

Flipped Classroom: A Constructivist Approach

Dr. Poonam Sharma

(Associate Professor & Head, Department Of Teacher Education, J. V. Jain College, Saharanpur, UP, India)

Abstract: *In the traditional teacher-centred model, the teacher is the primary source of information. By contrast, the Flipped Learning model deliberately shifts instruction to a learner-centred approach, where in-class time is dedicated to exploring topics in greater depth and creating rich learning opportunities. As a result, students are actively involved in knowledge construction as they participate in and evaluate their learning in a manner that is personally meaningful. The present paper is an attempt to deal with the concept of Flipped classroom as a constructivist approach and various pedagogical practices for flipped classroom in detail.*

Keywords: *flipped classroom, constructivist approach*

I. INTRODUCTION

“It’s a different kind of communication between faculty and students. Websites and laptops have been around for years now, but we haven’t fully thought through how to integrate them with teaching so as to conceive of courses differently.” - Mazur, 2009.

The two movements: technological and ideological movements, change the face of education. The technological movement has enabled the amplification and duplication of information at an extremely low-cost. As the technologies have been adopted, the ideas have been spread through their channels. Whereas the technological movement sought to overcome real physical barriers to the free and open flow of information, the ideological movement seeks to remove the artificial, man-made barriers.

A good example of this can be seen from the encyclopaedia. Encyclopaedia Britannica has been continuously published for nearly 250 years (since 1768). Although Encyclopaedia Britannica content has existed digitally since 1981, it was not until the advent of Wikipedia in 2001 that open access to encyclopaedic content became available to users worldwide. Access to Encyclopaedia Britannica remains restricted to a limited number of paid subscribers, but access to Wikipedia is open. Thus, although the technology and digital content was available to enable free access to encyclopaedic content, ideological roadblocks prevented this from happening. It was not until these ideologies had been overcome that humanity was empowered to create what has become the world’s largest, most up-to-date encyclopaedia.

The combined effects of these two movements are also found out to be seen on education. Knowledge once available to few is now freely open to anyone with the Internet connection. As Alexis Ohanian, the founder of reddit, said it, “The Internet has flattened the world... It allows us to learn anything that we want. A teenager with a smartphone has access to more knowledge than the president did a few decades ago.” Students nowadays can access lectures from world's top universities by listening to podcasts on iTunes or viewing lectures on YouTube and Khan Academy.

One of the most recent changes came with the discovery and popularization of MOOCs. Massive Open Online Courses became a buzzword in the world of education. With embracing technology in other aspects of life, technology is still not fully present in the classrooms. Most of the institutions still continue to favour traditional teaching methods, despite the change in students' learning patterns and preferences.

Blended learning relies on both use of face-to-face teaching and online learning. To identify the place of blended learning in diverse types of teaching, learning could be presented in a form of continuum with face-to-face teaching with no use of technology on one end, and completely online, or distance, learning with extensive use of technology on the other end. Blended learning belongs right in the middle of this continuum. One of the delivery modes in blended learning that implies extensive use of technology but also has a face-to-face teaching phase is flipping the classroom. Recently flipped classrooms became very popular as a way of introducing technology in teaching.

Flipped Classroom

The “flip” means moving lectures from the class to pre-class homework, while reserving class time for having students to do the problems and exercises that have traditionally been the domain of out-of-class assignments. Actual “Flipped Classroom” is that new ICT technologies make it easy to convert instructor lectures through digital recordings and place these online for student access outside of face-to-face class time. As a result, students can review lectures in advance of the regular class, then have class sessions for working together on the assignments that traditionally have been done as homework. Not only are students seen as gaining through working together on "homework" problems in class, but instructors are able to more quickly see where students are struggling and provide remedial support.

Experts argue that by using class time for student discussion, collaboration and problem solving, the traditional lecture based mode of instruction can be replaced by a more student-centred learning that is not only more effective but also achieves larger goals of 2020 year skills.

The terms flipped learning, flipped education, and inverted classroom are used in the literature, but all have to do with the shared idea of making a student ready for a session or more outside of class using one of a range of diverse instruments to permit the learners more free time in class to develop their skills and show proficiency of skills and knowledge. Perhaps the simplest definition of the *flipped* (or *inverted*) classroom is given by Lage et al. "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa".

