

Hybrid Learning: A Paradigm Shift

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Abstract:

The paper discusses the views of the students regarding different Hybrid Learning methods and the awareness of students regarding these methods. The paper also elucidates on the different factors influencing the motivation of students to attend lectures. An online survey was conducted on 300 students across 30 different colleges, majority of them being autonomous thus, having a variety of curriculum standards and assessment techniques, to collect information necessary to deduce conclusions regarding the above mentioned. The study indicates that the awareness of MOOCs, Outcome Based Education and Social learning is high among students though the level up-to which they're aware is limited. But the study shows that majority (i.e., around 88%) of students are unaware of the concepts like Flipped Classroom, Blended Learning and the use of Virtual Reality as a part of their curriculum. The study clearly shows that the one of the main reasons for motivation of students to attend classes are the teachers' content delivery and academic requirements. So, by making use of technology, self – learning methods and project activities in the curriculum and by providing training to teachers, interest in students to learn a course can be increased significantly and even ensuring a higher quality of content delivery by the course instructors.

Keywords: MOOCs, Blended Learning, Motivation, Self – Learning, Teachers Training.

Introduction

In this rapidly changing world, Engineering Education also has to adapt. In this context, there is little doubt that hybrid learning strategies, like

MOOCs, OBE, Social Learning, Blended Learning and usage of virtual reality, are highly desirable in terms of maximizing student engagement and learning achievement. This has become particularly significant since the advent of widening participation and open access whereby students join the engineering institution with a widely divergent range of qualifications, abilities, expectations, preferences and aspirations.

These hybrid learning strategies are only just starting to have a significant impact on the lives and experiences of main-campus, full-time students. Indeed, there is overwhelming evidence in the literature in terms of textbooks, journal papers and research done over several years, over several countries, over several different timelines, to show that hybrid learning strategies can bring important rewards for academic staff, students and institutions alike in terms of both increased quality and efficiency.

Despite these obvious benefits and the weight of scholarly evidence supporting them, the reality is that the Engineering Education industry as a whole is still at some distance from achieving widespread or even substantial adoption of hybrid learning strategies, particularly for the provision of courses to full-time, main-campus students.

Blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home.

Flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional

learning environment by delivering instructional content, often online, outside of the classroom. It moves activities, including those that may have traditionally been considered homework, into the classroom. In a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home and engage in concepts in the classroom with the guidance of a mentor.

Outcome-based education (OBE) is an educational theory that bases each part of an educational system around goals (outcomes). By the end of the educational experience, each student should have achieved the goal. There is no single specified style of teaching or assessment in OBE; instead, classes, opportunities, and assessments should all help students achieve the specified outcomes. The role of the faculty adapts into instructor, trainer, facilitator, and/or mentor based on the outcomes targeted. Internet gives students the opportunity to learn online. This is where the online learning portals like edX, Coursera and NPTEL are helpful for the students. Social Learning Platforms like Edmodo and Wiksate provide students a great platform for post – session discussions.

The main question that seems to arise is what motivates students to become part of these platforms. The only prerequisite that is required of a student is his/her self – interest and the main influence upon the self – interest is the teachers who should encourage the attitude. In order to wake up the self interest in students they should be aware/made aware of these concepts. Some critics say that MOOC's and social learning platforms are only for high achieving students and hence those students who are equipped with basic skills should take up these courses only to achieve these high standards or should make venture at them. Teachers have to arm the students with the basics of the course for them to venture through the course. Another criterion for students to develop interest would be the fatigue he/she might develop in a day's timetable.

Even though a student might be interested in doing activities out of his/her curriculum, he/she might not be able give enough time to do so.

From these above mentioned factors, it is evident that motivation is the major reason for a student to be successful either academically or technically. Now the focus should be shifted towards how to motivate the students.

The primary objective of this paper is to check the awareness level of students regarding the various hybrid learning techniques that are available with regard to Engineering education and to put forward the factors that would motivate a student to make these as a part of his/her learning process. It also aims at taking the opinion of students on how taking up online courses helps them improve their knowledge and their thinking regarding the subject.

