



Original Article

Student's Perception to Interactive Teaching and Learning (Flipped Classroom) In the Subject of Biochemistry in Kokrajhar Medical College

Dr Madhurima Bora¹, Dr Naba Kr Kalita², Dr Binod Kr Gohain³

¹Professor, Dept. of Biochemistry, Kokrajhar Medical college & Hospital

²Assistant professor, Dept. of Biochemistry, Kokrajhar Medical college & Hospital

³Assistant professor, Dept. of Biochemistry, Kokrajhar Medical college & Hospital

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Corresponding Author:

Dr Madhurima Bora

Professor, Dept. of Biochemistry,
KMCH

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ABSTRACT

Introduction: Interactive teaching involves active participation of students and teachers at the same time. One method of interactive class is Flipped classroom where in flipped instruction, the students first study the topic by themselves, typically using video lessons/PPT prepared by the teacher or third parties. In class students apply the knowledge by solving problems and doing practical work. The teacher tutors the students when they become stuck, rather than imparting initial lesson in person.

Objectives: The study aimed to see the effect of flipped classroom model of teaching in the subject of Biochemistry on the MBBS phase I students.

METHODS: 1st year MBBS batch (100) were taken for the study and a prior briefing was made about the flipped classroom. The Biochemistry competency, BC 11.2 (Enumerate the hormones and markers related to reproduction and reproductive health and their clinical interpretation such as LH, FSH, prolactin, beta HCG, estrogen, progesterone, testosterone and AMH. The importance of prenatal screening) was taken in three different classes. Feedback was taken and measured in 5 point likert scale.

Results: 45 to 50% Students were satisfied with flipped classroom as they got the power point slides before the class and had interactions with teachers in the actual class. Around 67.1% students were satisfied with the topics given in the PPT slides to gain prior knowledge before the start of the class. Around 20 to 25% students remained neutral which shows that either they are not interested in the module of Flipped classroom or they did not understand the benefits of Flipped classroom. A small percentage (5 to 10%) of students were there in class who strongly disagreed with the method of interactive session of Flipped classroom which shows they want to remain as a silent listener satisfied with the traditional didactic lecture.

Conclusions: With this study it is seen that students participated well and the students could overcome the initial hesitancy or apprehension and had come forward to their teachers to clear their doubts.

Keywords: Flipped classroom, Interactive class, Didactic lectures, MBBS phase I students.

INTRODUCTION

Interactive teaching involves interchange of ideas between teachers, students and the lecture content. It refers to the increased discussions among the participants and active involvement. It is designed to stimulate creativity and is much more analytical as opposed to traditional learning methods. Interactive learning is an optimal form of organization of the educational process, the essence of which is the joint activity of students on the development of educational material, the exchange of knowledge, ideas, ways of activity, interactive activity in the lessons involves the organization and development of dialogue communication, which leads to mutual understanding, interaction, to joint solution of common but significant for each participant tasks.

The main goals of interactive learning are:

- a) Stimulation of educational and cognitive motivation

- b) Development of independence and activity
- c) Fostering analytical and critical thinking
- d) Self-development of students

There are different types of interactive teaching methods such as brain storming, buzz sessions, debate, flipped classroom, interactive demonstration, case-based learning, gamification, peer review sessions. One of the interactive methods of teaching and learning is flipped classroom. In traditional style of institution, teachers present lessons to students and assign classwork or homework. Flipping the classroom represents an ongoing paradigmatic shift in education from teacher-centered instructional strategies (eg. Lecturing) to learning-centered instructional strategies (eg. active student engagement) (1). A flipped classroom consists of students completing direct instruction, such as viewing a lecture online, prior to the in-class discussion of the material. The intent is for students to see the material beforehand also known as first exposure learning so they can gain the concepts at their own pace. By doing so, students are better able to focus on participating in class and receive feedback on the efforts during the lesson-not just after. In flipped instruction, the students first study the topic by themselves, typically using video lessons prepared by the teacher (2)(3) or third parties. In class students apply the knowledge by solving problems and doing practical work (4-6). The teacher tutors the students when they become stuck, rather than imparting initial lesson in person. Complementary techniques include (7) differentiated instruction and project- based learning(8). Flipped classroom involves the delivery of foundational content outside of traditional class hours often via digital mediums. Conversely, activities traditionally designated as homework, such as problem solving exercises and application-oriented tasks are relocated to the classroom environment. Students learn more deeply- as a result of students taking responsibility, interacting meaningfully and often with their instructor and peers and getting and giving frequent feedback, they acquire a deeper understanding of the content and how to use it. Students are more active participants in learning. The students' role shifts from passive recipient to active constructor of knowledge, giving them opportunities to practice using the intellectual tools of the discipline.

