FLIPPED CLASSROOM: A WAY TO TRANSFORM THE TEACHING-LEARNING PROCESS

Dr. Navitha. S. Nair
Assistant Professor, Indian Institute of Teacher Education, Gujarat
***Corresponding Author-* Dr. Navitha. S. Nair**
Email- navitha19s@gmail.com

Abstract

Integrating technology in education, specifically multimedia fosters educators to create blended learning environments and leverage innovative digitalized tools for formative and summative assessments. Flipped classroom is one such kind of pedagogical approach in which a dynamic learning environment is created in a classroom where the teachers act as mentors or facilitators to guide the students in applying concepts. To put it in another way, flipped classroom learning ensures that learners are actively engaged in the teaching-learning process in contrast to traditional classroom learning. In inverted classroom learning, before classroom instruction students complete the lower level of cognitive work. During classroom instruction, learners engage with peers and teachers which gradually helps them to develop higher-order thinking abilities. In this paper, the author attempts to construe flipped learning as a constructive approach with the help of a theoretical framework. Also, sheds light on the effectiveness and the pedagogical practices of the flipped classroom by reviewing the research works.

Keywords: *Multimedia, flipped classroom, higher order thinking, constructive approach*

Introduction

Learners need to develop a set of abilities to face the challenges offered by the current information and technological era. Learning skills, literacy skills, and life skills are the three types of skills the 21st-century demands from learners. Like how the proliferation of technology has created an impact on business and market fields a similar effect has been witnessed in the field of education as well. Attaining quality education via the integration of technology is the prime concern of contemporary education which is in congruence with 21st-century skills. As a result, a substantial increase in internet-based technologies enhancing instructions in the field of education has been observed. William rightly stated that "electronic learning environments and online courses are generated where intranets, websites and computer-mediated communication are used by educational institutions" (2002, as cited in Uzunboylu & Karagozlu, 2015, p. 143). Nowadays, learners are getting access to both online and offline videos and lectures from top-level universities on YouTube and Facebook. Thus, the digital media act as a tool to impart education which influences learners more than the traditional one. The ongoing pandemic is an excellent example of how learners across the world cope with digital platforms or virtual education. In this digital society, teachers utilize technology as a medium for classroom instruction and give opportunities to learners for knowledge construction which makes learning an interactive process. It was rightly pointed out by Chein (2012) that gaining knowledge from digital media enhances learners' thinking-ability and problem-solving skills. In a nutshell, the

intention of integrating technologies in education is not only to prepare learners for their careers but also to make them technologically literate.

The radical transformation in education that we observe in this century is not new, as it began with the usage of instructional videos in distance learning and also with the popularization of Massive Open Online Courses (MOOCs). The term that gets along with these is blended learning where a comprehensive learning experience has been offered to the learners via two modalities. One is online materials and the other is face-to-face instructions. Mostly in ICT-enabled classrooms, knowledge dissemination these days happens through blended mode. These two modalities must work in a continuum to provide an enriched learning environment to the learners. According to Singh (2003), "blended learning is a learning approach that combines several learning tools such as electronic performance support systems, web-based courses and real-time collaboration software with face-to-face classroom".

An instructional strategy that signifies extensive use of technology along with face-to-face teaching, which is a type and a delivery mode of blended learning is flipping the classroom. The flipped classroom is also called as "inverted classroom or flip or flipped education or flipped learning" (Arnold-Garza, 2014, pp.8; Sharma, 2018, pp. 165). This conceptual paper has focused on two objectives: Firstly, intends to provide an in-depth understanding of flipped learning as a constructive approach using a theoretical framework; Secondly, looked at a few research works to understand the effectiveness of flipped classroom learning. Finally, the pedagogical practices that can be employed in a flipped classroom will be discussed.

Conceptualizing the concept of flipped learning

Flipped classroom, an active learning environment, where the instructors share the pre-determined content digitally outside the classroom, and "related content is also taught through this outside platform asynchronously" (Bergmann & Sams, 2012, as cited in Cabi, E., 2018, p. 203). Digital resources like interactive videos, podcasts, web-based modules, video lectures, e-books, etc. act as means for flipped learning. In the flipped classroom, learning happens through classroom activities and tasks inside the class which facilitates the learners to internalize the content.