Methodology:

A survey was conducted on 300 engineering students from over 30 different colleges. The Questionnaire for the survey was prepared during the period of July 2016 to August 2016 and the subsequent data gathering was done during the period of August 2016 to September 2016.

The questionnaire consists majorly of 2 parts. The first part is designed to collect the basic information from the students namely, their name, their email, the name of their college, year of study etc. The 2nd part consisted of the questions for the survey.

The questions making up the survey can be divided into two categories. The first category was designed to check the present teaching and learning methods followed by students and teachers in different colleges.

The second category was designed to check the awareness of students regarding the different available hybrid learning methods like flipped classroom, blended learning, Massive Open Online Courses (MOOCs), Outcome Based Education, Self – Learning, Social Learning Platforms and the use of Virtual reality/Augmented Reality as a part of learning process.

The second category also aimed at extracting the awareness level of students regarding the above techniques.

The questionnaire consisted of 23 questions in total. Out of these 23 questions two questions were aimed at gathering the interest level and the motivational factors of the students regarding the current Engineering education system.

Three questions aimed at extracting the teaching effectiveness of course instructors as viewed by students. Eight questions were aimed to recognize the benefits and demerits of current teaching learning

methods. Five questions targeted on asking the students about what could help them in reaching higher potentials by bringing about change in the current trends. Two questions were framed to check the awareness of students regarding the different hybrid learning techniques and their benefits. Two questions on checking the awareness level of students regarding these concepts were framed.

The online survey was conducted using Google Forms, a free-to-use website. Further, the collected data was compiled and appropriate conclusions were drawn from the data.

Results and Discussions:

The data analysis is carried out and is presented with the help of pie charts and bar graphs. A few essential graphs and pie charts are mentioned here.

The survey was conducted on 300 students from over 30 different colleges out of which 33.9% of them were 2nd year students, 28.8% of them were 3rd year students, 36.3% of them were final year students and only a meager 1% of them were 1st year students.

Study shows that majority of the students who participated in the survey were interested in engineering education at least moderately i.e., nearly 96% of the students. Study also confirms that the students feel that they can't reach their full potential as an engineer at the end of the engineering education with conventional teaching methods alone. In fact 62% of the students feel that they can't utilize their full potential when they are subjected to conventional teaching methods.

The survey indicates that nearly 47.6% of the students get motivated to attend classes only for academic requirements like attendance, marks, credits etc. But, the survey also shows that nearly 43.8% of the students get motivated to attend classes because of their interest in learning.

I get motivated to attend classes for

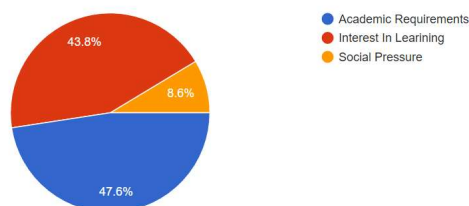


Fig.1 Motivational Factors

Another important conclusion obtained from the survey was that still a significant amount of students i.e., nearly 10% of the students attend classes only due to social pressure.

When students were questioned regarding their opinion about the existing lecture timetables in their college, nearly 40% of them replied that they were tightly loaded with break neck schedules, 52% of them replied that they were moderately loaded and only a small portion i.e., 8% of them replied that they were not at all loaded.

When students were asked about their opinion about which form of teaching process would actually help them the most, nearly 68% of them preferred to have a combination of "Chalk & Talk" Style of teaching together with the use of technology as a part of teaching process with more inclination towards the use of technology.

The survey indicates that the students feel that for them to have a better and a more effective understanding of the course content they should have a combination of lecture classes, numerical and concerned laboratories with more importance to be given to laboratories.

According to the study, nearly 15% of the students feel that the course instructors draw attention when they have good hold over the concept and communicate well, nearly 33% of the students feel that the course instructors draw attention when they provide real time examples regarding. Nearly 44% of the students feel that both these are necessary for a course instructor.

