INTELLIGENCE IN SEVEN STEPS
Howard Gardner, Ph.D.

The concept of intelligence, a very old one, has been employed in the most varied ways over the centuries. During the past century, there has been considerable movement on the "intelligence front," and this trend shows no sign of abating. In this essay I briefly describe seven historical steps, or phases, in the development of thinking about intelligence, focusing in particular on work inspired by the Theory of Multiple Intelligence.

Lay Conceptions

Until this century, the word "intelligence" has been used primarily by ordinary individuals in an effort to describe their own mental powers as well as those of other persons. Consistent with ordinary language usage, "intelligence" has been deployed in anything but a precise manner. Forgetting about homonyms which denote the gathering of information, individuals living in the West were called "intelligent" if they were quick or eloquent or scientifically astute or wise. In other cultures, the individual who was obedient, or well behaved, or quiet, or equipped with magical powers, may well have been referred to by terms which have been translated as "intelligent."

For the most part, the word "intelligent" was used in a beneficent way; however, its imprecision can be readily displayed by a recognition that it has been applied to nearly all of the American presidents in this century, even though it is doubtful that any two of our presidents exhibited similar kinds of minds. Perhaps ironically, Herbert Hoover and Jimmy Carter, two of America's least successful presidents, both of whom were engineers, probably came closest to the lay idea of "intelligence." It may be worth noting that they have become distinguished by their behaviors as ex-presidents.

The Scientific Turn

In a sequence of events that is by now familiar, Alfred Binet responded to requests from Parisian ministers at the turn of the century by creating the first intelligence test. It then became possible to estimate an individual's "intelligence" by noting his or her performance on a deliberately heterogeneous set of items, ranging from sensory discrimination to vocabulary knowledge. Used first clinically for "at risk" Parisian elementary schoolchildren, the intelligence test became "normed" on Californian middle-class children and was administered quite widely, thanks in large part to the efforts of Lewis Terman at Stanford University. By the 1920's and 1930's, intelligence tests (and their product, an individual's IQ) had become deeply ensconced not only in American society but also in many other parts of the world.

Pluralization of Intelligence

While intelligence was initially perceived as a unitary (if overarching) concept, which could be captured by a single number, a debate soon arose about whether the concept could legitimately be broken into components. Such researchers as L.L. Thurstone and J.P. Guilford argued that intelligence was better conceived of as a set of possibly independent factors. In recent years, buoyed by findings from fields as disparate as artificial intelligence, developmental psychology, and neurology, a number of investigators have put forth the view that the mind consists of several independent modules or "intelligences."
In my own "theory of multiple intelligences," I argue that human beings have evolved to be able to carry out at least seven separate forms of analysis:

1. Linguistic intelligence (as in a poet);
2. Logical-mathematical intelligence (as in a scientist);
3. Musical intelligence (as in a composer);
4. Spatial intelligence (as in a sculptor or airplane pilot);
5. Bodily kinesthetic intelligence (as in an athlete or dancer);
6. Interpersonal intelligence (as in a salesman or teacher);
7. Intrapersonal intelligence (exhibited by individuals with accurate views of themselves).

These ideas have attracted some attention on the part of educators seeking a more comprehensive and individualized educational system. Recently my colleagues and I have been exploring certain educational implications of the theory in our own research.

**Humanizing Intelligence**

Understanding the nature of the human mind in all of its complexity is no mean feat, and a complete understanding may well exceed human investigative capacities. But understanding intelligence—and even knowing how better to develop it—does not suffice in itself. Any human capacity can be used for ill as well as for good; and it is part of our responsibility as human beings living on a single troubled planet to try to use our competences, our intelligences, in morally responsible ways. This assignment cannot fall exclusively on the shoulders of researchers; nor can we simply afford to pass this responsibility on to others.

The human being is also more than his or her intellectual powers. Perhaps more crucial than intelligence in the human firmament are motivation, personality, emotions, and will. If we are ever to obtain a comprehensive and fully integrated picture of human beings, we need to meld our insights about cognition with comparable insights in respect to these other aspects of the human being. Perhaps, indeed, a different view of human nature will result from this activity of synthesis.

Obviously so grand an undertaking requires the highest degree of "distributed collaboration" among researchers, educators, and the general citizenry. Although the task is formidable, the advances made in understanding over the past decade give one some reason for optimism.

**About: Howard Gardner**

In 1981 Dr. Howard Gardner was awarded a MacArthur Prize Fellowship in support of Project Zero at Harvard University. An announcement of the award quoted Gardner as saying early in his career, that he had been a committed Piagetian, but as he pursued his own studies he came to view Piaget’s theories as "too narrow a notion of how the human mind works."

He noted further that he didn't believe there was "one form of cognition which cuts across all human thinking. There are multiple intelligences with autonomous intelligence capacities." This statement heralded the writing of his book *Frames of Mind*, which was published in 1983.

