E-learning systems versus instructional communication tools: Developing and testing a new e-learning user interface from the perspectives of teachers and students

Wejdan Farhan[a], Jamil Razmak[a,*], Serge Demers[b], Simon Laflamme[b]

[a] *Al Ain University of Science and Technology, Abu Dhabi, United Arab Emirates*
[b] *Laurentian University, Sudbury, ON, Canada*

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ABSTRACT

Focusing on Human E-learning Interaction (HEI), this interdisciplinary research integrates concepts from instructional communication and instructional technology and applies them to e-learning systems, focusing on academic stakeholders' roles and competencies. The purpose of this research is to propose and design an E-learning User Interface (ELUI) using web programming languages to support instructional communication in an online learning environment. The proposed interface, considering both students' and teachers' perspectives, identifies several new features that contribute to success in interactive e-learning systems in academic organizations. A sample of 102 students and 10 teachers selected from a university in Canada were asked to browse the ELUI proposed in this study and provide feedback. Using a mixed methods approach, this study employed both quantitative and qualitative methods of analysis to provide a more robust understanding of student and teacher perceptions of the ELUI. Students' attitudes toward use of the interface were analyzed using the Technology Acceptance Model, while teachers' perceptions were analyzed through content analysis of semi-structured interviews. The results of regression analysis showed that perceived ease of use and perceived usefulness of ELUI are predictive of student attitude toward future use of the ELUI. The results of the interviews revealed that teachers believe the ELUI would be efficient, particularly with adequate training and support, though were unable to comment on the cost effectiveness of e-learning systems. The overall results suggest that academic decision-makers should adopt instructional communication features in e-learning systems.

1. Introduction

An effective teaching process in a traditional classroom depends greatly on discussion and interaction, both between teacher and student, and among peers. Likewise, scholars recognize interaction to be an important element in achieving the objectives of e-learning systems [1,2]. According to Croxton [1]; interaction provides dynamic engagement for students to acquire knowledge and increase their individual learning skills. Students perceive their interaction with teachers according to the extent of support they receive, considering open communication, responsiveness, and teacher involvement as factors that contribute to this support [3]. Interaction is significant because communication practice itself as a learning process represents an important stage in transferring knowledge [4] and increasing student participation in educational activities [5,6]. The field of instructional technology highlights how advancing technology has increased the

number of media carriers able to facilitate interactive processes in instructional communication [7]. Technological tools that emphasize interaction are well-documented in the literature and include both asynchronous features, such as e-mail and streaming media, and synchronous processes, such as chat facilities. Instructional technology, a combination of education and information systems, engages "a complex, integrated process involving people, procedures, ideas, devices, and organizations for analyzing problems, and devising, implementing, evaluating, and managing solutions to those problems involved in all aspects of human learning" [8].

Instructional technology is productive in improving the interaction process between teacher and student through the provision of multi-platform communications within e-learning networks. Using instructional technology effectively requires determining and understanding the roles and capabilities of stakeholders, informing the selection of features to address their needs and allocate academic resources in an

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