From the study it is evident that in majority of the colleges, the students feel that the most of the course instructors are not updated regularly i.e., nearly 64% of them. 23% of them feel that none of them are updated regularly and only 10% of them feel that course instructors are updated regularly.

Faculties are updated on a regular basis

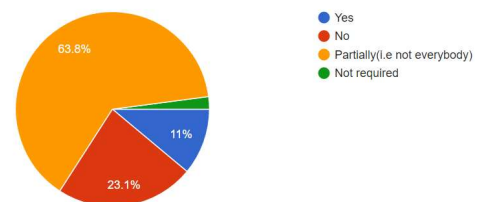


Fig. 2 Updating of Course Instructors

Study shows that nearly 91% of the students feel that a course instructor should have undergone an orientation programme regarding teaching - learning methods prior to teaching.

Faculties should have undergone an orientation programme prior to teaching

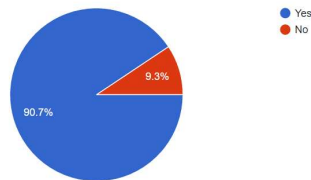


Fig.3 Orientation Programme for Course Instructor

The study shows that nearly 76% of the students feel that the courses they take as part of their engineering curriculum makes them think critically.

Analysis indicates that the awareness among students about hybrid learning methods, like Flipped classroom, Blended learning, use of Augmented reality/ Virtual reality as a part of their learning process, is too low when compared to their about the Massive Open Online Courses (MOOCs), Outcome Based Education and Social learning.

I am aware of the following concepts (multiple choices allowed)

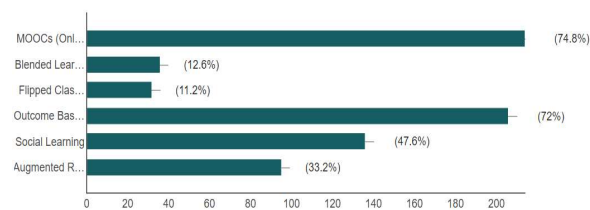


Fig.4 Awareness of Hybrid Learning Concepts

Even though the awareness about most of the hybrid learning methods is scarce, it is evident from the study that nearly 97% of the students are ready to accept these techniques as part of their curriculum.

From the study it is evident that nearly 48% of the students are unfamiliar with the relation between hybrid learning techniques and its effects on Outcome Based Education and nearly 43% of the students are familiar with the relation between hybrid learning techniques and its effects on Outcome Based Education.

From the study it is evident even though students are aware about the concept of Outcome Based

Education, their awareness level in the subject is very limited i.e., only 35% of the students are fully aware of the concept of Outcome Based Education (OBE) but nearly 58% have limited awareness about Outcome Based Education.

My awareness about the outcome based education is

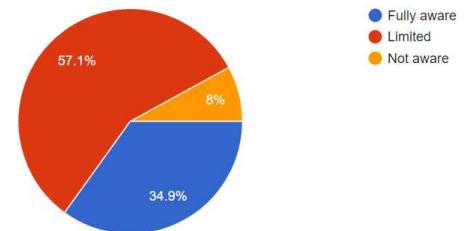


Fig.5 Awareness Level on OBE

One of the most important conclusions that were drawn from this survey was that nearly 70% of students preferred to have a self – learning component, like project work, software coding or any other forms of alternate assessment, for all of their courses.

Nearly 23% of students would like to have a self – learning component for most of their courses. It was found that nearly 76% of the students felt that they are provided with the tools to visualize various applications pertaining to the courses in their curriculum.

My opinion about self – learning is that, I

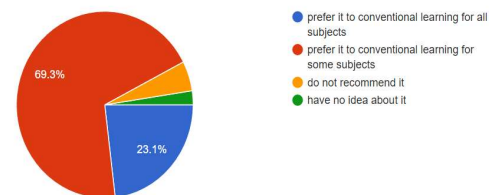


Fig.6 Opinion about Self – Learning

It was found that nearly 78% of the students felt that they had to think critically to perform well in the courses in their engineering curriculum.

