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Technology Enabled Learning in Higher Education: A Case Study

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Abstract

This paper examines the use of educational technology in higher education with the idea of supplementing traditional classroom teaching with open educational resources, such as mobile apps and social messaging groups for collaborative learning. The course "Critical Thinking and Social Media Technology", was being taught using Open Educational Resources. This paper analyzes the data collected from a sample of 218 students who completed the course through OERs. The data was collected from six different disciplines over a period of three academic years both at undergraduate and post graduate level. The results showed that the idea of technology enabled learning is significant and is embraced by the students.

Keywords: Educational Technology, Higher Education, Massive Open Online Courses (MOOCs), Mobile Learning, Open Educational Resources (OERs).

Introduction

Education is the backbone of a cultured society. It is a system that enriches the mind, abilities and character of an individual and allows him to lead a meaningful and coherent life. The structure of education in the 21st Century has changed drastically. With the advent of the Communication Technology and the Internet, the word "Learning" is being given more emphasis in higher education. The pedagogy and methodology of imparting knowledge has changed the entire structure of traditional classroom based learning. The last few years have witnessed a paradigm shift from traditional learning to e-learning using methods like blended learning, flipped learning, virtual laboratories, Open Educational Resources, Massive Open Online Courses and Mobile learning.

The upgrading in technology is transforming the approach of the society in almost all segments of life. The low cost hardware, software and the advancement in communication channels have resulted in the availability of powerful gadgets at our doorstep. These gadgets are available to youngsters these days 24x7 and without much effort.

Technology can be used to transform young minds into creative thinkers and critical thinkers. It has been observed that when one is involved and occupied with the activities that one enjoys and loves to do, learning capacity is at its best. It is in this context that this research explores the integration of technologies with the traditional classroom environments in imparting higher education in India.

This paper documents the progression of three academic years since the academic year 2016 - 17, where a university course was prepared with the intention that traditional classroom teaching would be supplemented with technology enhanced study materials in the form of open educational resources, a mobile app and a social messaging group. The goal was to analyze the perception and acceptance level of the students for innovative teaching methods. The technology enhanced learning course developed could be very easily converted into a Massive Open Online Course (MOOC) later.

Literature Review

As per UNESCO, "Open Educational Resources (OER) are teaching, learning and research materials in any medium - digital or otherwise - that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with limited or no restrictions"(Guidelines for OER in Higher Education, 2015). It is high time the United Nations must include

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OER in its program like Millennium Development Goals and Education for All to promote open education resources as learning materials.

Weller (2014) in his support towards transformation in education laid the idea of the pedagogy of openness and connectedness using social learning applications which could comprise of group assignments, chat rooms, discussion forums, wikis and even blogs. Weller suggests benefit of all participants if every student contributes something.

However the quality of OER published is a concern and it was pointed out by Kortemeyer (2013). He claims that unlike publishing houses, OERs have a limitation in terms of quality control. This is because of the mostly nonexistent experienced editorial/publishing personnel. Thus quality control has to be given importance while developing OERs. According to Coffin (2012)OERs are supported by students because they are available and accessed at no cost. In addition the print copies can also be generated at moderate low cost. In contrast the commercial textbooks are very expensive and sometimes even unaffordable as in the case of books by foreign authors. But it is seen that textbooks are still cherished, as they are still purchased by students every semester.

Methodology

This paper talks about the course "Critical Thinking and Social Media Technology", which is offered as a generic elective course at undergraduate level, and is also being offered as a course in a few selected schools at postgraduate level in Graphic Era Hill University (GEHU), Dehradun, India. Students from different major subjects like English, Mathematics, Physics, Media & Mass Communication, and Computer Applications had an opportunity to opt for this subject as a generic elective. The subject is taught by the traditional classroom teaching method in the first semester of the program at both Dehradun and Bhimtal campuses of the University. The course has a six-credit workload at undergraduate level and four-credit workload at postgraduate level as per the guidelines of the University Grants Commission, India. This paper is based on primary data collected online from students who opted for this elective course, through three academic years. A questionnaire was planned in seven sections viz.

i. Personal details
ii. Opinions about OERs
iii. Opinions about educational technology
iv. Familiarity with mobile devices
v. Opinion about subject educational app
vi. Opinions about collaborations and future actions,
vii. Evaluation of education technology.

