Implementation of Active Learning Tools in Modern Pedagogy

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Abstract: Now-a-days, it is important to integrate innovative tools in engineering education. It is need of hour that conventional teaching-learning techniques should be replaced by state-of-art tools that enable instructor to deliver the content in effective manner so that learners become proactive in teaching-learning process. Active learning tools play a vital role in modern day pedagogy. Today's pedagogical tools in active learning give that opportunity to learners to exercise their problem-solving skills and allow them to work collaboratively in groups. A detailed analysis of tools such as Kahoot, Eclipse crossword and flipped class is discussed in this paper. Our analysis involved engineering learners from Electrical and Electronics and Communication streams from our college. Participation of learners in activities such as Kahoot and Eclipse crossword was more compared to flipped class which indicates learners are more inclined towards puzzle solving and quizzing technique. We examined how these techniques improved students' approach towards learning. It is a prime duty of instructor to engage students in the activities which serves the purpose of learning by doing. Active learning tools play critical role in making students proactive in their learning phase.

Keywords - Teaching-learning, pedagogical, social, Kahoot, Eclipse crossword, flipped class

JEET Category — **Practice**

I. Introduction

Advancements in technology and the application of the technology in every field have emerged tremendously in past few years. Engineering education and modern pedagogy is also going through a transitional period in terms of innovation and acclimatizing to the changes in teaching-learning process. State-of-art technology gives liberty to instructors working in educational field to come up with innovative tools and techniques that raises the bar of content delivery in classrooms and make the process more interesting and learner-centric rather than conventional instructor-driven. It is indeed a challenge for an instructor to encourage student communication and interaction. Creating a collaborative environment than enable a comprehensive learning is a challenge. There is always a gap between active learning and components of teaching viz. course material, assignments, assessments etc. Hence it is important to bridge the gap to promote a high level of student engagement. Key components in every course is to design the course material for content delivery, formulating rubrics to evaluate assignments and developing methods to assess overall performance of students. Active learning tools are such tools that enable instructors with that extra dimension to deal with literature and empower the whole process of percolating the knowledge to the students. There are various online active learning tools available now-a-days such as Idea Spinner, Q&A Platform, Polling, Cubing, Four Quadrants, Whip around, JIGSAW [23] etc. that develop and elevate students complying outcome based education. These virtual tools also provides a rich and joyful experience to students and help them retain the knowledge. Thus active learning techniques are useful in upgrading the soft-skills as well as technical skills of the students.

II. Literature Survey

Active learning technique in a non-conventional way of approaching a teaching-learning process. It contrasts conventional teaching in terms of greater understanding of the subject literature through collaboration with peers, discussions and individual or group work through small projects [10]. A paper on Collaborative inquiry learning [11] shades light on improving engagement of students in class. It aims at bringing a new and promising culture of teaching and learning into the classroom where students in groups engage themselves into activities and develop a strong thinking on lines of how to tackle a problem and come up with a reasonable solution on their own. Conventional chalk and board technique is less productive than an active learning tool used for the same purpose. A comprehensive study [12] about integrating debate as an active learning technique in a group activity was found more effective than a conventional lecture in a class. With the advancements in technology, it gives as added advantage to the instructor to make use of tools based on the state-of-art technology and present an enriching experience to students in teaching-learning process. Various online gaming techniques give teachers and students a valuable returns [13]. Rapid information processing is a valuable aspect of leaning. In order to understand relevant course concepts in short duration of time in class, one of the ways can be to give a short time span and students are required to investigate the topic given to them, analyse the context or in some cases come up with a solution for a particular problem assigned by the course instructor. This definitely helps the critical thinking ability of students. Impromptu presentations can also be integrated as active learning tool [14].It is required to bridge the gap between the conventional abstract class-based methods to fully immersive active learning activities which