

Challenges Associated with Flipped Classroom and Creation of E-Content in Education

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ABSTRACT

With the onset of globalization and the impact of ICT- Information and Communication Technology, there has been a paradigm shift in the mode of academic transactions in the field of education. Flipped classroom is a new pedagogical approach, which employs asynchronous academic resources and problems as homework and active learning, group-based problem-solving activities in the classroom. Educational content in an electronic form that is e-content is a product of e-learning. E-content is a summative broad term that consist of digital content that could be transmitted over a computer network with the aid of Information and Communication Technology. In this research, an attempt was made to incorporate Flipped classroom and e-content for F. Y. B.Sc. and S. Y. B.Sc. classes in Microbiology, and to identify and investigate the significant challenges associated with them. It was observed, that there is an initial dormant phase in which students take time to acclimatize to the Flipped classroom and different types of e-content resources. It was observed that the major challenges associated with Flipped classroom pedagogy and e-content creation comprise of access to technology, basic computer literacy, creation of student-centric, plagiarism free and appealing e-content, language barrier, traditional mindset coupled with arrangement of class and adequate supporting technical infrastructure. Adequate measures need to be considered in further research in order to mitigate the adverse impact of these challenges. In order to incorporate higher levels of learning as per Blooms taxonomy, and inculcate skills of critical thinking and self-regulated learning, the role of Flipped classroom and e-content creation seems to be promising with a variety of future prospects in education.

Keywords: Challenges, Flipped classroom, pedagogy, e-content.

INTRODUCTION

Education is the most important tool which has the ability to have an impact on the destiny of an individual as well as the whole nation. The right to education is a fundamental human right under the right to freedom (Alam & Halder, 2018). As per the 86th amendment in the Constitution of India, which was passed by the Parliament in 2002, under the Article 21A, education was made a fundamental right (Alam & Halder, 2018). India is a developing nation and one of the fastest growing global economy as one of the BRIC nations (Altbach, 2014). Education system in India, has always experienced a pragmatic impact of the ancient rich cultural heritage. On one side there is a rich content on ancient literature, humanities and Ayurveda, and on the other side there are some of the crucial challenges which have permeated the system of education in India. Challenges such as improvement in access and quality at all levels of education, increase in funds for higher education, improvement in literacy rates have been observed for a long time (Lall, 2005). There has always been emphasis on quality of higher education in India, which has also been many a times under investigation. There is a need to address these challenges in a holistic manner and consider the incorporation of Information and Communication Technology (ICT) based teaching learning pedagogies in order to compete globally.

Keeping into consideration the advancement in technology and globalization, it seems that, only with the assistance of ICT based teaching-learning tools, there could be a reasonable betterment in the education fraternity. Methods such as Flipped classroom and creation, use of e-content, holds a promising position in the current dynamic scenario. Rather than a traditional classroom situation where the concept is directly

introduced to the learner in the classroom and the resources are shared later, Flipped classroom has a totally different approach. In Flipped classroom, the related resources in the form of e-content are shared with the learner in advance and the classroom sessions are utilized for active learning.

E-content complements the educational purpose and works in a synergistic manner to facilitate student-centric learning. As the current generation of students have access to technology, Flipped classroom and e-content opens promising avenues for learning. Although the methods of Flipped classroom and creation of e-content looks promising, their use are also associated with certain challenges and their investigation was the underlying intention of this research.

Attempt was made to identify and investigate the different challenges faced by an instructor/ teacher as well as the students with respect to flipped classroom and e-content creation.

OBJECTIVES

- 1) To identify the challenges associated with Flipped classroom pedagogy and e-content creation.
- 2) To investigate the impact of challenges associated with Flipped classroom pedagogy and e-content creation on learning.

METHOD

Sample: 60 students from F. Y. B.Sc. and 43 students from S. Y. B.Sc. Microbiology class were considered. Learning Management system such as Edmodo was studied. Classes were created and students were invited to join the class using respective class codes. The link for F.Y.B.Sc. class <https://new.edmodo.com/groups/fybsc-microbiology-2019-2020-29775884/members>, (Fig: 1) Initially educational resources such as e-books and videos from YouTube under creative commons as well as videos which were self-created were uploaded so as to set the frame and familiarize the students with basic concepts of Microbiology. A Screen-castify content on Protein Biomolecules was created and uploaded on Edmodo class of F. Y. B.Sc. class and students were instructed to observe the content. Attempt was made to revise the concepts and consider deeper aspects of Proteins in the actual class. Similarly in S. Y. B.Sc. class, the link for the same <https://new.edmodo.com/groups/sybsc-microbiology-2019-2020-29739183/posts> (Fig:2) was created and basic e-books and YouTube videos on Chromatography under creative commons were uploaded and students were investigated to observe and prepare the initial content. Active learning in the form of discussion was planned for the class session. Also, an e-content using AZ Screen-recorder was created on Basic Mechanism of Enzyme and was uploaded on the S. Y. B.Sc. class as well as shared by WhatsApp. Students were instructed to observe and attempt a simple MCQ created on Google forms. The link of the Google form was shared with the students. The intention was to have a formative assessment.

