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Teaching-learning during COVID-19 pandemic in the undergraduate level

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Abstract
Imparting Education in institutions in India (schools, colleges, and universities) is predominantly based on traditional methods of education, that is, the approach still relies on traditional set up of face-to-face lectures in a classroom. Academic units at different levels have also started blended learning, yet, in-person classroom procedures are the primary methods. The outbreak of a deadly disease called COVID-19 caused by a Corona Virus (SARS-CoV-2) took the entire world by storm. The World Health Organization declared it as a pandemic. The entire world appeared to come to a standstill. The education scenario also had to deal with this new virus. This situation posed an unprecedented challenge to the education system across the world and forced educators to shift to an online mode of teaching overnight. Many academic institutions that were earlier reluctant to change their traditional pedagogical approach had to embrace online teaching–learning. The article looks at this transition and the importance of online or e-learning modes in the time of crisis.

Keywords: Coronavirus, COVID-19, education, online learning, blended learning

Introduction
The World Health Organization has declared the pandemic of the novel SARS-CoV2 infection early this year and it has now become a major public health challenge worldwide. In order to curtail the policy of compulsory physical distancing has been implemented in many countries including India, resulting in nationwide school and university closures. In accordance with this policy, academic institutions are compelled to make appropriate and timely modification in order to continue to deliver education and to sustain the continuation of student academic progress. Just as the world around tried to take the virtual route to sustainability, the teaching and learning activities were also shifted to an E-learning mode. Educational units are struggling to find options to deal with this challenging situation. These circumstances make us realize that scenario planning is an urgent need for academic institutions (Rieley, 2020) [17]. This is a situation that demands humanity and unity. There is an urgent need to protect and save our students, faculty, academic staff, communities, societies, and the nation as a whole.

Several arguments are associated with e-learning. Accessibility, affordability, flexibility, learning pedagogy, life-long learning, and policy are some of the arguments related to online pedagogy. It is said that online mode of learning is easily accessible and can even reach to rural and remote areas. It is considered to be a relatively cheaper mode of education in terms of the lower cost of transportation, accommodation, and the overall cost of institution-based learning. Flexibility is another interesting aspect of online learning; a learner can schedule or plan their time for completion of courses available online. Combining face-to-face lectures with technology gives rise to blended learning and flipped classrooms; this type of learning environment can increase the learning potential of the students. Students can learn anytime and anywhere, thereby developing new skills in the process leading to life-long learning. The government also recognizes the increasing importance of online learning in this dynamic world.

The severe explosion of Corona Virus disease has made us realize the importance of online learning, online learning serves as a panacea in the time of crisis.

The undergraduate curriculum of Bangalore University also focuses mainly on classroom teaching and learning.

This is augmented by various other learning methods (group discussions, clarification sessions, and the laboratory works and skills lab). The E-learning management system (LMS) implemented by the department of collegiate Education (DCE) also was utilized to facilitate various teaching and learning activities at different academic levels in the undergraduate program. Though the LMS modules were available earlier also, the adopting rate was very meager. The organization of courses, access to resources and additional learning materials are available through LMS to support self-directed learning within an integrated PBL curriculum. During this COVID-19 pandemic, courses delivered in student-centered learning methods were sought to be moved to full E-learning. In the first half of semester before the pandemic, group discussions, clarification sessions and interactive lectures were carried out in-campus classroom learning while in the second half of semester, learning activities were delivered in full distance learning employing various online meeting platforms. In order to make the format of discussion sessions stay similar as it had been conducted before the pandemic, every online session was delivered synchronously with the attendance of a facilitator in each group. Students and facilitators' time spent on setting or accomplishing tasks was similar as in classroom learning.

Literature Review

Online Learning or E-Learning

Rapid developments in technology have made distance education easy (McBrien *et al*., 2009). "Most of the terms (online learning, open learning, web-based learning, computer-mediated learning, blended learning, m-learning, for ex.) have in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means" (Cojocariu *et al*., 2014).

E-learning is defined as learning that makes use of Information and Communication Technologies (ICTs). The incorporation of technological resources and innovative education strategies has transformed the teaching and learning processes. Earlier studies have shown various e-learning and online learning tools that are effective for teaching and learning in various fields. The results from these studies place the knowledge gain and performance of the students as a result of E-learning on par with that of face to face methods. Online learning can be termed as a tool that can make the teaching–learning process more student-centered, more innovative, and even more flexible. Online learning is defined as "learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students" (Singh & Thurman, 2019) [19].

Blended learning approach, on the other hand, redesigns courses that are developed, scheduled and implemented through a combination of physical and virtual learning activities. Blended learning can be defined as the integration of classroom and distance learning to facilitate an independent, interactive and collaborative learning among students. This approach promotes active and self-directed learning and has gained acceptance as a complementary method to traditional learning.

