Virtualization of University Education:
The Impact of ICT-Mediated Learning Environment on Students' Performance

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ABSTRACT

The increasing intake of students in tertiary institutions has resulted in large classes sizes in the universities in Ghana with the attendant reduction in quality in teaching and learning. This study was carried out to assess the impact of integrating ICT to teaching and learning in Universities on students' performance. This study adopted formative experimental approach using Moodle, an online learning platform to supplement the traditional face-face lecturing. This was carried out using seventy-five first year students on a communication skills course over two semesters. The Students' score in four learning outcomes were collected before and after the experiment. The data were quantitatively analyzed and compared to identify the impact of the ICT-mediated learning environment on students' performance. The results showed marked improvement in the students' performance in all aspects of communication skills. The lecturers of the course also confirmed improvements in students' performance, engagement and participation in the course compared to previous years.

KEYWORDS

INTRODUCTION

The continuous reduction in government funding to tertiary institutions has compelled the public universities in Ghana to increase the intake of students to raise more internally generated funds for smooth running of these Universities (Dadzie, 2009). This has resulted in large class sizes where managing students' participation in classes and assessments among other things have become problematic. The consequences of these are the churning out of graduates deficient in the application of the knowledge they have acquired (Afful, 2007). The solution of these problems, it has been recommended, lies in harnessing the potentials of Information and Communication Technology (ICT) to improve teaching and learning in the Universities (Gyamfi & Gyaase, 2015).

Universities in Ghana have noted with concern, that a lot of the students they admit often struggle with the English language (Owu-Ewie, 2006), hence Communication Skills is mandatory for students admitted into tertiary institutions to build up their capability to study and conduct research in English language (Flowerdew & Peacock, 2001). The general perception of recent graduates lacking the requisite Communication Skills in English has triggered questions about the effectiveness of this policy. Those in defence of the policy have attributed its failure to the large class sizes which limits lecturer-student interaction and effective delivery and assessment of the course (Coker & Abude, 2012).

To improve the teaching and learning environment in the universities, utilization of Information and Communication Technologies (ICTs) have been strongly advocated. ICT offers a range of learning tools that facilitate effective teaching and learning hence the incorporation of ICT in the teaching and learning of Communication Skills would continue interactions between students and lecturers and among students for the achievement of the learning outcomes in language and communication skills (Jarvis, 2001 & Chapelle, 2003). Using formative experiment, this study assesses the impact that ICT-mediated learning environment could have on performance in Communications Skills (CS) course. The study used first year students of a University with a class size of 75.

ICT-MEDIATED LEARNING ENVIRONMENT

An ICT-mediated learning or e-learning can be described as all forms of electronic supported learning and teaching, which are procedural in character and aim to affect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems, whether networked or not, serve as specific media to implement the learning process (Tavangarian, Leypold, Nölting, Röser, & Voigt, 2004; O'Donnell, Wade, Sharp, & O'Donnell, 2014)

There are various dimensions of ICT-mediated learning. This includes blending of the delivery mode, the blend of distance and face-to-face modes using technologies to enable flexible scheduling (Sharpe, Benfield, Roberts, & Francis, 2006) and a learning environment which remains institution and teacher-centred whilst the virtual learning environment is used as a repository for and a means of transmitting content to the students (Graham, 2006; Sharpe, et al, 2006). Masie (2002) posits that due to the complexities of human beings learning do not occur in a uniform manner. Consequently, ICT-mediated learning environments recognises the importance of giving the students equal access to learning resources to shape their own learning processes. Indeed, Fulantelli (2009) emphasizes that, ICT-mediated learning environment enables the sharing and shaping of ideas, and creating a community of learners among the students.

Through computer-mediated communication tools such as asynchronous and synchronous communication technologies, ICT-mediated learning environments have been found to improve communication among students and between teachers and students (Hew & Cheung, 2014). This is made possible by the various technology tools available in many ICT-mediated courses and course management systems which combine to form a communication environment such as facilitating access to course materials and experts that might not be otherwise available in a traditional classroom setting. Additionally, ICT-mediated learning environment have been touted to increase student learning outcomes (Hew & Cheung, 2014; Means, Toyama, Murphy, Bakia, & Jones, 2010).

To this end, the study relied on a designed ICT-mediated learning environment which was christened "ABLECAT" (A Blended E-learning Environment for Collaborative and Active Learning) for the formative experiment. ABLECAT was built on a Moodle platform which enables easy communication, collaboration, and content creation for teachers and students in addition to comprehensive assessment tools, including online quiz tool (Henrick & Holland, 2015).

For easy communication, Moodle provides a chat activity module for the students to have a real-time synchronous discussion. The forum activity on Moodle also allows students and teachers to have asynchronous communication through the exchange of ideas by posting comments as part of a 'thread'. Apart from serving as a collaborative tool, forum posts may also include files such as images and media which serve as contents for students. Furthermore, there is a quiz activity module on Moodle that allows the teacher to design and build quizzes consisting of a large variety of question

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