Chapter 10

Gender Differences in E–Learning:
Communication, Social Presence, and Learning Outcomes

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ABSTRACT

Although previous research has suggested that women may be at a learning disadvantage in e-learning environments, this study examines communication differences between women and men, arguing that women's communication patterns may provide them with a learning advantage. Using data from 303 males and 252 females, this paper discusses gender differences in course communication processes and course outcomes in a web-based introductory information systems course. Results indicate that women communicated more, perceived the environment to have greater social presence, were more satisfied with the course, found the course to be of greater value, and had marginally better performance than men. Despite the challenges facing women in e-learning environments, the results of this study suggest that e-learning environments that allow for peer to peer communication and connectedness can help females overcome some of these disadvantages. Implications for research and practice are also discussed.

INTRODUCTION

Estimates suggest that organizations are annually spending over $40 billion on technology based training (American Society for Training and Development, 2007). In addition, nearly 90% of universities are providing e-learning opportunities in which millions of students are enrolling (Wirt & Livingston, 2004). Some researchers have even argued that these training initiatives are "part of the biggest change in the way our species conducts training since the invention of the chalkboard"

(Horton, 2000, p. 6). Although e-learning has been argued to provide on-demand training to employees around the globe (Salas, DeRouin, & Littrell, 2005), learners with increased flexibility and control (Piccoli, Ahmad, & Ives, 2001), and organizational cost savings (Salas et al., 2005), e-learning still has several shortcomings. For example, it is difficult for courses to keep trainees engaged and learners tend to feel isolated when participating in these courses (Salas et al., 2005).

For organizations and universities to realize the benefits and overcome the limitations, it is important for researchers to not only investigate technology and processes involved in e-learning, but also to understand the characteristics of those who are participating in e-learning initiatives and how that may affect e-learning outcomes. Research has suggested that women make up the majority of those participating in e-learning initiatives, exceeding 60 percent in some countries (Kramarae, 2001; Sehoole & Moja, 2003). Thus, researchers are becoming more interested in e-learning gender issues. For example, researchers have found that the online environment can be openly hostile toward females, with men often dominating discussions and making negative comments about females (cf. Blum, 1999; Kramarae, 2001). In addition, research has suggested women's participation in e-learning is often related to how easy or difficult they find the software to use (Ong & Lai, 2006). Thus, it has been argued that women may be at a disadvantage in e-learning because they have lower experience or confidence in the use of computers (cf. Thompson & Lynch, 2003).

Despite these acknowledged disadvantages, evidence suggests that the nature of women's communication patterns in e-learning courses may provide them with a potential advantage. For example, female student's communication in e-learning environments tends to be more interactive and socially oriented than men (Barrett & Lally, 1999; Blum, 1998). Because peer interaction and the facilitation of a shared learning space is central to effective e-learning (cf. Gunawardena,

Lowe, Constance, & Anderson, 1997; Hiltz, 1994; Hiltz, Zhang, & Turoff, 2002; Tu & McIsaac, 2002), this higher social orientation may allow women to be more connected to other learners, have a higher sense of peer and instructor presence, and have better outcomes. Although there have been studies focusing on gender differences in e-learning (cf. Arbaugh, 2000; Barrett & Lally, 1999; Blum, 1999), we are not aware of research that has specifically focused on gender differences in communication, perceptions of peer presence, and learning outcomes. Therefore, the goal of this study was to investigate gender differences in communication, perceptions of social presence, and e-learning outcomes.

The remainder of the paper is organized as follows. In the next section, the relationship between gender, communication, and social presence are discussed. Following this, gender and e-learning outcomes are discussed. In the third section, the research setting, participants, and methods are discussed. In the fourth section, results are discussed. Finally the manuscript closes with a discussion of the findings and implications for e-learning researchers and practitioners.

LITERATURE REVIEW

E-Learning Communication Processes

Learning has long been conjectured to have a social component (cf. Vygotsky, 1978), with researchers arguing that the most effective learning occurs when learners are able to actively interact with content, peers, and the instructor (cf. Hiltz, 1994; Hiltz et al., 2002; Schmidt & Ford, 2003). Pedagogically, interaction with content encompasses the constructivist notion that learning takes place only by being actively engaged with the material to be learned, by incorporating it into existing mental models, and individually creating knowledge. Interaction with peers embodies the concepts

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