

ONLINE TEACHING AND LEARNING IN HIGHER EDUCATION: CREATING AN INCLUSIVE ENVIRONMENT DURING COVID -19 CRISIS

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Abstract

This research is a micro study conducted to understand the challenges and solutions associated with online teaching and learning in a state private university in Odisha. The university is designated as a skill university which aims at shaping lives and empowering communities. The main findings are related to online teaching and learning, learning management system, challenges in online content delivery, technology solutions and creation of inclusive environment. The paper is organised in seven parts: introduction, literature, objectives, methodology, research questions, findings and conclusion. The essence of the paper is to show how faculty rapidly adapt to the changing times and embrace disruptive technology in education to create a culture of digital learning.

Keywords: Online, teaching, learning management system, content, inclusive

I. Introduction

The staggering impact of Covid-19 on education systems around the world is unlike anything we have seen in the post-war era. More than 1.6 billion students have been affected, representing over 91% of all students in the world [1]. Today, new and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. There has been a significant surge in usage of different online platforms, learning apps, video conferencing tools, software since COVID-19 crisis. While some accept that the immediate shift to online learning - with no training, poor connectivity, and insufficient preparation - will result in a poor user experience that is un conducive to sustained development, others accept that a new hybrid model of education will emerge for future learning. The development and delivery of e-Learning materials is underpinned by a desire to solve authentic, learning, teaching and performance problems. The potential drivers are fairness (ensuring that personal and social conditions do not keep students from accomplishing their potential); and inclusion (setting an essential norm for all students regardless of their educational or family background, caste, colour, gender or geographic location). The paper includes background of study, related literature, statement of objectives, method of study, research questions, and summary of findings for quick adaptation of technological changes to disrupt in the field of education. The scope of the study is to gain knowledge about the issues and challenges faced by the faculty in online content

delivery. It explores various platforms and tools to address the needs and challenges in online teaching.

II. Literature

The 21st century student requires an education that can be sought after whenever and anyplace and that is more lined up with requirements of Industry 4.0. Online education helps them to embrace technology and, hence, more prepared to be prolific digital citizens. Given the demand for online learning, the plethora of online technologies to incorporate into teaching, the budgetary problems, and the opportunities for innovation, we argue that online learning environments are facing a "perfect e-storm," linking pedagogy, technology, and learner needs [2]. Confusion reigns as higher education brings many of e-learning technologies, with new ones appearing to arise every day and every week. Adding to this confusion, students are dropping out of online classes while demanding for alternate methods and arguing for more engaging online learning experiences.

Aligned with principles of andragogy, course redesign strategies support the use of interactive learning in online settings with the use of multimedia tools [3]. Although technologies and resources are necessary ingredients for online teaching [4], teachers' support for students, including through monitoring their learning processes, is what makes teaching effective-as with face-to-face situations. Identifying and adopting learning styles and skills required to participate in online courses can be challenging for learners [5]. Providing students with a back-up plan in case technology fails is important. The effectiveness of

teaching and learning experience does not solely depend on the technology usage but is facilitated by three elements namely: 'interaction design', 'information design' and 'interface design'[6]. The support plan may include a technology hotline phone number, email, or chat where students can contact faculty, and a conference line in case the class need to be moved from online to phone conference [7; 8; 9]. As per the National Education Policy 2020, one of the central principles steering the education system will be the 'extensive use of technology in teaching and learning, removing language barriers, increasing access as well as education planning and management' [10].

The move into the extraordinary unknown brought up numerous issues and challenges about how to reach and attend all students equally, realising that many students either do not have devices or access to the tools required to learn online. This paper enlightens the pressure that emerges for colleges and universities attempting to discover an equilibrium in proceeding with training and classes in fair ways for all students and faculty.