Interactions increases and students learn from one another, Students work together applying course concepts with guidance from the instructor. This increased interaction helps to create a learning community that encourages them to build knowledge together inside and outside the classrooms. Instructors and students get more feed-back with more opportunities for students to apply their knowledge and then for demonstrating their ability to use it, gaps in their understanding become visible to both the students and the instructors.

AIM: To see the student's perception of interactive teaching and learning in the subject of Biochemistry in Kokrajhar Medical College

STUDY QUESTION: Does the interactive teaching and learning in the form of flipped classroom effect the 1st year MBBS students learning outcome?

JUSTIFICATION: Interactive teaching and learning in the form of flipped classroom will help the students to make them active by completing direct instruction, such as viewing a lecture online, or other topic related materials prior to the in-class discussion of the material.

OBJECTIVES:

- (a) To see the effect of traditional method of teaching in the subject of Biochemistry on the 1st year MBBS students.
- (b) To see the effect of flipped classroom model of teaching in the subject of Biochemistry on the 1st year MBBS students.
- (c) To see the students' perception of interactive teaching and learning (flipped classroom) in the subject of Biochemistry.

OUTCOME:

- To sensitize the students about interactive teaching and learning methods
- To make the students take active participation in flipped classrooms and interact with their faculties.

METHODS:

Study design: Cross sectional study

Study Duration: 6 months

Place of study: Kokrajhar Medical College

Study population: Undergraduate Medical Students (phase I) of Kokrajhar Medical College

Sample size: 100

Inclusion criteria: MBBS phase I students of Kokrajhar Medical College (both gender).

Exclusion criteria: MBBS students unwilling to participate

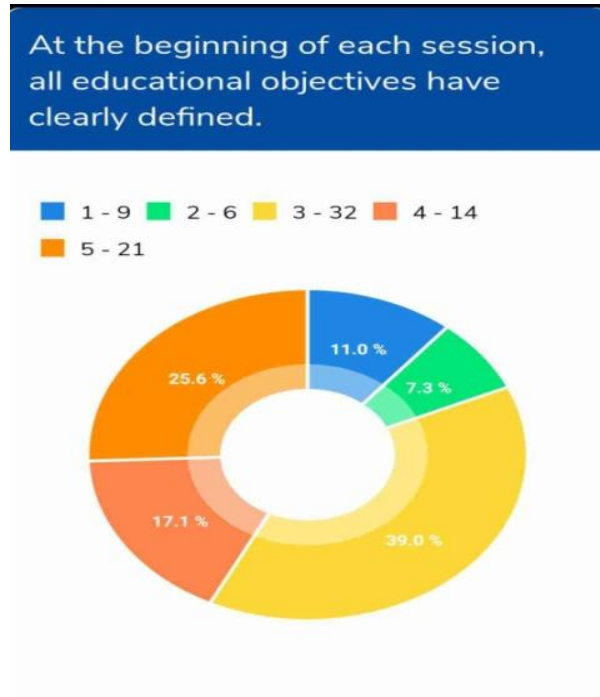
Ethical Clearance: Approval taken from IEC, Kokrajhar Medical College.

DATA COLLECTION: After ethical clearance from IEC, Kokrajhar Medical College & Hospital, a briefing was be given about flipped classroom to the willing 100 1st year MBBS students. Then a google group was formed with their E-mail IDs. The Biochemistry competency, BC 11.2 (Enumerate the hormones and markers related to reproduction and reproductive health and their clinical interpretation such as LH, FSH, prolactin, beta HCG, estrogen, progesterone,

