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Impact of Blended Learning on Engineering Students in Indian Context

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ABSTRACT: *The advancement of information technology results in the phenomenal changes in the wide area of education system. Blended learning is the potential upshot of advanced technology based learning scheme. The use of latest e-learning channels and technologies has started facilitating the teaching learning process. Computers and mobiles are the most widely used e-learning materials in the blended learning education system. The charm of blended learning approach lies in the method of adapting technology aided learning methods apart from the existing conventional learning methods. The negative aspects of traditional learning approach are covered by enhancing the overall learning as well as teaching experience with the use of modern technology. This study focuses on the impact of blended learning on the engineering students in our country. There are certain challenges in blended learning in India but in the current scenario of pandemic outbreak, it has a huge significance in our education system. The challenges which the society of our country is likely to face are due to the students from dissimilar backgrounds and their inflexibility, time unavailability and unawareness of using technology. Blended learning is a varied educational paradigm that offers addressing these challenges. The study proves the impact of blended learning in the engineering students of India that it leads to the improvement in the knowledge of their subject topics as well as the improvement in their overall achievement.*

KEYWORDS*:* Blended learning, face to face learning, Information technology, engineering students, learning impact

INTRODUCTION

Engineering education system in India holds huge planning to build a skilled society that can enjoy the fruits of technological skills in the present age. The most used innovative technology in the higher education field is the use of Information and Communication Technology (ICT). The huge increase in the use of ICT in engineering colleges shows the power of technology based teaching learning system in India. But it has to be set considering the circumstances of greater change in the economic, social and political fields in a developing country such as India. Blended learning is a new innovative technology used for the engineering students and it combines the advantages of traditional learning techniques and new e-learning techniques. Blended learning is a part of blended teaching and it is a process of learning by an individual and is considered as the

amalgamation of face to face formal and informal learning processes. The objective of this research is to examine and work out the quality of blended learning and how it works for the improvement in the achievements of students in learning their subjects. The literal meaning of the term blended learning is analyzed and demonstrated with the key concepts of learning and achievement. Blended learning is related with the achievements of students and it reaches to the empirical study within the multicultural scenario. It also generalizes the system of blended learning in the engineering students. In order to observe the impact of blended learning in the students, the quality of the process is studied. It could be analyzed that the learning achievement of engineering students has been enhanced after implementing the blended learning process.

WHAT IS BLENDED LEARNING AND WHY?

Blended learning is defined by most of the researchers as a combination of face to face learning system and online learning system by using information technology. (Grgurovic, 2011; Qiu, Chen, 2011; Staker, M. Horn, 2012; Tucker, 2012). The learning can be in various forms such as blended, mixed or hybrid ((Driscoll, 2002; Jones, 2006; Laster, 2004; Oliver and Trigwell, 2005; Osguthorpe and Graham, 2003). According to Finn and Bucceri, "When accessed in terms of information transfer and interaction methods blended learning is to combine the positive sides of online and conventional face to face learning methods. (Finn and Bucceri, 2004). The feature of traditional face to face learning is that it allows the instructors and the students meet together in a particular place and the learning happens in a synchronous method. It doesn't need any technological support. Whereas, the blended learning can consists of both real time interactions and also interactions that occur over extended period of time. Real time interaction needs the learners' active participation such as online discussion boards and other learning activities like chat platforms and presentations. During this recent days of Covid-19 pandemic breakout, blended learning are found more effective than the traditional face to face learning methods. In the blended learning method, the students can access the learning materials prepared by their instructors using the web technologies outside the class. Blended learning has its own advantages because the system combines both the aspects of classroom education and online education. The technique of blended learning provides instructors to convey their lectures and notes using creative and innovative methods.

