

Multiple Intelligences

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INTRODUCTION

The multidimensional approach to education has existed for quite a long time. For instance, educators in the early and mid-19th Century, such as Edward Séguin (Montessori, 1965), already had ideas about physical and mental training. Froebel's (1894) *Mother-Play and Nursery Songs* aimed toward the development of the whole child. Rich in songs with lyrics, the book contained activities designed to develop empathy in children through play with their mothers. Moreover, the book is full of beautiful illustrations and kinesthetic activities. Also, Thurstone (1938) designed intelligence testing method for measuring abstraction, verbal, spatial, numerical, numerical figure recognition, and other abilities.

Additionally, Montessori (1965) considered moral, physical, tactile, literal, and sensory developments as important elements in education, and she developed methodologies for teaching geometry and arithmetic. Guilford (1967) included abilities such as multilimb coordination, spatial orientation, symbol recognition, verbalization, reasoning, and social cognition as components of human intelligence. After this long tradition of referring to multiple intelligences, Gardner (1983) suggested that intelligence is the ability to define and solve problems in real life, insisting that there is a wide range of intelligence that is represented by different abilities. However, there is the misconception that Gardner invented the multiple intelligences framework. For example, Teele (1995, p.2) refers to Gardner's as a "new paradigm."

BACKGROUND

Gardner (1983) described different types of intelligences:

1. **Linguistic intelligence:** Is represented by a highly developed sense of phonology, semantics,

and syntax. There are four domains of linguistic intelligence:

- a. **Rhetoric:** Persuading others through language
 - b. **Mnemonic:** Using language to remember.
 - c. **Explanation:** Using language to explain.
 - d. **Metalinguistic:** Using language to think about language.
2. **Musical intelligence:** Consists of the ability to recognize and replicate pitch and rhythm, as well as the ability to compose music and express feelings through music.
 3. **Logical-Mathematical intelligence:** Is associated with formal mental operations. Abstract thinking is the signature of logical-mathematical thinking, although some may conclude that any mathematical activities foster logical-mathematical intelligence. On the contrary, Gardner (1983, p.138) argues that, "mathematicians are seldom talented in finance or the law. What characterizes the individual is a love of dealing with abstraction."
 4. **Spatial intelligence:** Involves the ability to grasp visual worlds correctly, to transform visual perception, and to recreate what one has seen before.
 5. **Bodily-Kinesthetic intelligence :** Involves the skill to use one's body to accomplish tasks. Dancers and actors, for example, possess such skill.
 6. **Intrapersonal intelligence:** Refers to self-knowledge. Gardner refers to Erikson's (1963) framework of identity development.
 7. **Interpersonal intelligence:** Concerns the ability to form friendships and maintain social sensibility.

In addition to the seven original intelligences, Gardner (1999) later added naturalist intelligence:

8. **Naturalist intelligence:** Is linked to the ability to classify biological features of animals and plants.

It is noteworthy to point out a key difference between Gardner's view of intelligence and that of other scholars. The sharp difference seems to lie in spiritual education. In traditional education in both Europe and the United States, spiritual development is considered to be extremely important. On the contrary, Gardner (1999) opines that spiritual intelligence is not admissible. Nonetheless, exploration of spiritual detention is not all together dismissed by current scholars. Goleman (2003), for instance, implies that one can train oneself to control negative emotions by meditation, typically practiced by Buddhists, and encourages constructive dialogue between scientists and spiritual leaders.

Some teachers have the misconception that multiple intelligences theory is concerned with determining learners' most developed intelligences and adjusting instruction to accommodate these intelligences. Such teachers may not require weaker writers to write as much as they should and say that it is acceptable for them to express themselves through drawing, music, or dance. To the contrary, Gardner believes that underdeveloped intelligences should be nurtured. For example, Piaget (1980), whom Gardner (1983) quotes in *Frames of Mind*, believed that logical-mathematical thinking is not endogenous, but develops as the result of a learner's knowledge construction while she adapts to specific external environments.

In terms of musical intelligence, if someone grows up in a culture that trains children in the community to become skilled at rhythm and tone, almost all members in the community are likely to have musical intelligence. In some cultures it is believed that musical talents are not inborn, but are developed by stimulus and training. In addition, Gardner (1983) insists that with the right training, most people could play the violin skillfully, although few would become concert violinists. Some are born with exceptional talents, but the nurturing of these talents is paramount to the development of intelligence. The exception is those with legion or sickness of brain (Gardner, 1983, 1993).

It is likely that more than one intelligence is used in an activity because solving an authentic problem normally requires the interaction of several types of intelligence. Therefore, a class activity can simultaneously employ multiple intelligences (Armstrong, 2000). For example, effective communication with others involves social competency and verbal skills. For young children, speech is mainly used for social interaction. Later, children develop inner speech,

which fosters logical thinking (Vygotsky, 1986). This means that communication for older learners entails interpersonal, linguistic, and logical intelligences. The next section will examine some uses of technology that allows multiple intelligences to interact.

MAIN THRUST OF THE ARTICLE

The best way to nurture multiple intelligences is to have learners engage in an authentic problem solving. Real-life problems are often messy. In order to develop life-long learning skills, students need to identify unknown problems and then develop solutions. Even though real-life problems are messy, educators mainly design well-structured problems for classroom activities. This gap can inhibit the development of the ability to become successful problem solvers in real life (Jonassen, 2003). Therefore, it makes sense to facilitate authentic, nonlinear activities using technology; but it is naïve to think that a given technology tool will automatically foster a certain intelligence. Any technology can either facilitate or deter learning. Successful use of technology that nurtures multiple intelligences, therefore, depends on the pedagogical skills and the academic content expertise of the instructor.

The first example of technology that assists real-life problem solving necessitating multiple intelligences is *WebQuest* (available at <http://www.webquest.org/>), an online problem-solving template created by Dodge (2006). With WebQuest, students follow the directions and search the Internet to find information for completing tasks defined by the teacher. It is a very well-supported form of Internet activity, as evidenced by nearly 2,000 examples created by classroom teachers, which were found on the WebQuest database when this article was written. Activities can range from weather forecasting to evaluating persuasive text to playground designing. A world language teacher may have students make a brochure for the best trip in the target country on a designated budget, requiring students to include texts in the target language and graphics. Moreover, multiple senses can be stimulated as learners read the directions, evaluate text and pictorial information on the Web sites, negotiate with peers to solve problems, and plan the logistics of the projects. However, careless implementation of WebQuest can result in a mindless time-filler (Jonassen, Howland, Moore, & Marra, 2003).

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