Active Teaching Learning Methods for Improving Students Engagement in the Classroom

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Abstract- In today's world, traditional teaching has been losing its impact during classroom teaching. Students get lazy after 20-25 minutes in an hour lecture and it makes difficult to teacher to engage a large crowd classroom. It is the need of the time to use innovative teaching learning techniques to make lectures interactive and create interest among students. These techniques should promote independent, critical and creative thinking among students. Also, increase student's interest in lecture, motivation and performance in examination.

Keywords: Active learning methods, Blended learning, Collaborative learning, classroom, students

INTRODUCTION

In recent years, active teaching learning has become a counterpart to traditional teaching methods and has drawn considerable attention. In a current research it was stated that the students can be more active when active learning is compared to traditional teaching methods (such as lecture), regardless of the subject matter. Apart from that, it creates the interest among students in terms of enjoy the class more and able to persist the information for a long time. The active teaching learning methods allow students to learn in the classroom with the help of instructor and other students, rather than learning by self. In an active learning classroom, students must be proactive and problem solvers rather than passively listen to lecture [8]. Active learning techniques and strategies can be helpful to develop quick activities that engage lectures. They can also be used to completely fill the class time. Drawing the students' attention and keeping them engaged are essential points to the learning process. Active methodologies place the students at the center of this process and make them the leaders of discovery, rather than just passive information receivers. There are different teaching strategies to create an active learning environment and to engage the students to it. Current evidences indicate that active learning improves understanding and information retention. It is also effective in developing higher-order cognitive skills. Nevertheless, the adoption of active methodologies is still low.

This paper aims to emphasize the effectiveness of active teaching learning methods used in the classroom and pedagogy developed by a teacher for undergraduate students. The researchers explore the benefits of active learning strategies used in curriculum and pedagogy course [1].

To promote student's engagement in the classroom, these teaching learning methods are useful in following respects:

- Promote learn ability among students
- Create Self-awareness and evaluation of group processes
- Changing students role from passive learner to active learner
- Helping students to remember things better way
- Team work with their classmates
- Applying course content to real-world examples
- Develop their social skills i.e. to communicate better and have better relationships with classmates
- Problem solving across disciplines

Teaching Learning Methods

The following methods are used during lectures such as: concept map, think-pair-share (TPS), flipped classroom, discussion forum, case studies, problem-based learning (PBL), summary writing and surprise test [2]. These techniques are suitable for classrooms with large crowd.

Concept Map: A concept map is a type of graphic

organizer used to help students organize and represent knowledge of a subject. Concept maps begin with a main idea (or concept) and then branch out to show how that main idea can be broken down into specific topics. This technique is useful when students want to revise their studies during the examination.

Think-Pair-Share (TPS): To engage students during class, Think-pair-share activity is one of the best activities. It is the simple and easy activity for implementation. In this activity, student thinks individually on a given problem, make pair with his/her neighbor and discuss the problem, note down the answer in the notebook and share his/her answer with the class.

Flipped classroom (FC): A flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the classroom. It moves activities, including those that may have traditionally been considered homework, into the classroom. In a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home while engaging in concepts in the classroom with the guidance of a mentor. In the class, presence of instructor and peers is more useful for students to apply their learning, rather than listening to information transmission and asking clarifications.

In a flipped classroom, the in-class time can be devoted to tasks that promote active learning, since information transmission happens before class.

Discussion Forum: The feature in online courseware that gives the instructor the opportunity to post topics for discussion and provides the students a tool for responding. Each topic is referred to as a "thread" The discussion is started by one member by posting a topic and other members reply. This allows members of the same group to share information and ideas. This method promotes collaborative learning among students as well as self thinking ability to give response or opinion.

Case Study Presentations: In case study method, students have to make group of 2-3 members, need to identify topic of their choice from the given list, work on that topic throughout the semester under the guidance of a teacher. Students should visit to organizations according to the domain to collect required information about the problem and produce documents such as SRS document as evidence and give presentations [4].

Problem Based Learning (PBL): Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem. This problem is what drives the motivation and the learning. Students work in a group of 3 members. Everyone has to solve at least 4 problems on the given concepts [5].

Summary writing: It demonstrates the importance of connecting reading and writing. It is well known that writing summary after a teaching for half an hour provides an opportunity to students to revise their understanding of the ongoing topic. This method allows teachers to understand student's involvement in the class and provides direction to organize contents for the next classes.

Surprise Test: 'Surprise test' encourages students to develop their knowledge, skill and attitude. It is conducted using MOODLE learning management tool in MCQ mode. This mode of learning also helps students to get mentally prepared for semester examinations. Also helps to both teachers and students to identify the gap of knowledge i.e. what I am saying in the class room and what students learn from the lecture.

