Innovations by the Faculty in Teaching and Learning (

Teaching and learning innovative practices encourage the students to have interactive sessions. The faculty members of Information Technology department strive to deliver to the best of their capacity, knowledge and curriculum. They enhance the student learning by adapting student centric methods. It helps the students to understand the concepts well and creates interest about the subject and improves etiquettes and desire to understand. It also improves academic performance and motivates participation in co-curricular activities. The process of teaching includes use of smart boards and projectors for showing and editing various study models online. It also enables students to save the work for review at home.

Following are the best and innovative practices undertaken by the faculty members for improving teaching and learning experience.

Sr. No	Innovative Practices	Goal	Reflection/ Significance of Result
1	LMS/ Teams / Drive	To make study material available to the students and facilitate continuous assessment.	Students are more actively engaged with course material that lead to greater learning gains.
2	Project-Based Learning/ Collaborative Learning/ Live Case Studies/Industrial visits	To expand technical understanding through development in terms of software solutions and hardware implementation for industrial / societal problems.	Students get the opportunity to explore theory to research and present a pilot project with a possibility of further development. They also develop skills and understanding within a particular field.
3	Group Discussion	To share thoughts, listen to others, and explore topics in-depth.	Helps students exercise critical thinking by analyzing and evaluating different viewpoints and arguments. Helps in communication of ideas; Encourages team work (collaboration and co- operation); Opportunity for authentic skill

			development; Opportunity to develop & assess Higher order thinking skills.
4	Expert Lectures	To bridge the gap between syllabus and recent trends in industry.	Helps to understand the recent developments in Industry
5	Quizzes	To impart knowledge and understanding about particular module as part of continuous assessment process in teaching and learning.	Helps in preparation of the topic at the earliest and best way to remember by solving MCQ
6	Mind Mapping Activity/ Think-Pair-Share Activity	To motivate students for self-study and group study.	Students develop skills in interpersonal communication and able to express views in a clear and concise manner. Helps in assessing Higher order thinking, values & attitude; Promoting creative and innovative solutions. Make students alert and active in the class. Mind map helps to identify associations between different elements and can be used for quick review of key points
7	Videos	To encourage the students to view the videos as it is one of the best and frequently used learning platform.	Helps student to get anytime access and thorough revision.
8	Flip Classroom	To motivate the students to learn the concepts thoroughly.	Students are more actively engaged with course material that led to greater learning gains

Table : Innovations in Teaching and Learning

Following are the activities conducted by the faculty:

A. Learning Management System(LMS): While carrying out teaching activities, faculty members use state of the art technology like LMS, where the lecture wise Power point presentations, reading material, Question bank, Discussion forum, quiz, Assignments and university question papers are provided online to benefit the students

