Evaluating an Online Programming Instructional Process Organized Through Elaboration Theory

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ABSTRACT

This article draws on a semester design study to evaluate the quality of an online from the point of e-learning. Adobe Connect web conferencing system was used as a delivery platform in an Introductory Programming course. The course content was specifically sequenced and elaborated in terms of elaboration theory (ET). Thirty pre-service computer teachers enrolled in instructional technologies department online program were participated to the study. The evaluation criteria included dimensions of e-learning in which both qualitative and quantitative data was used. The results indicated that the online course almost met the seven dimensions of e-learning in order to provide high quality learning outcomes. Elaborating the content provided positive contributions to the dimensions of content, interaction, learning and support. Along with the results, some implications were provided for elaborating and evaluating the content for online courses.

KEYWORDS
Elaboration Theory, E-Learning, Online Learning, Programming Course

INTRODUCTION

Online learning environments have grown tremendously and continue to play significant role in higher education. It is not easy to provide quality outcomes in online learning; because online learners have various schedules, timelines, or other reasons affecting to their study performances. Since learners are often physically isolated from one another, institution, and instructors in online learning programs, pedagogical aspects have drawn the attention for online learning. The pedagogy of online learning deals with online teaching and learning theories for organizing and delivering of the course contents. It is necessary to plan and implement strategies and techniques including quality of materials, communication style and supporting learners to construct knowledge (Martens, Bastianens & Kirschner, 2007).

On the other hand, in recent years, institutions have begun to deliver online courses. Programming course is one of those courses which has an increasing demand to be received online. Due to the programming pedagogy, Jenkins (2002) argues that programming is a complicated task. Problem

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solving, abstraction, mathematical logic and testing, debugging and other stages are required in order to learn programming. Because the online learning environment has its own challenges, online programming is becoming more difficult to learn. (Law, Lee & Yu, 2010). In this sense, Dabbagh and Bannan-Ritland (2005) suggest specific roles for the instructors that they should need to spend more effort for planning and organizing the online lessons. Generally, it is difficult for learners to control own learning process in the online learning environment. Driscoll (2010) suggests implementing instructional strategies convenient to the nature of course content in accordance with the learners’ individual needs. At this point, some principles are offered in the context of instructional design. In order to achieve positive learning outcomes, instructional strategies, learners’ characteristics, content organization and evaluation procedures are the basic issues generally focused in instructional design.

ORGANIZING COURSE CONTENT FOR QUALITY ONLINE LEARNING

The quality of online learning design influences learning outcomes through technology, face-to-face support and quality of content (Kintu, Zhu & Kagambe, 2017). Some studies have been carried out regarding the evaluation of pedagogical dimensions of online learning quality (Robinson & Wizer, 2016; Nacu et al., 2016). Martin, Ndoye and Wilkins (2016) expressed Course overview & Introduction, Learning Objectives, Assessment & Measurement, Instructional Materials, Course Activities & Learner Interaction, Course Technology, Learner Support, Accessibility & Usability as pedagogical characteristics from quality matters. Also, Sims, Dobbs and Hand (2002); focused on online learning of Strategic Intent, Content, Learning Design, Interface Design, Assessment, Student Support, Utility of Content, Outcomes dimensions.

In this regard, while Moore and Kearsley (2011) suggested to divide content into meaningful simple parts to make it easy for the online learners; Allen (2016) points out flexible organization on contents to provide student-content interaction and use students’ cognitive potentials via learner control. However, some efforts are spent to establish a certain order with content units to associate objectives and the learning activities; it still remains a challenging issue to formulate organizing the content, thus more work is needed in the field of online instructional design.

Fink (2003) pointed out that quality of instruction incorporates elements such as content, active learning, and various instructional strategies. In addition, Vrasidas and McIsaac (2010) claimed that; online course effectiveness is related to the content, teaching strategies, visual design, interaction and navigation. Ward, Peters and Shelly (2010); revealed that encouraged student-faculty contact, encouraged cooperation among students, encouraged active learning, provided prompt feedback to students, emphasized on time on task, communicated high expectations, respected diverse talents and ways of learning are necessary for quality of online learning. Kintu, Zhu and Kagambe (2017) and Hsiao, Mikolaj and Shih (2017) described the quality indicators of online courses are increasing in recent years. Zaharias & Poylymenakou (2009) also addressed the quality dimensions for e-learning which is named as Seven Dimensions for e-Learning (SDeL): (1) Content, (2) Learning and support, (3) Visual design, (4) Navigation, (5) Accessibility, (6) Interaction, (7) Self-assessment and Learnability. Some other studies indicated that SDeL can be used as a framework to evaluate the learning quality (Ehlers, 2004; Khan, 2005). Similarly, in this study we considered SDeL as a well-organized framework involving both online and higher education dimensions to evaluate an online course. The seven dimensions are briefly explained as follows:

Content

The content of online courses is important for the achievement of students’ goals and for the construction of knowledge. The contents should be hierarchically organized through providing learning objectives (Elias, 2010).
The Impact of Internet Learning Technology: Experimental Methods of Determination
www.igi-global.com/chapter/impact-internet-learning-technology/28785?camid=4v1a

Multimedia Authoring for Communities of Teachers
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