Technological Supports for Onsite and Distance Education and Students’ Perceptions of Acquisition of Thinking and Team-Building Skills

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ABSTRACT

This paper compares students’ perceptions of support provided in the acquisition of various thinking and team-building skills, resulting from the various activities, resources and technologies (ART) integrated into an upper level Distributed Computing (DC) course. The findings indicate that students perceived strong support for their acquisition of higher-order thinking skills and team-building skills 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. It also seems that those in the traditional computer lab setting perceived online resources as more supportive of higher-order thinking skills than those in other sections and those in the electronic classroom perceived the least support. The results were mixed for team-building skills and for offline resources support for higher-order thinking skills. In particular, distance students deemed the text and material in Blackboard less important for developing these skills than onsite students.

Keywords: Classroom Learning, Critical Thinking, Distance Education, Online Learning, Technology and Learning Technology-Enhanced Learning, Traditional Learning

INTRODUCTION

Untold studies have looked at the effect of courses delivered in a traditional classroom setting, 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 (Wittrock, 1986; O’Shea & Self, 1983; McEuen, 2001; Chism, 2004; Barak, Harwood, & Lerman, 2007; Yeh, 2009). 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 paper, we look at different types of technology integration in both onsite 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, as a consequence of different activities, resources and technological (ART) supports provided in these different settings (Collins & Berge, 2003; Law, Lee, & Chow, 2002; Lim, 2007; Oliver, 2001). Noll and Wilkins (2003) identified these skills as extremely pertinent for the information systems (IS) professional. Our findings indicate that those in the electronic classroom setting perceived significantly less support from online resources for these skills than did those in other sections, while those in all sections perceived strong and equal support from the offline resources. Distance students perceived less support for these skills from the text and material in Blackboard than the onsite students.

**BACKGROUND**

Understanding learning itself without the additional interjection of technology into the mix is a daunting task, given the complexity and number of dimensions that need to be considered. Ein-Dor identified 5 main and 3 sub-dimensions of knowledge, which can be arrayed along various spectra, see Figure 1.

On the right of the spectra, knowledge is seen to be explicit or easily articulated, therefore more readily available for social or public sharing. This knowledge is often in the realm of declarative knowledge and common-sense knowledge and easily represented in well-defined tasks, or steps – the ‘know what’. This knowledge is usually certain and easily verifiable and measurable.

On the other end of the spectrum, knowledge can be seen as tacit or difficult to articulate, the purview of the expert, making this knowledge more the property of the individual and private. This knowledge would be contextual and include understanding of procedural knowledge – the ‘know how’. The Alavi and Leidner (2001) model integrates causal knowledge – the ‘know

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**Figure 1. Dimensions of knowledge spectra**

<table>
<thead>
<tr>
<th>Tacit</th>
<th>Explicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Social</td>
</tr>
<tr>
<td>Procedural</td>
<td>Declarative</td>
</tr>
<tr>
<td>Expert</td>
<td>Common-sense</td>
</tr>
<tr>
<td>Context Knowledge (external)</td>
<td>Task (internal)</td>
</tr>
<tr>
<td>Uncertain</td>
<td>Certain</td>
</tr>
<tr>
<td>Private / Individual</td>
<td>Public / Shared</td>
</tr>
<tr>
<td>Verifiable (low)</td>
<td>Verifiable (high)</td>
</tr>
</tbody>
</table>

Adapted from: Ein-Dor, 2006; Alavi & Leidner, 2001 (See Thomas, 2007)
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