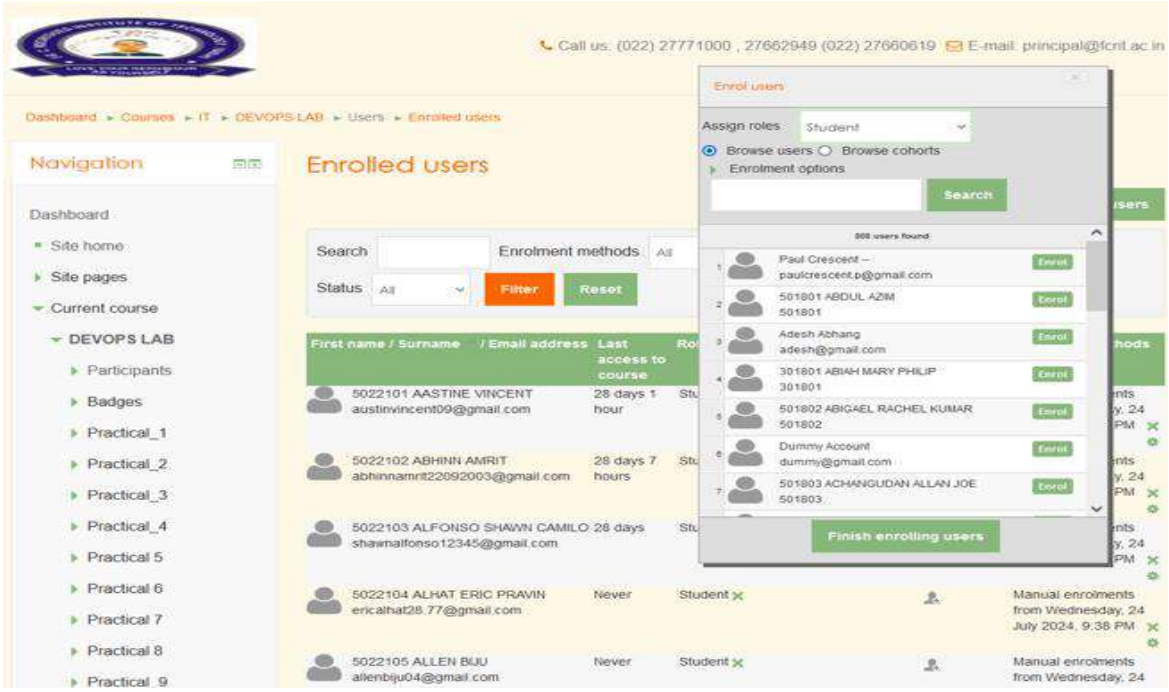


Figure 1: Learning Management System

B. Academic Performance Management System (APMS): APMS is used by faculty as well as students. The class wise attendance is being updated by the respective subject teacher on the website. This enables the subject teacher to facilitate the computing work of attendance and also gives an overall view of the attendance. Internal exams and various test marks along with practical's marks can also be uploaded. This further enhances the maintainability of the marks as a whole. Also helps in facilitating outcome based assessment with summary of marks and co-po mapping.

C. Project-based learning (PBL): PBL in the form of course projects is introduced in some subjects that involves a dynamic classroom approach so that students acquire a deeper knowledge through active exploration of real world challenges and problems. Apart from the course projects, mini project and major project, students are encouraged for developing and completing Mini-projects based on their field of interest during summer vacation after completing IV-Semester exams. Beginning of the V-Semester they have to showcase their

work and present in front of panel members (group of 2-3 faculty). This enhances students' teamwork, communication, and presentation skills. They also learn ethical standards. We also encourage students to participate in various project development competitions. Every year students are participating in various Hackathons and securing prizes also.