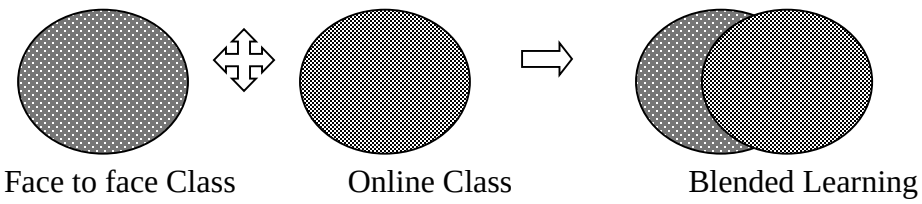

Figure 1: Concept of Blended Learning (Maryam,2012)

Figure 1 shows the concept of blended learning that it refers to a learning method which is an integration of different learning methods of face to face class and online class.

Advantages of Blended Learning

Blended learning for the engineering students in India shows a great increase in the enrollment. The learning system incorporates both traditional face to face delivery of lecture offline and the online techniques of learning in order to reduce the in class engaging time for students. It shows a tremendous advantage of learning from a convenient place and time of the student. It enhances the under enrolled programmes, helps to assign teaching load for teachers and improves the effectiveness. The students need not be present in the class to engage in their studies. The advantages of blending learning education system are:

- It can be accessed by everyone who needs to learn at their own pace.
- Learners seem to be more responsible for their learning and so it gives self motivation.
- Blended learning provides different types of learning resources which improves the competency and hence the confidence level of learners.
- The restrictions and rules of the learning campus are removed in case of blended learning and the learners have the liberty to choose their own decorum of learning.
- Speedy delivery of feedback helps the learners to evaluate themselves and to develop accordingly.

Blended Learning in Engineering Colleges

The engineering colleges in India follow a peculiar context of learning system comparing to that of other countries worldwide. Précis information about scale, organization and constraints is necessary to understand how online tools might be used to improve the quality of technical education in India. Engineering education in a developing country like India is very heterogeneous and wide enterprise. After 2009, the number students joining in engineering colleges increased from 1.1 to 1.6 million. After ten years of gap, there are more than 300 engineering colleges in India, approximately 4 million students are studying various in branches. However, many students are interested to join the engineering course yet forced to leave the dream because of their poor economic status. There are some serious drawbacks in the education system of engineering study. Students acquire a little mastery in their subjects because of the lack of quality in teaching methodology and the limited relevance of classroom performance. In many instances, students aim only at the short term goals rather than achieving practical knowledge. As a result of these problems, industry has largely given up the trust on many colleges about delivering quality technical education. It leads to the question whether this situation could be improved through innovative teaching and learning methodology such as blended learning and online education?

Massive Open Online Courses are the most prominent in the blended learning platforms which follows the academic discourse pedagogy in the US, Canada and Europe. However, In India, still many of the students are unaware of these platforms. Comparing to other countries the number of

students who enroll for MOOCs in India is very small as the portion of the elite population of the country. This study suggests that these types of platforms are mostly used by adult learners as continuing education system whereas a very small fraction of young learners are using the opportunity. Even the students of high ranked institutions like IIT might be aware of these MOOCs but the average students of other technical institutions are the least aware of such online teaching resources. The students and the faculty members should be given awareness about the high opportunities of blended learning and its impact on the technical education field.

Blended Language Learning

It has been trying to use the most modern methods of teaching at the level of higher education in technology in the form of blended learning. E-learning undoubtedly keeps its ways at the topmost level. There were only ICT teachers at the very beginning who used this type of learning technique but gradually the language tutors also joined in. Blended learning enables to use different kinds of methods in foreign language teaching. First of all the use of e learning techniques was difficult to language teachers because the possibility of oral communication without face to face contact in the classroom was hardly imaginable. Language teaching cannot be possible without student-teacher interactions, authentic listening and group activities. But in spite of these difficulties, the English Language teaching turned into the field of e-learning technological methods by creating new online courses in language learning in the form of blended learning. Many courses were designed online which support combined form of language learning. The engineering students must develop their communication skills in order to be placed in good companies and so it is obvious that special attention is given to the English language in their curriculum. The language learning courses through blended learning are based on the needs of both the teacher and the student and their attitude towards the modern technology.