The synchronous learning environment is structured in the sense that students attend live lectures, there are real-time interactions between educators and learners, and there is a possibility of instant feedback, whereas asynchronous learning environments are not properly structured. In such a learning environment, learning content is not available in the form of live lectures or classes; it is available at different learning systems and forums. Instant feedback and immediate response are not possible under such an environment (Littlefield, 2018). Synchronous learning can provide a lot of opportunities for social interaction (McBrien *et al*., 2009). Amidst this deadly virus spread such online platforms are needed where (a) video conferencing with at least 40 to 50 students is possible, (b) discussions with students can be done to keep classes organic, (c) internet connections are good, (d) lectures are accessible in mobile phones also and not just laptops, (e) possibility of watching already recorded lectures, and (f) instant feedback from students can be achieved and assignments can be taken (Basilaia *et al*., 2020).

Online Teaching - A Necessity

The major part of the world is impacted by the pandemic COVID-19 and therefore the world as we know has changed drastically. Its effects can be seen in schools, colleges, and universities too. The Corona Virus has made institutions to go from offline mode to online mode of pedagogy. This crisis will make the institutions, which were earlier reluctant to change, to accept modern technology. There was an overnight shift of normal classrooms into e-classrooms, that is, educators have shifted their entire pedagogical approach to tackle new market conditions and adapt to the changing situations. During this tough time, the concern is not about whether online teaching–learning methods can provide quality education, it is rather how academic institutions will be able to adopt online learning in such a massive manner (Carey, 2020) [4].

Resistance to change will not help any educational unit across the world. The shift from face-to-face lectures to online classes is the only possible solution. Indeed, academic institutions would not be able to transform all of their college curricula into and online resource overnight. Distance, scale, and personalized teaching and learning are the three biggest challenges for online teaching. Innovative solutions by institutions can only help us deal with this pandemic (Liguori & Winkler, 2020). There is a requirement of a quick shift to online learning mode; therefore, the products by Google can be really useful under such problematic situations; they are (a) Gmail, (b) Google Forms, (c) Calendars, (d) G-Drive, (e) Google Hangouts, (f) Google Jam board and Drawings, (g) Google Classroom, and (h) Open Board Software (not a Google product, helps in recording meetings in the form of files). These tools can successfully be used as an alternative for face-to-face classes (Basilaia *et al*., 2020).

Problems Associated With Online Teaching and Learning

There are n number of technologies available for online education but sometimes they create a lot of difficulties. These difficulties and problems range from downloading errors, issues with installation, login problems, problems with audio and video, and so on. Sometimes student finds

online teaching to be boring and unengaging. Online learning has so much of time and flexibility that students never find time to do it. Personal attention is also a huge issue facing online learning. Students want two-way interaction which sometimes gets difficult to implement. The learning process cannot reach its full potential until students practice what they learn. Sometimes, online content is all theoretical and does not let students practice and learn effectively. Mediocre course content is also a major issue. Students feel that lack of community, technical problems, and difficulties in understanding instructional goals are the major barriers for online learning (Song *et al*., 2004). In a study, students were found to be not sufficiently prepared for balancing their work, family, and social lives with their study lives in an online learning environment. Students were also found to be poorly prepared for several e-learning competencies and academic-type competencies. Also, there is a low-level preparedness among the students concerning the usage of Learning Management Systems (Parkes *et al*., 2014) [15].

Possible Solutions for Problems

A lot of issues are attached to online education but we cannot ignore the perks of it in times of such crisis. We can always have solutions to fix these difficulties. Technical difficulties can be solved through prerecording video lectures, testing the content, and always keeping Plan B ready so that the teaching–learning process cannot be hampered. Online courses should be made dynamic, interesting, and interactive. Teachers should set time limits and reminders for students to make them alert and attentive. Efforts should be made to humanize the learning process to the best extent possible. Personal attention should be provided to students so that they can easily adapt to this learning environment. Social media and various group forums can be used to communicate with students. Communication is the key when it gets difficult to try reaching out to students via texts, various messaging apps, video calls, and so on—content should be such that enable students for practice and also hone their skills. The quality of the courses should be improved continuously and teachers must try to give their best. Online programs should be designed in such a way that they are creative, interactive, relevant, student-centered, and group-based (Partlow & Gibbs, 2003) [16]. Educators must spend a lot of time in making effective strategies for giving online instructions. Effective online instructions facilitate feedback from learners, make learners ask questions, and broaden the learner horizon for the course content (Keeton, 2004) [10]. Institutions must focus on pedagogical issues and emphasize collaborative learning, case learning, and project-based learning through online instructions (Kim & Bonk, 2006).