The questionnaire had 5-point Likert scale using strongly agree, agree, neither agree nor disagree, disagree and strongly disagree as the choices.

Objectives of the research

- To develop an Open Educational Resource for a raditional classroom course.
- To analyze the open educational resources developed in the process on the basis of the survey of the students who took this course.
- To study the effectiveness of the implementation of technology enhanced learning with traditional classroom teaching in higher education.
- To check the viability of the course as a model for converting traditional classroom courses into MOOCs.

Modus Operandi

UNESCO and Commonwealth of Learning (COL) have always been instrumental in providing guidelines on Open Educational Resources (OER) in Higher Education. The OER of the course, "Critical Thinking and Social Media Technology" was developed under the support and guidelines of COL. The course comprises of five learning units with each unit comprising of activities, assignments and assessments. The students were evaluated on the basis of class assessment at the end of each unit as well as mid-term examination and end-term examination. The OER developed is discussed below:

a) Text based study material :

The teaching learning material developed was divided

into sections such as course overview, course outcomes, time frame, study skills, links of additional online video resources, and details of the teaching resources, contents, unit outcomes, terminologies, study materials, activities, case study, tips, summary, assignments, assessments, and further readings. The complete MS-Word version of the course / learning material was made available on Oasis, which is COL's online institutional repository for learning resources. The study material was published online at http://oasis.col.org/handle/11599/2383.

One of the pre-requisites for any educational resources to be OER is that they must have an open license and in most cases the license used is by The Creative Commons. The publication was licensed under Creative Commons BY-SA 4.0 (CC BY 4.0, 2016) and can be freely downloaded for reuse and adaptation.

b) Short Videos on YouTube

In order to improve learning a total of ten short video lectures were created and uploaded on Commonwealth of Learning Channel of www.youtube.com. As videos not only help in better familiarity with the concepts but also rope in the human and visual aspect to e-learning, the short video lecture acts as an ideal means for quick revision as they are merely of five – nine minutes in duration.

c) Android App

There is an upward rise in the use of mobile technologies in youngsters which emphasizes on finding new ways to amplify the acceptance of mobile learning(Cheon, 2012). In order to explore this new dimension of learning an Android app "GEHUeGURU" was developed which contains all of the text based study material as well as links of all short videos on YouTube. Android was selected as the preferred platform so that it could reach the maximum students. The app was developed using Android Studio which is designed especially for Android development and is the official integrated development environment for Google' s Android operating system. After development the app "GEHUeGURU" has been uploaded on Google Play Store and has been downloaded more than 350 times. The app requires Android version 4.0.3 or upwards and can be downloaded and used on any Android platform of mobile phones, tablets etc.

d) Social messaging groups

In order to promote collaborative learning among the students opting for the elective course, separate social messaging groups for post graduate and under graduate students were created. WhatsApp was chosen as the preferred social messaging app because of its popularity and ease of use.

Analysis of participants

A total of 358 students got enrolled for this elective course in both the campuses of the University. All these students were invited to participate in the survey through the digital medium. A total of 218 responses were received, which s60.89% of the total targeted population. The gender distribution of the sample is shown in Table 1.

	Frequency	Percent
Female	94	43.10
Male	124	56.90
Total	218	100

TABLE1:Gender Distribution of the sample

The highest percentage of students who responded to the survey were of the age of 19 years (28%) followed by 18 years (27.5%). The lowest age group of respondents was 24 and 25 both with a percentage of 0.9%. 81.2% of the respondents were enrolled in the under graduate program while 18.8% were enrolled in the post graduate program. The percentage distribution of the participating students by Schools / Program in ascending order is given in Table 2 and Figure 1, while their distribution by academic year is given in Figure 2.

School / Departments	Percentage (%)
School of Humanities	10.56 %
School of Media & Mass Communication	17.59 %
School of Sciences	25.12 %
School of Computing	46.73 %