This internalization happens in a collaborative learning environment. It was asserted by Toto and Nguyen (2008) that "inside the classroom, active, collaborative, and interactive problem-solving activities and consolidation practices are carried out". It was further claimed by Bishop and Verleger (2013) that flipped classroom comprises two essential components. The first component is the use of technologies and the second one is interactive learning activities inside the classroom. Thus, this education technique portrays a pedagogical shift in instructional strategies from teacher-centered to learner-centered.

In other words, in inverted classrooms learners have been providing an engaging environment for knowledge construction. A growing body of research studies in recent years shows that the pedagogical approach "flipped classroom" has amassed considerable attention from academicians.

Theoretical underpinning

In inverted classroom, the instructor shares resources digitally so that the learners get a basic idea about the topic or in a way can be called as pre-classroom learning. Subsequently, inside the classroom, the instructor conducts active, collaborative activities which further facilitate the learners to internalize knowledge. Flipped

Dr. Navitha. S. Nair

classroom is an ICT-integrated classroom practice, that "make it easy to convert instructor lectures through digital recordings and place these online for student access outside of face-to-face class time" (ibid). In virtue of this, learners get an opportunity to review and analyze the lecturers before the regular class. On the other hand, in the classroom, they work together collaboratively to solve the questions or any assignments given by the teacher which was conventionally been done as homework. By doing so, not only learners are enriching their learning experiences but instructors are also able to figure out the areas where students are struggling with. This further supports the learners in such a way that the instructors can provide remedial assistance which eventually facilitates the learners to cross the hurdles of learning. This kind of student-centered learning helps learners to achieve proficiency in skills and knowledge which is needed for this century.

**Flipped classroom learning as a constructivist approach**

The flipped classroom learning, as an approach is deeply rooted in Piaget and Vygotsky's socio-constructivist theories of education. The literary meaning of the word constructivism is to construct new knowledge. Social constructivism is one of the theories which has profoundly influenced both learners and teachers, resulting in a paradigm shift of the teacher's role to instructor/guide/scaffolder. According to social constructivism, knowledge construction happens effectively when learners get the opportunity to work in groups under the tutelage of a teacher to solve problems and eventually become competent or attain mastery in it. This reveals the importance of a teacher in a learning environment in other words, knowledge construction occurs only in the presence of an expert. Thus, the main responsibility of a teacher "according to constructivist learning theory is to provide the necessary tool for the students, so they could develop their own ideas and makeup conclusions" (Sharma, 2018, p. 165). In contrast to traditional approaches, the constructivist approach places much value to expert knowledge and shifts the role of learners from passive to active members of the learning process.

In Vygotsky's language, the base of social constructivist theory is "Zone of Proximal Development". It is the teacher or the instructor who decides the position of the learner within the zone by checking their previous knowledge and the advancement of the learner to the next level is purely based on this prior knowledge. This knowledge progression happens under the tutelage and guidance of a skilled person. Applying Bloom's revised taxonomy to flipped learning, activities on basic types of cognitive work namely, remembering and understanding are done outside of the class by the students whereas with the assistance and encouragement of peers and instructors activities related to higher levels of cognitive work such as applying, analyzing, evaluating and creating are carried out by the students inside the class.

In contrast, in a non-integrated ICT classroom or a conventional classroom setting, instructors focus on basic levels of cognitive work in the classroom, and then, the learners need to do the homework and additional exercises at home which concentrate on the higher order thinking levels.

