Chapter 5
Using Spatial Constructivist Thinking Theory to Enhance Classroom Instruction for Students with Special Needs

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ABSTRACT

Spatial constructivist thinking theory is an alternative method of presenting digital materials to enhance the learning process of special needs students in a 21st Century classroom. Spatial constructivist thinking is the integration of pictures, animations, videos, color schemes, abstract plans, applets, graphics, and formatted texts in a presentation to represent text and verbal concepts. Concepts can be simple or complex, literary or symbolic representations of the concepts. This representation addresses Bloom's revised taxonomy to challenge students' thinking to create knowledge. Spatial constructivist thinking also posits that spatial representation is influenced by ones visual and verbal knowledge, and prior experiences. Spatial constructivist thinking is also influenced by the multiple intelligences theory. Presentations done by an instructor or knowledgeable peer using spatial constructivist thinking theory reflect the best spatial representation of the presenter's visual and verbal repertoire for concepts presented. For each spatial representation there is a corresponding verbal representation.

INTRODUCTION

As the educational system continues to experience a paradigm shift in using multimedia

technology to deliver instruction at all levels of education, educators must refine how concepts are presented to address the learning styles of visual digital natives, especially students with special needs. In delivering instruction through media, an intelligence that plays a major role in

Figure 1. Spatial Constructivist Thinking aligned with Multiple Intelligences
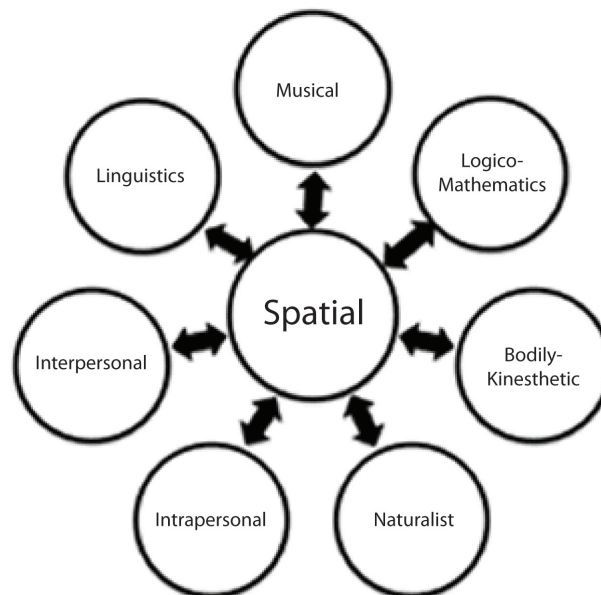
how special needs students learn is the spatial intelligence (see Figure 1: Spatial Constructivist Thinking Aligned with Multiple Intelligences.) Spatial constructivist thinking theory posits that delivering instruction via multimedia technology is more effective when emphasis is placed on the spatial presentation of the information rather than on the traditional means of using text.

The integration of technology with students in the developmental disabilities spectrum has the potential to enhance learning. In a study of technology integration with thirty special education teachers working with individuals with severe cognitive and developmental disabilities, Bull (2005), identified fourteen reasons for technology integration with individuals with severe cognitive and developmental disabilities:

• Provided opportunity to keep pace with societal changes
• Aided with skill acquisition.
• Increased job opportunities.
• Enhanced the curriculum.
• Provided control over their environment.

• Increased eye and hand coordination.
• Promoted fine and gross motor skills.
• Improved attending skills.
• Provided consistent instruction throughout the curriculum.
• Provided alternate mode of instruction.
• Provided avenue to generalize skills.
• Served as a reinforcer.
• Improved self-esteem and self-confidence of students.
• Provided plain fun through music and videos.

The study also identified three areas in which technology made a difference; training, leisure activities, computer skills acquisition and vocational training.

SPATIAL CONSTRUCTIVIST THINKING THEORY

Spatial constructivist thinking theory is the integration of pictures, animations, videos, color

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