Figure 2: Course Project for Internet of Everything

Figure 3: Summer Project Presentation

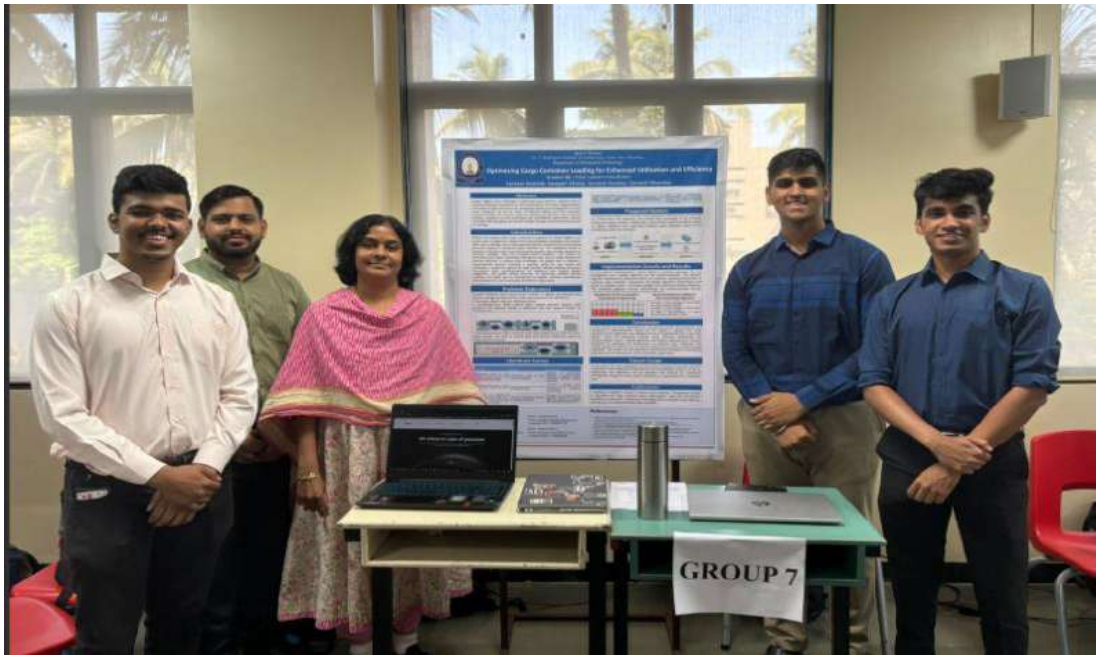


Figure 4: Project Poster Presentation Competition

D. Encouragement of self-learning: Students are encouraged for self-learning. The activities used in the department for students self-learning include:

- Home Assignments
- Case Studies
- Major and mini project works
- Web-based learning
- Flip Classroom
- Student driven seminars.

E. Group Discussion: Group Discussions are made among students to emphasis on learning and sharing. Differences in opinions are explicitly marked during discussions. Students are groomed to participate in group discussions in healthy manner by accepting the criticism in positive way.

Figure 5: Group Discussion

F. Live Case Studies: Live case studies are discussed with students for better understanding of the courses and current trends in the industry.

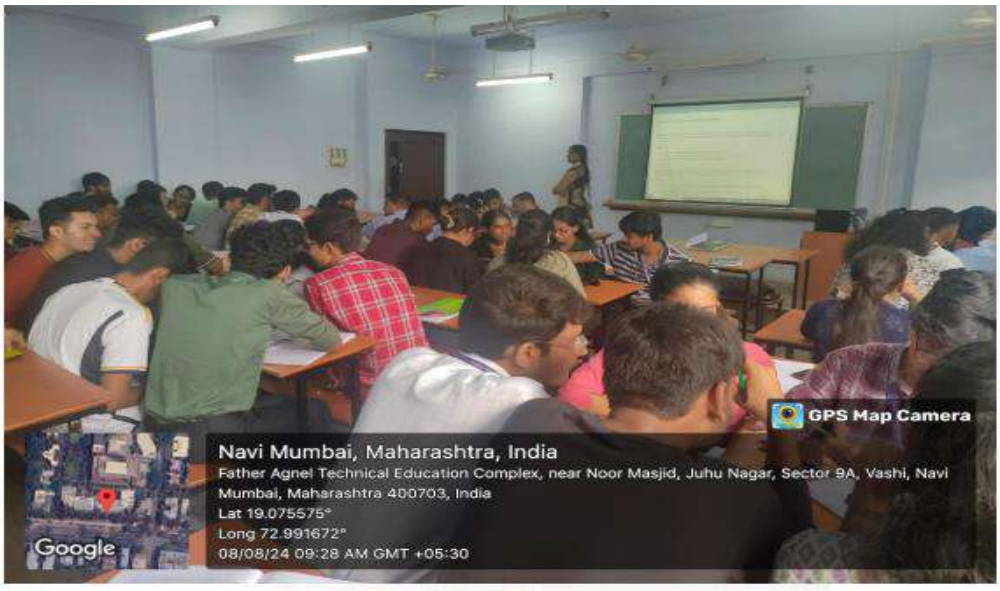


Figure 6: Discussion on Live case study for Entrepreneurship and E-Business

G. Expert lectures: To bridge the gap between syllabus and recent trends in industry, the concept of content beyond syllabus is introduced. Guest/Expert lectures on advanced technologies are conducted for students and faculty.

Figure 7: Expert Lecture on Current Industry Trends for Data Science and AI

Figure 8: Feedback of Expert Lecture

H. Mind mapping activity: Students are asked to portray real life applications and all requirements that support that applications. Students are asked to draw mind map and present that in front of class.