RESULTS AND DISCUSSION: OBSERVATION AND CHALLENGES FACED

- 1) **Access to technology:** Although, it is considered that students have access to smartphones and Internet connectivity, in reality it cannot be generalized, it was observed that the access was in most of the cases associated with Wifi connectivity at their homes which limited the scope to observe e-content readily, if at all they are outside.
- 2) **Basic computer literacy:** Students come from diverse backgrounds and do not have equal basic computer literacy. There have been instances where certain students do not possess basic confidence of use of Gmail. It was observed in both the classes. When the classes were created on Edmodo and class code was shared, students faced sign-up issues. Most were not familiar about the Learning Management system. Even after instructing them to proceed via Gmail having College log in some could not sign-up faster.
- 3) **Nature of e-content:** When the videos from YouTube were screened two major challenges were observed. First was to check the content as per the understanding ability of the students. Care had to be taken to check that it was under Creative commons to avoid copyright issues. Another major challenge was to check the duration of the video. Attempt was made to select videos of shorter duration 3-4 minutes as over a period of time the attention span of current generation students has reduced and

revolves around 5-10 minutes(Bunce, Flens, Neiles, & States, 2010). Sometimes it is observed that when we proceed for advanced search using Filter option on YouTube, some of the significant content cannot be directly shared as they are not under Creative Commons. This also reduces the scope of available resources.

Instructor faces challenges associated with e-content creation. On one side where there is an ocean of information, it becomes challenging to scrutinize the authenticity of the available e-content and at the same time to assess if the content is available in public domain. Instructor should be familiar with copyright issues and avoid plagiarism in e-content creation. Instructor need to be familiar with installation of different applications in the smartphones and laptops/ desktops and upgrade as per the requirement.

- 4) **Language as a barrier:** Effective academic transactions need meaningful communication. It could be verbal face-to-face or in a blended mode of teaching and learning. It has been observed that students from vernacular languages find it difficult to understand and interpret in English. As most of the applications are in English, this might reduce the scope of resources for the learners.
- 5) **Flipped classroom associated challenges:** Instructor should be familiar with basic technical aspects of flipped classroom and should possess initial skills to implement Flipped classroom. (Zainuddin & Halili, 2016). Faculty need to consistently check and upgrade the status. It was observed in the S. Y. B.Sc. class, that when the content on Basic Mechanism of Enzyme was shared with the students as pre-class activity, only 50 % watched and responded by a test using Google Form in first 24 hours (Fig:3). Same was observed for F. Y. B.Sc. wherein 40 % had observed the e-content created on Protein Biomolecules in the first 24 hours. It becomes challenging to create or search for substantial e-content in the beginning for pre-class activities. Instructor need to invest time to customize the content and at the same time to cater to the diverse group of students. In a class all students do not possess equal cognitive skills, there could be slow learners and fast learners. In Flipped classroom, instructor need to facilitate and keep ready substantial and appealing, plagiarism free e-content so that the learners have access to it as and when required. All the learners may not have equal access to technological resources and may lag behind.
 - a) **Maintenance of discipline in class:** It was observed in both the classes that the students who had no exposure to Flipped blended mode were not mentally prepared and there were possibilities of disturbance and deviations from the expected outcomes.
 - b) **Constant need to create a good e-content:** Effective and student centric e-content and pre-class activities are the hallmarks of Flipped classroom pedagogy, without which the purpose of learning is not fulfilled.
 - c) **Traditional mindset:** The traditional structure of the classroom where the learners are instructed to sit in rows and in a rigid manner could be a challenge for an active class session, as Flipped classroom demands Collaborative learning strategies, wherein learners learn better and faster when are made to sit in a group of 5-6 members. This in turn promotes self-regulated learning (SRL) (Winne, 2015).
 - d) **Availability of supporting infrastructure:** Creation of e-content is dependent on the availability of trained technical assistance and expertise. Lack of infrastructure and technical assistance would be detrimental for execution of active learning pedagogies.



Fig-1: Screenshot of F. Y. B.Sc. class on Edmodo



Fig-2: Screenshot of S. Y. B.Sc. class on Edmodo.

DATA ANALYSIS

Enzymes accelerate the rate of a biochemical reaction by _____	0 / 2	1 / 2	2 / 2	Grand Total
increasing activation energy	2	2		4
lowering activation energy		6	15	21
no role of activation energy		1		1
Grand Total	2	9	15	26

Fig-3: Pivot table for data of one question of test by Google form for S. Y. B.Sc. class

CONCLUSION

It has been observed that Flipped classroom and e-content creation are promising methods to inculcate and promote self-regulated learning among the learners (Winne, 2015). A combination of Flipped classroom and student-centric, appealing and comprehensive e-content would enhance the active learning only when the challenges associated with each method have been taken into consideration and worked upon to mitigate their adverse impact.

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