Collaborative eLearning in a Developing Country: A University Case Study in Uganda

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Abstract: Universities in developing countries are increasingly adopting and using eLearning in their teaching and learning processes as one of the means for leapfrogging into the knowledge driven world. However, despite the recognition eLearning has received, it has not fulfilled the expectations in terms of impact on the delivery and quality of learning, pointing to the need for improved or new approaches. This paper explores the collaborative eLearning approach as one of the strategies for effective adoption and use of eLearning. Using the first stage of development research this paper presents an empirical study that aimed to explore and understand the current practices of collaborative eLearning in a developing country context. The study was carried out with university students in Uganda and placed focus on the value derived from and challenges encountered in adopting and using collaborative eLearning. From a general perspective, it was evident that learning and teaching methods are predominantly traditional, with limited/no integration of eLearning and there were inconsistencies in understanding the integration of technology into teaching and learning processes. The findings obtained indicated that students through collaborative eLearning were able to share and gain knowledge, understand course concepts and access various views and learning material. Factors such as inadequate bandwidth, inadequate Internet/computer access, conflict resolution, adequate ICT skills and face to face interaction challenged the adoption and use of collaborative eLearning in this context.

Keywords: collaborative eLearning; developing countries; eLearning; ICT; higher education; Uganda

1. Introduction and aim

Developing country contexts (DCC) have been mainly exemplified by low living standards, high rates of population growth, low income per capita, and general economic and technological dependence on developed economies (Bakari, 2005). It is without doubt that, higher education is increasingly becoming a vital avenue for students to leapfrog into the competitive economic market and improve their quality of life. The drive to join the growing global economy is attributed to the rapid transformation in various business sectors that require a skilled workforce that is more effective and competitive. The increasing need to rely on faster and reliable access to information and knowledge have also become crucial aspects. It comes as no surprise that recent developments in the education sector have seen a widespread recognition for the need to position eLearning in a broader context of the emerging knowledge economy.

However, Garrison and Anderson (2007) point out that we are yet to fully experience the transformative effect of eLearning to support learning. For instance, the inherent assumption in DCC is that putting in place ICT infrastructure and creating online courses equates to eLearning and thus leads to changes in the teaching and learning process (Kahiigi et al., 2009). Contrary to this, Zurita and Ryberg (2005) affirm that changes in the mode of education delivery does not translate into a positive development, nor a change or development in the teaching styles or the pedagogical practices. This can be attributed to the limited understanding of integrating eLearning into the teaching and learning process in DCC (Vesisenaho, 2009).

Nonetheless, several higher education institutions in DCC have adopted eLearning to improve the quality of teaching and learning; to increase access to learning materials; to reduce the total cost of education and to enhance their academic profiles (Engelbrecht, 2003). However, attempts to enhance and reform the education sector through eLearning in DCC have been negatively affected by factors such as unreliable and inadequate ICT infrastructure and services, low levels of ICT literacy and
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experience, lack of pedagogy in their curricula and lack of lecturer and management support to drive the eLearning initiatives (Kahiigi et al., 2009). Consequently, eLearning has not yet fully penetrated the existing education systems in most DCC (Iahad et al., 2004). While acknowledging these challenges as having a negative impact on eLearning in DCC, we affirm that suitable approaches for its effective adoption and use to support student learning can be instituted.

Collaborative learning (CL) is such an approach that has been attested to by several studies to support student learning (Kamba, 2009). CL has been applied as an instructional method in traditional and distance learning environments. The underlying phenomenon involves students working in groups through mutual interaction to achieve common learning goals. Pedagogically, interactions derived through CL scenarios can be related to deep learning, critical thinking, higher cognitive development and long term knowledge retention (De Wever et al., 2006). Recent research in the CL field has mostly placed focus on investigating how collaboration contributes to group or individual knowledge construction and learning outcomes (Arvaja et al., 2007). However, the significance of factors influencing students’ opportunities to learn collaboratively still remains under-researched (Östlund, 2008). This has resulted into limited empirical evidence on the effectiveness of Computer Supported Collaborative Learning (CSCL) at the higher education level, especially in DCC. Understanding the collaboration process and what impacts on it to support effective, meaningful and sustainable interactions in eLearning environments within any context is equally important. CSCL is hence forth referred to as collaborative eLearning in this paper.

