"To Study the Barriers in Implementing Flipped Classroom: A Review of Selected Literature."

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Abstract

A sound pedagogical approach aims at building an active learning environment in the classroom as well as outside the classroom for the learner. In an active classroom learner, engagement plays a pivotal role in constructing and collaborating knowledge. One such approach is flipped classroom where conventional lectures and homework are inverted or reversed, and learners get an opportunity to access learning resources and prepare themselves before coming to the class, the learners get ample of time in the classroom in doing projects, problem-solving and more in-depth understanding of content by collaborative and cooperative learning. But recent studies suggest obstacles in implementing the flipped classroom model in the traditional classroom, this study reviews the literature and analyzes the barriers in implementing flipped classroom in the conventional environment, and it also gives suggestions for overcoming barriers in implementing flipped classroom.

Keywords: Flipped Classroom, Pedagogy, Conventional Classroom, Information and Communication Technology, Learning Management System.

In the 21st century with rapid development in science and technology brought myriads of opportunities to the learner to get their education, but it also brought problems in dropout due to lack of interest and engagement in the classrooms. Thus a new instructional paradigm 'flipped classroom' was introduced by Jonathan Bergmann and Aaron Samms in the year 2007. In their book, (Bergmann & Sams, 2012), Aaron Sams observes that the learners need a teacher in the classroom physically when they get stuck in the problem, and they need individual help. But in reality teacher gets hardly any time to help learners in the classroom, this can be a problem and solved by recording all the lectures and learners view the videos as homework, and teachers get time to help learners in solving problems and helping them to understand concepts better.

What is a conventional classroom?

In a conventional classroom, the teacher is actively involved in the teaching-learning process; they provide information to the students and hardly give individualized attention to the learners. In the conventional classroom, content taught in the classroom and homework is given to the learner to provide some practice of content imparted in the classroom (Olga Bedrina, n.d.). Thus in a conventional class, teachers are unable to engage learners in the activities, because they do not get enough time to engage learners in completing projects, solve problems and develop a deeper understanding of the concepts. These problems in conventional classroom solved with the help of a flipped classroom.

What is a flipped classroom?

According to (Bergmann & Sams, 2012), the concept of a flipped classroom is that, activities and teaching which are conventionally done in the classroom are completed at home, and those activities and teaching that are done as homework are completed in the classroom. As cited in (Lucy Santos, Green Banas & Perkins, 2017), the conventional class based on the delivery of content in the form of lectures, where learners listen to lectures passively, but in a flipped classroom learners are more active and collaborate in the teaching-learning process during the class time. In the flipped classroom, learners get an opportunity to create knowledge through collaboration with their peers, and this fosters creativity and critical thinking among the learners. As observed by (Lucy Santos, Green Banas & Perkins, 2017), in a flipped classroom learners are engaged in the hands-on activities such as projects, field activities, problem-solving, experiential learning and homework to be completed in the classroom.

According to Lage et al., (as cited in Bishop & Verleger, 2013), the flipped classroom or inverted classroom is defined as "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa." (Bishop & Verleger, 2013) Defines, "the flipped classroom is a teaching-learning technique consisting of two major parts, the peer and group learning activities which takes place inside the classroom, and self-learning based on the computer and Internet." The Flipped classroom centered on the sound pedagogical and psychological theories, (Bishop & Verleger, 2013), urges that implementing flipped classroom model in the education system is justified on the theories on learner-centered teaching and learning given by Piaget (1967) and Vygotsky (1978). According to Foot and

Howe (as cited in Bishop & Verleger, 2013), in flipped classroom model teaching and learning in the classroom is based on the pedagogy of peer-assisted learning. In the classroom, learners construct knowledge which based on the constructivism and collaborative learning given by Piaget's theory of cognitive conflict, further cooperative learning in the flipped classroom based on the Vygotsky's theory of the zone of proximal development.

According to (Bergmann & Sams, 2012), in the conventional classroom, learners were given activities as a homework, which are new to them and hence their concepts are not clear and they face problems in completing homework. In the classroom teacher has to spend time in solving problems faced by the learners during activities given to them as homework and remaining time of the class allotted to the independent practice, classroom teaching or laboratory work. Further (Bergmann & Sams, 2012), observed that in the flipped classroom model, the time restructured. The learner provided with video lecture and content as a homework activity these videos can be view at their home at their own pace, and get prepared before coming to the class. In the class, learners can solve their problems and ask difficulties faced while watching videos, thus reduces time in clearing concepts and addressing challenges of the learners. The remaining time is used in the classroom for more extensive hands-on activities and giving more learning experiences to the learner (Bergmann & Sams, 2012). In implementing the flipped classroom, parents should inform about this model, and they should be made aware of the benefits of the flipped classroom for their children. (Bergmann & Sams, 2012) express their views about training learners in interacting with content and teaching materials available for them. (Bergmann & Sams, 2012)

