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BLENDED LEARNING IS A JOURNEY NOT AN EVENT

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ABSTRACT

The purpose of this paper is to contribute to the discussion about the contribution of digitization by enhancing the learning outcomes to the students. Using digital technology, the paper reports continuous development and implementation of teaching-learning and assessment process. The authors find that it is advantageous to combine different learning approaches to promote awareness of learning and learning outcomes. It is also necessary to move away from teacher-centric to more learner-centric education. The focus should be on the experiential and lifelong learning practices. Practically, the authors designed and delivered blended course materials for engineering programs. Central focus of OBE is to increase the critical and creative thinking capability of learners. The enhancement of learning outcomes will help the students to face the challenges of employability. This will affect the quality of life and society for a bright future. ICT enabled teaching is introduced focusing mostly on blended approach. Direct assessment and indirect assessment through rubrics is setup. Course outcomes attainment is calculated by using automated excel sheet. The approach combines a range of methods, tools to monitor the learning progression.

Keywords: Pedagogy, OBE, Blended Learning, Course Outcome Attainment, Achievable Matrix

INTRODUCTION

The concept of *literate* means who can write name (put signature), whereas the concept of *educated* means one who has academic degree certificate. The primary question that arises is whether it brings any impact on the individual or societal life? The challenges of unemployment, moral and ethical values need to be addressed. This will surely impact the quality of life in international level, through individual, family, society, state and national level. This can only be done through education. Education helps in learning. So, it is very important to understand the meaning of *learning*. Learning is a two-way process of getting knowledge from outside to inside and inside to outside (Shulman, 1999). It is essential to discuss more about learning so that improper learning does not happen. Research findings by Shulman (1999) showed that improper learning happen due to *amnesia, fantasia and inertia*. *Amnesia* happens due to forgetting of things which the learner has learned some time back or doesn't remember at all the studied concepts. *Fantasia* occurs due to the misconceptions or for not understanding the concepts correctly. As a result, whatever the new learning takes place is based on the misconception. The last type of improper learning is *inertia*, where the learner has not actually forgotten what is learned, but it is just sitting ideal in the brain without recalling or using. Out of the three improper learning, fantasia is the most dangerous as new learning will not take place correctly and misconception will be passed on to others.

LITERATURE REVIEW

In recent years, outcome-based education has gained popularity across the globe for its potential to focus on the learning outcomes (Spady, 1994). The learning starts with the focus that on completion of a course or program what the student will be able to do. In outcome-based education the learning takes place according to Bloom's Taxonomy of Educational Objectives (Basril *et al.*, 2004). The taxonomy of educational objective is based on three learning domains such as cognitive, affective and psychomotor. In cognitive domain the skills are categorized as lower level (remembering, understanding & applying) and higher-level skill (analyzing, evaluating and designing). It is very crucial to inculcate these skills, while learning is taking place inside the class or outside the class. When learning takes place with lower level and higher-level skills then it becomes a lifelong learning. There are different learning styles available in literature (Kolb, 1984; Felder & Silverman, 1988). In this paper the discussion is based on blending of different existing learning approaches.

With the advancement of technology over past few decades information and communication technology has an important role to play due to its vast application in different areas of research including the field of

educational research. Communication can happen from one corner of the world to other within few seconds due to the advanced technology. In 2nd century 'Flipped class room' has gained its popularity due to the vast usage of electronic gadgets like laptop, tab, PC along with internet. Learning takes place simultaneously from different parts of the world at the same time. Distance is no longer a barrier as far as communication is concerned.

The basic two components to communicate information are verbal and visual. With the advancement of technology multimedia has the capability of combining audio and visual contents in different formats (Clark & Mayer, 2016; Mayer, 2001; Mayer, 2009). The idea behind combining audio and visual files is to convey the message with clarity. Usage of these multimedia files in learning environment has gained popularity in recent years. Students learn better with multimedia presentation than only text-based content (Fletcher & Tobias, 2005; Mayer, 2009). Because of the high potential of Information Technology new teaching methodologies and models are introduced in different levels of education. The popularity of technology has enabled incorporation of e-learning in higher education (Sun *et al.*, 2008).

