Chapter 17
The ART (Activities, Resources, Technological Supports) in On-Site and Online Learning, and Students' Perceptions of Acquisition of Thinking and Team-Building Skills

Jennifer D. E. Thomas
Pace University, USA

Danielle Morin
Concordia University, Canada

ABSTRACT

The efficacy of different modes of instruction delivery, whether on-site, online, or a combination, continues to be debated in academic circles. This chapter takes a somewhat different view from most other research and compares students' perceptions of support provided in the acquisition of various thinking and team-building skills, as a consequence of the integration of various activities, resources, and technologies (ART) used in an upper level Distributed Computing (DC) course. The findings indicate that students perceived strong support for their acquisition of higher-order thinking skills (HOTS) and team-building skills (TBS) from the offline resources, but moderate support from the online resources and technologies provided in the course, which was in opposition to the grades received. A deeper analysis of the results pointed, among other things, to the use of cases as being most supportive of the acquisition of the higher-order thinking skills and of team-building skills.

DOI: 10.4018/978-1-61350-483-3.ch017

INTRODUCTION

While university faculties acknowledge that developing higher-order thinking skills – HOTS (Thomas, 2001) is one of their highest priorities (Paul, Elder and Bartell, 1997), few seem able to define some of its components, for instance critical thinking, or how to balance content coverage with techniques for fostering this skill. Add to this, technological supports, and the task is even more daunting and mysterious.

Delivery of instruction runs the gamut from using traditional delivery methods versus courses delivered with some technology integration, usually in the form of PowerPoint® presentations within the classroom and, in some cases, Internet access, to courses at the far end of the spectrum taught via distance education technologies, either entirely online or with support from videoconferencing technology (Wittrock, 1986; O'Shea and Self, 1983; McEuen, 2001; Chism, 2004; Mandernach, 2006; Barak, Harwood & Lerman, 2007; Yeh, 2009). The interplay between these technologies and various activities and resources of the course, determine the efficacy with which students develop higher-order thinking skills, such as critical thinking, and team-building skills, that faculty seek to engender in their students. These skills are vital for their long-term professional and personal development (Noll and Wilkens, 2002).

In research into these matters, the conclusions found have not been decisive nor consistent. Wadsworth (2007) found that student success rates and motivation to learn were supported in online math learning, and Lee (2007) found critical thinking supported by online case study instruction. Osterman (2005), on the other hand, found no statistical difference in the success and completion of a reading course using online versus traditional instruction, while Burgess (2009) found that integrating the content management system, WebCT®, improved reading engagement and critical-thinking skills. Parker and Gemino (2001) found that students performed equally well in on-site versus virtual conference meeting spaces, however, those in the virtual classroom scored significantly higher on conceptual material on exams but lower on techniques.

Sulcic and Lesjak (2009) found that information communication technology did not improve e-learning effectiveness, instead it was different teaching strategies that had an impact. Course delivery had a statistically significant difference on students' opinions about the knowledge acquired, while Russell (2003), as reported in Sulcic and Lesjak (2009), on his part found no statistical difference in acquired knowledge. In research conducted by Arbaugh and Rau (2007), media variety was a positive predictor of delivery media satisfaction but a negative predictor of perceived learning, while learner-learner interaction positively predicted perceived learning but negatively predicted delivery medium satisfaction. By the end of the semester, Kock, Verville and Garza (2007) found that initial differences in perceived ambiguity, perceived cognitive effort, excitement, and grades disappeared.

Davis (1989) has shown that system use is tied to user's perceptions, while Keengwe (2007) and Koohang & Durante (2003) found that a relationship exists between students' personal computer proficiency and students' perceptions of the effect of computer technology to improve their learning. Song, et al. (2004) focused on students' perceptions as a way to improve online or distance learning. Perceptions are, therefore, important considerations when integrating technology into learning.

In this study, we look at different types of technology integration in both on-site and distance courses - a traditional computer lab setting, a 'smart' electronic classroom setting (e-classroom), a mixed traditional computer lab and e-classroom setting, and an entirely online distance setting (Rovai & Jordan, 2004; Piccoli, Ahmad & Ives, 2001). We were interested in differences in students' perceptions of the support provided to various team-building and higher-order thinking skills (HOTS), as a consequence of different activi-