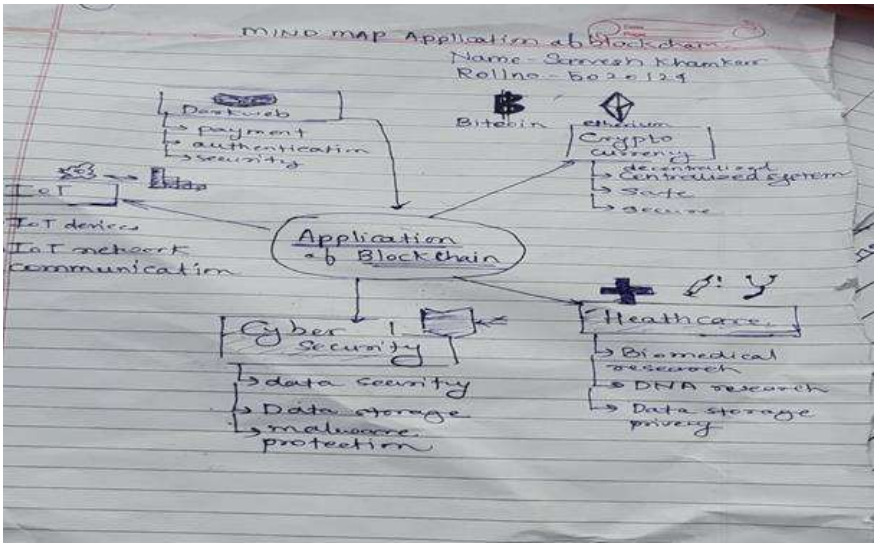
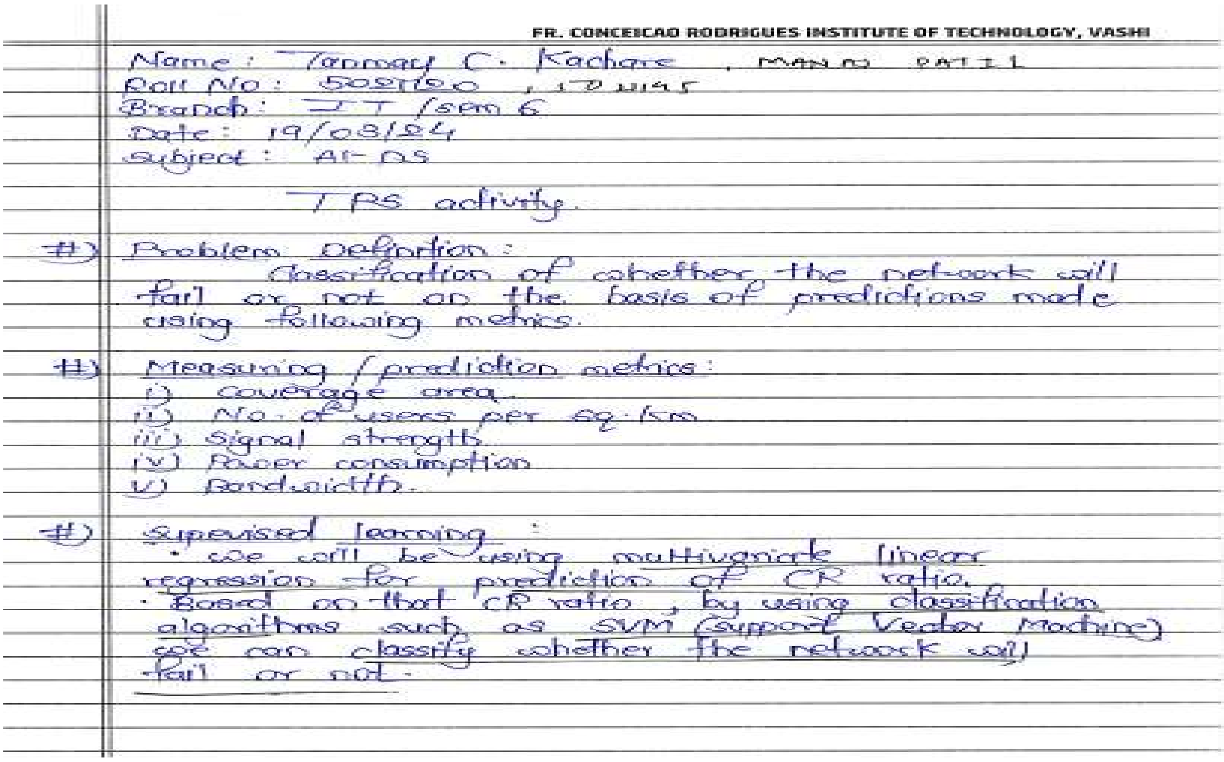