TABLE 2:Distribution of the Participating Students by Schools / Departments

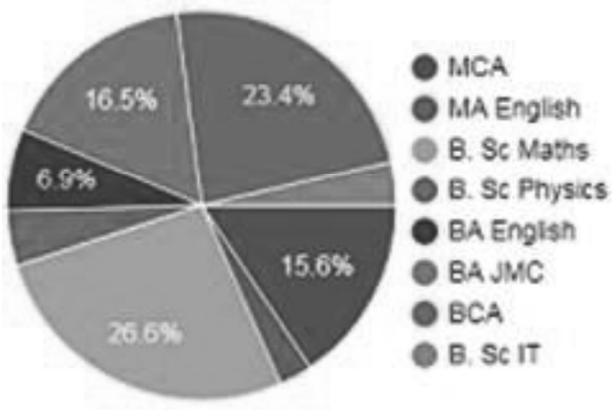

Figure 1: Distribution of the Participating Students Program wise

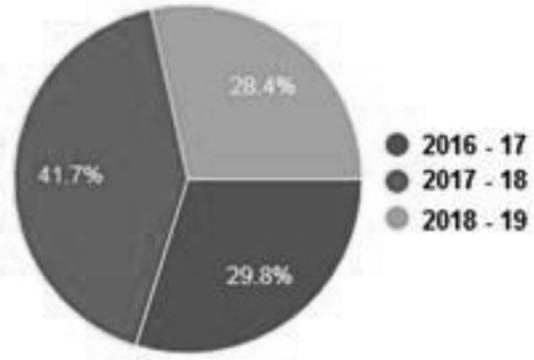

Figure 2: Distribution of the Participating Students by Academic Year

Results and Discussions

The analysis of the data collected through the questionnaire yielded few interesting results, some of which are discussed as follows:

Only 7.8% of the respondents had an unpaid educational loan, yet when it came to buying books only 44.5% respondents bought books every semester, while around 31.7% never bought any book and 19.7% seldom bought books. The result is shown in Figure 3.Besides, 14.7% of those who buy books spend only Rs. 500 per semester on books, while 17.9% spend around Rs. 1000 per semester on books and only 11% spend Rs 2000 or more on books per semester. These results tell the significance of OER, as the trend is not to buy books but consult online and open resource materials. Thus a professionally developed OER helps a student gain the concepts of the subject matter at either a minimal cost or at no cost.

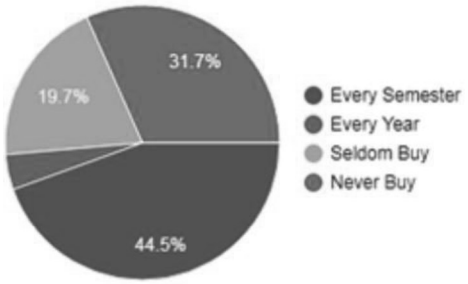

Figure 3: Buying necessary textbooks of courses

An important question that the respondents were asked was on the usefulness of OERs. Results showed that 39.4% strongly agreed and 51.4% agreed while 9.2% neither agreed nor disagreed. None of the respondent felt that OERs are not useful. Emphasizing again OERs of the course is very well accepted by students' community. The results are shown in Figure 4.

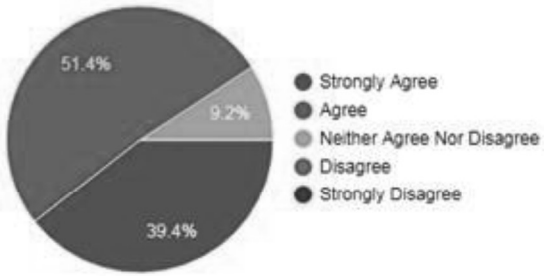

Figure 4: OER useful in higher education

When asked to evaluate the usefulness of the digital format of the OER course, 24.3% were strongly convinced and happy, 59.2% wereconvinced, 14.7% were neutral. On the other hand 1.8% were not convinced and happy with the digital format (Figure 5). As the OER of the course was developed on the OER format and guidelines of Commonwealth of Learning, it was very well received by students community at large.