Dr. Navitha. S. Nair

Figure 1. Adopted from 'Flipped Classroom: A constructivist Approach', by Poonam Sharma, *2018, International Journal of Research in Engineering, IT and Social Sciences,*
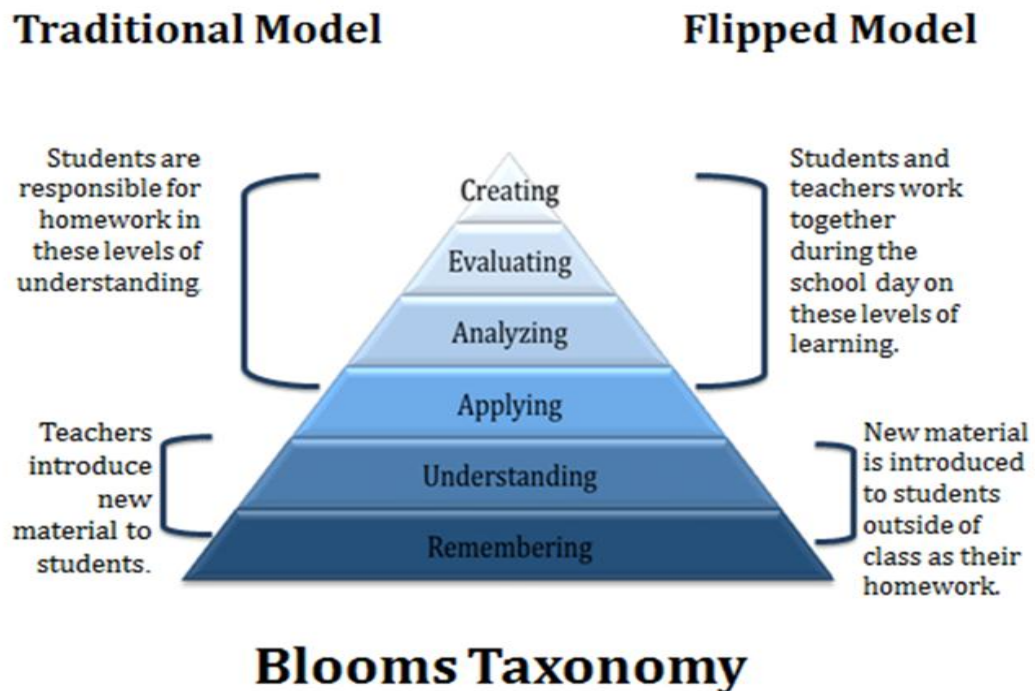
08, p. 166.

The following studies signify the effect of flipped classroom learning on learners' academic achievement.

In 2018, Cabi, E. investigated the impact of the flipped classroom on learners' academic achievement. The study was guided by two research questions. Firstly, to what extent does the flipped classroom model affect students' academic performance, and secondly, what are the opinions of pre-service teachers about the flipped classroom model. 59 pre-service teachers from two programs namely, English Language Teaching and Turkish Language Teaching were the sample of the study and these participants were taking a "Computer I" course in the academic year 2015-2016. In this quantitative work, random sampling technique was used for sample selection. The experimental and control group consisted of 28 and 31 students, respectively. Out-of-class activities and In-class activities such as learning videos and group presentations and individual assessments were assigned to the experimental group. Inferential statistics, and two-way ANOVA was applied to compare the pre and post-test scores of the experimental and control group, respectively. The results showed that flipped classroom model does not create any significant effect on learners' academic achievement. However, preparing the content prior to the classroom instruction and classroom activities are the positive impacts of flipped classroom model. Along the same lines, quasi-experimental quantitative research was conducted by Overmyer, G. R. (2014) among college students to study the effectiveness of a flipped classroom model on their academic achievement in algebra. The results of this study corroborate with the results of Cabi, E. (2018), that a statistically significant difference was not observed between experimental and control groups. Nevertheless, the experimental group showed better performance than their counterparts.

A similar kind of intervention study was carried out by Alzaytuniya, S.

Dr. Navitha. S. Nair

H. in 2016. The study focused on the effectiveness of flipped classroom in learning English grammar among tenth grader'. Also, examined the motivation level of students towards learning English language using a motivation scale, which was administered pre and post intervention phases. Using random sampling a total of 60 female learners were selected and distributed 30 each into experimental and control group, respectively. Independent variable used in the study were flipped classroom and English grammar learning and motivation was the dependent variables, respectively. The statistical test independent sample t-test was used to test the hypotheses. The results from independent sample t-test revealed significant differences between experimental and control group in learning English grammar which depicts the effectiveness of flipped classroom learning.

Further results showed significant difference among experimental group post application of motivation scale. On the contrary to Cabi, E. (2018) and Overmyer, G. R. (2014), the result showed significant differences in experimental and control group with respect to learn English grammar using flipped classroom. Findings further indicated significant difference in the two groups with respect to learners' motivation for learning English language. These results revealed positive effects of flipped classroom learning on learners' academic performance and further enhancing their motivation level. This once again substantiate the effectiveness of flipped learning. Another research work carried out by Gilboy, Heinerichs and Pazzaglia (2015) on flipped classroom model in two undergraduate nutrition courses and also delineated the learners' perception towards this model. The results showed that majority of the students preferred flipped classroom model for teaching

over traditional method. These findings are by and large in tune with the research findings of Simpson and Richards (2015), Baeplar et al. (2014), Butt (2014) and Hung (2015). To conclude, it is evidenced from these works that this student-centered peer-assisted learning is beneficial to the learners.