III. Objectives

- Explore various learning management systems used by the faculty for content delivery
- Understand the challenges faced by the teachers during the content delivery
- Identify alternative methods to provide technology solutions to the problems

IV. Method of Study

To achieve the objectives of the study, a literature review was conducted to (a) identify the problem (b) collect data via a questionnaire, (c), analyze and interpret the collected data, and (e) organise and report the findings. The results led to the design of a framework to empower the faculty. The focus of this study is on online courses offered via a learning management (e.g. Impartus, BigBlue Button) by higher education institutions. A total of eighty-eight faculties from various colleges and universities of Bhubaneswar, Visakhapatnam, Paralakhemundi, Rayagada and Bolangir participated in the study.

V. Research Questions

The study will provide satisfactory answers to the following research questions:

- What LMS are you using for content delivery?

- Have you developed any course in other platforms?
- What in-house resources are available for courseware production?
- What are some of the challenges you faced in the content creation process?
- What are some of the challenges you faced in the content delivery process?
- Given the various students' diverse background and goals, what was your strategy to meet the challenges?
- Mention some useful web-sites/tools/sources that you have shared with your students.
- Have you completed any certification course on MOOC Platform?

VI. Findings

A. What LMS are you using for content delivery? 85.2% of the respondents use Impartus while 8% use Google class for content delivery. Impartus is a virtual classroom for live online classes. Impartus is a learning focused video platform. To ensure that students continue to have live and interactive access to teachers in the ongoing Coronavirus Crisis, Impartus was implemented at the University. It has various features such as video conferencing, video content management, collaborative learning, searchability, analytics and gamification.

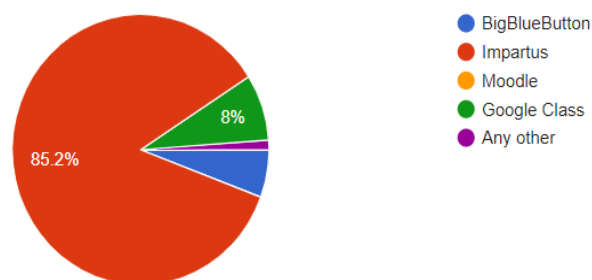


Fig.1. Use of LMS for content delivery

B. Have you developed any course in other platforms?

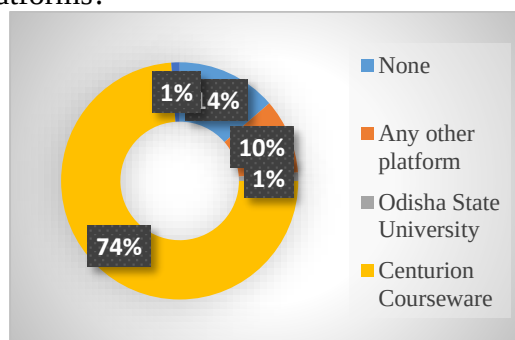


Fig.2. Courses developed in other platform

74% of respondents have developed course materials for in-house online teaching for the University. One each has done courses for Moodle and Odisha State Open University. 10% of the respondents have developed content for other e-platforms whereas 4% of respondents have not prepared any course material.

C. What in-house resources are available for courseware production?

Adobe Spark, Doodly, Wordpress, Filmora, Prezi, R studio, MS office PPT, WPS office are the resources available for courseware production by faculty. Further, there is an in-house Media Resource Center well equipped to shoot short videos of faculty teaching live. Many faculties have prepared content on simulation and design softwares such as Dassault software, CATIA, SIMULIA, ANSYS, DYMOLA, etc.

D. What are some of the challenges you faced in the content creation process?

The challenges faced by faculty during the content creation were to get acquainted to the new softwares such as Adobe Spark, Doodly to synchronise audio and visual, making good quality short videos to capture students attention and making it impactful, write equations, putting the right circuit diagrams, putting images, getting the right materials online for reference, making 100 percent original video, preparing contents for practical/laboratory teaching, internet connectivity and related costs, copyrights issues.