Flipped class is also known as '21st century teaching skill'. Flipped classroom is not a new idea; the educators always struggle to make the student learn by themselves. The four pillars of Flipped classroom are Flexible Environment, Learning Culture, Intentional Content and Professional Educator (Flipped Learning Network, 2014). In the flipped classroom model, classwork and homework are switched or flipped. Instead of students listening to a lecture in class and then going home to work on assigned problems, they study the materials and view videos before coming to class. In the class the educator engages themselves in active learning by using case studies, labs, games etc. The accomplishment is observed better at home by listening to lecture, watching videos or going through the study materials. Hence, the term *flipped*, or *inverted classroom* is used. The better the student is prepared maximum learning can be achieved. There are many benefits obtained from the flipped class along with few challenges. Two major challenges of flipped class are reluctance from the student's side to change in the existing method of teaching and preparation of good quality audio, video study materials. The later one is a challenge for the educator to be up-to-date with the new technology, tools and to implement in preparing study materials it takes lot of time. The central theme of active learning is necessary. In any case the shift from existing system to a new system needs transition. The transitional approach between the traditional and flipped class is blended the mode of teaching.

The basic goal of education system is to increase the quality of education, while monitoring students' levels of success and to try to guide them accordingly. Improving student learning outcomes is a key indicator of enhancement of quality education, so that students acquire the skills needed for 21st century learning. These skills are creativity, communication, collaboration and critical thinking. The acquisition of 21st century skills requires the development of personalized learning which should cover knowledge and skill. Educators have a crucial role to play in understanding the student learning and in facilitating a teaching and learning program. Incorporation of information and communications technology (ICT) is fundamental for this kind of personalized learning needed for the improvement of quality education. Literature survey shows that instructional video podcasts have positive impact on student attitudes (Bolliger, Supanakorn, & Boggs, 2010; Fernandez, Simo & Sallan, 2009; Hill & Nelson, 2011; Holbrook & Dupont, 2010; Lonn & Teasley, 2009). For quantifying students' levels of success, it is necessary to set up the measurement and assessment process effectively. In this regard the purpose of measurement and assessment is to reveal students' levels of potential success, to increase the quality of education and to valid measurement tools.

This paper briefly describes the implementation of blended learning in professional education. This includes the teaching-learning process, different teaching modes and assessment process to evaluate the learning outcomes. Different approaches are combined to obtain the best output from the learners. The secret behind success is doing not planning. It is a constant improvement in the process to improve the quality of education. Blended learning offers us a new teaching model for case study teaching, incorporating activity, engaging students in learning with mastery over content that can be applied to solve real-world problems.

RESEARCH MEHODOLOGY

In traditional teaching classroom is teacher-centric. In the present scenario we have not completely ignored the traditional teaching method, as we believe that transition is required for any change. The best way to include technology in teaching is to begin with a blending of traditional method, pedagogy and technology. We will be discussing step by step how we have implemented the blended mode of teaching.

Step 1: Curriculum Design

There is a process to design the curriculum. Designing in curriculum is more than syllabus. Today's technology will be obsolete tomorrow, so it is important to collect information from various source like industry, alumni, academic, research and society regarding the possibility of technology requirement for future. Considering all the inputs the curriculum is designed by the faculties, which further undergoes review by the Board of Studies (BOS) members and academic council members of the institute. Once the process is complete the curriculum designed is an official document. The designing of curriculum is done considering all the courses contributing to a program. Course outcomes for a course are set before the curriculum is designed. Course Outcomes (COs) are designed in such a way that their contribution to the program outcomes is high, medium or low. (Sample COs for Engineering Chemistry course is given in supplementary material).

Step 2: Lesson Plan

Beginning of the academic session the faculty needs to prepare the plan of teaching, how they are going to cover the entire curriculum. It includes theory, practical, activities and tests as mentioned in the academic calendar.

Step 3: Delivery of Content

It is very important for the faculty to understand the background of the student and their level of understanding. Depending on these preliminary assessments, faculty handling the course needs to decide which method of delivery is appropriate for simple concept or critical concept. Following are the few content delivery methods which are used by the faculties. Some of these methods are traditional classroom teaching, information communication technology (ICT) based or it is a blend of traditional teaching and ICT based teaching. Following are the few methods which are incorporated in our teaching and learning process. There is no method which is superior to the other. It is the duty of the educator to decide which method to use depending on the complexity of the content, learner understands level and resources available.

- **Black/White Board teaching**

Though it is a very old method of teaching, still in the modern society it has not lost its importance. When the educator writes on the board and students are asked to write it makes a positive impact to think what they are writing.

- **Illustrations or Case studies**

The understanding of the concept is clear when the educator explains it through an example or real case study. Learner can visualize the practical implication of the concept.

- **Industrial visit**

Class room teaching gives the theoretical knowledge. Taking them to a factory, industry makes them understand how the theory has been implemented. It not only helps them to understand but they can easily remember the activities.

- **Presentation and videos**

Multimedia has power to combine the audio files, video files along with text. When concepts are taught through presentation, learns can visualize, listen and read. Simultaneously three effects are helping to understand the concept better. Without writing the student can focus more on the understanding part.