Dr. Gardner's Theory of Multiple Intelligences, described in this seminal book, has become the framework for many of the effective educational strategies currently being implemented to expand human development. All the
conferences presented by New Horizons for Learning have been produced with that theory in mind-presenting new information through all the intelligences.

Gardner's Theory of Multiple Intelligences proposes that people use at least seven relatively autonomous intellectual capacities - to approach problems and create products. These include linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal intelligences.

He suggests that "although they are not necessarily dependent on each other, these intelligences seldom operate in isolation. Every normal individual possesses varying degrees of each of these intelligences, but the ways in which intelligences combine and blend are as varied as the faces and the personalities of individuals."

Dr. Gardner is a professor of Education and co-director of Project Zero at the Harvard Graduate School of Education. He is also a research psychologist at the Boston Veterans Administration Medical Center and adjunct professor of Neurology at the Boston University School of Medicine. Since Frames of Mind, Dr. Gardner has written six books including The Mind's New Science, To Open Minds, The Unschooled Mind, Multiple Intelligences, Creating Minds, and Leading Minds.

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Learning Through Many Kinds of Intelligence

by Dee Dickinson

Dr. Howard Gardner, author of Frames of Mind and co-director of Project Zero at Harvard University, has created a Theory of Multiple Intelligences. He points out that school systems often focus on a narrow range of intelligence that involves primarily verbal/linguistic and logical/mathematical skills. While knowledge and skills in these areas are essential for surviving and thriving in the world, he suggests that there are at least five other kinds of intelligence that are important to fuller human development and that almost everyone has available to develop. They include, visual/spatial, bodily/kinesthetic, musical, interpersonal, and intrapersonal intelligence.

The strongest skills of many children lie in these five areas, which are frequently undervalued in some traditional schools. The fact is that when children have an opportunity to learn through their strengths, they may become more successful at learning all subjects--including the "basic skills."

Gardner believes that the seven intelligences he has identified are independent, in that they develop at different times and to different degrees in different individuals. They are, however, closely related, and many teachers and parents are finding that when an individual becomes more proficient in one area, the whole constellation of intelligence may be enhanced.

For this reason, we believe that it is important to encourage children to explore and exercise all of their intelligences. Creating a rich, nurturing, and stimulating environment filled with interesting materials, toys, games, and books lays the foundation for healthier, happier, brighter children! Students who have these kinds of experiences know many ways to learn almost anything!

Following are some characteristics of the different intelligences, along with ways to exercise and develop them:
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<th>Intelligence</th>
<th>Description</th>
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<tr>
<td><strong>Verbal/Linguistic</strong></td>
<td>Involves reading, writing, speaking, and conversing in one's own or foreign languages. It may be exercised through reading interesting books, playing word board or card games, listening to recordings, using various kinds of computer technology, and participating in conversation and discussions.</td>
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<td><strong>Logical/Mathematical</strong></td>
<td>Involves number and computing skills, recognizing patterns and relationships, timeliness and order, and the ability to solve different kinds of problems through logic. It may be exercised through classifying and sequencing activities, playing number and logic games, and solving various kinds of puzzles.</td>
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<td><strong>Visual/Spatial</strong></td>
<td>Involves visual perception of the environment, the ability to create and manipulate mental images, and the orientation of the body in space. It may be developed through experiences in the graphic and plastic arts, sharpening observation skills, solving mazes and other spatial tasks, and exercises in imagery and active imagination.</td>
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<td><strong>Bodily/Kinesthetic</strong></td>
<td>Involves physical coordination and dexterity, using fine and gross motor skills, and expressing oneself or learning through physical activities. It may be exercised by playing with blocks and other construction materials, dancing, playing various active sports and games, participating in plays or make-believe, and using various kinds of manipulatives to solve problems or to learn.</td>
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<td><strong>Musical</strong></td>
<td>Involves understanding and expressing oneself through music and rhythmic movements or dance, or composing, playing, or conducting music. It may be exercised by listening to a variety of recordings, engaging in rhythmic games and activities, and singing, dancing, or playing various instruments.</td>
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<td><strong>Interpersonal</strong></td>
<td>Involves understanding how to communicate with and understand other people and how to work collaboratively. It may be exercised through cooperative games, group projects and discussions, multicultural books and materials, and dramatic activities or role-playing.</td>
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<tr>
<td><strong>Intrapersonal</strong></td>
<td>Involves understanding one's inner world of emotions and thoughts, and growing in the ability to control them and work with them consciously. It may be exercised through participating in independent projects, reading illuminating books, journal-writing, imaginative activities and games, and finding quiet places for reflection.</td>
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**About the Author:**

Dee Dickinson is CEO of New Horizons for Learning and co-author, with Linda MacRae Campbell and Bruce Campbell of *Teaching and Learning Through the Multiple Intelligences*, (1996, 1999 Allyn & Bacon.), which is available as a resource for those interested in applying Dr. Howard Gardner's Theory of Multiple Intelligences in the classroom.