

19. Innovative Approaches in Teaching –Learning Process of Engineering Education

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Abstract

India is one of the largest producers of engineers in the world. Due to its rapid advances in technology and Intellectual science, and a global progress toward outcomes-based education, it requires variety of challenges and changes in design and delivery of engineering education. Even though we have more effective well- defined instructional technique, till now it not be validated by careful and repeatable research. So, it is important to implement newer techniques by gradually and systematically without compromising the syllabus coverage. Therefore, in this study we revealed the exacerbating problem in instructional development and learning approaches that must be developed in the field of engineering education.

Introduction

Instructing strategies fluctuate by teachers. Some address while others illustrate. Some attention on standards while others deal in applications. Some stress memory and recollecting realities while others take a shot at comprehension. Every one of

these sets of instructing styles takes up opposing positions yet each in its own privilege is important and fundamental. Correspondingly, learning strategies differ by applicants. A few students learn by observing and hearing while others learn by acting and reflecting. A few students learn by instinctively making sense of things while others learn by thinking and rationale. A few understudies learn by retaining and drawing analogies while others learn by building scientific models. Every one of these learning techniques is likewise legitimate and exceptionally gainful, each in its own right. Since there are such huge numbers of various facilitating styles and learning styles, bungles in educating and learning can and do happen.

Reviews:

Quality education does seem un-measurable because it evolves with time and technological advances and also depends on the national context. From the decade, academicians and researchers develop a greater number of teaching models to evaluate a system. It so because of challenges and overwhelming task in effective engineering teaching process. But the viewpoints suggest that there is much to be learned about the factors which make teaching good and effective. Therefore, additional research should be focus on Training Module, problem-based learning (PBL), and Assessments. Hence instructional performance and students perceptive plays a key role in students learning and academic achievement.

Instructional practice:

Facilitation can be significantly improving with the aid of modern instructional methods such as ICT, design tools, software and numerous assessment techniques. The media mentioned target our sensory memories and convert them as verbal and pictorial model and integrated as long term memory. It helps learners to Self-exploration, break monotony and develop interaction among learners. Employing ICT in Teaching-Learning process may depend on requirement of industry. Because the industry requires engineers those had sufficient understanding of the operation and limitation of design/Software tools. There forth to attract the students' teachers must update their skills to use these tools effectively.

Compendium of learning components:

It is important to relate student with content in teaching. The teacher can improve the efficacy only by considering the component like Motivation, Perception and attitude of the learners. Here are some learning principle needs for engineering education.

- Provide structured objectives relevant to their improvement level
- Improve learners' retention mode by ICT classroom
- Repeated practice for problem solving
- Co-operative Learning (Group processing)

- Feedback

Teaching and Learning Styles

In order to get more desired quality engineers, we faced more difficulties in gearing engineering education. So, learning styles and instructor teaching style are parallel and vary naturally from one to one. Hence sticking with one may not create enjoyable learning environment and create monotony among learners.

Learning model classifies students on a number of scales related to how they receive and process information. Also proposed in parallel, teaching style depends on how well they address the projected learning style components. Based on Felder and Solomon style the learners are categories in to four. They are

1. Sensory- Intuitive,
2. Visual-Verbal,
3. Active –Reflective and
4. Sequential- Global.

Hence both Instructor and learning style should match one another. Due to frustration on the part of the teacher and missing opportunity by the student, learning style of the student mismatch with the traditional teaching style.

Problem Based learning

PBL is simply annex of the traditional lecture and is very necessary for engineers. But a greater number of students are not interested in solving unseen problem as it requires higher level of skills. Therefore, to develop these skills among students, here it is a way of practice student with closed ended problems.

In-Class Activity practices

Active learning techniques can promote in engineering classes, includes Jigsaw puzzles; review of muddiest point; Think- Pair-Share; quiz bowl for studying; use of multi-media; use of props; candy questions; mind breaks; engaged tests; overview, prime, drill, check etc [1,2]. An engineering class can be made interesting and enjoyable by involving students in these activities beyond the typical classes required.

Flexible learning environment

Flexible learning is creative methodology for conveying well designed, student focused and Interactive learning condition by using the qualities and different methods of learning working together with Instructional structure standard and use of time. In this FLE student make over to connect content with skills. When the teachers are working more collaboratively, they see connection across the skills and content of their specific courses. At the point when the instructors are working all the more cooperatively, they see association over the abilities and

substance of their particular courses.

Creative assessment and Evaluation

In order to understand the student difference in their attitude about teaching-Learning and Instructional practice the assessment and evaluation was carried out in class due to,

1. Get immediate response
2. Grading, Selecting & System accountability
3. Give feedback on current understanding

An assessment has an important role in engineering education. Without fix to older technology the assessment may carried out with newer techniques. To improve the learning, instructors inform student to summarize the keywords of their lecture in boards as a self-assessment. Leadership board is also another authentic process of evaluating leadership skills of students among groups. In this student were grouped and their daily activity performance was noted and graded.

Conclusion

The learning styles of many designing understudies and the instructing styles of many Engineering educators don't generally coordinate. Many building understudies are visual, inductive and successive students. Many Engineering educators and Engineering programs then again are sound-related, deductive and instinctive. By accommodating different learning

style, the teacher can able to teach wide variety of student

Reference

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