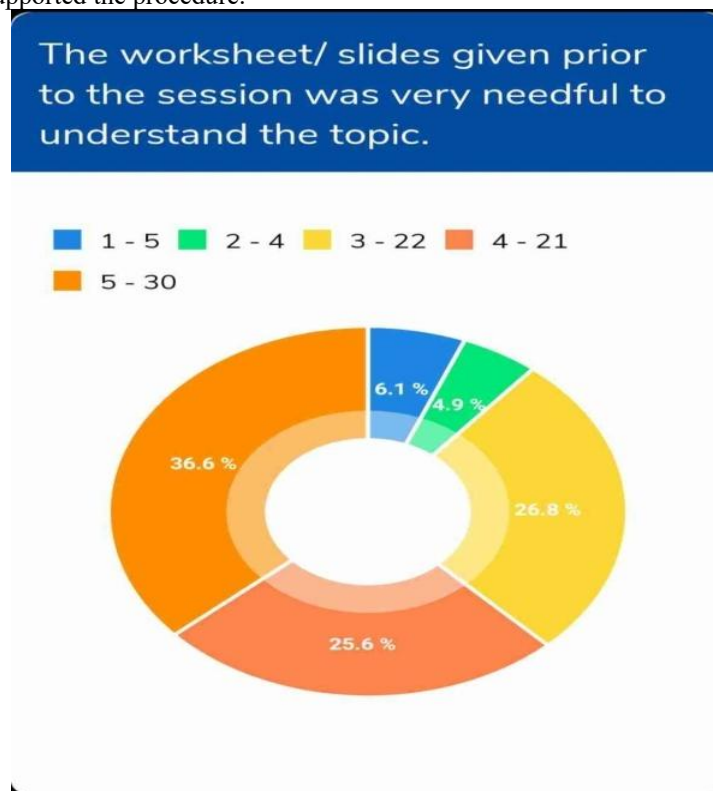
testosterone and AMH. The importance of prenatal screening.) was taken as flipped classroom in three consecutive days. The students were given the power point slides of the topics mentioned along with the resource materials such as the books with these topics before the class about 10 days before the actual class. During the actual classes, the students presented the topics in groups and also asked their doubts where they were not cleared. All the faculties were present all through the three classes and were ready with the discussions. Interactions were there all through the classes. After the completion of the three classes, Feedback in the form of Google Questionnaire Form was released in the Google group. Feedback was measured with 5 point Likert scale.

RESULTS AND OBSERVATIONS:

Feedback form in the form of Google Questionnaire Form was released in the Google group. Feedback was measured with 5 point Likert scale



39% students had neutral attitude about the educational objectives of the FC sessions being defined before the sessions. 25.6% students strongly supported the procedure.



36.6% students were extremely satisfied, 25.6% students were satisfied with PPT slides and the resources given before the session while 6.1% students were not satisfied.

The sources given in the worksheet such as references and websources, slides kindle interest to read.

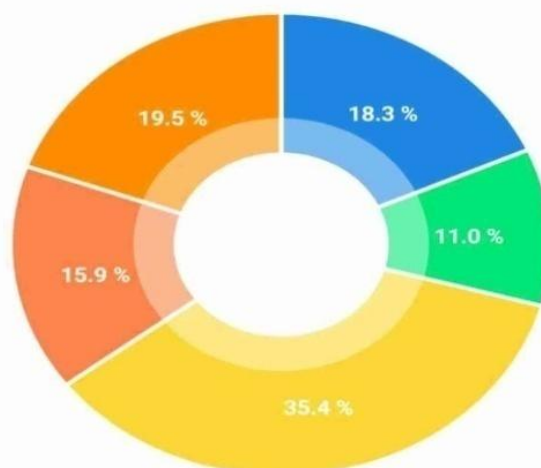
1 - 4 2 - 10 3 - 31 4 - 20
5 - 17



24.4% students were somewhat satisfied, 20.7% students were extremely satisfied and gained interest to read the references and web-sources given .

The method was more engaging and interesting in comparison to traditional class.

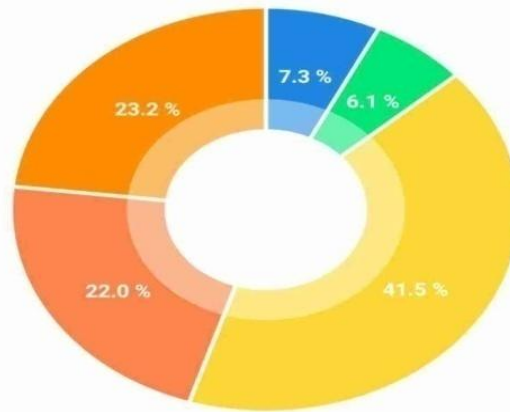
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5 - 16



35.4% students were neutral about the method of engaging themselves in the study process. Around 18.3% strongly disagreed with the method of engagement while 19.5% strongly agreed with the method of engagement and 15.9% students agreed about their engagement in flipped classroom if compared with the traditional method.