From the discussion above a question that requires examination is; what is the current state and practice of collaborative eLearning (CEL) in a DCC? This paper therefore aims to investigate the CEL concept and how it has been applied within a DCC, specifically in Uganda, as the first stage of development research. More specifically, this study investigates the value derived and challenges encountered from adopting and using CEL. The empirical results are obtained from third year undergraduate students.

2. Theoretical perspective on collaborative learning

CL is based on the notion that knowledge construction is a social event and interaction is particularly important for learning and attainment of higher order cognitive skills (Lehtinen et al., 1999). This view builds on Vygotsky’s (1978) and Piaget’s (1926) frameworks that emphasizes social interaction as a means of individual cognitive development and learning. This implies that through social interactions individuals with different perception tend to improve their understanding of concepts. Lehtinen et al. (1999) further assert that deep conceptual understanding is fostered through explaining a problem to others during the process of inquiry. The resultant effect is that individual’s level of understanding of concepts tends to become salient in a collaborative environment.

CL can be explained basing on social constructivism that relates to individuals constructing their knowledge through the process of negotiating meanings with others within the learning community (So and Brush, 2008). The constructivist view of learning is associated with Vygotsky’s (1978) zone of proximal development that relates the learners level of understanding and cognitive development to social interaction and collaboration from expert guidance and capable peers. This implies that CL can allow learners develop an understanding and master various aspects in a course better than when working alone.

Notwithstanding the potential of CL in supporting student learning, there still exists obscurity in finding a common definition of CL. As exemplified by Lipponen et al.(2004), from a theoretical perspective the variation can be reflected through three metaphors of learning, which are: acquisition, participation and knowledge creation. Acquisition implies individual knowledge gain; participation emphasizes interaction, while knowledge creation relates to continued advancement of shared knowledge. Emanating from these metaphors various definitions have been presented. For example: Roschelle and Teasley (1995) defines collaboration as “a coordinated synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem”. Dillenbourg (1999) views CL as “a situation in which particular forms of interaction among people are expected to occur, which triggers a learning mechanism”. Liaw and Huang (2006) cite CL as “a social activity involving a community of learners and teachers through which information is acquired and knowledge shared through social constructivism approaches”. It is evidently difficult to provide a generalized definition of CL as various perspectives are taken on by different disciplines and contexts in which CL is
implemented and studied. However, these definitions point to joint participation and social interaction as dominate aspects that are required to facilitate CL situations.

The distinction between collaboration and cooperation is another aspect that has created numerous debates. Some researchers have used and referred to these terms interchangeably, while others have had counter arguments to distinguish them. Dillenbourg et al. (1996) argue that in cooperation a task is split into independent subtasks and coordination occurs when results are collated, while in collaboration cognitive processes maybe divided into intertwined layers that facilitate continued attempts to share concepts in order to achieve the desired results. Roschelle and Teasley (1995) affirm that cooperation involved division of labour among participants to accomplish a task; while collaboration involves mutual engagement of participants in a coordinated effort to solve a problem together. According to Panitz (1996), collaboration is a philosophy of interaction and personal lifestyle while co-operation is a structure of interaction designed to facilitate the accomplishment of an end product or goal through people working together in groups.

It is clear that there exists obscurity in finding a common distinction between cooperation and collaboration. This can be attributed to the fact that individuals have different perspective for which they define these concepts. However, Kirschner (2001) affirms that of utmost importance is that the two concepts have similarities that are significant in supporting the learning process. In both cases, the learning process is active, teaching and learning is a shared experience, students are engaged in group activities, reflection on ones contribution is enhanced through discussions and articulations of one’s ideas within a group and social and team skills are developed through consensus building. This paper subscribes and adopts Roschelle and Teasley’s (1995) distinction of cooperation and collaboration, based on participation and different roles played by group members during a learning activity.

3. Collaborative eLearning as an alternative learning approach

The wide acceptance and availability of the internet means that CEL facilitates knowledge sharing and creation, social interaction and cognitive development regardless of geographical boundaries, time and socio-economic status. Consequently CEL has increasingly become appealing to students and educational institutions as an alternative learning approach. CEL supports a faster learning curve, since students can interactively customize their learning and have more control of their learning process (Cantoni et al., 2004). The belief is that shared understanding through interaction is a natural way for students to learn (Kreijns et al., 2003). This implies that collaboration and social interaction coexist and are dependent on each other in any learning environment.

