Innovations by the Faculty in Teaching and Learning

Introduction:

The key role of a teacher is to teach, which can be understood as meaning to facilitate learning of some target curriculum. Teaching is therefore intimately tied to notions of learning and there is a sense that if students do not learn then whatever the teacher is doing does not deserve the label of 'teaching'. The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goals for the country.

Traditional Teaching Method:

- In the pre-technology education context the teacher is the sender, the educational material is the information and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the "chalk-and-talk" method and LCD projector transparencies. This learning perspective is a popular technique, which has been used for decades as an educational strategy in all institutions of learning. Basically teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge.
- D-Space has been created in CAYm3 as information source for students where they can explore research papers of faculties and various lectures delivered by faculties, so course material and Lab manuals are being uploaded to D-Space for ready access to students.

Statement of Clear Goals:

Teaching process is effective when it is tied to learning of students then only it is said to be outcome based teaching learning process. We follow the following procedures to achieve the outcomes.

- The institution is affiliated with Rajasthan Technical University. The ECE Branch of the institution has to follow the prescribed syllabus and scheme which is framed by the university.
- Course outcomes are framed accordingly by the faculty members.
- The course outcomes are interlinked with POs and PSOs.
- Mappings of POs and PSOs with curriculum are available in the department.
- Course outcomes and Program outcomes are mapped. The attainment levels of the university curriculum in terms of individual course(s) and POs are identified. Outcome assessment methods include, but are not limited to midterm examinations, quizzes, university examinations and laboratory examinations.
- This assessment (followed by the data analysis in terms of midterm marks, university results analysis) ensures compliance of the university curriculum, POs and PSOs.
- The gaps are reviewed by the DPAQIC and suitable measures are recommended and devised by DPAQIC to bridge the gap in the form of theory, practical and sessional course work, beyond syllabus teaching, expert lectures and co-curricular activities.

Mapping of Curriculum Courses with POs is carried out in order to :

- Enable assessment of attainment of POs from the attainment of COs
- To identify curricular gap in attainment of POs and PSOs, and to design addition al learning material/exercise/ activities to fill the curricular gap.

Innovative Methods of Learning

Following innovative learning methods are initiated and implemented by the faculty for students to learn in a better manner.

1. Power Point Presentation
2. OHP Slide
3. Animated Video Lectures
4. Role Play for Deep Understandings of Concepts
5. Smart Class Rooms
6. Digital Library(Del Net)
7. Group Learning(Tutorials & Lab Experiments)
8. Innovations in Assessment(Midterm paper according to blooms taxonomy, Unit Tests, Assignments ,Library Assignments)
9. Innovations in Evaluation(Solution with Stepwise marking system uploaded after the exam on D-Space)
10. NPTEL & Swayam video lectures are referred to improve the quality of Teaching

Computer and Internet facility:

The facilities abundantly used for the teaching-learning processes.

Objectives:

- To provide direct access to quality instructional resources through computers connected in LAN and Internet
- Motivate the students for electronic presentations (PPT)
- Assess the students through online quiz tests for better learning

Facilities Created:

- Smart boards are consistently used in the class-room lecture delivery.
- Internet facility is provided to students for deeper inquiry into their subjects.
- The technologies are used even in the co-curricular activities during seminars, workshops every classroom is provided with computer with LAN and internet connection.

Outcomes:

- The students and faculty are engaged in effective teaching and learning process

Laboratory Improvement

The laboratory learning is made very effective through the implementation of an innovative program namely Laboratory Improvement for Future Trends (LIFT).Under this program the faculty member handling the laboratory sessions shall prepare a manual with different activities.

Objectives:

- Conduction of advanced experiments.
- Collect research literature related to the lab Participate in the maintenance of the lab.
- Execute project as product to solve real Life Problems.
- To create awareness among the students and develop Industry –Institution interactions and reach the standards in laboratories.

Facilities Created:

- Creation of additional facilities for advanced experiments-**Virtual Lab**
- Motivate students for entrepreneurship through- **Incubation Center**

- Student can access research papers through digital library and able to publish their paper related to project work-**Research Centre**

Outcomes:

- Experience in collecting literature
- Preparation of maintenance manual
- Prepare working model/execute hobby project
- Student publications

Advance Learning Domain-Beyond Curriculum Activities:
Objectives:

The Objective of the activity is introduction of new experiments beyond course curriculum in day to day regular lab sessions.

Methodology:

These Topics are taught to bridge the gap between curriculum and POs and PSOs. Understanding of these topics are very useful for the students to get awareness with recent developments in industries and relevant areas.

Outcomes:

Technical knowledge in labs is improved. Design hobby projects.

Group Learning OR Collaborative Learning :

A collection of students who are intellectually, and aesthetically engaged in solving problems, creating products, and an assemblage in which each student learns autonomously and through the ways of learning of others. By group, we refer both to the learning of individuals that is fostered by being in a group and to a more distributed kind of learning that does not reside inside the head of any one individual. Rather than focusing only on what the individual knows, the goal is to build a collective body of knowledge; learning groups strive to create publicly shared.