It was found that nearly 24% of the students preferred to meet the course instructor regarding their queries, nearly 54% of them preferred the usage of social media for discussions regarding the curriculum beyond the classroom. It also shows that still a significant number of students i.e., nearly 18% of them prefer self - clarification regarding their doubts.

For discussions beyond the classroom, I prefer

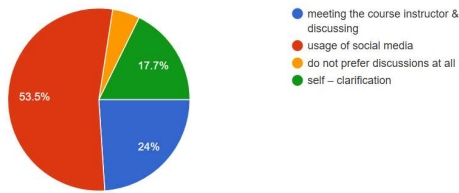


Fig.7 Medium for Discussions beyond classrooms

It was found that nearly 55% of the students felt that the assessment of a course can be made more effective by a combination of exam based and project based assessment techniques with an inclination more towards project based evaluation. More than 90% of the students think that online learning would help them to think rationally regarding curriculum.

Conclusion:

Due to the rigidity in the Indian education system, there has been a stalemate achieved. In order to bring about changes in the current education system, efforts are being made to include modern teaching and learning methods. To support this view, it can be observed that there is a recent increase in the number of autonomous colleges in the Indian education system. An attempt is made in this paper to propose an increase in the quality of education using Hybrid Learning Techniques. This paper tries to shed some light on the factors affecting the motivation of student to attend lectures and for them to be a part of hybrid learning techniques like online courses, social learning platforms, self – learning techniques, outcome based education and blended learning methods.

Hybrid Learning is a term used interchangeably with blended learning that incorporates both traditional and technology in education.

The responses obtained as discussed above are analyzed taking into account the students' daily schedule, course instructors' role and students' motivation which in turn affects students' interest in Hybrid learning.

It was seen that the most important factors that affect students' motivation to continue with the current teaching – learning process were teachers, mode of teaching, and the students' interest in learning. In order to improve students' motivation to learn, the survey suggests that by providing course instructors

with sufficient and effective formal trainings, they can present the course content more effectively and also they should be updated regularly with regard to the current happenings in their respective fields. Another implication of the paper is that steps can be in updating the current syllabus and by encouraging students to look for links between the various courses in their curriculum so that they can think critically in solving problems. Also it is seen that students prefer assessments based on projects.

As the time allotted per semester is insufficient for online learning and social learning methods to take effect, it should be made inherent in the course so that students are made aware of such platforms and marks/credits should be allotted on completing the respective courses.

As we have entered the digital era of learning, it is envisioned that hybrid learning would become an integral part of the current education system. In order for that to be a success, it is necessary to develop interest and motivation within students to start using MOOCs, Social learning platforms and become familiar with concepts like Flipped classroom and Blended learning. It is also the responsibility of students to work on themselves to motivate themselves to become part of the digital education revolution and improve students learning experience.

References:

- 1) Sharaj A P, Rohan Pattankar, S Kishore, Madhav Murthy (2016), Fatigue experienced by students in a day long class : A Survey on students, IJERAT, Special Volume 02 Issue 01
- 2) Nikolaos Antoniadis and Dimitrios Konetas, Correlation Between Awareness of Blended Learning Techniques and Participation Rate in E-Learning: A Case Study, iJAC
- 3) "Blended Learning (Staker / Horn – May 2012)"
- 4) Hybrid Learning and Education First International Conference, ICHL 2008 Hong Kong, China, August 13-15, 2008 Proceedings, 1-80
- 5) Hybrid Learning and Education Second International Conference, ICHL 2009 Macau, China, August 25-27, 2009 Proceedings, 1-70
- 6) Parag Chatterjee, Asoke Nath, Massive Open Online Courses (MOOCs) in Higher Education – Unleashing the Potential in India, 2nd IEEE International Conference on MOOC (2014)

- 7) Parag Chatterjee, Asoke Nath, Massive Open Online Courses (MOOCs) in Education – A Case Study in Indian Context and Vision to Ubiquitous Learning^{2nd} IEEE International Conference on MOOC (2014)