Technology developments supporting CL have played a critical role in facilitating and mediating the interactive process (So and Bonk, 2010). Students are able to establish online social and academic support networks while becoming constructively involved in their learning activities. Additionally students are exposed to various online learning resources and conditions for quality interactions (with peers, teachers and content) in order to achieve worthwhile learning goals and profound levels of understanding (Garrison, 2007). Indeed studies (Kahiigi et al., 2009, Kamba, 2009) have established that students engage in peer interactions in order to achieve their academic goals. Prosser and Trigwell (1999) argue for a holistic approach that focuses on student learning experience, learning context and learning outcomes as correlated variables and processes vital for CEL. Thompson and MacDonald (2005) further assert that although it is important to establish effective communication and develop social bonds, there is need to create a secure environment that facilitates open communication in order to sustain the community. This implies that online courses have to be designed in a way that faciliates acquaintance and trust among students (Östlund, 2008). Studies have also indicated that aspects such as motivation, self discipline and self directed learning; experience with ICT use and learning styles are facilitators of CEL (Kahiigi et al., 2009, Fahy and Ally, 2005).

Challenges for effective adoption and use of CEL have been realized in various contexts. These challenges include unclear expectations from teachers, additional workload, slow access and absence of synchronous communication (So and Brush, 2008). Cantoni et al. (2004) indicate that in some instances technology and online environments can be frustrating, pointing to the lack of technology skills among the students and teachers. Kahiigi et al. (2009) emphasize the limited understanding of integrating technology and pedagogy as a major challenge in implementing CEL. Koponen et al. (2011) view the lack of teacher training for modern educational technology, user
environment, culture and language as aspects that challenge adoption and use of CEL. Other studies have reported scaffolding, group cohesion, lack of timely feedback, persistent technical problems, time, resources and motivation as having a negative effect on CEL (Kirschner and Kreijns, 2004, Lehtinen et al., 1999). However, worth noting is that appropriate design strategies can eliminate most of the challenges, while without accurate and informed instructional design the benefits become unachievable in any given context.

4. Case description and methodology

4.1 Case description

In 2002, Makerere University, Uganda embarked on an eLearning project with support from development partners. This project was in line with the University policy of leveraging academic units’ effectiveness by using ICT in teaching, learning and research. The overall project goals were: a) to improve the quality of graduates, by utilizing modern instructional materials and methods; b) to provide greater access to university education, by developing capacity for increased enrolment through non-conventional approaches to teaching and learning. Through this project, an eLearning policy was formulated and approved; over 300 academic staff have been trained in online course authoring; an end user training program to cater for computer literacy was instituted; and various supporting ICT infrastructure and resources (which include: local area networks, computer labs, internet kiosks and a wireless networks on campus grounds, etc) have been set up.

However, to date Makerere University is still struggling to attain the minimal educational benefits from implementing eLearning. While the ICT environment to some extent is conducive for eLearning development, there are currently partially developed online courses that are not used, and the Makerere University ELearning Environment (MUELE) is mostly used as an information repository by a few lecturers. A review of the academic sphere at Makerere University indicates that the issue is not access but attitude towards adopting eLearning in the teaching and learning processes. For instance, while the lecturers attended the training courses and appreciated eLearning as an alternative approach, they were concerned about the increase in workload to support large student numbers; increased course preparation time. In addition to this, there is the mind-set challenge, most of the lecturers are used to the traditional teaching methods and view eLearning as a waste of time and resources.

Conversely, the students at Makerere University frequently have face to face group meetings to discuss their course material, work on class assignments and study for their tests and examinations (Kahiigi et al., 2009). In addition students engage in “informal eLearning” which encompasses the use of the internet, access to e-content and mailing lists. This has created an environment through which significant learning has been realized. These findings indicate that transferring traditional interactions into the online environment can present students with opportunities to enhance and support their learning. The students interact and share knowledge through a wider online learning community. This strategic approach can support Makerere University in achieving its eLearning implementation goals. Adoption and use of CEL in the teaching and learning processes is therefore proposed as a research agenda in this context.