Method: Inside the classroom

Traditional classroom: Lectures, questions & answers

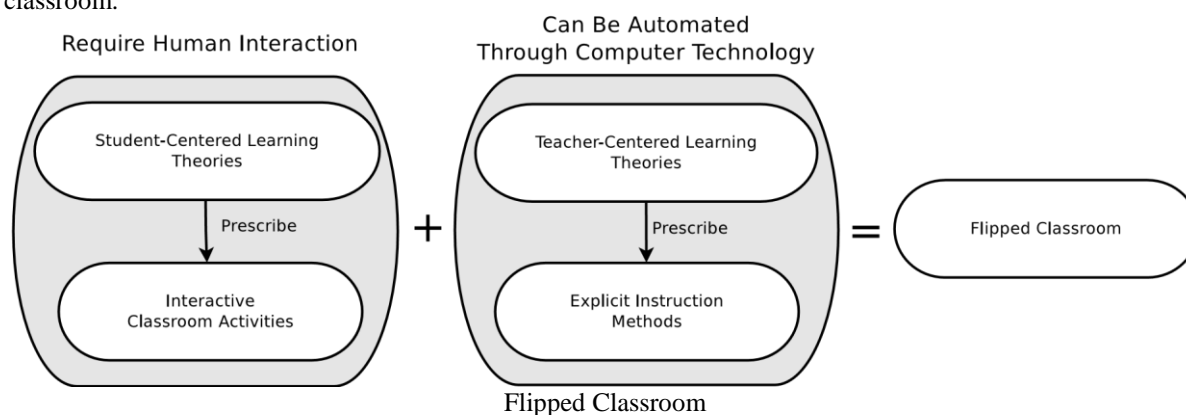
Flipped classroom: Practice Exercises, Problem Solving & Group-Based or Open-Ended Problem Solving

Method: Outside the classroom

Traditional classroom: Practice Exercises & Problem Solving

Flipped classroom: Video Lectures, Closed-Ended Quizzes & Practice Exercises

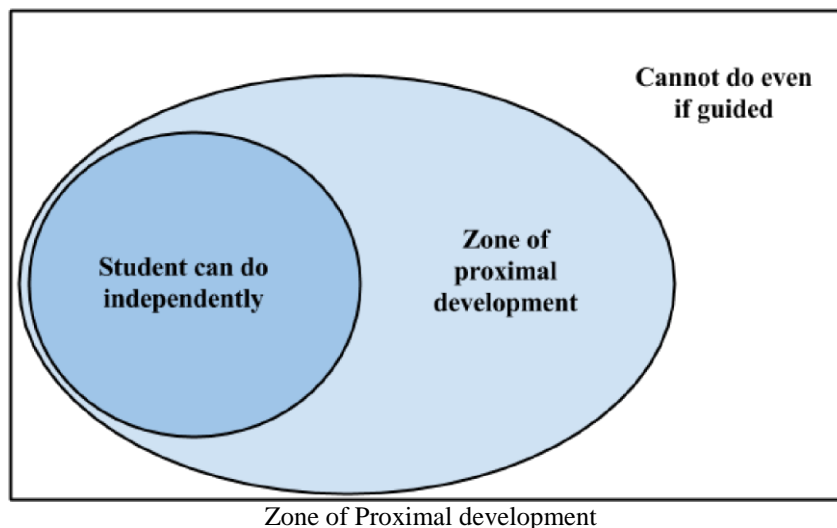
We define the flipped classroom as an educational technique that consists of two parts: interactive group learning activities inside the classroom, and direct computer-based individual instruction outside the classroom.



Constructivist Approach

The flipped classroom approach is rooted in socio-constructivist theories of education and active learning. Popularized by Piaget and Vygotsky, constructivism implies that knowledge is always constructed by the person on their own. Social constructivism in classroom implies shifting teacher's role to instructor that would guide the students. Relying heavily on social context, working in groups in order to solve problems and master skills is another trait of constructivist classroom.

Constructivist approach doesn't decline the value of the expert knowledge or the active role of the teacher. The role of the teacher is changed to assist the students to produce the knowledge themselves. The main purpose of the teacher according to constructivist learning theory is to provide necessary tool for the students, so they could develop their own ideas and makeup conclusions. Constructivist approach turns students into active members of the learning process that build up their knowledge, instead of passively receiving it from the teacher.

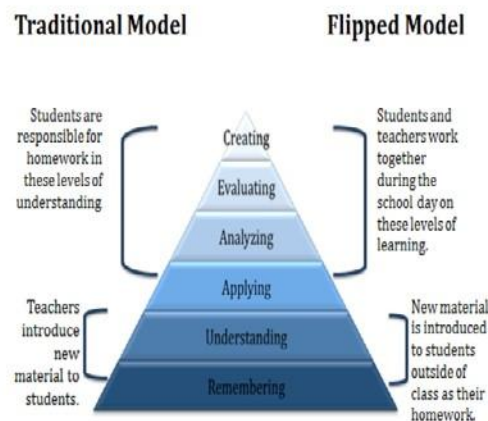


The base of social constructivist theory is formed on a Vygotsky's "Zone of Proximal Development" (ZPD). ZPD is the gap between learner's actual development and potential development that is achieved with the help of educational support. In the higher education context the teacher is responsible for locating the student's position within the zone. It is important to find out what skills and knowledge the student already has in order to advance to the next level. The next level of knowledge and skills is achieved with the guidance of the teacher.