Figure 9: Sample Mindmap drawn by student on application of Blockchain

Figure 10: Students engaged in Mindmap activity

I. **Think Pair Share(TPS):** In TPS a topic is allocated to students and each one writes their perspective on the topic and then discusses the same with other member and after some brainstorming session presents to the class.



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Subject : AI-DS

TPS activity.

#) Problem Definition :
Classification of whether the network will fail or not on the basis of predictions made using following metrics.

#) Measuring / prediction metrics :
i) coverage area.
ii) No. of users per sq.km
iii) Signal strength.
iv) Power consumption
v) Bandwidth.

#) Supervised learning :
· we will be using multivariate linear regression for prediction of CR ratio.
· Based on that CR ratio, by using classification algorithms such as SVM (Support Vector Machine) we can classify whether the network will fail or not.

Figure 11: Sample copy of TPS activity

Figure 12: Students presentation on TPS activity

J. Quizzes: Quizzes are conducted as and when required. It helps students to understand the topic in-depth.

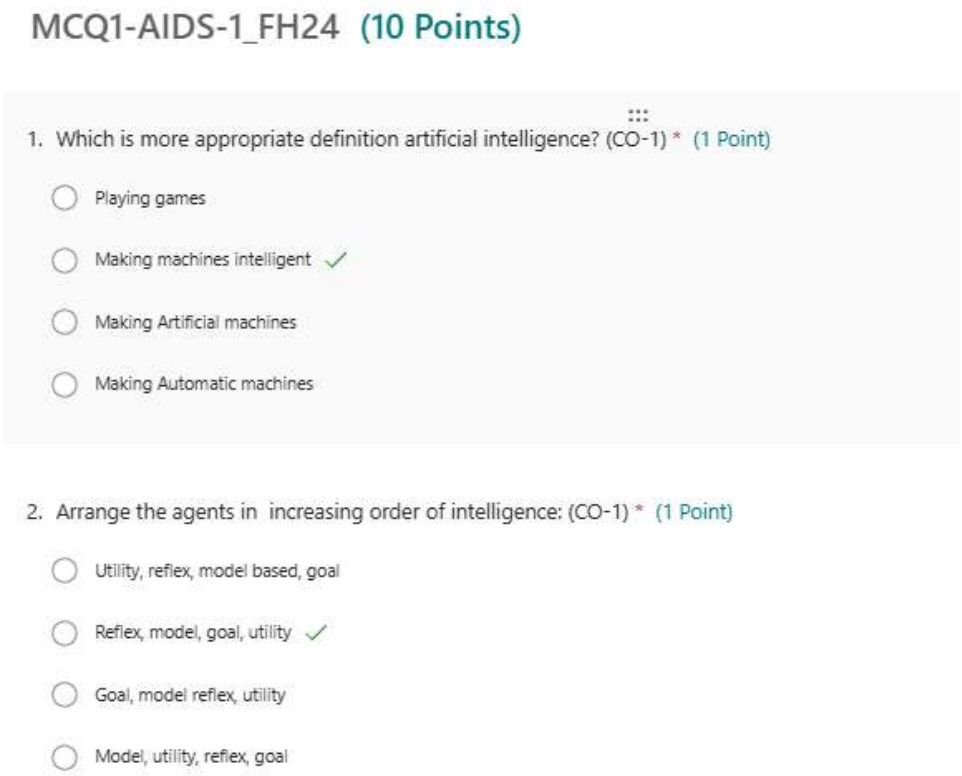

Figure 13: Sample Quiz conducted for AIDS-I Course

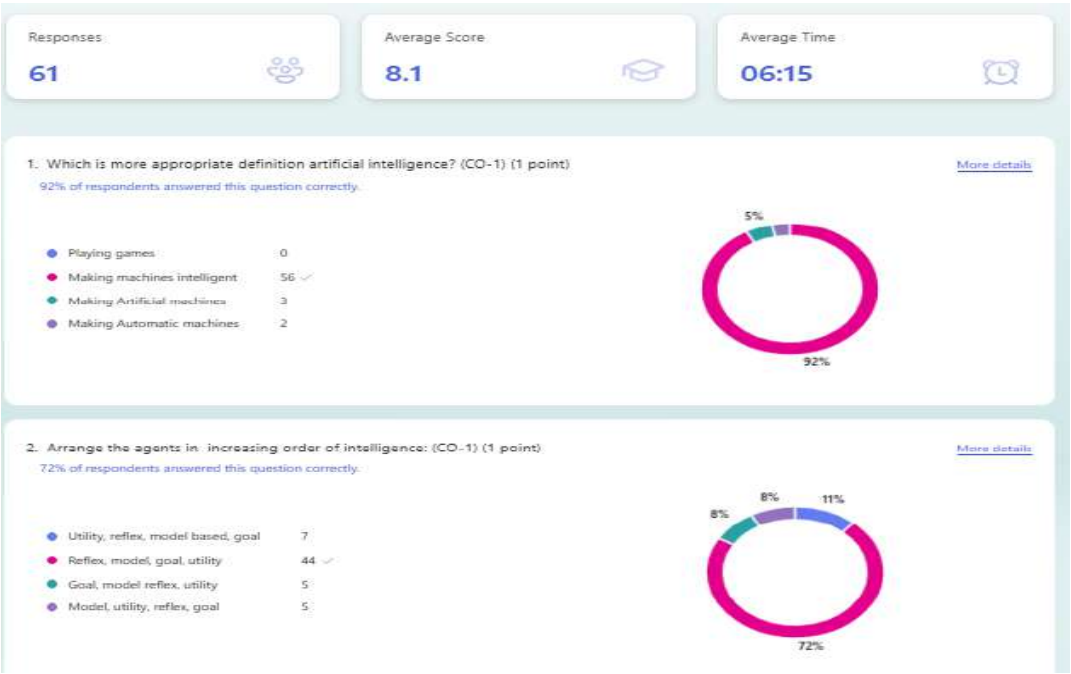

Figure 14: Sample Response of Quiz conducted for AIDS-I Course

K. Flipped Class room: It is a blended learning strategy with the aim to improve student engagement and outcomes. This method requires students to prepare learning before they meet and engage with peers in purposeful activities.

