Best practices in academics/teaching-learning by Abhishek D. Patange

I believe project based learning can only match the expectation of modern day students. Hence I always incorporate in my teaching project based learning, industry oriented teaching modules, case studies which makes student more interesting. Along with this my interest in research activities will help students for undertaking creative projects, publications etc. The administrative roles, on I served, will be helpful in respective activities such as accreditation etc. I will ensure my key role in organizing the training program, seminars and workshops for getting tune with technological advancements.

'Innovative Ways' in which I have facilitated my teaching-learning processes

Evidence of success

Case I:

In the elective subject of analysis and synthesis of mechanisms, the task of 'modelling and fabrication of mechanisms' was given to students in group of 4. However, near about 12 models of different mechanisms of are used in lab for demonstration. The students' involvement is raised to such level that they are thinking on future modification, filing a patent, converting prototype into commercial product etc.

The presentations of this activity are recorded and some of the videos are uploaded on YouTube for helping engineering aspirants to understand real time applications. The links are:

- Toe-operated Drum Pedal by Rohan, Kaushal, Naman, Riyaa
  https://www.youtube.com/watch?v=v_IEjhC_3dE
- Watt's linkage by Apoorva, Hrushikesh, Aditi, Sana
  https://www.youtube.com/watch?v=aUdsoSe_8G8&t=456s
- Synthesis and Analysis of Ellipse Drawing Mechanism by Devendra, Shirish, Vinayak
  https://www.youtube.com/watch?v=DZVQlPVee_w&t=4s
- Synthesis of four-bar mechanism for loading-unloading of boxes by Nikhil, Neha&Sayali
  https://www.youtube.com/watch?v=Ba0pAEI64pI&t=224s

Case II:

The project based learning for the subject of mechatronics and theory of machines was implemented. Three large classes of 70+ students were grouped in to 3-5 students per batch. Project phases were defined as; Project Identification, Specification, Development, Conceptual Design, Detailed Design, Delivery, Service and Maintenance. The PBL served as an efficient framework as it not only ensured holistic development, building of teams, sustainability, improved higher-order cognitive skills, learning ability, soft skills, self-efficacy and communication but also accumulated near about 60 innovative working prototypes in mechatronics laboratory. The research paper is presented in a conference and published in a journal as:*'Improving Program Outcome Attainments Using Project Based Learning approach for: UG Course – Mechatronics', Regional Research Symposium on PBLOrganized by Centre for Engineering Education Research, KLE Technological University, Hubballi, in Collaboration with Aalborg Centre for Problem Based Learning in Engineering Science & Sustainability under the auspices of UNESCO, Aalborg University, DENMARK (21st- 23rd November 2019)*

Case III:

Recently in subject 'Numerical Methods & computer programming', I've started with an initiative of 'Research based learning' and implemented for approximately 150+ students of third year mechanical engineering at COEP. Students are directed to find and study the research paper as per own interest related to any domain of mechanical engineering where one of the numerical method is used for analysis. The presentations of this activity are recorded and some of the videos are uploaded on YouTube for helping engineering aspirants to understand real time applications of Numerical Methods. The links are:

- A study of statistical analysis for predicting E-Rikshaw range by VispiKarkaria (141810022)
  https://www.youtube.com/watch?v=Y9rIXmlGe08&t=4s
- Newton Raphson method for determination of stability by RohanGhatpande (111710040)
  https://www.youtube.com/watch?v=x0nPrCKhWE8&feature=youtu.be
- Characteristic velocity stability indicator for cars by Vaishanvi (111710017) &Samiksha (111710018)
  https://www.youtube.com/watch?v=qBrJEXw46xI
- Study of application of Newton Raphson method by RushikeshKhade (111710060)
  https://www.youtube.com/watch?v=FpdVP8GAXsI&t=668s
- Study of Interpolation method by SohelShaikh (111701045)
  https://www.youtube.com/watch?v=B2Egx0HA_jk&t=361s
- Thermal analysis of convective fin by numerical analysis by Devendra (111710008)
  https://www.youtube.com/watch?v=_O7IwkF8x-c&feature=youtu.be