4.2 Methodological approach

Development research was adopted for this study. The underlying phenomenon of development research is based on solving real problems while at the same time constructing design principles that can inform future decisions (Reeves, 2000). Development research involves interactions with practitioners (in this case lecturers and students) to gradually clarify on both the problem within the research context and the eventual solution (Van den Akker, 1999). According to Collins et al. (2004) development research addresses several issues central to the study of learning, these include: a) the need to address theoretical questions about the nature of learning in context; b) the need for approaches to the study of learning phenomena in the real world rather than the laboratory; c) the need to go beyond narrow measures of learning; and d) the need to derive research findings from formative evaluation. These aspects form a basis of choice of development research as a method for pursuing the aim of the study.

Although development research provides suitable means to facilitate the process of understanding and developing an appropriate approach to CEL in this context; it also poses challenges which
include an immature methodology that has not been widely accepted in the research community; generation of numerous unstructured data that requires a lot of time to analyse and report; complexity arising from engaging teachers and students in the design process that may cause bias in the research output (Wang and Hannafin, 2005). These challenges are crucial aspects to be considered during the course of the study in order obtain justifiable results. This is so specifically since the application of development research is limited in DCC.

The current study employed a process of inquiry between students, lecturers and the researcher, encompassing the first stage of development research - analysis of practical problems by researchers and practitioners (Reeves, 2000). The study was carried out in three stages as presented in Table 1. The first stage of the study adopted a design approach that focused on introducing the research concept, soliciting views on how the study was going to fit in the course structure. Through involvement in the course design and consultative meetings with the lecturers, a CEL component was developed and included within the course structures.

Table 1: Methodological approach

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Theoretical Framework</th>
<th>Action</th>
<th>Output</th>
<th>Actors</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAGE 1</td>
<td></td>
<td>Design Approach</td>
<td>Consultative meeting with Lecturers</td>
<td>Collaborative e-learning component</td>
<td>Researcher and Lecturer</td>
</tr>
<tr>
<td>• Introduce research concept</td>
<td></td>
<td>Involvement in course design</td>
<td></td>
<td></td>
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<tr>
<td>• Solicit views on how the study can fit in the course structure</td>
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<td></td>
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<tr>
<td>• Incorporate the collaborative e-learning approach</td>
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<tr>
<td>STAGE 2</td>
<td></td>
<td>Interpretive Approach</td>
<td>Attending Classroom sessions</td>
<td>Raw Data/Responses Analysis of Data</td>
<td>Researcher and Student</td>
</tr>
<tr>
<td>• Observation of learning activities</td>
<td></td>
<td>Discussions with students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Deriving perception about online vs. face to face interactions</td>
<td></td>
<td>Reviewing students activity in the LMS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Application of collaborative e-learning component</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAGE 3</td>
<td></td>
<td>Interpretive Approach</td>
<td>Dissemination of questionnaires</td>
<td>Raw Data/Responses Analysis of Data</td>
<td>Researcher and Student</td>
</tr>
<tr>
<td>• Soliciting Responses</td>
<td></td>
<td></td>
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</tbody>
</table>

The second and third stage were based on an interpretive approach that involved observation of learning activities, deriving perception about online vs. face to face interactions and application of the CEL component. Data generated at this stage was derived from attending classroom sessions, holding informal discussions with students and reviewing students’ activity in the MUELE. Constant engagement with the students during the semester term was used to explore their perception about online vis-à-vis the traditional interactions during their learning activities. In the third stage, qualitative responses were solicited through a questionnaire that aimed to facilitating rich empirical data.

At the end of the course, an online questionnaire was disseminated to students however this resulted into a 17 completed responses, which equated to 2% of the students in the study. The low response rate can be attributed to lack of time as students were preparing for their examinations. It could also be attributed to the limited access to computers facilities or to the fact the students are not accustomed to the online questionnaire culture. These aspects raise concern, especially if online learning methods are to be adopted and used in this context. As a result 400 questionnaires were randomly distribution to the students of which 266 out of the 276 returned questionnaires were usable. The questionnaire items covered the following general open ended questions: (a) What value do you derive from collaborative eLearning? (b) What challenges do you encounter/would you encounter when working in CEL environments? The responses were compiled and categorized into emerging themes for analysis using Microsoft Office Excel 2007.