This module provided sufficient knowledge of biochemical basis of Mechanism of Hormone action

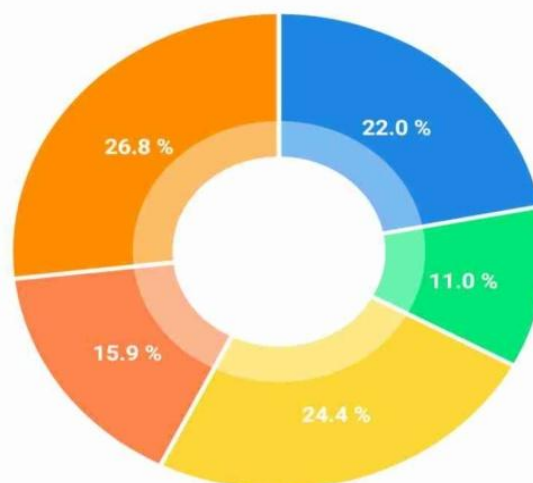
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5 - 19



41.5% students were neutral about knowledge of mechanism of hormone action provided through the module of flipped classroom. 22% students agree that the module provided sufficient knowledge about mechanism of hormone action while 23.2% strongly agrees to it.

More such modules should be organized in the future.

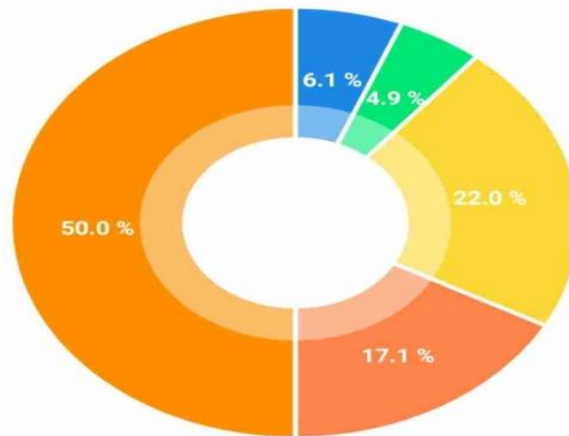
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15.9% Students supported and 26.8% Students strongly supported to have similar modules to be organized in future

Time allotted for the topics were adequate.

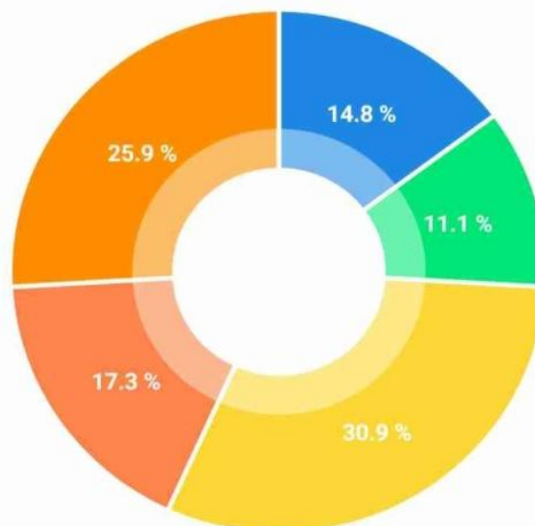
1 - 5 2 - 4 3 - 18 4 - 14
5 - 41



50% Students strongly agreed that the time allotted for flipped classroom was adequate.

This method make me participate actively with the subject.

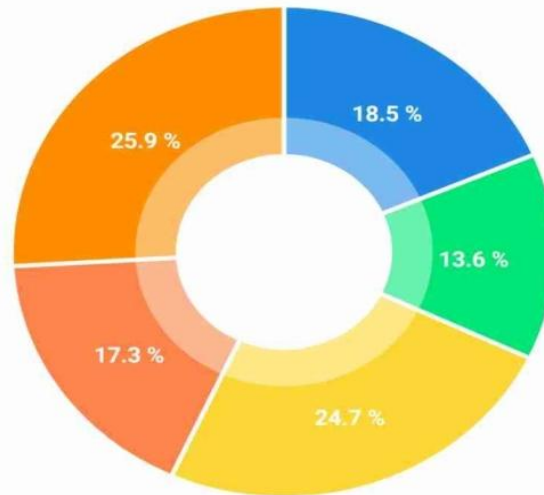
1 - 12 2 - 9 3 - 25 4 - 14
5 - 21



25.9% Students strongly agreed with the active participation while 17.3% agreed with this.

