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RESEARCH ARTICLE

IUCEE INTERNATIONAL ENGINEERING EDUCATOR CERTIFICATION PROGRAM [IIEECP]

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ABSTRACT

Teaching is a noble profession and our country has seen renowned teachers in various fields. Teaching Profession has evolved over the years and the demands of the profession has evolved over the years and the demands of the profession varies at different levels as for schools, colleges, professional colleges etc., Different schools promise global teaching with local knowledge etc., not being able to draw the line in the dynamic education scenario. NEP calls for nationalization of curriculum, while the states call for regionalization. To adopt for the ever-changing technological developments, it is required to elevate faculties at a global level. The certification programs help meet this demand. IIEECP is one such program that certifies Educators and prepares them to implement Active learning and Outcome Based Education to make Teaching standardized to the Global level. The Paper is about the Experiences of the Author in the journey towards the completion of the Course.

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INTRODUCTION

IEECP course is offered by the IUCEE to enable educators who to champion Active learning and Outcome based Education in their institutions to get certification for their teaching abilities, to follow practices on par with global institutions. While the motto is futuristic, one should not forget that the adaptation to the local needs cannot be sidelined at all. The Course comprises of selected lectures by global experts over Canvas platform for a period of six months on particular days of the week. The course consists of Six modules: 1. The Teaching learning process (TLP), 2. Course Design and Delivery 3. Creating a dynamic Classroom 4. Harnessing the power of TECHNOLOGY 5. Effective Assessment.

Module 0: Essential Information about the Course: The course starts with the essential information about the course. The participants have to edit their profile on Canvas Platform (5Pts). Course Attendance is there for 45 points. The policies regarding the course will be provided and details of grading for every assignment in each module will be provided.

The complete schedule of the course is preplanned. The following are the Guidelines: Weekly workload has to be submitted without plagiarism and with academic integrity. How to make up for failed/missed assignments and to communicate with IIEECP staff, what is the evaluation scheme etc ., are given in detail. Criteria the course consists of five modules and lectures were delivered through weekly online zoom sessions and office hours were used to discuss and clear doubts and weekly graded assignments and discussions were conducted for a period of six months and the certification completes with the participants meeting the criteria of assignments, discussions, attendance, Teaching Portfolio Submission and Final Capstone Presentation.

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Module 1: The Teaching Learning process (TLP)
-Dr.Veena Kumar

The Teaching Learning process was briefed and different humanistic theories of learning were discussed. Indians are more theory oriented while international education is quite practical. Examples of theories from Plato were quoted, as it is important to understand how the learning happens and has evolved over the years and interaction with participants happened and the audience wanted more of examples from the Indian history in this regard to be discussed, as India is known for masters since ages. [1] Brain based Learning is one technique emphasized from the neuroscience perspective and the following strategies were recommended.

1. Deliver content in small chunks.
2. Make content relevant.
3. Plan and implement group activities.
4. Embed assessment in everyday instruction.
5. Provide constructive feedback.
6. Partner with Technology.
7. Make yourself accessible.

Lowman's 2D model maps Intellectual Excitement (IE) Vs

Interpersonal Rapport (IR) for Effective Teaching. Intellectual Excitement is the ability of the teacher to present the teaching material with clarity and also to think at various angles and make connections with other academic material. Interpersonal rapport is about knowing the students and their needs and ensuring positive atmosphere inside and outside of classroom. A true exemplar should have high intellectual Excitement and can have low, medium or high interpersonal rapport.

Module 2: Course Design and Delivery (CDD)
-Prof. Neeraj Buch

Course learning Objectives (CLO) were taught to be written for a course. Learning objectives for the entire course followed by Module level objectives to lecture level objectives were recommended. Generally, when a course is taught, say, the second time, the teachers will use their experiences and apply backward design and keep the objectives clear before even starting the topic, which is highly recommended. MOOCs and open education and their implications for Higher Educations was discussed and different models of integrating MOOCs into the curriculum were debated for Undergraduate students. While encouraging students for taking MOOCs on various streams, offering MOOCs by the faculty was also on the cards. Peer Supported Independent Study (PSIS Activity) was taught. Proper choice of topics for the activity, which the student can learn independently has to be chosen and may be the students can be asked to submit presentations on the topic and best few presentations can be discussed in class.

Flipped classes should become integral part of every course: The students can be supplied prior material related to what is going to be taught in the next class, during which the students will prepare themselves on the topic and come prepared and ready for the class with their predetermined knowledge set and clear their understanding further through active discussions in class. Flipped class exercises were given to the participants and implemented for a particular topic and reflections on the effective conduction happened during the course. Students were given a video on what is a flipped class and how the students should make use of the materials and come prepared prior to the actual class and what can be done next during the class. Careful choice of topics for this activity is required from the faculty.