Figure 15: Flip Classroom Activity

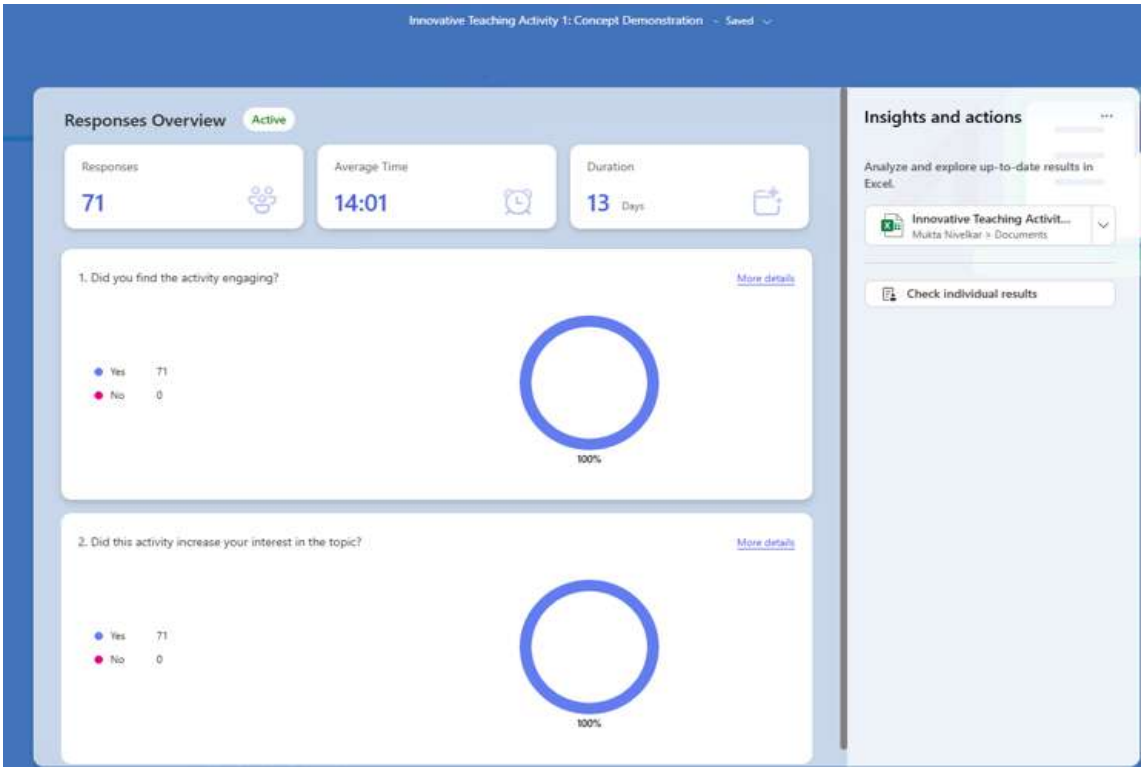

Figure 16: Feedback on Flip Classroom Activity

L. Videos: Videos are used to enhance the overall comprehension of students and allows teachers to present their lessons in a more dynamic way.

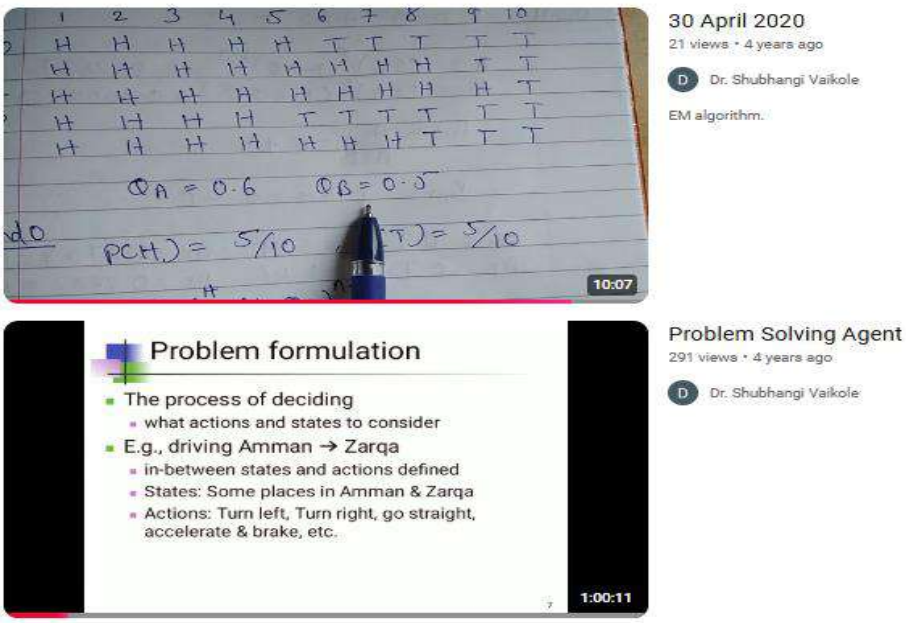

Figure 17: Videos present on Faculty's You Tube Channel

M. Industrial Visit: Industrial visits are arranged for all year of students to get exposure to industry. It helps the students to understand the working/development of any product/process related to that industry.

Figure 18: Industrial Visit arranged for TE Students