Four Pillars of Flipped Classroom Methodology

The four pillars essential for effective flipped learning as identified by the Flipped Learning Network and Person's School Achievement Services are Flexible Environment, Learning Culture, Intentional Content, and Professional Educator.

1.Flexible Environment

Learners need a flexible learning environment for active learning. A kind of flexibility in the learning environment allows the students to choose their spaces, where they choose when, and where they learn. Bringing changes in the spatial arrangement of the physical classroom not only benefits the learners but also the educators. To create an interactive classroom environment, educators can encourage the students to form small groups for discussion, can allot individual workspace for students, and also frequent rearrangement in the classroom enhances collaboration. Imparting this kind of liberty improves the learner's adaptability to the learning environment which includes the selection of methods such as group work, independent study, etc. Most importantly, flexibility in a learning atmosphere provides more learning opportunities as different from a conventional classroom, and also the in-depth understanding and exploration of learning objectives happens extensively.

2.Learning Culture

An innovative pedagogical approach like flipped classroom, allows learners to actively engage in knowledge construction by evaluating their learning. In this student-centric

Dr. Navitha. S. Nair

approach, learners have more space to collaborate and interact with their educators and peers.

3.Intentional Content

This pillar of flipped classroom learning model talks about the content or the materials and the instructional decisions that are given by the teacher. Though learning in a flipped classroom happens in a collaborative learning environment; however, the instructor or the educator decides what content to teach and what materials learners are permitted to probe. This also includes developing conceptual understanding and procedural fluency by the usage of technology and optimizing the utility of diverse methods of instruction, namely, mastery learning, problem-based learning, inquiry-based learning, questioning method, etc. according to grade level.

4.Professional Educator

As flipped learning is theoretically underpinned in socio-constructivism, where learners learn from a more knowledgeable person or a scaffolder. Thus, the final pillar of flipped classroom model delineates the inevitable and demanding role of professional educators, a scaffolder in Vygotskian terms.

The role of educators or teachers in a flipped classroom is not visible peripherally in a flipped classroom, however, knowledge construction does not happen in the absence of these educators. Thus, instructors in a flipped classroom play an active role by persistently observing their learners, providing critical feedback at the appropriate time, evaluating their work, and assisting with the problems they confront. Most importantly, these professional educators receive constructive criticism and reflect on their practice to improve their instruction.

Pedagogical practices in Flipped Classroom

Differentiated Learning:

It is an instructional technique that is appropriate for a flipped classroom, where the teachers utilize a variety of teaching methods to meet the academic needs of the students individually. The needs may be related to the styles of learning, interest, present knowledge, and understanding of the subject. It is defined as a "method of instruction to accommodate the different ways that students learn that advocates active planning for student differences in the classroom" (Sharma, 2018, p. 167). Using this student-centric practice as a technique in the flipped classroom approach is beneficial to the learners, as the class time can be dedicated to discussion, and questioning, learners can learn at their own pace and educators can provide tailored feedback to meet the situational needs of the students. In essence, the main objective of differentiated learning is creating an environment where every learner should receive or gain the advantage of learning equally.

Peer-Assisted Learning:

This student-centered learning is also known as "Peer-Assisted Study Sessions" (PASS) or "Supplemental Instruction" (SI). In this learning, a conducive environment is being created in the classroom, where the learners are getting opportunities to gain new learning experiences irrespective of their academic abilities, from their peers. According to Jauregui, et al. (2017), peer-assisted learning is the "development of new knowledge and skills through active learning support from peers" (p. 193). The activities which can be employed in a peer-assisted classroom include discussion, seminars, peer-study groups, and collaborative projects.

Mastery Learning:

In this group-based and individualized learning strategy, learners are expected to attain a high level of understanding of a specified topic. Flipped classroom

Dr. Navitha. S. Nair

learning offers learners the opportunities to transcend their knowledge in other words it is embedded in providing learners to learn at their own pace. To conclude, this type of pedagogical practice ensures that the learners acquire the knowledge and skills required for their current learning level before advancing to the complex ones.

Individualized Learning:

As the name indicates, individualized learning is an instructional strategy in which instructions are calibrated or modified to meet the specific needs of the learners. Additionally, in this practice (Sharma, 2018) "learning objectives, instructional approaches, and instructional content (and its sequencing) may all vary based on learners needs" (p. 168). Similar to the above-discussed practices, this strategy also gives utmost importance to learners' abilities, interests, and readiness.

