what has been achieved over the centuries in this small but dynamic nation. Our youngsters must learn about these achievements, come to respect them, have time to reflect about them (and what it

took to achieve them) and aspire some day to achieve anew in the same tradition...or perhaps even to found a new tradition. Learning about human heroism may be another clue to how to nurture youngsters who embody positive values. We should not be afraid to state our values; but of course it is far more important to embody them, to live them day in and day out. The scholarly disciplines are among the most remarkable of human achievements--and we must remember that they are much easier to destroy than to build up. Totalitarian societies first burn the books; then they humiliate the scholars; then they kill those who do not buckle under. As the events of the last century remind us, a Dark Age can always descend upon us.

We should remember that one of the most magnificent of human inventions is the Invention of Education--no other species educates its young as do we. At this time of great change, we must remember the ancient value of education and preserve it--not just facts, data, information, but Knowledge, Understanding, Judgment, Wisdom. We must use the ancient arts and crafts of education to prepare youngsters for a world that natural evolution could not anticipate and which even we ourselves as conscious beings cannot fully envision either. In the past, we could be satisfied with an education that was based on the literacies; that surveyed the major disciplines; and that taught students about their own national culture. We must maintain these three foci, but we must add two more: preparation for interdisciplinary work and preparation for life in a global civilization. And, speaking in the land of Erasmus and Spinoza, we must keep alive the important values of Responsibility and Humanity.

The great French playwright Jean-Baptiste Molière once declared "We are responsible not only for what we do but also for what we do not do." We must not shirk from the responsibility to prepare children and youth for a future which we can only glimpse-- as through a glass darkly. That is the challenge faced as never before by education today. Let us combine the best of physical, natural, and social science, with the most precious of human values. Let us do so on a Global Scale. Then and only then can we have an educational system that reflects the best facets of the human condition.

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