The online courses to learn English language focus on teaching communicative English and Business English which are the main communicative tools for the engineering students. The main objective of these courses is to provide the opportunity to learn the language at their own pace. The courses are ideally suitable to be used as a self-study course. During the course the students themselves can concentrate on developing their listening, speaking, reading and writing skills (LSRW). These courses represent a self-contained didactical material which in a similar electronic form does not exist in the market. The online classes leave room for using many audio and video resources for improving the listening and speaking skills. The students in any corner of the world can communicate each other and there might be a chance to speak with a native speaker. Blended learning in language learning filed is a typical example for motivating and progressive learning system.

Strategies of Blended Learning

Many universities in India which provide technical education have been practicing outcome based education for the past years. This outcome based education (OBE) measures the results of the learning system by evaluating the outcome. The learning objects for a particular subject are

mapped on the basis of the course outcomes. The outcomes are measured in percentages of achievements. Having a measurable outcome is beneficial as it would be a fair and scientific method of evaluating students' performances. For blended learning, the course outcome can be mapped according to the learning objectives set to that particular subject. The main difference in how the subject is taught is that the lectures are not delivered to the students in the traditional classroom environment. The teacher should not be assigned the task of conducting lecture classes or display the notes on power point slides in the classroom. Instead of that in blended teaching, the notes prepared in power point slides and the lectures recorded as voice narration are converted into video formats and uploaded using a suitable platform like YouTube or institutional websites. Students are instructed to watch the video lectures, understand the lectures and to complete the assignments in the stipulated time. Students can interact with the instructors or with their peer team through the question forum that can be set for each lecture module. The assignments need the students to search more relevant details which are related to the blended learning topic using various sources in the internet. The assessment methods are innovative in the case of blended learning whereas the assessment methods in traditional learning are only written examinations. The notable point in this view is that the questions for the final written examination for blended learning subject should be separate from the questions for the non-blended learning subjects. Questions would be assessing students' ability to apply the knowledge they had learned from the blended learning method.

Impact of Blended Learning

Developing an effective blended learning environment needs effective resources to be accessed. Many institutions in India that have gone down find it is not affordable to them is a great challenge to implement such an environment. This can be overcome by proper planning if blended learning gradually and cost-effectively as the institutions can decide to deliver the whole course content or part of the course using blended approach according to the financial, human and technical resources.

The impact of blended learning on the students is more effective than traditional method of teaching. The students' participation in the interaction after the classroom sessions in the blended learning found more effective because students feel free to discuss their doubts and questions in the discussion forum through the technical resources. The interaction is found more favourable to the students since in the standard teaching the teacher write on the board and they take notes. The blended learning technique of listening to the video lecture and typing the notes directly on the computer was really interesting to the students. The study showed that the students were able to write their comments freely after attending the blended learning classes and most of the students were overjoyed with the interactive and interesting practical classes they could attend. There was a great positive impact on the students indicating all of them appreciated this different pedagogy to the traditional 'chalk and talk' method.

CONCLUSION

From the findings and discussion, it was found that the impact of blended learning on the engineering students in India is absolutely positive. The impact was much encouraging that the subject failure percentage among the students was gradually decreasing after using this technology. The average marks of the students were in an increasing graphical line when comparing with previous years. In addition to this, there was an increase in the mapping of learning outcomes by using the blended learning pedagogy. The students prefer online courses to the traditional classroom classes. The possibility to choose their place of study and time is really appreciated. The students are not restricted to study a constant lesson for a particular day as in the face to face learning, but they are free to consult their teacher online and communicating with them all the time. With these positive impacts, more opportunities can be given to the engineering students for wide spreading their knowledge by the implementation of blended learning.

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