Benefits of Flipped Classroom

The surge of research studies focusing on flipped classrooms and results from these studies indeed reveals the need of advocating flipped classrooms in the teaching-learning process. A few benefits are:

-A child-centric learning strategy that mitigates the limitations of the traditional classroom models by shifting education to flexible, effective, and active learning.

-Allows the active involvement of the learners in their own space at all levels of learning.

-The learning outcome obtained by exercising flipped classroom learning is meaningful and memorable.

-Permits the learners to reflect on the learned content, which further leads to meaningful learning. This knowledge generation happens in a collaborative learning environment which eventually helps the learners to take ownership of their learning.

-As feedback is an important component in flipped learning, critical feedback enriches the teacher-learner relationship.

-Provide opportunities for the learners to grasp the content with ease by engaging them in hands-on activities with peers, asking questions, and working on complex problems.

Final Thoughts

Recent years have witnessed an increasing shift in terms of instructional strategies from teacher-centered to learning-centered and flipped classroom learning is one of the ICT integrated pedagogical practices that garnered wide attention academically. This flexible innovative pedagogical approach furnishes a variety of activities comprising pre-class assignments, in-classroom activities, post-class practice, and assessments for evaluating learners' conceptual clarity. Providing learning exercises prior to classroom instruction is a way to gauge learners' mastery of the content. Additionally, active learning exercises given in flipped classroom is a formative way of assessing learners' understanding. In a nutshell, the teacher as a facilitator in a flipped classroom can help the learners to overcome any misconceptions concerning the knowledge perceived by them.

References

1. Alzaytuniya, S.H. (2016). The Effectiveness of using Flipped Classroom on tenth graders' grammar learning and motivation for English [Doctoral dissertation, The Islamic State University]. https://library.iugaza.edu.ps/thesis/120552.pdf
2. Arnold-Garza. (2014). The Flipped Classroom Teaching Model. *Communications in Information Literacy, 8*(1),
3. Bergmann, J., & Sams, A. (2012). Flip your classroom: Reach every student in every class every day.

Dr. Navitha. S. Nair

Washington, DC: Internal Society for Technology in Education.

4. Bishop, J. L., & Verleger, M.A. (2013) The Flipped Classroom: A Survey of the Research. Conference of 120th ASEE Annual Conference and Expostion, Atlanta, Georgia.

5. Cabi, E. (2018). The impact of the flipped classroom model on students' academic achievement *International Review of Research in Open and Distance Learning, 19*(3), 203-221.

6. Friesen and Norm (2012), Report: Defining Blended Learning

7. Gilboy, M. B., Heinerichs, S., & Pazzaglia, G. (2015). Enhancing Student Engagement Using the Flipped Classroom. Journal of Nutrition Education and Behavior, 47, 109-114. https://doi.org/10.1016/j.jneb.2014.08.008

8. Jauregui, J., Bright, S., Strote, J., & Shandro, J. (2017). A Novel Approach to Medical Student Peer-assisted Learning Through Case-based Simulations. *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 19*(1), 193-197. https://www.researchgate.net/publication/322708446

9. Overmyer, G.R. (2014). The Flipped Classroom Model for college Algebra: Effects on student achievement [Doctoral dissertation, Colorado State University]. ProQuest Dissertations and Theses

10. Rao, V. C. S. (2019). Blended Learning: A new hybrid teaching methodology. *Journal for Research Scholars and Professional of English Language Teaching, 3*(13), 1-5. https://www.researchgate.net/publication/333485907

11. Sharma. P. (2018). Flipped Classroom: A constructivist approach. *International Journal of Research in Engineering, IT and Social Sciences, 08* (08), 164-169.

12. Singh, H. (2003). Building effective blended learning programs. *Educational Technology, 43*, 51-54.

13. Toto, R., & Nguyen, H. (2009). Flipping the work design in an industrial engineering course. ASEE/IEEE Frontiers in Education Conference. San Antonio, TX

14. Uzunboylu, H., & Karagozlu, D. (2015). Flipped classroom: A review of recent literature. *World Journal on Educational Technology. 7*(2), 142-147. doi: http://dx.doi.org/10.18844/wjet.v7i2.46

Dr. Navitha. S. Nair