Module 3: Creating a Dynamic Classroom:
-Dr. Stephanie Farell

A typical class should have Student engagement for some time, the objectives have to be set for the class, Concepts presented and student engagement again in the form of questions, polls, quizzes, exercises, again presentation of concepts and summary of the discussions, for an active learning. Proper planning of the lectures in advance is required for conducting such classes. Thinking Aloud Pair Problem Solving (TAPPS), Three Step Interview, Think-Pair-Share (TPS), visible quiz, Send/Pass a problem, value line were some active learning techniques shared [3]. Ten In-Class Activities were suggested among which One minute paper caught everyone's attention. The students can quickly give in writing what they liked or disliked on a particular class topic or lecture. A JigSaw Activity was planned and executed. The whole class was divided into groups and assigned tasks. The students were actively engaged in solving the problems. During the activity, one student from each group will move out of the group and discuss with the expert group outside and comeback and contribute to the group activity. At the end of the task, each group can present their solutions in front of the class.

Students could successfully implement this puzzle activity and a survey was conducted about the activity and the students were glad to take more such activities as an outcome of this event. The approach is not every activity will be welcome by the students. It is important to reflect and analyze the shortcomings and keep improving in a way that suits both the students and the Teacher. Collaborative learning in the form of group activities and projects were emphasized.

- Jigsaw
- Teams-Games-Tournaments (TGT)
- Student Team Achievement Divisions (STAD)
- Team Achievement Individualization (TAI) were some of the activities proposed.

Experiential learning through Problem based learning and project based learning were highly recommended. Assessment of collaborative work was also recommended. Our learning platform should slowly accommodate different approaches to make way for active learning for large classrooms. Lot of references were shared in this regard, which if implemented properly can truly transform Education.

Module 4: Harnessing the power of Technology:-Thomas Iwinski and Anil. K. Kulkarni, Dr. Amit Lathigara

Faculty were encouraged to make instructional videos. Hands on Vs Simulated Vs Remote laboratories were debated. A lot of videos using PhET in lecture were shared. AI authoring tools were shared. Use of Technology can become a boon or bane, especially in the era of Artificial Intelligence. Effective tips on the careful usage of AI was emphasized. Open discussions were conducted on how to be more successful with Technology. Active discussions on various tools and virtual labs happened. Use of virtual lab and Creating a lab manual and assessment for the lab were part of the discussions. EdPuzzle and Kahoot ICT Tools were introduced and Quizzes were created using Kahoot from Youtube videos for topics on course taught.

Module 5: Effective Assessment:
-Prof. Subramaniam D. Rajan

Effective Assessments and Assessment Rubrics were discussed. Sample assessment questions were demonstrated and exercises were given to the participants on how to make proper assessments and sample question papers were analyzed for proper allocation of course outcomes and blooms taxonomy levels discussed. Faculty were encouraged to design proper questions and rubrics and to develop questions on higher order thinking skills such as design, create and evaluate. [6] A lot of tips on how to make a question paper and what are the typical mistakes faculty do while framing the question paper and how to come out with a question paper that is a win- win for both the students and the faculty were discussed. A discussion on- Are AI Engines Engaged in Intellectual Theft and Unethical Practices? was conducted. It was recommended to create detailed rubrics for assessments and the practice of sharing the rubrics with students and arriving at collaborated new rubrics was suggested. Incorporating Ethics in Engineering Education, Open Book/Notes Exam and collecting student feedback were discussed in this module. All the course materials and videos were shared on Canvas Platform and assignments and discussions conducted through canvas. Office hours were conducted to discuss questions from faculty and any difficulties or issues and doubts addressed.

The Valedictory Module: Faculty came up with Teaching Philosophy Statement. Faculty submitted Teaching Portfolio- including their philosophy statement and reflections on each module of the course and their experiences. Clear instructions regarding the Format and content were shared, and assessed for 50points. A capstone presentation was scheduled and conducted to share the reflections and experiences of the faculty over the period and knowledge gained and assessed for 50 points. Peer Evaluation was there and faculty were allowed to interact and ask questions for the presentation.

CONCLUSION

Overall, starting from the First Day Introduction to planning and effective delivery of lectures, to active learning approaches, to using technology to effective assessment a complete refresher for the faculty was provided by Dr. Veena Kumar and Team from the IUCEE

and the most accomplishing outcome is that the exercises were conducted along the running semesters, so that the faculty can try and inculcate the best practices in their courses in two semesters., which was really helpful.

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