

Supporting Teacher Training Programs with an Electronic Reserve System (ERes)

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## Introduction

The National Educational Technology Standards (NETS) Project, a program that concentrates on preservice teacher education as a division of the International Society for Technology in Education (ISTE), has defined specific concepts, knowledge, and skills considered essential in order to apply technology in educational settings. Preservice teachers participating in their preparation programs are expected to demonstrate competency in Technology Operations and Concepts. Requisite proficiencies range from using technology tools and information resources to increase productivity, promote creativity, and facilitate academic learning to examining acceptable use policies for the employment of technology in schools, including strategies for addressing threats to security of technology systems, data, and information. The availability of diverse multi-media based technology in the academic arena promotes a re-evaluation of traditional methodological strategies to now include concepts that promote the recognition of various categories of potential intelligences.

The theory of multiple intelligences was developed in 1983 by Howard Gardner, Hobbs Professor of Cognition and Education at the Harvard Graduate School of Education. Multiple intelligences theory holds that each person has abilities of varying degrees in several different and discrete areas. This is in contradistinction to general theories of intelligence that have been advocated during the past century. The theory promoted by Gardner in his 1983 book, *Frames of Mind*, claims that each individual has capabilities or potentialities in seven distinct areas: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal. Another area of intelligence according to Gardner in his 1993 book, *Multiple Intelligences: The Theory in Practice*, is designated the naturalist. Further possible areas of intelligence - spiritual, existential, and moral - are explored by Gardner in his 1999 book, *Intelligence Reframed*; however, after extensive discussion, Gardner (1999) has decided not to add them to the current framework. The key to understanding the theory of multiple intelligences is to recognize that each person has strengths and weaknesses in each of these areas, as well as a uniquely individual combination of abilities acquired from all intelligences. These intelligences are dynamic in nature rather than static, that is, they are capable of changing over time. This paper will explore the eight multiple intelligences that currently compose Gardner's theory and examine their relationship to educational technology.

## **Multi-Media Technology Meets Multiple Intelligences**

The current culture of multi-media technology allows for many interactions between technology and multiple intelligences. Jonassen (2000) advocates the use of computers to support meaningful learning through cognitive tools. These “mindtools” are computer applications that require students to think in meaningful ways or produce actual representations of what they know through critical thinking.

Roblyer and Edwards (2000) state, “Gardner’s theory meshes well with the trend toward using technology to support group work. When educators assign students to groups to develop a multimedia product, they can assign students roles based on their type of intelligence. For example, those with high interpersonal intelligence may be the project coordinators, those with high logical-mathematical ability may be responsible for structure and links, and those with spatial ability may be responsible for graphics and aesthetics” (p. 66).

Multi-media technology, in particular, is a remarkable vehicle for allowing the expression of multiple intelligences. Armstrong (1994) correctly ascribes the potential applications of the multiple intelligences theory with computer technology. The list of software recommended to activate multiple intelligences can serve as a template for the exponentially expanding varieties of software available to educators. With the rapid increase of software, both in sheer volume as well as complexity, applicable to each of the eight areas of multiple intelligences, there seems to be no limit to the integration possibilities of multi-media technology and multiple intelligences.

## **Drury University and Multi-Media Efforts in Teacher Preparation**

The renowned Drury University teacher education program requires students to complete five foundation courses, including Technology in the Classroom, EDUC 200. This is a three-hour introductory course enabling participants to explore a number of technologies that can be used in the classroom. The course focuses on three areas: how to operate the technologies, how to use the technologies to enhance personal productivity, and how to use technologies in a learning/instructional environment.

Multi-media and multiple intelligences coordinate to create opportunities for both individual as well as group learning. In the case of the Drury University teacher preparation program, multimedia applications are stressed at both levels-personal and group. This allows for a synergistic confluence of

multiple intelligences. On the one hand, individuals will draw upon their strengths in each of the eight intelligences to create a product. Conversely, a group project is enhanced due to each individual bringing into the mix a unique blend of intelligences that interact with the intelligences of the other group members. The result is the same, the whole is greater than the sum of the parts.

### **Specific Utilization of Multiple Intelligences through Multi-Media**

Linguistic: Each of the course projects requires the students to use written and oral language skills. The Microsoft Power Point presentations contain text and Microsoft Word documents are required in the lesson plan presentation and the final project. The projects require the students to make oral presentations.

Musical: Each project allows the student to utilize musical selections to augment moods and experiences. In the lesson plan presentation and final project students may choose musical topics for their themes.

Logical-mathematical: The capacity to analyze problems logically is required in all of the assigned projects. Students may also choose mathematics for their theme in the lesson plan presentation and the final project

Spatial: Each of the projects features a need to recognize and manipulate patterns. To create multi-media presentations using the Microsoft Power Point software, students must be able to discriminate spatially and to integrate colors, graphics, and texts in a balanced format.

Bodily-kinesthetic: This intelligence is not just limited to sports or athletic activities, but it also includes the use of the individual body or parts of a body to fashion products. The field of multi-media presentations requires the use of the hands to create the text documents and the Microsoft Power Point presentations. Students must also demonstrate physical coordination to present their slide shows while delivering their oral presentations.

Interpersonal: This intelligence is utilized primarily through the presentation of finished products. It is used to the greatest extent during the group review process for the final project.

Intrapersonal: This intelligence is employed during each of the required projects for as students utilize the capacity for self-understanding, including personal desires, fears, and aptitude.

Naturalist: Students who select a science theme for their lesson plan presentations or the final project could be expressing and utilizing the naturalist intelligence.

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