Chapter 59
Pedagogy and the New Literacies in Higher Education

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ABSTRACT

Having the ability to understand and use digital technology is an important skill needed for the 21st century workforce (Goodfellow, 2011). In higher education, Web 2.0 and other collaborative resources impact pedagogy, research methodology, and relationships with colleagues and students. Creative use of digital resources enhances traditional instructional methods such as inquiry-based learning, situated learning, and collaborative project-based learning. Generative learning theory is applied through organizational, integrative, and elaborative strategies, which are supported through a variety of digital tools all within a constructivist environment. Digital resources are best applied using 1) collaborative spaces in cloud computing, 2) digital tools for engaged learning, 3) presentation software for course content, and 4) access to electronic textbooks. Pedagogical decisions associated with use of these tools are an important part of the new literacies for 21st century learning. The relationship between digital resources and pedagogical practices in higher education are explored in this chapter.

INTRODUCTION

Much of the education research published since the year 2000 describes skills associated with digital literacy as opportunities for use of electronic tools to enhance knowledge and understanding (Goulão & Fombona, 2012; Simsek & Simsek, 2013). Instructional decisions in planning for the new literacies include evaluation of electronic resources, integration of digital resources into both traditional and online learning experiences, and design of multi-modal learning environments. Higher Education's continued expansion in use of electronic information, e-textbooks, and other digital resources may require a closer look at pedagogical decisions being made by university faculty. Based on a review of the literature, the new literacies appear to bridge traditional information skills with the technologies of the 21st century. Important to the adoption of these new literacies are the traditions of constructivism and generative learning theory.

DOI: 10.4018/978-1-4666-6046-5.ch059

USE OF DIGITAL RESOURCES AND CONSTRUCTIVIST LEARNING EXPERIENCES

Constructivist learning is well known to educators as a paradigm in which the learner uses prior knowledge to support the acquisition of new skills and understanding (Abbott & Ryan, 1999). According to John Abbott, former director of 21st Century Learning Initiative (Abbott, 2008), all knowledge is embedded into an idea, image, or emotion experienced prior to the new learning. Because of the distinctiveness of each individual learner, no two people will acquire the same conceptual understanding as any other person. Thus flexibility in methods, varied instructional resources, and open-ended outcomes lead to individually constructed knowledge. Constructivist environments are supported by several instructional methods employing a variety of tools, activities and resources. For 21st century learners, many of the resources are digital in format, requiring special skills for adapting resources to the learning experiences (Beetham, & Sharpe, 2013; Gill, 2013). This chapter begins with a discussion on *generative learning* strategies which are reported useful for enhancing reading comprehension (Wittrock, 1989).

Generative Strategies Applied to Constructivist Learning Environments.

Generative processes in reading and comprehension have been used to enhance comprehension and recall for learners ranging from primary school through graduate education (Osborne & Wittrock, 1985). Generative instructional methods are particularly useful as level of text complexity increases with college level courses. Text complexity is determined using three measures, 1) quantitatively based on number of words per sentence, number of ideas embraced within a reading passage, and sentence length; 2) sophistication of content based on purpose and structure; and 3) complexity of content based on experiences of the reader. Instructional methods that offer elaboration and organization of complex text can be used to compensate for a reader's deficiencies (Common Core State Standards Initiative, 2012; Miller, 2012; Rouet, 2012). With the advent of 21st century technologies in social media, Web 2.0, and other electronic text, the term "new literacies" (Kist, 2013, p. 38) is particularly significant since much of learner engagement involves reading and production of text in digital environments (Hughes & Robertson, 2010; Lea & Jones, 2011).

Based on generative learning theory textual information is best processed as the reader uses one of three strategies: 1) organization of text, 2) elaboration of the information, and 3) integration of new information into prior knowledge (Knowlton & Simms, 2010; Wittrock, 1992). Through the use of digital resources students may gather large amounts of information, read, review, process, and as a last step, categorize information in a more manageable format. Coined as *generative organizational,* these strategies (Morrison & Guenther, 2000) are important for complex reading associated with college level textbooks and other assigned readings. Recommended tools for organizational processes can be accessed online and from one's individual computer workstation. For example, visualization tools accept user input to generate an image representing complex textual data as well as numerical data. Examples of visualization tools include Google visualization tools (Zhu, 2012), ManyEyes, a resource sponsored by IBM (DeveloperWorks, 2013); and concept maps (Banas, & Brown, 2012). Organizational strategies prompt the reader to identify main categories and keywords. Forms generated from database applications can be used to identify main categories associated with topics and themes embedded in a collection of assigned readings. In addition, students frequently use worksheets, generated from a spreadsheet application to identify themes and supporting textual data (Morrison, Ross, Kemp,