DON BOSCO COLLEGE OF ENGINEERING, FATORDA-GOA

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

INNOVATIVE PRACTICES IN TEACHING AND LEARNING

Sr. No.	Faculty	Subject	Subject Content Links	Description
1	Dr. Varsha Turkar	Image Processing	https://drive.google.com/drive/ folders/1_d4111QbqSVLVOxP 3L4IS- D899jrj3t_?usp=sharing	GOOGLE DRIVE LINK: Fundamentals of Image Processing Spatial and Frequency Domain Enhancement Techniques
2	Mrs. Trima Fernandes	Circuit Analysis and Synthesis	https://drive.google.com/drive/ folders/1Sy8bv- o5UzQmR3olhWIhewx01n0ji 3Sd?usp=sharing	GOOGLE DRIVE LINK: Video Lectures on Concepts and Problems in Circuit Analysis and Synthesis.
3	Mr. Yeshudas Muttu	Electronic Devices and Circuits	https://www.youtube.com/play list?list=PL- HZDwLAnpvFYy8udQBnv6Q fA8CuBonwV	YOU TUBE CHANNEL: Video Lectures on Concepts and Problems in Electronic Devices and Circuits.
4	Mrs. Mohini Naik	Electromagnetic Fields and Waves	https://youtu.be/iIJ0pRPCqzI	YOU TUBE CHANNEL: Video Lectures on Concepts and Problems in Electromagnetic Fields.
5	Ms. Priyanka Padiyar	Introduction to Java	https://www.youtube.com/play list?list=PLxs3FjwX993l4kfFr sM8uDTK8E6spUFi6 https://drive.google.com/drive/ folders/1wTl_Qpn9JxcOTGfX OjkHoHhqEBh9o1CE?usp=sh aring	YOU TUBE LINK: Video Lectures on Introduction to Programming in Java, Basic Concepts in C and Cpp.

There's quite a bit of evidence that technology, when used in the right way, helps students learn. While technology, in and of itself, does not always spur innovation in the classroom, there are countless innovative ways to use technology to better teach and engage students. Here are some examples:

Project-Based Learning:

Project-based learning (PBL) is an effective and enjoyable way to learn. PBL also develops deeper learning competencies required for success in college, career, and civic life.

Project-based learning uses real-world scenarios, challenges, and problems to engage students in critical thinking, problem solving, teamwork, and self-management. Once students solve the problem or challenge, they present their solutions. The problems students solve can be presented to community leaders to solve problems in their own community.

PBL uses collaboration, digital tools, and problem solving skills to come up with a solution to the problem presented.

- PBL makes school more engaging for students
- PBL improves learning
- PBL provides opportunities for students to use technology
- PBL makes teaching more enjoyable and rewarding
- PBL connects students and schools with communities and the real world

(https://www.amle.org/BrowsebyTopic/WhatsNew/WNDet/TabId/270/ArtMID/888/ArticleID/87 6/Innovative-Teaching-Strategies-that-Improve-Student-Engagement.aspx)

Flipped Classroom:

Flipping the classroom is becoming an increasingly popular effective teaching method. In this technique, the students are made active participants of the learning process by passing the onus of learning on them, it requires the teachers to relegate to the role of resource providers and the students take the responsibility of gathering concepts information. Using various tools of technology the students are encouraged to constructing knowledge, fill in the information gaps and make inferences on their own as and when needed.

Problem Based Learning:

Problem-based learning is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem. This problem is what drives the motivation and the learning. Rather than teaching relevant material and subsequently having students apply the knowledge to solve problems, the problem is presented first. PBL assignments can be short, or they can be more involved and take a whole semester. It is often group-oriented, so it is beneficial to set aside classroom time to prepare students to work in group and to allow them to engage in their project.

Creating Mind Maps:

A mind map can be created to depict how a concept breaks down into its parts, what those parts mean and how they tie into each other. This approach helps students understand new things in ways that make sense to them, allowing them retain new information for much longer.

Seminar Method of Teaching:

Seminar is a form of a class organization that utilizes a scientific approach for the analysis of a problem chosen for discussion. It is a discussion method of teaching where a group of students learners participate to solve problems in a scientific approach and analysis. The objective of the seminar is to give students opportunity to participate in methods of scientific analysis and research procedures. Students are expected to do considerable library search prior to the seminar. A seminar group is mainly concerned with academic matters rather than individual students and commonly involves the reading of an essay or paper by one group member followed by a discussion by the total group on the topic. The role of a teacher is to help students to select, formulate and resolve the most significant problems and suggest the available sources of information. As the seminar progresses, the students assume greater responsibility for addressing the problems and conducting discussion.

CASE Based Strategies:

Using a case-based approach engages students in discussion of specific scenarios that resemble or typically are real-world examples. This method is learner-centered with intense interaction between participants as they build their knowledge and work together as a group to examine the case. The instructor's role is that of a facilitator while the students collaboratively analyze and address problems and resolve questions that have no single right answer.

The objectives of Case based study are as follows:

- 1. To provide students with a relevant opportunity to see theory in practice.
- 2. To require students to analyze data in order to reach a conclusion.
- 3. To develop analytic, communicative and collaborative skills along with content knowledge.

Many faculties also use case studies in their curriculum to teach content, connect students with real life data, or provide opportunities for students to put themselves in the decision maker's shoes.

Field-Based Learning:

In field-based learning, teaching is extended to a site outside of the classroom or laboratory, exposing students to a real-world setting. Students learn through direct interaction with an environment that reflects taught concepts rather than learning through indirect presentations of the setting such as textbooks or lectures.

Field-based learning is generally chosen because the experience:

- Provides an opportunity to present materials, objects or phenomena that are not accessible otherwise to students in a way that enables direct contact and interaction
- Provides students with an opportunity to practice skills or techniques that cannot be carried out elsewhere
- Stimulates higher understanding and reinforcement of previously learned classroom material
- Stimulates an appreciation for, concern or valuing of the visited environment

Lab-Based Learning:

Laboratories are wonderful settings for teaching and learning science. They provide students with opportunities to think about, discuss, and solve real problems.

In order for labs to be effective, students need to understand not only how to do the experiment, but also why the experiment is worth doing, and what purpose it serves for improving students' understanding of concepts, relationships, or processes.

The objectives of Lab based Learning are as follows:

- 1. Develop basic skills such as inquiry, investigation, organization and communication.
- 2. Building Concepts such as Critical Thinking, Problem Solving, Application, Analysis and Synthesis
- 3. Understanding nature of Science i.e. the interrelationships between science and technology and amongst disciplines of science.

(https://www.queensu.ca/ctl/teaching-support/instructional-strategies/lab-based-learning)