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Design and Implementation of Online-Learning platform with a large class size. Case study at University of Energy and Natural Resources-Ghana.

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Abstract: An experimental use of web based platform to supplement and enhance the teaching and learning of the course UENR103–Computer Literacy and Information Technology at the University of Energy and Natural Resources, Sunyani-Ghana was carried out between Octobe - December, 2014 and also September–December, 2015 to a combined class of over 300 students in each academic year in the school of Natural Resources. The course was taught in a one-hour class, with an-hour lab sessions every week for each student. The face-to-face sessions were supplemented with course outline, lecture notes, presentation by lecturer, group discussions, group/individual assignments, laboratory manuals, quizzes, and online tutorial using the developed Learning Management Software called UENR103_toolkit. The laboratory sessions was basically done using UENR103_toolkit and sometimes the Google Classroom platform. This paper looks at the areas of application of online-Learning for large classes and how it was applied at the University of Energy and Natural Resources, Sunyani-Ghana UENR103 course, students and tutors view of the course, as well as experiences from its use.

Literature Review

Since the establishment of the University in 2012 the Information Technology Directorate and the department of Computer Science and Informatics is spearheading the Online-Learning initiative to enhance teaching and learning with appropriate use of Information and Communication Technologies (ICTs) at the University.The definition for Online-Learning used by the University is as follows: *"the proper organization of information and communication technologies (ICTs), for advancing student-oriented, active, open, and life-long teaching-learning processes".* This definition is inclusive, encompassing all forms of ICTs such as overhead and digital projectors, power point presentations, video conferencing and online learning, using the UENR103_toolkit, to name a few. During the past few years, the world has witnessed a phenomenal growth in ICTs. Development of new broadband communication services and convergence of telecommunication with computers have created numerous possibilities to use a variety of new technology tools for teaching and learning system. The integration of computers and communications offers unprecedented opportunities to the education systems with its capacity to integrate, enhance and interact with each other over a wide geographic distance in a meaningful way to achieve the learning objectives.

It has the potential to transform the nature and process of the learning environment and envision a new learning culture. Interactivity, flexibility and convenience have become the order of the day in the ICT supported environment. As we become increasingly supported by ICT, teaching and learning will not be the same as before. We will have to make use of the rich and exciting opportunities offered by the new technologies in education to reach our training goal and mission. One of the objectives of the present paper is to provide better understanding and appreciation of the role of ICT in teaching and learning system. Lucas & Hoffman (2000) quoted Moore & Kearsley (1996) as contending that the medium removes some of the less pleasant aspects of face-to-face conversations. Students can ask questions online without disrupting a class. For large classes, eLearning seems to be a solution where students can feel closer to the materials and lecture.

Larsen (2000) says one of the major benefits for large enrolment of courses is the help that can be provided for the 'administrative side' of a offering course. It provides a great help in assessment management. Some of the highlighted benefits of electronic submission of assessment materials include easy tracking, time stamped enforced deadlines and easy return to students (Douglas & McNamara 2002). The issue of students claiming they submitted scripts when they did not will be eliminated. This was another major problem faced in previous offerings of the course, and another motivation to use eLearning.

For large classes, eLearning seems to be a solution where students can feel closer to the materials and lecture. Furthermore, they have the opportunity to practice outside the laboratory hours. Students with "techno phobia" now have a chance to go over and over the materials till they are confident.

Methodology

The methodology used in the research was simple and concise .An extensive review of existing and current works related to the topics was done in order to acquaint ourselves with the current issues in the field and also do a good work. Analysis of previous models and online learning platforms was carried out to find out the drawbacks and if possible make the necessary suggestions. The model was developed which was later used to develop the software application called UNER_toolket. The toolkit was piloted using a class size of 300 students with 3 lecturers and one demonstrator. A questionnaire was design for the assessment of the toolkit which was done by students and lecturers who were selected purposefully. UNER_toolkit kept track of students' visits and activities on the Web.

Results

Students were also divided into groups to discuss on various applications of computers based on their laboratory group using the discussion forum. Each student was expected to post a minimum of 1 item to the discussion group. All students at least posted and commented on the platform. The table shows the details of postings done by the students.

Table.1

No. of Postings(Modules Item)	Frequency
1	70
2	30
3	80
4	70
5	50
Total	300

Self-Assessment Tests

The Self-Tests are designed as a set of about fifteen (15) multiple choice quizzes to be used after each module. Students are given immediate feedback on wrong and right answers. Self-tests are used to help the students know how well they have grasped the concepts. Table 2 shows that most of the students (91.4%) used the self-test less than four (4) times. There were no scheduled times to use the self-test. It was not compulsory. Students had to do it at their own convenience. This was probably not fully utilized due to lack of enough computing resources.

Table.2

Frequency	Percentage
0.00	22.9
1.00-2.00	52.4
3.00-4.00	16.1
5.00-6.00	4.9
7.00-8.00	2.3
9.00 and above	1.2

Discussion

Online-Learning is no auxiliary for what is done in normal classroom lectures but is a very useful support tool especially in managing large class size. The used of Online-Learning platform for the class did support the views in literature on the benefits found in literature about large classes. Some advantages it provided were based on the fact that activities are independent of time and place. This created greater freedom for students. Apart from during classes, they could log in any other time and examine their course and laboratory session as well as take part in any available online discussion.UENR_toolkit also provided the ability to track assignments submitted and assessed. It also provided a way of easy feedback for the students. Other advantages from using the course included more interaction with the students through email and online discussion. It was easy to manage students' assignments. There was also enough evidence that students felt it added value to the course. There was also a strong correlation between its use and overall course results.

References

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