

# Chapter 5.5

## Teaching, Learning and Multimedia

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### ABSTRACT

“We must not forget that almost all teaching is Multimedia” (Schramm, p.37). Today, the magnetism of multimedia is clearly oblivious via the use of streaming video, audio clips, and the Internet. Research has shown that the use of multimedia can aid in the comprehension and retention of student learning (Cronin & Myers, 1997; Large Behesti, Breulex & Renaud, 1996; Tennenbaum, 1998). As a result, more educators are utilizing Web-based multimedia materials to augment instruction online and in the classroom. This chapter provides a theoretical framework for transforming Student Centered Discussion (SCD), a traditional based pedagogy strategy, to a new multimedia pedagogy SCD strategy. The new multimedia SCD pedagogy represents a new way of teaching and learning. As a result, positive responses and feedback have been collected from students in their ability to interpret facts, compare and contract material, and make inferences based on recall of information previously presented or assigned in article readings.

### INTRODUCTION

Research has shown that students can integrate information from various sensory modalities into a meaningful experience. For example, students often associate the sound of thunder with the visual image of lightning in the sky. When the cognitive impact of two given interaction modalities differ enough, different learning modes can be induced. Moreover, an interaction modality, which affects a learning mode, also has consequences for the learning performance (Guttormsen, 1996, 1997). Therefore, a teacher is faced with the need to integrate various combinations of sensory modalities, such as text, still images, motion, audio, animation, etc., to promote the learning experience.

Multimedia is multisensory; it engages the senses of the students. Multimedia can be defined in a variety of ways, but in this chapter, the term “multimedia” refers to a Web-based interactive computer-mediated application that includes various combinations of text, sound, still images, audio, video, and graphics. Multimedia is also interactive; it enables both the student and the

teacher to control the content flow of information (Vaughan, 1998). A major part of using multimedia in instruction involves engaging students in sense-making activities, such as conversations and chats about external representations that use concepts, symbols, models, and relationships. As a result, multimedia has introduced important changes in the educational system and has impacted the way teachers communicate information to the student (Neo & Neo, 2000).

## **Learning**

Learning is fundamentally built up through conversations between persons or among groups, involving the creation and interpretation of communication (Gay & Lentini, 1995; Schegloff & Sacks, 1973; Schegloff, 1991). More importantly, learning is established and negotiated through successive turns of action and conversations (Gay et al., 1995; Goodwin & Heritage, 1986; Schegloff, 1991). Thus, conversations are means by which people collaboratively construct beliefs and meanings as well as state their differences.

Brown, Collins, and Duguid (1989) argued that learning involves making sense of experience, thought, or phenomenon in context. They hypothesized that student representation or understanding of a concept is not abstract and self-sufficient, but rather it is constructed from the social and physical context in which the concept is found and used. Further, Brown et al. (1989) emphasized the importance of implicit knowledge in developing understanding rather than acquiring formal concepts. It is, therefore, essential to provide students with authentic experiences with the concept.

Students can engage in learning conversations in distributed multimedia environments. Multimedia technologies, such as graphics, simulations, video, sound, and text, allow instructors to use multiple modes and representations to construct new understanding and conceptual change of enhancing student knowledge. Brown et al. (1989)

stated that learning involves making sense of thoughts, experiences, or phenomena in contexts. Multimedia allows for the accommodation of diverse learning styles. Different media provide different opportunities for communication and activities among students. For example, online conversations provide a common background or mutual knowledge about beliefs and assumptions during conversation.

## **The Distinct Ways of Learning**

There are multiple ways of learning. Four of the most common and distinct ways to learn are independent learning, individual learning, cooperative group learning, and collaborative group learning (Kawachi, 2003). For the purpose of this chapter, it is important to understand the differences between cooperative and collaborative learning.

Traditionally in a cooperative learning environment, knowledge is learned by the student via the teacher or other students repeating, reiterating, recapitulating, paraphrasing, summarizing, reorganizing, or explaining the concepts. Meanwhile, in collaborative learning, knowledge is not learned by the student via the teacher, but rather knowledge is learned via an active dialogue among students who seek to understand and apply concepts. Using multimedia in collaborative environments allows students to participate in genuine learning activities by which they can reflect as well as modify their understanding of concepts (Brown et al., 1989; Gay, Sturgill, Martin, & Huttenlocher, 1999; Harasim, Hiltz, Teles, & Turoff, 1995; Wegerif, 1998; Murphy, Drabier, & Epps, 1997). The ability to read and respond to a message posted to an online forum creates opportunities for the creation of knowledge.

With the use of multimedia, students can utilize the information presented to them by the teacher, and represent it in a more meaningful way, using different media elements. Fortunately, there are many multimedia technologies that are available for teachers to use to create innovative

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