

# Exploring the Effectiveness of Online Instructional Technology in Higher Education: Professors' Perspective

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### Overview

Technology has drastically changed the landscape of how, when, and where we can access information. As a result of technological advancements, delivery methods for lectures have been a major beneficiary of this advancement. In higher education, 21st century technology allows professors to deliver lectures face-to-face or online, passive and active content engagement, and synchronous or asynchronous through multiple web formats. However, with all of these delivery methods of course content, the issue that remains in question is; does the effective use of online instructional technology foster higher order thinking? According to Resnick, higher order thinking is nonalgorithmic, tends to be complex, and requires analyzing and synthesizing of given content (as cited in Dori and Zohar, 2003, p. 147). In order to explain the need for research in this area and examine the theoretical concepts and/or methodological methods that support my research, a literature review has been conducted to describe instructional technology and its place in higher education.

Instructional technology is "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning," according to the

Association for Educational Communications and Technology (AECT) Definitions and Terminology Committee (as cited in Anderson and Garrison, 2003, p. 33). When students rely on professors to provide the connection between content and knowledge in online environments, it raises a concern about the effectiveness of online instructional technologies. Sure, students with strong higher order thinking capabilities will make that connection, but a concern should be for those students who cannot (Dori and Zohar, 2003). Research on instructional technology is often concerned about the medium and not its true functionality which is to make the learning process more effective, interactive, mentally engaging, and broader (disciplines) (Herrington, Oliver, and Reeves, 2005). Open source software has created a new realm of possibilities for educators using instructional technology. Open source can be described as the concept and practice of making program source code openly available. More flexibility is given to program designers and license policies and restrictions are eliminated (Jhunjhunwala and Lakhan, 2008). More and more universities are offering distributed learning opportunities to potential or currently enrolled students. For example, Stanford University has a massive online open course (MOOC), free for anyone to take before close of course registration (Moravec, 2011). However, there is still a need for adaptability of instructional technology in all disciplines, among all potential users, and in aligned with learning objectives. Research into the adoption of instructional technology, its uses, and assessment by higher education faculty will give understanding into potential factors that will make online instructional technology more effective in regards to higher order thinking skills. Moreover, this helps students to take a more scientific approach to learning and growing the individual student skills and knowledge (Twiggs, 2003).

### **Methodology**

Questions guiding this study are:

How does using open source software help professors make online instructional technology more conducive to the learning and knowledge process?

What factors make online instructional technology within the online educational environment effective?

This pilot study interviewed four faculty members and one instructor (4 females and 1 male) at a major university in South Carolina in a one-on-one interview session. Research interests of the interviewees were: Higher Education Assessment, 3-D Imaging and Information Technology, Use and Search of Educational Technology, Health Information Science, and Graphic Novels in k-12 Settings. All interviewees taught within the same department. A semi-structured, open ended question data collection method was chosen to allow for further probing questions and clarification of terminology. The first few questions were designed to make the interviewees feel comfortable with the interviewer. Interview questions, grouped into categories, consists of area of research, use of online instructional technologies, teaching pedagogy and online instructional technology, and the teaching and learning process using online instructional technology. All interviews were conducted in the instructor or faculty members' personal office for convenience. The questions used were not always asked in sequence, furthermore, some questions were not asked at all for lack of significance depending upon the interview discussion. The length of the interviews ranged from 20 to 40 minutes. All interviews were recorded and transcribed by the researcher. Taking a grounded theory, qualitative strategy was pivotal in allowing the context analyzed from the interviews to present themes which contribute to efficacy in online instructional technology (Jacobsen, 1998).

## **Results**

Preliminary results from content analysis show more emphasis needs to be placed on the choice of technology for each class taught, every semester. The banal statement of “one size fits all” is not conducive to higher order thinking skills in regards to online instructional technology. As a result of the interviews, five themes have been identified:

- Learning Objectives – learning outcomes for the course and the technology must “fit.” *Interviewee 1 “And in some ways, you can use instructional technology to enhance uh achieving specific objectives.”*
- Interactivity – there is a need for collaboration amongst peers and move towards the “blended learning environment.” *Interviewee 3 “..blended class where I will have people in class and online and we use adobe connect as a classroom and students seem to really enjoy that.”*
- Teaching style – personality and delivery method dictates the effectiveness of the online instructional technology
- Pedagogy – the technology used should have the social (Web 2.0) aspect with student-to-student and student-to-knowledge focus. *Interviewee 4 “I like to allow students to have choices in what they create their product through if I ask for a product using technology. But as far as teaching myself, I do what communicates the content the best.”*
- Interoperability – any technology chosen must have the ability to inter-operate with various systems.

These results are part of a preliminary study that will look at online instructional technology in various departments at the institution in which the study was conducted. This pilot study will help refine and develop further questions. Also, taking a qualitative, inductive approach with future studies will define a hypothesis to be used. The pilot study has described a need for further investigation in online instructional technology and its effectiveness. Getting students perspectives will increase the quality and validity of the study in addition to interviewing faculty and/or instructors who do not teach in a predominately online program.

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