

Innovativeness in Teaching Internal Combustion Engines Using Alternate Assessment tool

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Abstract— The teaching learning process in educational institutions around the globe is seeing a paradigm shift in that the centre point is shifted from what the teacher is able to deliver to what the student is able to deliver after completion of his graduation. The present days mantra in educational institutions is the Outcome Based Education (OBE). In the process of inculcating the qualities in the students which help them in achieving the required outcomes as expected by the OBE system, there needs to be an innovative approach in the curriculum development as well as in the content delivery methods. In this direction, an attempt has been made in delivering the subject I.C. (Internal Combustion) Engines to the Mechanical Engineering Students of BMS College of Engineering, Bangalore.

In the modern society where the speed of delivery is of utmost importance, transportation takes the centre stage. I.C. Engines has always been the heart of the transport system. Hence learning IC engines has become a necessity for placements, higher education and research.

Innovativeness is brought about by the usage of Alternate Assessment Tool in delivering the contents of the subject.

Keywords— OBE, Alternate Assessment Tool, IC Engines

I. INTRODUCTION (HEADING 1)

Education is a means of bringing rationality of thinking in man along with making him learned and cultured. From the beginning of civilizations, it has always been the desire of man to innovate and progress. Education adds new dimensions to the creative ability of man's mind. But making education appealing to the students has become the present day challenge in the wake of technology explosion and the ease of access to electronic gadgets.

Creativity is the act or the capacity to conceive something new, original and unusual. Innovation is the implementation of this new something. Invention is the creation of something that never existed before and is recognized as the product of some unique insight. In a company, usually innovation is for a product. But in educational institutions, it can be applied to teaching process or method. But the implementation should be done carefully. Pedagogical studies shed light on the importance of creativity and innovativeness [1]. Creativity

arised through merger of three components namely knowledge, creative thinking and motivation [2].

II. CONVENTIONAL AND INNOVATIVE TEACHING METHODS

A. The Chalk and Talk

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B. Innovative Teaching Methods

a. Enhancing Concept Understanding- Multimedia

Use of images, audio and video results in integrated learning and enhances the understanding of concepts.

b. Enhancing Memory - Creating Mindgaps

Recollection of information can be enhanced by using pictures, music, color and touch. Mindmaps connect the ideas present in the mind. Information presented in the form of graph can be remembered easily.

c. Role Playing And Scenario Analysis

By role playing, the students are exposed to decision making.

III. THE ASSESSMENT FOR CONVENTIONAL TEACHING

Assessment in case of conventional teaching consists of grading system which is given prime importance. Since this has been an age old practice, there is a lot of resistance to bringing change in the assessment to suit the innovative teaching. Assessment has to change if curriculum has to change.

IV THE AAT (ALTERNATE ASSESSMENT TOOL)

Ushering in a new era of innovative teaching practices, the alternative assessment tool provides a means of coming out of the monotonous conventional testing.

Following is a list of possible alternative assessment for innovative teaching.

1. Performance based
2. Role playing
3. Open ended questions
4. Journals and learning logs
5. Portfolios etc.

- b. Working in teams and enhancing leadership qualities
- c. Written communication skills
- d. Contemporary knowledge
- e. Effect on Society and environment

V. IMPLEMENTATION OF AAT

In the direction of Innovative teaching, following aspects were tried while teaching IC Engine

1. Assignments of solving Previous question Papers

The teacher becomes the facilitator in this problem based learning.

2. Peer Evaluation

The students were assigned to evaluate the assignments of their peers during which they learnt from the mistakes of the peers

3. Latest Trends

Students were to survey the recent advancements in various field of IC Engines. For this, they had to download at least ten Journal papers in the particular field chosen and study for the problem statement, methodology, materials and modifications, observations and conclusions. During this study, they prepared a survey paper on the subject of interest. This enhanced their understanding of the subject and increased the understanding of the future scope. Also they were made to work in groups for this survey which resulted in working in teams and developing leadership qualities

4. Presentation of Survey

The students were required to prepare a power point presentation of the survey report and present the same to the peers. This enhanced their communication skills.

5. Seminars

The students were assigned with contemporary topics such as fuels and exhaust emissions on which they presented seminars highlighting their effect on society and environment and how to provide a sustainable solution in such cases.

6. Attending symposium

Students were encouraged to attend symposiums where they could present their literature survey papers.

7. Projects

Students were encouraged to take up projects based on the survey report prepared by them.

By using the alternate assessment tool in place of traditional quiz for 10 marks, certain higher level graduate attributes were attained. These are

- a. Communication skill

VI. CONCLUSION

The usage of alternate assessment tool motivated the students to participate in greater number of events for 10 marks as compared to traditional assessment through quiz for 10 marks. This enhanced their learning skills and also helped to attain certain program outcomes. Students were more relaxed in their approach and applied themselves to perform all the assignments and activities.

Acknowledgment

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References

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