Further discussed that in a flipped classroom, lectures are given to the students in the form of videos so that they can view it at home and prepare themselves for the class. Learners are trained to use technology so that they can utilize in learning content, and the pause button can be used to learn according to the abilities and pace of the learners. Learners can be trained in note taking, asking interesting questions, and summarizing the content. (Bergmann & Sams, 2012), mention classroom setup, where students have to face in the center so that they can focus in the center like a setup of a kindergarten classroom. In the flipped classroom, the designed is around learning and not the teacher presentation. In the flipped classroom, the SMART boards are kept at the side of the and not at the front of the room. The SMART boards used as an interactive tool for

learning, in the flipped classroom, students use online simulation in science, collaborate, and communicate with the help of web tools. Students get an opportunity to manage their time in the flipped classroom due to flexibility in mastering content. Flipped classroom encourages collaborative and cooperative learning, which develops team spirit among the learners.

The objective of the study

The objective of this study is to find the barriers to implementing the flipped classroom model (Baig, 2019a). Following are the objectives of this study;

- To identify the literature published on the flipped classroom.

- To identify the literature published on barriers in implementing the flipped classroom.

- To discover the literature published on flipped classroom and barriers in implementing the flipped classroom model.

- To find the remedy to the barriers in implementing flipped classroom.

The method used in the study

In this study, the published literature is reviewed and analyzed from the database of open educational resources and websites (Baig, 2019b). In this study directories and repositories to investigate the barriers in implementing the flipped classroom model, the repositories and directories used in the study are Social Science Research Network (SSRN), Google Scholar and Directory of Open Educational Research (DOAJ). The following combinations of keywords were used in the study, "Flipped Classroom," "Traditional Classroom," "Barriers in Implementing Flipped Classroom," and "Remedy for Flipped Classroom."

Barriers in implementing the flipped classroom

Learners in the 21st century are good at handling digital devices, and they grew up with smart devices, Internet, Social Networking Sites (S.N.S.), and YouTube. Learners solve problems with the help of Google when they face problems and difficulties in their homework. But in some schools, colleges, universities, and homes smart devices and digital equipment's are not allowed to use; thus learners face problems in using technology judiciously, thus banning of the devices bring obstacles in implementing flipped classroom in some schools, colleges, and universities. According to a study by (Li, 2018), the low range of network and

absence of WIFI availability attributes to the barriers in implementing flipped classroom in the schools and colleges. Further in their study (Li, 2018), finds that files and documents are incompatible to the devices and their software, the study materials provided to the learners are in the mp3 or mp4 format, but most of the smartphones are unable to open this format. In schools there is a shortage of integrated communication platform for teachers and students to interact and disseminate information, they have to use different web tools and plugins to interact and simultaneously use different teaching and learning tools. (Li, 2018) has found that digital illiteracy among the teachers and learners as one of the obstacles in implementing flipped classroom successfully in the schools. The results obtained by (Jesurasa, Mackenzie, Jordan, & Goyder, 2017), suggests that there are barriers in engaging in teaching and learning perceived by the teacher and learners in the flipped classroom. In a flipped classroom there are students with diverse abilities; thus each one has its style of learning, but in a flipped classroom the course is designed with limited methodologies, approaches and learning styles; thus some learners with different learning styles are not able to engage with the design of the flipped classroom. (Eichler & Peeples, 2016), conducted an important study showing drawback of flipped classroom model, the drawback in a flipped classroom related with the trust in completing assignments, homework and activities independently by the learners, if a student does not complete these activities successfully then it will have a direct effect in attaining the desired learning objectives. As cited in (Eichler & Peeples, 2016), the teachers are reluctant to change their teaching methods and styles, which has a negative effect on the engagement of the learners and their assessments. The findings by (Eichler & Peeples, 2016), also suggests that the active learning intervention provided in the lecture may not have much impact in regards to long term learning. (Arnold-Garza, 2014) the study provided an overview of inequalities in accessing flipped classroom materials online, the technology used in accessing, communicating, and disseminating information in the flipped classroom may not be available in the homes of disadvantaged learners. But (Bergmann & Sams, 2012), contend that the disadvantaged learners who are not having Internet or low Internet access can be provided with the offline materials such as CD-ROM and Flash Drive to view teaching and learning materials. (McLaughlin et al., 2013) provides information with regard to learners engagement in the flipped classroom, the self-learning materials are suitable for the learners who are better in reflecting content and comfortable in learning through self-learning materials but there are learners whose learning do