4.3 The case study

The data presented in this paper was generated from two cases of third year undergraduate students pursuing the Bachelors of Information Technology (BIT) and Bachelor of Medicine and Surgery (BMS)
degrees at Makerere University, Uganda. The field research was undertaken between September 2010 and January 2011. The cases used in the study were selected through purposeful sampling to derive information-rich cases for the study (Patton, 1990). The selection criterion was based on: a) students using eLearning in their learning activities; b) and the will of the lecturer to participate and drive students’ involvement in the study. Students perception of eLearning systems have been attested to by several studies as one of the crucial elements in providing management with better understanding of what is required for effective eLearning development and use (Yaghoubi et al., 2008). Consequently there was a need to understand how students perceive and react to CEL since their perception and attitudes are critical in motivating them as well as enhancing their learning.

The first group of students, 700 BIT students, studying Strategic Management as part of their degree program was regularly exposed to the use of ICT and online resources incorporated in their learning activities. The second group of 120 students undertaking BMS studying the Head and Neck Region course were subjected to a problem based approach at the centre of their learning activities. To achieve the course objectives, both students groups were expected to attend face to face lectures and tutorial sessions and also to engage into discussion on various course issues largely through the online environment.

The first activity aimed at introducing students to the online learning environment Moodle also referred to as MUELE. In order to familiarize students with the MUELE, the students were given online quizzes and also encouraged to make journal contributions about the course (see Figure 1). The online quizzes and journals were used to assess the students’ level of understanding of the course concepts.

![Figure 1: Online quiz and journal in MUELE](image)

The second activity aimed at introducing the CL approach. Students were divided into groups of 10. Each group was supposed to complete the case study assignment using MUELE’s online discussion forums see (see Figure 2). The groups then had to present their findings to the class using poster presentations. At the end of the semester a questionnaire was disseminated in order to obtain students perception and experience about the CEL approach in relation to the value they derived and challenges faced.

5. Results and discussion

The study presented in this paper aimed to examine the current practices of adopting and using a CEL approach to support student learning. Resulting from observations, open-ended questions and informal discussions with students, issues relating to CEL emerged. The results presented and discussed in this section relate to students value derived and challenges encountered in a CEL environment.

5.1 Students background characteristics

The student background characteristics indicated a gender composition of 38% female and 62% male distribution. 35% of the students were taking the BMS course, while students taking the BIT course accounted for 65% of the students. In relation to knowledge of ICT and its use: 38% of the students
had very good knowledge, 30% had fairly good knowledge, 31% had fairly good knowledge, 23 % had basic knowledge and 9% had limited knowledge. 74.4% of the students had access to a shared computer and 98.1% of the students owned personal mobile phones.

Figure 2: Online discussion forum in MUELE

5.2 Value derived from collaborative eLearning

Table 2 lists students' responses relating to derived value of adopting and using collaborative eLearning. Students reported that they are able to improve their ICT skills, understanding course concepts, access to various views and learning material, interact with fellow students, access course information in a timely manner, share and gain knowledge and well as self evaluate and build confidence in their learning process. These results affirm to the claims that CEL is an alternative learning approach that support student learning (Zhu et al., 2009).

Access to various views and learning material recorded the highest occurrence. The learning management system - MUELE was used as an information repository. Students had access to various resource links and documents which supported their understanding of the course concepts in addition to having timely access to relevant information.

In addition, students were actively involved in traditional discussion groups and thus viewed CEL as an approach that would support and enhance their interaction. Indeed, Puckdeepun et al.(2010) affirm that interaction is a key element in CEL through which shared understanding can promote learning. During the group assignments, students carried out individual research and then collated information for further discussions. This was an ideal case for the student as they would work independently at their own pace and time. This facilitated knowledge sharing and learning as students had varying views on a given concept.