- **Games**

Teaching and learning is boring without having fun. It is good to have some extent of fun while learning. There are many tools available to create games for learning. For example, one of the popular games is Jeopardy labs. The game is designed in such a way that the student needs to formulate the question given the answer. In traditional classes always, the teacher asks the question but here the scenario is reverse. This helps the students to think what questions can be asked while studying.

- **Practical**

To strengthen the theoretical knowledge, the students can do experiments in laboratory. Some of the videos are prepared to go through prior to do the experiment, where students can learn what is expected to do in the laboratory. Manuals are also prepared for the experiments. This includes theory behind the experiment, procedure and calculation. As part of experiential learning students can do an experiment by their own without any guidance.

- **Study Materials**

Study materials are very important for students. Along with the textbook, handwritten scripts the materials are available in electronic formats. Different electronic formats are used such as pdf notes, power point presentation and videos.

- **Wiki spaces**

One of the free LMS used in wikispaces. Students find entire description about the course, different announcements, notes, presentations, videos along with certain documents. Seminar registration and course end survey is also done by providing link on the wikispaces (Sample questioner for course end survey is given in supplementary material). One needs to have internet connection to access wikispaces. After collecting the feedback educator does the analysis. The process is digitized which helps to save lot of time compared to the manual feedback. The process is not automated, needs more effort to make it happen.

- **Quiklrn**

An android based application designed specially to cater the needs of students. Student can download notes to their smart phones and organize it according to their own convenience. Options like highlighting the text, putting a tag, adding extra information from internet and many more are available. Recently this app has been used to take online quiz and valuation can be done automated or manually. Due to the increasing demand the app is now available on desktop in windows platform.

Lots of effort has been invested in preparing different study materials but its worth. To keep the students focused and learning interesting is a constant challenge for the educator. Educators need to prepare new study materials with new tools. This is one of the greatest challenges for the educator.

Step 4: Question Paper setting

Portions for different test/quiz are decided as per the lesson plan. In each question paper the marks distribution for each COs for different learning level is set according to Bloom's taxonomy level using Achievable matrix. Achievable matrix is a matrix designed at the beginning of the academic session along with lesson plan. In which the full mark is distributed among COs for the entire syllabus. From this distribution further distribution of CO marks for quiz/test is done. (Sample Achievable Matrix is given in supplementary material).

Step 5: Assessment Process

The assessment process in outcome-based education is different than the output-based education. In output-based education the grade is obtained by the student depending on the percentage of marks obtained in the exam. Measurement of learning outcomes along with grade is one of the challenges in OBE. For theory component after the exam/test is conducted for each student, the course outcome attainment (COA) is calculated. COA is calculated for each CO, which corresponds to different levels of learning in Bloom's Taxonomy. Similarly, for laboratory and assignment /seminar COA is calculated through rubrics. Rubrics are necessary where direct quantification of marks is not possible. Usage of technology has helped in the assessment process to be faster, accurate and smooth. Once the process is set and marks for including the output is ready. Storage of data, documentation for accreditation agency in the required format can be obtained. Incorporation of digitization in assessment process has made possible to make the necessary documents for the need of compliance along with their final grade. An automated simple excel sheet has been designed to calculate the final grade along with the CO attainment. The automated excel sheet can be customized for different courses.

Step 6: Action Plan

Output of assessment process is the beginning of teaching and learning process of next academic session. Depending on the CO attainment percentage the necessary actions are planned. The actions are planned to incorporate new teaching methodologies, to give more emphasis on the concepts pertaining to specific CO where the attainment is low and to fix the target value of CO attainment for the next academic session. Along with this if necessary to incorporate any modification in the assessment process is also taken care.

CONCLUSION

The insight gained from digitization of the course content over the past few years is that to promote learning awareness and skill improvement. We need to move away from traditional education, being teacher leads to be more student-centric and focused on lifelong learning practices. The focus is not to move towards completely student-centered learning, but we need to involve students as co-creators of the classroom to promote critical and creative thinking in the learning process. Thus, creating a balance between the traditional and ICT method of teaching may be advisable, depending on what we are trying to achieve with our teaching. With the advancement of technology electronic gadgets has taken priorities in the life of younger generation. It is crucial to use these gadget or technology as media for learning. The educators have an important role to guide the learners towards this drive. For which the educators need to learn the new technologies and keep up-to-date with the

subject domain knowledge. The educator must be flexible to learn and implement the new technology or tool. Incorporation of digitization in teaching has proved its potential but to make it possible the educator needs to pay high price in terms of time, flexibility and willingness to adapt new technologies. Most educators want to make a difference in students learning, and it is critical that we make a positive difference. Learning is a lifelong process, it is a journey for the educator and

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