

Chapter XXXIII

Concept Mapping as a Mediator of Constructivist Learning

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ABSTRACT

This chapter on electronic concept mapping introduces a specific example of a learning technology that has potential for serving and promoting an emerging set of identified literacies in today's youth. The chapter begins with a discussion of the nature of the modern student and the literacies that are most likely to serve them well as they integrate into an increasingly technological information-based society. A discussion of the historical development of the concept map and its defining characteristics will follow. The range of applications of concept maps in K-12 classrooms will then be discussed with additional comments regarding teacher development both in preservice and inservice settings. The chapter will close with a discussion of the particular literacies served by electronic concept mapping.

INTRODUCTION

It is a popular belief that technology has shaped the nature of teaching and learning. McLuhan (1967) and Postman (1993) have long proposed that technology has ingratiated itself into our society in sometimes subtle, pervasive and arguably insidious ways. One hesitates to personify technology in that humankind must take some responsibility for shaping our world. It is a visible trend that human nature is to fix old technologies with new ones. Technology by definition is a way of adapting or

making the human world an easier place to live. It isn't surprising then that homo sapiens refuse to reverse technology and make life more difficult for themselves (Erhlick & Erhlick, 2004).

Recently researchers have defined the modern student in terms of their relationship to technology and its impact on who they are from a sociological perspective (Hartman, J., Moskal, P. & Dziuban, C., 2005). Students have been coined as "millennials" (Howe & Strauss, 2000) or are said to belong to the "Net Generation" (Dobbins, 2005). These students have certain inherent characteristics that

make them different from the last generation; different in ways that pose new challenges to educators. Dede (2005) has suggested that these students have a learned capacity to multitask while immersed in technology; in fact they tend to thrive on a myriad of technologies that constitute their social world. This conjures up visions of students' online chatting while listening to mp3 players whilst problem solving at their desk on paper. This ability to engage several dimensions of interaction, while maintaining a measure of productivity is part of a skill set that will be increasingly useful much less demanded in the working world to which most children aspire. If this is to become the norm, if not already firmly entrenched, then teachers must prepare students with a new set of literacies.

LITERACIES FOR THE 21ST CENTURY

Dede (2007) cites Jenkins et al (2006) who has identified literacies associated with student engaging new types of media:

- “play, the capacity to experiment with one’s surroundings as a form of problem solving;
- performance, the ability to adopt alternative identities for the purpose of improvisation and discovery;
- simulation, the ability to interpret and construct dynamic models of real-world processes;
- appropriation, the ability to meaningfully sample and remix media content;
- multitasking, the ability to scan one’s environment and shift focus as needed to salient details;
- distributed cognition, the ability to interact meaningfully with tools that expand mental capacities;

- collective intelligence, the ability to pool knowledge and compare notes with others toward a common goal;
- judgment, the ability to evaluate the reliability and credibility of different information sources;
- transmedia navigation, the ability to follow the flow of stories and information across multiple modalities;
- networking, the ability to search for, synthesize, and disseminate information; and
- negotiation, the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.” (p. 23)

Given the preponderance of information available to students through the advent of the internet, the notion of “information literacy” has become important. Rockman (2004) has suggested that “an information-literate individual is able to

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into his or her knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally” (p. 3)

Within the realm of strictly computer literacy skills, a case can be made for students being competent in use of email, word processing, databases, spreadsheets, multimedia including audio-visual software and digital peripherals, electronic discussion, principles of design including webpage and

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