Continued engagement with the online environment over the semester led to changes in students’ attitude towards using MUELE that resulted from improved ICT skills. This finding is supported by Doll and Ahmed (1983) who established that user expectations change as they become more familiar with the technology. Students also gain confidence with working in a CEL environment and were able to self evaluate their contributions. Indeed Lehtinen et al.(1999) recognized that interaction between participants forces them to consider their conceptions from the view point of others, thus facilitating a growing awareness of one’s own knowledge and belief.
Table 2: Students responses relating to value derived from collaborative eLearning

<table>
<thead>
<tr>
<th>Value derived (n=195)</th>
<th>Occurrence</th>
<th>Student quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge sharing and Knowledge gain</td>
<td>41</td>
<td>“I have been in position to acquire new knowledge from various people” (Student 5); “I get to learn from different people since different people have different options” (Student 173)</td>
</tr>
<tr>
<td>Understanding course concepts</td>
<td>35</td>
<td>“It makes it easier for me to grasp concept better than my individual learning” (Student 52); “Helps when you are stuck, while trying to understand a particular concept. Helps 90% of the time” (Student 27)</td>
</tr>
<tr>
<td>Access to various views and learning material</td>
<td>58</td>
<td>“Exposure to information from various students” (Student 205); “Diversified ideas and different perspectives of something” (Student 236)</td>
</tr>
<tr>
<td>Improved ICT Skills</td>
<td>17</td>
<td>“Enabled me expand my ICT knowledge” (Student 132); “Learning to use ICT resources to further my learning” (Student 228)</td>
</tr>
<tr>
<td>Interaction with fellow students</td>
<td>18</td>
<td>“Promote interaction with lecture and fellow students” (Student 112); “Promotes student-lecturer interaction and familiarity” (Student 74)</td>
</tr>
<tr>
<td>Timely Information</td>
<td>16</td>
<td>“It helps in timely access to the latest and well researched information relevant to the learning process” (Student 145); “timely information, wide sources of reference and easy communication” (Student 22)</td>
</tr>
<tr>
<td>Self evaluation and confidence</td>
<td>10</td>
<td>“It gives you capability to freely express yourself and understand core competencies” (Student 66); “Helps me know myself better and what other student are doing” (Student 45)</td>
</tr>
</tbody>
</table>

5.3 Challenges encountered with collaborative eLearning

In relation to challenges encountered with adoption and use of CEL two categories emerged. These were: technical and pedagogical issues (see Table 3). The technical issues included inadequate bandwidth, inadequate Internet/computer access, lack of ICT skills, lack of support, and high cost. Pedagogical issues included lack of timely feedback, lack of self esteem and trust, conflict resolution, lack of face to face interaction and workload.

A typical approach adopted by students while working on their group assignments was to conduct offline discussions in their face to face discussion sessions and then post their work in MUELE. This resulted from the limited internet/computer access that would have otherwise supported asynchronous and in some cases synchronous discussions. Students also lacked adequate ICT skills to support their engagement in the online environment, or access to, and manipulation of the information in MUELE, thus resulting into the students’ apprehension in engaging in online learning activities.

Although students viewed CEL as an approach to support their learning, it was difficult to see student's involvement in online activities during the observation period. This pointed to the fact that CEL was a new learning approach that the students were not accustomed to and thus did not understand. In addition students missed the face to face component, which constrained their ability to express themselves in the online environment. The lack of immediacy of responses and interactive cues during dialogues resulted in the online forums not to be effectively utilized. Reviewing the online forums indicated that questions posed by the lecturer through MUELE hardly received any responses and requests for contributions did not bring forth an increase in postings.

The study further established that different learning styles and levels of understanding of the course concepts, triggered conflicts during student discussion. This led to low self esteem and lack of trust among some of the students, thus affecting students' online interactions. However, studies (Kong, 2006) have shown that positive constructive cognitive conflicts have promoted positive learning outcomes. This then implies that if the conflicts within the students groups are geared towards cognitive development, then students are given an opportunity to learn from their peers. In such situations, teacher presence is crucial in supporting and sustaining the process of inquiry. Timely feedback from lecturers is another aspect that challenged students’ involvement in CEL; this could be explained by the large student numbers that overwhelmed the lecturers. In order to increase effectiveness in this respect there is need to exploit the student to student interaction where
considerable learning can be achieved by encouraging collaborative activities and processes of inquiry. The resultant effect can rationalize the lecturers’ workload, while the students receive timely feedback to their queries.