PROCEDURE OF METHODS

At the start of the semester, which active teaching learning methods are to be implemented are listed out. In a lecture plan, according to the nature of contents these methods are scheduled to implement in the classroom [3].

Think-Pair-Share (TPS): While implementing this method, teacher first teaches students for half an hour on the topic that is selected for this method. Teacher writes question on the blackboard for the selected topic. Here, students make pair with their neighbors and discuss on the question, record response in the notebook. After this, teacher asks to any student to present his/ her answer to the class. If the response is not so much convincing, teacher elaborates that response to the whole class. Hence, students can clear

their understanding about the topic instantly.

Flipped classroom (FC): In this approach, teacher first identifies a suitable video of the topic that he or she is going to deliver in the next lecture. Using MOODLE learning management tool, this video or its URL is uploaded for students. Students are instructed to go through the video at home and list the queries regarding contents that they don't understand. During lecture, teacher asks questions based on the video lecture and students share their response one by one to the whole class. Also, teacher clears students queries that they have been came across while going through the video. This method allows students to prepare priory before attending the lecture and initiates learning. Whereas, teacher feels comfortable while teaching as students have in advance information about the topic he is going to deliver. Hence, students can clear their understanding about the topic instantly.

Case Study Presentations: In this method, students are instructed to prepare groups. Here, teacher has to upload a list of topics on MOODLE learning management system. From the given list, students need to identify topic of their choice. They should work on the selected topic throughout the semester under the guidance of teacher. They should visit to various organizations according to the domain to collect required information about the problem and produce documents such as SRS document as well as design documents as evidence and give presentations.

Problem Based Learning (PBL): Here teacher has to select critical topics from the course which can be taken for problem based learning. During lecture, teacher used to solve some example problems on the selected topics, thereafter gives a list of problems to students to solve them. Students learn about a course by working in groups to solve these problems. They have to submit a notebook in which individual has to solve at least 4 problems on the given concepts. PBL method is considered for internal evaluation of the course. Therefore, due to this activity, students get confidence in solving such difficult problems as well as it helps them to prepare for various exams [7].

RESULTS AND DISCUSSIONS

After implementing all these methods in the classroom, we have assessed their impact in terms of quantitative analysis. To perform this analysis, we considered course outcomes, results, student learning index and feedback about teaching learning methods.

Course outcome: In autonomous institutes, we can measure the performance of students by measuring the CO attainment of the course. Here we take the course to which these methods are applied and compare the CO attainment for two consecutive years. After comparative analysis, we have seen the substantial improvement in CO attainment of courses software engineering and operating systems.

Result in ESE examination: Another measure that we consider to specify the impact of active teaching learning methods is the result comparison of the courses for which we implemented it.

Table 1: Result comparison

Sr. No.	ESE	Year 2017-18	Year 2018-19
1	Software Engineering	92.00 %	95.77%
2	Operating Systems	72.22 %	83.78%

There is significant increase in student's results who obtained grades in AB, BB, BC and CC.

Student Learning Index (SLI): To measure teacher's performance, we consider student learning index where students have provided a questionnaire and recorded student's response. The following table shows the comparative analysis of SLI.

Table 2: Student Learning Index Comparison

Sr. No.	SLI	Year 2017-18	Year 2018-19
1	Software Engineering	7.5	9.0
2	Operating Systems	6.8	8.9

From the comparative analysis of SLI, we can state that, the teaching learning methods that teachers have implemented during lectures satisfied students expectation about their learning in the classroom.

Student's feedback on active teaching learning methods: We have also recorded student's feedback on active teaching learning methods. They are provided a list of questionnaire. In multiple choice question type, this questionnaire was provided.

Table 3: Feedback of active teaching-learning methods

Sr. No.	Question	Strongly agree	Agree	Neutral
1	I learn best when my teacher teaches me using a lecture style of teaching	13%	68%	18%
2.	I learn best when my lectures involve active learning	17%	63%	20%
3.	Active learning methods help me to remember things better	29%	57%	14%
4.	Working with my friends help me to develop my social skills	27%	63%	9%

From the table, it shows that due to the incorporation of active teaching learning methods, students experience joy of learning, activity based learning and being proactive in the classroom.

CONCLUSIONS

This paper highlights the impact of active teaching learning methods over traditional teaching methods. These methods are suitable in a large number of student's classroom and can be implemented easily and efficiently. From the quantitative analysis, we can conclude that students can learn, enjoy and complete activity in best manner. This shows impact of teaching in student's performance increase as well.

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