It is an enjoyable way of learning.

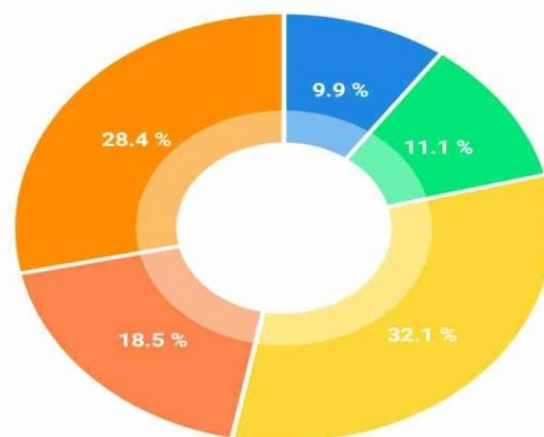
1 - 15 2 - 11 3 - 20 4 - 14
5 - 21



25.9% Students strongly agreed that it was an enjoyable way of learning

The team based activity enabled us to go through the topic prior to the module session.

1 - 8 2 - 9 3 - 26 4 - 15
5 - 23



28.4% strongly agree that with team based activity it became easier to learn the topic.

DATA ANALYSIS & DISCUSSION:

From the feedback of students about Flipped classroom measured by the 5 point Likert scale it is found that around 45 to 50% Students were satisfied with flipped classroom as they got the power point slides before the class and had interactions with teachers in the actual class. This correlates with the following studies where learners in flipped classrooms report increased satisfaction with the ability to access pre-classroom assignments and learn at their own pace as well as enjoy the greater focus on discussions and hands on activities during class when compared to traditional lectures taken. (9, 10, 11). Around 62% students were satisfied with the topics given in the PPT slides to gain prior knowledge before the start of the class. They could go through the slides at their own pace and can repeat them any number of times. The Flipped classroom model optimizes learning by reducing extraneous cognitive load through self paced pre-class, content delivery (videos/readings) and increasing germane load via active in class participation (12) Around 67.1% agreed that the time allotted for Flipped classroom were adequate. Time factor plays a role in Flipped classroom and many authors say that educators require lot of time to prepare the study materials beforehand. But Wagner et al suggests in congruence with the author in experience that once pre-class materials is recorded or prepared online courses and learning materials can be used on multiple consecutive cohorts of learners which fills up the time for educators to focus on the hands on aspects like bed side teaching, cases and discussions (13,14) Around 20 to 25% students remained neutral which shows that either they are not interested in the module of Flipped classroom or they did not understand the benefits of Flipped class room.. Psychologists suggest that a great flipped classroom model combines factor that build learner motivation both intrinsically and extrinsically (11,15). A small percentage (5 to 10%) of students were there in class who strongly disagreed with the method of interactive session of Flipped classroom which shows they want to remain as a silent listener satisfied with the traditional didactic lecture. Flipping the medical classroom takes adjustment and time difference cannot be assessed by flipping the classroom through recorded lectures provided over several days without a period for learners to adjust pre-work involved in flipping of the classroom (16), For most learners, the flipped class room is a new experience from the traditional process of learning in the past. Though interactions between teachers and students is more in Flipped classroom than in traditional didactic lectures but it is yet to establish whether knowledge retention is superior in Flipped classroom than in traditional class (didactic lecture).

CONCLUSION: With this study it is seen that students participated well and the students could overcome the initial hesitancy or apprehension and had come forward to their teachers to clear their doubts. The actual class was given beforehand so that the students became well versed with the topic for the forthcoming class and this brings students involvement which was not seen in traditional teaching method. The medical education requires interaction of teacher students in every field and this Flipped class room is one such interactive class. We can have more topics as flipped classroom out of the total competencies of Biochemistry for under graduates in future. But it won't be justified to replace all competencies of Biochemistry with flipped classroom.

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