The challenge to educational institutions is not only finding new technology and using it but also reimagining its education, thereby helping students and academic staff who are seeking guidance for digital literacy.

Objectives of the Study

1. To understand the online teaching-learning process during the Corona Virus pandemic.
2. To delineate the factors that can result in the success of online mode of learning during a crisis-like situation.

Research Methodology

The study is descriptive and tries to understand the importance of online learning in the period of a crisis and pandemics such as the COVID-19. The problems associated with online learning and possible solutions were also identified based on previous studies. The research tool used for analyzing the data which amassed from different sources for this study is a content analysis and the research method is descriptive research. We have taken into consideration the qualitative aspects of the research study. This study is completely based on the secondary data. A systematic review was done in detail for the collected literature.

Secondary sources of data used are (a) journals, (b) reports, (c) search engines, (d) company websites and scholarly articles, (e) research papers, and other academic publications.

Analysis of Online Learning

Educational processes in schools and colleges are disrupted in the aftermath of some of the natural calamities such as floods, cyclones, earthquakes, hurricanes, and so on. Knowledge delivery becomes a challenging task during such times.

"Disruption of education can leave children at risk of child labor, early marriage, exploitation, and recruitment into armed forces" (Baytiyeh, 2018). When disasters and crises (man-made and natural) occur, schools and colleges need to be resilient and should find new ways to continue with teaching–learning activities (Chang-Richards *et al*., 2013).

In February 2011, a 6.3 magnitude earthquake shook Christchurch and the University of Canterbury collapsed. Information technology and online learning helped the university to restart its operations and gave them a second life (Todorova & Bjorn-Andersen, 2011).

At New Orleans, Southern University converted itself into an e-learning campus after the violent hurricane created a Havoc. Several online courses were offered and mobiles were used to provide education to the displaced students (Omar *et al*., 2008) [14].

And the most recent disaster is in the form of the COVID-19 which is spreading like a forest fire around the world. All of the schools, colleges, and universities are facing lockdowns in the most affected areas to curb further spread of the Corona Virus. Many academic institutions are, therefore, seeking the help of online learning so that teaching and learning processes are not hampered.

In the last few years, e-learning has started gaining popularity in India. Many platforms provide affordable courses to students via Massive Open Online Courses. Still a lot of institutions in India were reluctant toward online teaching and learning. However, the challenges posed by the Corona Virus pandemic introduced everyone to a new world of online learning and remote teaching. Instructors indulged them in remote teaching via few platforms such as Google Hangouts, Skype, Adobe Connect, Microsoft teams, and few more, though ZOOM emerged as a clear winner. Also, to conduct smooth teaching–learning programs, a list of online etiquettes was shared with students and proper instructions for attending classes were given to them (Saxena, 2020).

Discussion

The COVID-19 pandemic has brought the unprecedented universities' facilities closure, it affected millions of students worldwide. The sudden transformation in the teaching and learning activities into virtual modalities was carried out in order to continue the academic courses while avoiding people gathering and the potential risk of the

spread of infection. The present study documented the learning activity delivered through full distance learning since March, 2020 and compared to the classroom learning in the undergraduate study program.

Student's attitude and acceptance toward e-learning has been shown to be more positive and favorable. However, in these studies the virtual learning modules were integrated with classroom learning, while in the present study, the distance learning was delivered in full online. It was previously reported that full online learning offers a sense of unreality and it largely depends on the student's commitment to the courses [15]. Bridges and colleagues suggested the integration of learning technologies with face-to-face teaching to support access to digital resources and to enhance the visualization.

Beside the necessary preparedness of students in distance learning methods, other factors such as personality types may influence student preference for e-learning than classroom learning. As the personality regulates how individuals perceive, make judgements and react in certain situations. The acceptance of students for e-learning is commonly associated with self-regulation character. Self-regulatory behavior includes the ability to set goals, effective time management, problem solving capacity, and awareness of time to seek advice from instructors. On top of self-regulatory behavior, constraint of self-efficacy, e-learning motivation, and high task value are other factors which strengthen the blended/online learning preference [21, 22].

Apart from its obvious advantages, distance learning also brings some disadvantages. Increased chances of distraction, complicated technology, limited social interaction, and increased difficulty to stay in contact with instructors are several conditions that might interfere with the success of distance learning [24]. The present study showed more students felt lower learning satisfaction and more difficult communication either with instructors or with peer students in doing distance learning. Internal factors challenges of student readiness to distance learning, time management and difficulty to stay focused for long online learning duration were reported. The performance of instructors in charge in the distance learning process of this study were varied in their interactive pedagogy ability, uplifting spirit, and confidence toward utilization of innovative learning. Self-efficacy character is importantly demanded not only from students but also from instructors. The quality of teaching is very important in stimulating students' satisfaction. Special attention to communicate with students is essential since lack of personal contact may affect the development of trust [22, 23]. Peer to peer communication and interaction in a group discussion are not often feasible in the virtual learning method. The barriers associated with infra-structure were obviously also encountered by the students complaining about unstable internet connection and extra financial burden for internet quota. Moreover, stress experienced by one-third of the participants of the study might have an impact on student perspective toward learning method. Recent study also reported students concerned on the issues of economic slowdown, potential academic delay and changes in daily life and these were associated with the level of anxiety of the college student in China during this pandemic time [24].

