

## **35. Role of a Teacher: ICT and its effect on Pedagogy of Teaching and Learning**

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The role of education is to empower students with their skills and attitudes that are essential to their success in our knowledge and society future. The educational practitioners are still developing the strategies and modifying their pedagogy as a result of introducing ICT (Information and Communication Technology) in engineering education. Teachers have to overcome the following factors which form barriers to use of ICT like adequate training, realistic time management, and inclusion in supportive communities or practice. The following are the three factors that must be fulfilled by teachers to be driven in direction of using ICT: Effectiveness - Using technology, teachers must believe that they will achieve higher level goals, Disturbance - Technology will not create any disturbance to teachers in achieving higher level goals, Control- Teachers must believe that they have the ability and resources to use ICT effectively. Further characteristics of teaching and learning contained in the model come from the learners themselves and the context of the teaching and learning process. How ICT fits into this model depends upon whether teachers will see ICT as

changing the nature of their subject and the way it is understood, or whether ICT is seen as a tool for teaching another artifact in the classroom.

The teachers have to know the pedagogy required to effectively integrate technology into our regular teaching-learning practice. Because the teachers in this 21st century has to be a facilitator rather than a traditional teacher. Teacher as a facilitator has to understand various features before moving from physical classroom to online classrooms. As a facilitator the teacher has to setup and design a new learning platform for an effective online based teaching- learning. To create a hybrid or blended mode of teaching and learning, the instructor has to identify the learning purposes and the technologies. In addition, the design decisions should involve content, pedagogical, technological, academic, practical, and ethical. The three basic components in teaching-learning are teacher, learner/student, and content. In online platform the teacher becomes facilitator and has to interact with the content like preparing slides, preparing videos, nano videos, assignments, practice problems etc. The learner goes through the content and the instructor-learner and learner-learner interaction takes place. The online based teaching practice improves activity-based learning by setting up this kind of delivery mode. The instructor can even prepare open educational resources and introduce a blended or hybrid mode of effective engineering education. The advantages of this blended mode of learning are, the instructor can integrate activity or problem or project-based learning, improve

collaborative learning by OERs and their delivery. All this is possible by aligning technology into teaching-learning practice and this will be student centric. The various elements that can be included in the ICT based online course are active learning, flipped classroom, preparing online courses using LMS like MOODLE, Web presence of the instructor, peer instruction, creating and using open educational resources etc.

## **Organisation of Classroom**

This is related to physical approaches to teaching and learning by using ICT. These practical details need to be managed to well support the learning and teaching in a controlled learning environment. Effective organization of ICT will ensure that:

- ❖ Equality of access for all the abilities
- ❖ Appropriate access to ICT resources
- ❖ Appropriate learning aids for students
- ❖ Access of content and communication among the learners
- ❖ Different learning styles of students

## **Technology and Tools Available for ICT**

- ❖ Interactive white boards
- ❖ PPTs, Word
- ❖ Computer, tablets, laptops, digital projectors

- ❖ Audio video creation – Camstudio, Screen casting
- ❖ Visual presentation
- ❖ Learning management systems like MOODLE, MOOCs and CANVAS
- ❖ Content management systems
- ❖ Learning extension resources like Drupal
- ❖ Web presence or learning site by Wordpress
- ❖ File sharing by Google Drive, Dropbox, One drive Social media

## **Challenges**

The success of the ICT based teaching and learning depends on several factors. Few are stated below.

- ❖ Lack of teaching experience with ICT
- ❖ Awareness of the possibilities to transform teaching and learning afforded by the uses of ICT
- ❖ Ideas about strategies for planning and integrating ICT tools in teaching of certain subjects
- ❖ Understanding of the factors that condition the successful use of ICT in the classroom
- ❖ All students and teachers should have some understanding of the potential that ICT has to enhance the processes of teaching and learning

- ❖ Learning culture
- ❖ Social well being
- ❖ Motivation
- ❖ Engagement
- ❖ Thinking

## **Conclusions**

Positive attitudes to the role of ICT in teaching are crucial in influencing teachers' decisions to use technologies in their teaching. Students also need opportunities to develop beliefs and practical theories about the role of ICT. Programs should be conducted and should contain opportunities to use ICT in practical setting. These opportunities should enable further occasions for reflection on solutions to obstacles by using ICT in teaching and consideration of when it is appropriate to use ICT to support learning. Lack of instrumentality and potentially high professional and personal costs is an issue even where pedagogic use of ICT is strongly congruent with the values of the student and teachers. The managements have to explore on how to capitalize the knowledge and skills that are enhanced with the technology integration in teaching and learning.

## **References**

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