The flipped education and online videos strengthen the principles and assumption of constructivism by releasing class time for inquiry-based learning. The flipped learning backed-up by the constructivist theory, should empower learners to involve in communicating, imaginative, and collaborative activities during knowledge construction

Bloom also drew attention to the need to concentrate on higher level learning goals, not simply on basic skills. Applying Bloom's revised taxonomy to flipped learning, students are doing the lower levels of cognitive work (remembering and understanding) outside of class, and focusing on the higher types of cognitive work (applying, analyzing, evaluating, and creating) in class, where they have the encouragement of their peers and instructor.

This can be compared to the traditional method of teaching where the basic level skills are often the centre of attention of classroom sessions and students are left to work on the higher levels skills in their own time with homework and additional exercises.



The flipped learning is deeply connected to problem solving, active learning, inquiry learning, and interpersonal communications.

The Four Pillars of Flipped Education

The Flipped Learning Network and Person's School Achievement Services have identified four pillars of effective flipped learning. These four pillars of F-L-I-P™ are Flexible Environment, Learning Culture, Intentional Content, and Professional Educator.

1. Flexible environment

Flexible Environment is the arrangement of the physical classroom space for active learning. The space must remain flexible so that an educator can create small group work stations, individual work areas, and also places to speak to one student away from the noise of groups working. Educators frequently readjust their classrooms with the intention of being more encouraging to collaboration. This flexible and adaptable learning environment empowers students to select when and where they want to learn and in what method such as group work, independent study, research, performance, and evaluation. Consequently, the flipped class develops into a place where learning objectives are explored in greater depth and learning opportunities are enhanced.

2. Learning culture

Second, the Learning Culture for the flipped class is one where the educator feels comfortable taking a back seat and assisting students who are actively learning together, instead of an educator having to 'perform' at the front of the class while lecturing. In the traditional teacher-centered model, the teacher is the primary source of information. By contrast, the Flipped Learning model deliberately shifts instruction to a learner-centered approach, where in-class time is dedicated to exploring topics in greater depth and creating rich learning opportunities. As a result, students are actively involved in knowledge construction as they participate in and evaluate their learning in a manner that is personally meaningful.

3. Intentional content

Intentional Content is the third pillar and describes instructional decisions that must be made by the teacher. These decisions contain what content to teach through video, and what materials students are permitted to investigate on their own. Flipped Learning Educators continually think about how they can use the Flipped Learning model to help students develop conceptual understanding, as well as procedural fluency. Hamden et al.

declared that flipped educators use intentional content to take full advantage of classroom time with the intention of utilizing a variety of methods of instruction such as peer instruction, active learning strategies, problem-based learning, or master or Socratic methods, according to grade level and subject matter. Using technology is not the purpose of the flipped class; using technology to support a curriculum that is based on collaborative, active learning is the goal.

4. Professional educators

The fourth pillar of the flipped class is Professional Educators, perhaps be the extremely important pillar. The role of a Professional Educator is even more important, and often more demanding, in a Flipped Classroom than in a traditional one. During class time, they continually observe their students, providing them with feedback relevant in the moment, and assessing their work. Professional Educators are reflective in their practice, connect with each other to improve their instruction, accept constructive criticism, and tolerate controlled chaos in their classrooms. While Professional Educators take on less visibly prominent roles in a flipped classroom, they remain the essential ingredient that enables Flipped Learning to occur.

Pedagogical Practices in Flipped Classroom

The shift to student-centric learning environments requires new pedagogical practices other than often in traditional classes such pedagogical practices are individualized learning, differentiated learning, active learning, cooperative learning, collaborative learning, and mastery learning.

- **Cooperative Learning**

Cooperative learning constitutes five factors are paramount: 1) Positive interdependence, 2) Face-to-face interaction, 3) Individual accountability, 4) Small group & interpersonal skills, 5) Group self-evaluation.

- **Problem-Based Learning**

Five goals of problem-based learning include helping students develop 1) Flexible knowledge, 2) Effective problem-solving skills, 3) Self-directed learning skills, 4) Effective collaboration skills, and 5) intrinsic motivation.

Barrows describes six characteristics of problem-based learning, running somewhat parallel to these goals: 1) Learning is Student-Centred. 2) Learning Occurs in Small Student Groups. 3) Teachers are Facilitators or Guides. 4) Problems Form the Organizing Focus and Stimulus for Learning. 5) Problems are a vehicle for the development of clinical problem-solving skills. 6) New information is acquired through self-directed learning.