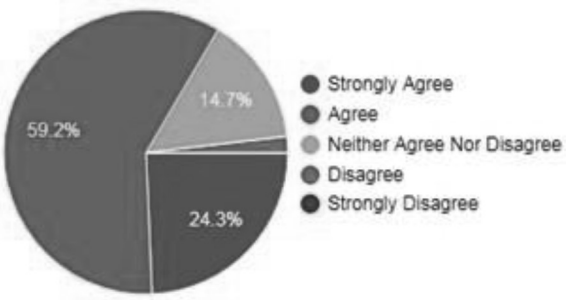

Figure 5: Convinced with the digital format of the OER course

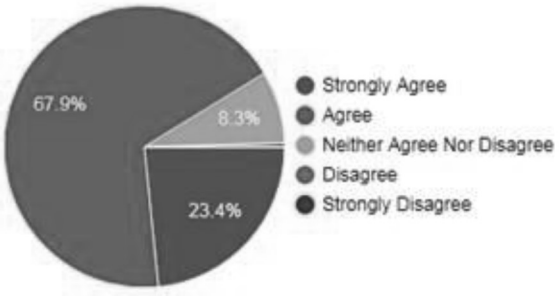

Figure 6: Leads to Constructive Learning

67.4% of the respondents agree that OER leads to constructive learning. None of them think that it is not useful for fruitful and constructive learning. The result is depicted in Figure 6.When asked whether OER is flexible for learning and about ease of access to resources anywhere and anytime, almost all the respondents agreed to this while 1.8% respondents disagreed (Figure 7). This is comprehensible as most of the respondents are from the hill state of Uttarakhand and there are still some connectivity issues in some interior hilly areas.

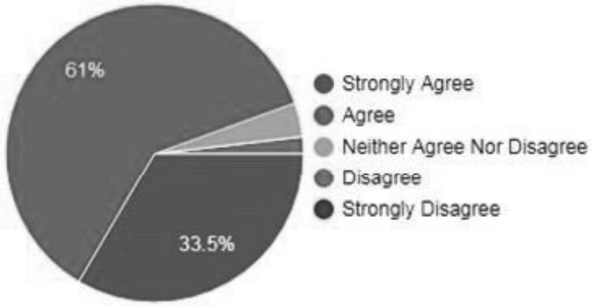

Figure 7: Flexibility and ease of access to resources anywhere and anytime.

94.5% agreed that technology enhanced learning is effective and useful for students, 5.5% neither agreed nor disagreed. As none disagreed, it can be established that technology helps learning and is useful for students of the present generation as they are also very tech-savvy.

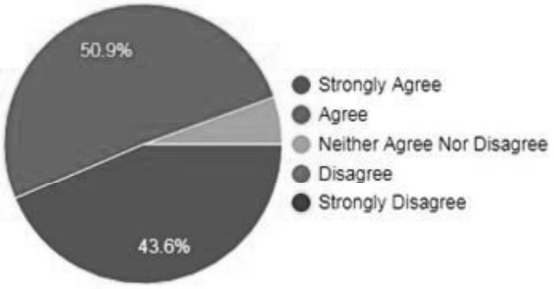

Figure 8: Technology enhanced learning is effective and useful for students.

73.4% respondents were of the opinion that technology enhanced learning improves the communication between teacher-student with just 8.7% disagreeing, while 17.9% said it has no it effect on teacher-student communication.(Figure 9).

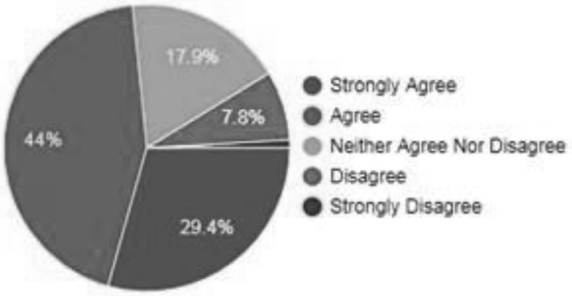

Figure 9: Technology enhanced learning improves the communication between teacher and student.

90.4 % of the respondents feel that supplementing technology enhanced learning with regular classroom teaching is an innovative initiative. 8.7% neither agreed nor disagreed while 0.9% disagreed.

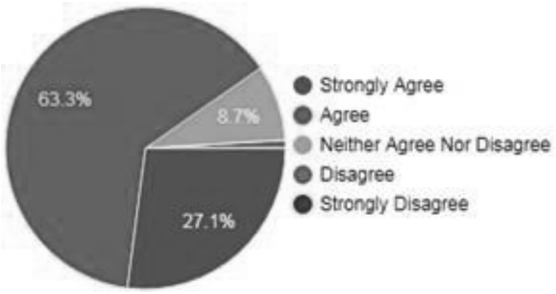

Figure 10: Supplementing technology enhanced learning with regular classroom teaching is an innovative initiative.

Conclusion

It is very evident from the survey conducted, that students not only accepted and adapted to OER but their response towards technology enabled learning was positive. This research submits to us the idea that OER supplemented with higher education would stimulate better imagination and understanding in young minds thereby making them lifelong learners ready for the future.

Acknowledgements

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