not get enhance through technique of pair and share, these students are not having confidence in answering the questions. (Wang, 2017), conducted an important study on barriers in the flipped classroom; the limited resources learners do not get an opportunity to access technology necessary in the implementation of the flipped classroom. In some school trained and digital literate teachers are not available, teachers don't have time, resources, and technical training to conduct flipped classroom. According to (Wang, 2017), there is a misconception among the teachers regarding the technology-based pedagogy, and the teachers have a blind belief about flipped classrooms that they are not much effective as compared to the conventional methods. In conventional teaching, teachers well acquainted with the roles, behavior, strategies, and environment of the conventional classroom, the introduction of the flipped classroom may not be much comfortable for some teachers. Teachers who are not having skills in computer and Information and Communication Technology (I.C.T.) lacks self-confidence, and they feel anxious about their fear of handling I.C.T. types of equipment. (Kelly E. Snowden, 2012), identifies major barriers to technology in integrating into the flipped classroom, in their review of published literature. In most of the schools and colleges in the availability of resources also hinders in integrating technology into the flipped classroom, time is another barrier which is required to enhance and learn innovative technology, skills, and pedagogy. In schools, there is a lack of infrastructure and technical support; hence, teachers face difficulty in integrating technology into educational settings.

Suggestions for implementing a successful flipped classroom

As (Wang, 2017), the study revealed that flipped classroom could successfully implement by enhancing the capacity of teachers and their professional development. According to Marshall (as cited in Wang, 2017), the professional development of the teacher should not be designed to acquaint teachers with the new technologies, but rather it should justify the necessity of paradigm shift in pedagogy. To develop capacity and professional development of teacher, the institute or school should provide hands-on experience in technology and pedagogy through the seminar, symposia, group discussions, and workshops. (Kelly E. Snowden, 2012) Says that the teacher's belief and attitude towards technology can be changed by providing an opportunity in hands-on experiences with innovative technology and pedagogy, showing benefits of technology, and making them believe that the change to pedagogy is worth the extra efforts and time. Implementation of pedagogy based on the technology requires the budget to purchase Hardware and Software,

which does not make such type of teaching methods cost-effective; thus it is necessary to bring down the coast of technology for the successful implementation of the flipped classroom. The reduction in the cost is possible by using free open source software into the educational system; similarly, the price in accessing and disseminating information can reduce by using offline materials. In their study, (Bergmann & Sams, 2012), contend that the disadvantaged learners who are not having Internet or low Internet access can be provided with offline materials such as CD-ROM and Flash Drive to view teaching and learning materials. Integrating flipped classroom in an educational setting requires myriads of software for communicating, collaborating, and creating knowledge; thus teacher and learner has to set up and install software into the system. This barrier can remove by using the Learning Management System (L.M.S.) into an educational setting, in L.M.S., there are myriads of software which can use for collaboration, communication, and creation of information. In schools there is a shortage of integrated communication platform for teachers and students to interact and disseminate information, they have to use different web tools and plugins to communicate and simultaneously use different teaching and learning tools. Judicious use technology can stop students from getting addicted to technology, and there are software and hardware which keeps learners safe from the malicious content of the Internet. There are features in the smartphones which alert parents about screen time spend by the learners and the apps used by the learners, thus reducing the threats of technology. The results obtained by (Jesurasa et al., 2017), shows that there are barriers in engaging learners in the flipped classroom. As (Baig, 2011), the study revealed that engagements of learners mostly depend on the Instructional Design by the content creator, thus sound Instructional designing helps learners in engaging in the flipped classroom, thus to motivate learners awards, badges and roles should be included in the flipped classroom. Further appropriate instructional designing helps learners with different abilities to enhance their learning according to their style of learning.

Findings and Conclusions

The conclusions of the analysis of various research suggest that the flipped classroom provides an environment where active learning is possible through collaboration, cooperation, and engagement of the learners in the conducive settings. In the conventional class, the teaching process and syllabus requires too many hours to complete the task; thus teacher gets hardly any time to solve learner problem, they cannot give

much time to practice problems in a classroom, these problems solved with the advent of the pedagogy of flipped classroom. In the flipped classroom, lectures and homework are inverted or reversed, and learners get an opportunity to access learning resources and prepare themselves before coming to the class. The learners get ample time in the classroom in doing projects, problem-solving, and more in-depth understanding of content by collaborative and cooperative learning. But from analysis from research studies suggests that there are some obstacles in implementing flipped classroom in the present educational settings. Flipped classroom model based on the pedagogy of I.C.T., thus there are barriers in implementing flipped classroom, which is mostly related to I.C.T., based teaching-learning methods. The flipped classroom based on sound psychology and pedagogical theories; therefore, most of the software used in communicating and collaborating information with the teachers and peer members. Thus issues related to the compatibility of the software and cost of software arise while implementing flipped classroom, but these issues can solve by using Free and Open Source Compatible software in the educational setup. Learners have a learning disability and different styles of learning thus issues related with motivation, interest, and engagement of learners in the flipped classroom are obstacles in implementing flipped classroom, but sound instructional design and interactive content help in removing these barriers. The obstacle in implementing flipped classroom is the attitude of the teacher towards I.C.T., and the essential skills required in I.C.T., for implementing flipped classroom in the schools and colleges. But these obstacles can be removed by appropriate training and professional development of the teachers by conducting seminars, symposia, group discussions, and workshops.

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