Innovations in Assessment:

Objectives:

- Simplify the assessment of course outcomes and program outcomes
- Take corrective actions during the middle of the semester for better attainment levels of course outcomes and program outcomes.

Quality of internal semester Question papers, Assignments and Evaluation (20)

(Mention the initiatives, implementation details and analysis of learning levels related to quality of semester question papers, assignments and evaluation)

Initiatives and Implementation details of mid-term examination

The mid-term examinations (theory and practical) are scheduled by examination cell of institute as per university requirement. The department holds two mid-term examinations in every semester. The mid-term exams are of 15 marks each.

The department has three sections in each semester. As such, the department follows the policy of having two or three teachers of a particular subject for different sections. The examination paper is set by proper consultation between concerned faculty members and a common paper is set for all the sections of a particular semester.

Quality of Internal Semester Question Papers

Following points are considered for setting question papers:

- Question Papers are set as per university pattern
- Due Consideration is given to Bloom's Taxonomy in setting Question Papers of mid-term Examinations.
- Individual attainment of COs of specific subject is done by question wise assessment of mid- term (internal) marks. The rubrics are developed for finding the criterion of assessment. If a specified criterion meets for particular question, it is assumed that particular CO (for the specific question) is attained.

Following documents are prepared for every question paper of internal exams:

- The question paper is set according to the guidelines issued by Examination cell of Institute.
- Solution and marking scheme of the paper.
- Mapping of each question with appropriate Course Outcomes.

The question paper and its solution is sent to the Examination Cell in a sealed envelope after due approval of HoD.

Quality of Assignments and Tests

Self learning assignments are given to students to improve their comprehension and application of the theoretical knowledge.

- Assignments requiring use of tables, charts, searching data from internet are also included.
- Library and Internet Assignments are given to students to inculcate in them Life-long learning skills.
- A set of questions are prepared after completion of each unit by concerned faculty member in relevant subject and given as assignments to the students. These are solved by students for in-depth knowledge of the topic.
- After completion of each unit of relevant subject, unit test is conducted by concerned faculty member. Test papers are prepared similar to those in competitive exams.

Methodology:

Special Assessment :Midterm paper are set according to blooms taxonomy, Unit Tests, Assignments ,Library Assignments are implemented to collect the attainment levels of course outcomes and program outcomes on frequent basis.

Outcomes:

- Effective teaching and learning process
- Better attainment levels of course outcomes and program outcomes

Innovations in Evaluation:

Evaluations of students are done by the faculty and also review by HOD to maintain transparency and uniformity. An innovative assignment evaluation method is also present with the following objectives:

Objectives:

- To enhance the understanding levels of the subject
- To improve the presentation skills.

Evaluation of Mid-Term Examinations

- The evaluation of mid-term examinations is carried out in accordance with the applicable marking scheme.
- A total weightage of 20 marks is assigned to internal semester examinations. The mid-term examinations are of 15 marks each. 5 marks are reserved for attendance and classroom interaction.
- 10% of evaluated answer sheets are randomly checked by HOD.
- The evaluated answer books are shown in the class, and marks finalized.

Assessment of Internal and external marks

- Assessment of internal and external marks is done on the basis of each subject (Theory and practical). Predefined rubrics (illustrated in Section 3.) are used to assess the marks and the gap is identified. If the gap is not within the range, some activities for bridging the gap are done such as: make up classes, expert (guest) lectures etc.
- Continuous assessment system is also implemented for assessment of laboratory work.

Methodology:

Solution with Stepwise marking system uploaded after the exam on D-Space after reviewed by HoDs. Evaluation is done according to that marking scheme only, which creates a transparency in marking system. Evaluation of the students is also carried out on the basis

of assignments. Home assignments are also given to students. Library assignments are allotted to the students which are to be solved using reference materials.

As per the RTU guidelines the evaluation process of students for practical and theory exams are segregated into two components 80 % component is of university examination and remaining 20 % component is for midterm or internal examination. For evaluation of the course outcomes following procedures are taken into account.

A. Two midterm examination of 15 marks each

B. Unit tests

C. For practical lab examination two internal practical examinations are held. These account for 60 % of total marks. The components of these exams are attendance, written test, lab record, student performance and viva voce.

D. University examinations (for evaluation purpose the data is taken from the university TRs)

E. Student portfolio during DECA Examinations

Evaluation Scheme for Discipline and Extracurricular Activities (DECA)

The evaluation of DECA is segregated into two components.

- Component A
- Component B

The component A is a base component which account for 60 % of the total marks. This component is based on the student attendance in the class. The evaluation of component B is based on their participation in the extracurricular activities. Any student, who takes active part in any activity such as blood donation, NCC, NSS, Sports & Games, cultural activities, paper presentation, annual day celebration and publication of articles in institute magazines or Moderate participation in two activities, may be awarded 20 marks.