

An Adaptability of Online Engineering Education Amidst the COVID19 Pandemic

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Abstract— The COVID19 pandemic has disturbed the daily lives of people, including those in the education sector. It has tested the readiness of Higher Education Institutes (HEIs) and put in question the adaptability of students and faculty in using online teaching-learning modalities. This paper describes the development of an online engineering education in the department of Electronics and Telecommunication Engineering of Rajarambapu Institute of Technology, Islampur. The authors sampled 211 engineering students and 16 faculty members from the department of Electronics and Telecommunication Engineering using online survey forms. The author highlighted the requirements of online teaching-learning, the implementation methodology, online platforms, sample ICT tools and active learning tools used for the delivery of contents and conducting examinations. From the feedback of students and faculties members, it was found out that availability of resources, institute support, skill development and engagement have significant contribution to the adaptability of faculties and students to online teaching-learning. The pandemic situation has enhanced the adaptability of online teaching-learning during the COVID19 pandemic and also students and faculties are ready if any other similar man-made or natural disruptions occur.

Keywords— Online teaching-learning, ICT Tools, online platforms, adaptability, pandemic.

I. INTRODUCTION

THE COVID19 pandemic, which started in Wuhan, China in late 2019, is one of the deadliest catastrophes of the recent time. Inevitably, the pandemic has disrupted the daily lives of people including the higher education sector. To protect the health and safety of the public, countries around the world have implemented policies. Government of India issued series of circulars to guide entire education sector to implement online delivery using different information and communications technology (ICT) tools. It is a student centric and outcome-based education approach, for which its implementation depends on the availability of technology, availability of devices, internet connectivity. The online learning is the most ideal alternative of face-to-face learning and applies only if the technology readiness is high; learners have good digital devices, fast internet speed, and motivation to adapt to changes (Nikdel Teymori, 2022; J.R.Dhage et al., 2017; Mamta Meena, 2021).

The output of the study is the identification of requirements and implementation methodology to the online engineering education while the main outcome is to find adaptability to online engineering education amongst students and faculties.

II. REQUIREMENTS

The students and faculties were motivated by conducting meetings. In the meeting, requirements and issues were gathered. For the effective delivery of online education, the requirements are devices (Smartphone/Laptop/Desktop), internet connectivity (wired/leased line/wireless/mobile data), average internet speed in Mbps, location, training, online platform, Learning Management System (LMS), social support, confidence, motivation. On the other hand, the demotivating factors were large screen time (4-5 hours a day), frequency of disruptions, lack of good internet speed, self-confidence, training, social support, lack of abilities to handle online platforms (Yadav, 2021).

III. IMPLEMENTATION METHODOLOGY

Most of the students had laptops/desktop and every student has smart phone with internet connectivity, however the speed of the internet was not sufficient especially in rural areas. To provide social support, meetings were conducted with parents. Mentors for group of students were appointed to motivate students in online mode. The students and faculties were trained to operate online platforms and most commonly used apps, time management, and perceived usefulness of online learning resources. Most commonly used platforms were Zoom, MS Teams, Google meet and Webex and apps are MS PPT, MS Excel, PDF Viewer. The ICT tools: online white board, Kahoot, Polly, Socrative, were used. Chat window was used to take feedback during live sessions of delivery and Google forms were used to take feedback at the end of completions of unit/chapter. Also online learning Massive Open Online Courses (MOOCs) and Open Educational Resources (OERs) were used (Kamerikar & Patil, 2020; Hew, 2014). Some sample ICT and active learning tools used are described here.

Kahoot quiz platform provides facility to create quiz including multiple choice questions, a true or false questions, and a single word response from each participant (Prabhavalikar & Patil, 2022). Since it displays leader board

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