Conclusion

According to the World Economic Forum, the COVID-19 pandemic also has changed the way how several people receive and impart education. To find new solutions for our problems, we might bring in some much-needed innovations and change. Ayebi-Arthur (2017) [2] conducted a case study of a college in New Zealand which was badly affected by seismic activities. In her study, she found that the college became more resilient to online learning after that disastrous event. Technology helped them overcome the barriers in those difficult times. But they suggest that robust IT Infrastructure is a prerequisite for online learning. Infrastructure needs to be so strong that it can provide unhindered services during and after the crisis.

The study presented evidence that despite some challenges, undergraduate students could adapt to the new learning methods of distance learning and agreed on better efficiency experienced in distance learning than in classroom learning. This sudden closure of the university globally due to COVID-19 pandemic, albeit undesirable, presents an enormous opportunity for cultural transformation in the education system. As more "tech-savvy" generations enroll in higher education, dental educators need to incorporate blended learning in the curriculum, to design the best features of classroom and distance learning to improve the overall learning environment.

Teachers have become habituated to traditional methods of teaching in the form of face-to-face lectures, and therefore, they hesitate in accepting any change. But amidst this crisis, we have no other alternative left other than adapting to the dynamic situation and accepting the change. It will be beneficial for the education sector and could bring a lot of surprising innovations. We cannot ignore and forget the students who do not have access to all online technology. These students are less affluent and belong to less tech-savvy families with financial resources restrictions; therefore, they may lose out when classes occur online. They may lose out because of the heavy costs associated with digital devices and internet data plans. This digital divide may widen the gaps of inequality.

Although this outbreak did not give us much time to plan we should take a lesson from this that planning is the key. This can only be done if we do scenario planning. There is a need to prioritize all the critical and challenging situations which may occur and plan accordingly. This pandemic has also taught us that students must possess certain skills such as skills of problem-solving, critical thinking, and most importantly adaptability to survive the crisis. Educational institutions must build resilience in their systems to ensure and prioritize the presence of these skills in their students.

"The key lesson for others may be to embrace e-learning technology before disaster strikes!" (Todorova & Bjorn-Andersen, 2011). Today, we are forced to practice online learning, things would have been different if we have already mastered it. The time we lost in learning the modes could have been spent on creating more content. But it is better late than never. This virus surely has accelerated the process of online learning. For instance, this e-application called ZOOM is making a lot of news because of its viable features. It allows conducting live online classes, web-conferencing, webinars, video chats, and live meetings. As most of the schools, colleges, universities, companies are closed due to lockdowns/curfews and most of the people are working from home, this app helped in keeping people connected via video conferencing. This application is trending on Google play store amidst the ongoing crisis. People are practicing social distancing so this application

gave them a sigh of relief. ZOOM also allows conducting business meetings.

Disasters will continue to occur and technologies will likely help us cope with them (Meyer & Wilson, 2011). We need a high level of preparedness so that we can quickly adapt to the changes in the environment and can adjust ourselves to different delivery modes, for instance, remote learning or online learning in situations of pandemics such as COVID-19. Institutions and organizations should prepare contingency plans to deal with challenges such as pandemics and natural disasters (Seville *et al*., 2012). Reliability and sufficient availability of Information Communication Technology infrastructure, learning tools, digital learning resources in the form of Massive Open Online Courses, e-books, e-notes, and so on are of utmost importance in such severe situations (Huang *et al*., 2020). Instruction, content, motivation, relationships, and mental health are the five important things that an educator must keep in mind while imparting online education (Martin, 2020) [12, 13]. Some teaching strategies (lectures, case-study, debates, discussions, experiential learning, brainstorming sessions, games, drills, etc.) can be used online to facilitate effective and efficient teaching and learning practices. In such panicky situations, where the lives of so many people are at stake, teaching and learning should be made interesting. This will also reduce the stress, fear, and anxiety levels of people. For this, proper technique and learning support should be provided to teachers and students and government support is also crucial at such stage. Pedagogical and technical competency of online educators is of utmost importance. Rigorous quality management programs and continuous improvement are pivotal for online learning success and making people ready for any crisis-like situation.

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