E. What are some of the challenges you faced in the content delivery process?

The survey revealed the challenges and issues related to content delivery via LMS which is summarized as follows:

1. Internet connectivity issues for course facilitator as well as students
2. Some students were not interacting and literally having no response. Some students were irregular mostly linked to internet issues
3. Difficulty in delivering the practice or laboratory course content or teaching some portions of the course which would be better understood with more hands-on exercise
4. Not comfortable with use of whiteboard of the LMS compared to the physical classroom board

5. Time management in delivering the content within the given time for the session
6. Student interaction was less, so there was difficulty in explaining complex concepts
7. Students doing online group activity/presentation

In spite of all the odds, faculty could learn an important skill of online content delivery, and move as and when needed to alternative platforms such as WhatsApp, learning apps, and other social media and digital tools to cater to the needs of students.

F. Given the various students' diverse background and goals, what was your strategy to meet the challenges?

It's imperative for faculty to be extra careful about fostering an inclusive learning environment for a diverse group of students. Some of the strategies practiced and shared by faculty to meet the challenges are:

1. Identify slow-learners and interact with them more
2. Simplify and shorten the content
3. Simplify the content delivery process
4. Take remedial sessions for slow learners.
5. Give more practice assignments
6. One to one meeting and solving problems through remote desktop access.
7. Provide more reference/study materials
8. Record the lecture sessions and save it for repeated use by students later.
9. Student counselling to know the exact problem student to student.
10. Live demonstration from the Lab by teacher
11. More of visuals, videos, pop up quizzes etc.
12. Use of Flip class
13. Simulation videos created using screen recorder.

G. Mention some useful web-sites/tools/sources that you have shared with your students.

Faculty have shared some useful websites and tools with students for digital inclusion, and continuous support and learning. They are as follows: amrita.edu, arcGIS, YouTube video links, IIRS-Dehradun e-learning, Krishikosh, agMOOCs. Kisansuvidha, ICAR e-course content, SWAYAM, Science Direct, Google Scholar, MATLAB, OpenModelica, iee.org, sanfoundry.com, RStudio Cloud, IELTS online tests, 3 Brown I blue, Dymola,

Dassault platform, Harvard Business Review, psychological today, tinkercad.com, simscale.com, python, Biopython, slide share, geeksforgeeks, Biological databases, JSTOR, courseware.cutm.ac.in

H. Have you completed any certification course on MOOC Platform? If yes, name the courses.

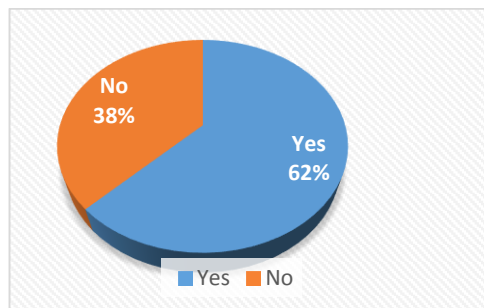


Fig.3. Certification course on MOOC Platform

62% of faculty have done a course from either/or Coursera, Udemy, NPTEL, NAHEP-ICRISA to gain new skills and stay relevant to the current times whereas 38% faculty have not done any certification.

VII Conclusion

The study has shown clearly that in the pandemic situation where the regular and physical classes could not happen the faculty had to adopt and adapt to online course delivery using various platforms. There was an immediate need to prepare the contents and customise it as per the need of the student and the nature of the subject. The institute which has been taken for the scope of the study had done a massive drive to enable their faculty members prepare the contents within a couple of weeks by using the online resources for content development. There were challenges of students getting included which was well addressed by faculty by complimenting the regular online platform with WhatsApp groups, zoom sessions, conference calls. The major challenge for online content delivery was the delivery of practical/ hand-on courses which faculty tried their level best, but still are of the opinion that it's delivered best when students are physically doing it hands-on. This pandemic has posed challenge to the teaching fraternity, but the adaptation to situation was excellent as it taught all of us how to go online and reach out to the students. The faculty fraternity

needs to be applauded to this. But, we all need to appreciate the student fraternity in the same spirit as they also had put their best effort to learn all the courses online.

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