Table 3: Students responses relating to challenges encountered from collaborative eLearning

<table>
<thead>
<tr>
<th>Challenges encountered (n=189)</th>
<th>Occurrence</th>
<th>Student quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogical Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of timely feedback</td>
<td>7</td>
<td>“At times you don’t receive feedback from your tutor online” (Student 243), “Some people do not provide feedback on time that delays your activities” (Student 51)</td>
</tr>
<tr>
<td>Lack of self esteem and trust</td>
<td>2</td>
<td>“Some people are not so comfortable with team work” (Student 227), “Lack of trust” (Student 228)</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td>12</td>
<td>“Some people in a group lack the idea of how to handle other people” (Student 22), “There is always the challenge of lack of cooperation and lack of commitment” (Student 223)</td>
</tr>
<tr>
<td>Lack of face to face interaction</td>
<td>9</td>
<td>“I don’t physically see the people I am learning from especially on internet” (Student 7), “The face to face interaction that helps express ideas more clearly” (Student 269)</td>
</tr>
<tr>
<td>Workload</td>
<td>1</td>
<td>“A lot of assignments drive me nuts” (Student 105)</td>
</tr>
<tr>
<td>Technical Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate Bandwidth</td>
<td>62</td>
<td>“Sometimes access to some of the websites is too slow and quite frustrating to wait for minutes for a webpage to load hence a lot of time is wasted and important information missed” (Student 181)</td>
</tr>
<tr>
<td>Inadequate Internet-computer access</td>
<td>55</td>
<td>“Lack of access to computers and the internet when needed on time” (Student 195), “Lack of dedicated devices and the student ratio to machines is big” (Student 257)</td>
</tr>
<tr>
<td>Lack of ICT Skills</td>
<td>24</td>
<td>“Not very good computer” (Student 22), “Some of us are not computer literate so find ourselves left behind and slow in aspects concerning computer work” (Student 143)</td>
</tr>
<tr>
<td>Support</td>
<td>15</td>
<td>“The most challenging aspect is the shortage of materials to use and also lack of help on some occasions when needed” (Student 130)</td>
</tr>
<tr>
<td>Cost</td>
<td>2</td>
<td>“Staying online for the cost of mobile phones, accessing internet in case of no power, inability to access the ICT resources” (Student 53), “Communication cost and Capital to buy phones” (Student 105)</td>
</tr>
</tbody>
</table>

Although the occurrence of cost and increased workload were low in this study, their impact on CEL in this context is worth discussing. The cost for procuring computers is still high, making it difficult to meet the growing demand. 74.4% of the student in the study had access to shared computers but could not afford personal computers. Students have to rely on computer laboratory opening hours to book for computer access time. However, campus grounds have wireless internet installed to support students’ internet access 24/7. This then implies that there is need to institute student computer purchase loan schemes or avail low cost computers that are students can afford. Computer/internet access is crucial to drive CEL developments. 98.1% of the students in the study had personal mobile phones. An implication could be to explore avenues that will support affordable mobile phone pedagogies using basic functionalities to support CEL. In relation to perceived increased workload, it was observed that students were used to receiving information from lecturers and are not encouraged to getting involved in their learning process.

6. Conclusion

This paper aimed to explore and understand the current practices of CEL as an alternative learning approach. More specifically, the paper investigates and discusses the value derived and challenges encountered with the CEL approach in Uganda. In so doing the paper provides insight into both research and practice on aspects that are particularly important when implementing CEL in a DCC. This is so since delivery of innovative education that supports the development of cognitive skills, self-directed learning and research creates competitiveness in the global information society. The study established that CEL is one of the approaches that can have a positive impact on student learning, giving them opportunities to interact and share knowledge. However, it was evident from the study that learning and teaching methods are predominately traditional, with limited/no integration of eLearning. In addition there were inconsistencies in understanding the integration of technology into teaching and learning processes. As a result students’ possibility or willingness to adopt and use CEL was negatively affected. Future research therefore should be geared towards in-depth analysis and elaboration of factors that facilitate a holistic online learning environment. In so doing the major research question on how CEL can be effectively implemented to support students learning in a developing country context should be pursued.

References


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