- **Active Learning**

Active learning broadly may be defined as, “any instructional method that engages students in the learning process.” Thus, active learning acts as a superset for both peer-assisted and problem-based learning approaches. Problem-based learning is, “always active and usually (but not necessarily) collaborative or cooperative.”

- **Peer-Assisted and Collaborative Learning**

Peer assisted learning is, “the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions”. Taken together, the processes [collaborative learning and peer tutoring] describe and seek to explain underpin virtually all the [peer-assisted learning] techniques currently in educational practice.

- **Inquiry-based learning**

Inquiry-based learning (IBL) is a pedagogy which most excellently empowers students to undergo the processes of knowledge construction and the vital characteristic is learning motivated by inquiry, a student-centered approach, a shift to self-directed learning, and an active approach to learning. Inquiry-based learning belongs to the area of ‘inductive’ approaches to teaching and learning which start with a group of observations or data to explain, or a multifaceted complicated real-world problem, and while the students analyze the data or problem they need facts, procedures and guiding principles.

- **Differentiated Learning**

Differentiated Learning 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”. The flipped classroom approach creates an opportunity for differentiated learning because class time is dedicated to discussion; the educator can provide tailored feedback each class, students can help determine their own project requirements to show their knowledge in a variety of ways, and they can learn content at their own pace, once again recognizing and supporting student choice and learning preferences.

- **Individualised learning**

Individualised learning is an instruction that offers pedagogy, curriculum, and learning environment to meet the individual child's needs. The experience is tailored to learning preferences and the specific interests of different learners. The United States National Education Technology Plan 2017 defines personalized learning as follows:

Individualized learning refers to instruction in which the pace of learning and the instructional approach are optimized for the needs of each learner. Learning objectives, instructional approaches, and instructional content

(and its sequencing) may all vary based on learner needs. In addition, learning activities are meaningful and relevant to learners, driven by their interests, and often self-initiated.

- **Mastery Learning**

Mastery learning is a set of group-based, individualized, teaching and learning strategies based on the premise that students will achieve a high level of understanding in a given domain if they are given enough time. The Flipped Classroom model naturally lends itself to Mastery Learning.

“In a traditional classroom, the teacher must aim the lecture at the middle, leaving the faster learners bored and the slower ones lost. Differentiation and personalization are big challenges. But the mastery system allows each student to learn at her own pace. Since the flipped classroom eliminates the whole-class lecture, they’ve realized, it has also eliminated the reason for students to work at a uniform pace.”

Advantages of Flipped Classroom

Supporters of the flipped education claim that it is in what way a teacher makes use of the freed class-time that is extremely important. Offloading direct instruction to videos permits educators to reassess by what method they can make best use of individual face-to-face time with students. Time becomes existing for students to collaborate with peers, involve more profoundly with content, and be given instant feedback from their instructor. The most significant benefit of the flipped class model is to lengthen teacher-to-student and student-to-student interaction during class time.

Flipped classroom provides additional supporting instructional material for students that can be accessed online. This frees up classroom time that had previously been used for lecturing. This method revealed three major findings: students are doing less homework in a Flipped Classroom than in a traditional lecture-based classroom, students enjoyed learning in a Flipped Classroom environment, and students benefited from watching their lectures in condensed-lesson formats. The benefits for students and teachers can be discussed as below-

(i) For Students

Students can pause and rewind their teacher created contents. Struggling students have more time with the teacher. Students who “get it” are able to move on and extend their learning. Students are learning and applying technology skills at all levels. Students are more engaged in their learning work. Students are working collaboratively with each other.

(ii) For Teachers

Teachers can spend more time with individual groups of students. Teachers can differentiate their instruction according to the level of students. Teachers are able to reach students in their digital language. Teachers can work more collaboratively. Teachers are excited about teaching and learning process.

II. CONCLUSION

The concept of flipped classroom offered a new direction that helps to meet the expectations of today’s students by providing modern teaching and learning resources. From an instructional design perspective, the flipped learning model incorporates the constructivist learning theory, which can be implemented in a variety of learning situations. The features of this model include a focus on efficient use of class time which accommodates different learners, engages with problem-based learning, increases student-teacher interaction, and allows students to take responsibility for learning so that they may transfer these skills to other contexts. One disadvantage of this model might be that instructors might find it quite time consuming at first to develop their video lessons. Peer instruction and collaboration is a vital component of effective implementation of this model in higher education and may need to be incorporated more frequently at the secondary level. Secondary and higher education teachers with large class sizes can also implement this model to accommodate the needs of many learners. The flipped learning method requires knowledge of technical skills, theoretical underpinning and pedagogical expertise to implement effectively. Therefore teachers are advised to see the application of flipped learning into their area of practice before they plan to implement which will build their confidence to overcome any potential difficulties. As education and technology continue to evolve, it is important to examine the impact of the flipped learning in the secondary and higher education.

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