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The Transformation Of Higher Education And New Concerns Regarding Online Courses During Pandemic: A Strategic Approach

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Abstract

In the middle of a crisis, society must undergo a transformation, no matter how unsettling and challenging it is. Globally, the Covid-19 pandemic is quickly and drastically affected how people live, work, and interact be it in the community or the society. This paper focuses on education to demonstrate how institutions of higher education are undergoing significant transformations as a result of the urgent requirement to digitise their training and education process with several of the professors who lack innate technological skills for online instruction and several who had the skills. In order to remain competitive and provide high-quality education in the face of rapid digital transformation, disruptive technology breakthroughs, and rapid change, the university and higher education institutes system must strive to overcome this obstacle. This paper discusses some of the obstacles and challenges universities face in achieving these objectives, as well as the technical tools and strategies they have employed to restructure higher education in response to Covid-19. The discussion and conclusion summarise significant concepts that can be implemented to enhance the digitisation of education. On the macro level, the coming era would be Online offerings and the need to catch the waves of changes.

Keywords: Digitalisation, Digital transformation, Higher education institutes, Online learning, Pandemic-COVID-19.

Introduction

The present Covid-19 pandemic has generated unparalleled chaos, and the ensuing economic and social measures have resulted in profound transformation (Parker et al 2021),[i] and the rapid global outbreak of Covid-19 shocked the globe. The crisis has forced school closures in around 188 countries, heavily disrupting the learning processes of more than 1.7 billion children, youth, and their families (Saavedra, 2020).[ii] To prevent the spread of the virus, various governments across the globe instituted social isolation programmes, lockdowns, and bans on personal contact with anyone outside of immediate households. Even after two years since the breakdown due to pandemic, still the problems exists, as most organisations are yet to come back to workplace, as they are still WFH-work from home. Consequently, the pandemic has a significant effect on educational activity. The outlook was clouded by various downside effects, including de-anchored inflation, financial stress, social tensions, and above all, the student community facing challenges in the academic and university changed format of teaching and interaction. The education system has faced an unprecedented health crisis that has shaken up its

foundation. Given today's uncertainties, it is vital to gain a nuanced understanding of students' online learning experience in times of the COVID-19 pandemic (Nerantzi, Chrissi, 2020;[iii] Barrot et al. 2021).[iv] Although many studies have investigated this area, limited information is available regarding the challenges and the specific strategies that students employ to overcome them (Shivangi Dhawan, 2020).[v] To transition to an online teaching-learning environment, the entire educational system, from elementary to higher education, has to undergo a comprehensive overhaul in a matter of weeks (Walsh et al. 2020;[vi] Mishra et al., 2020).[vii] However, few could do it efficiently, and many struggled due to various reasons, per se.

Global higher education is one of the industries witnessing a rapid digital transformation due to pandemic effects disturbing the new normal (Aguilera-Hermida, Patricia (2020).[viii] The abrupt forced shutdown of face-to-face instruction and placed educators and students in "unfamiliar terrain" due to the necessity to rapidly transition to virtual or online-only learning environments (Carolan et al., 2020).[ix] E-learning is a colloquial phrase that refers to a new paradigm of online education that is based on information technology. As a result of this unanticipated changes, universities and higher education institutes were forced to quickly adapt to online-virtual education, relying on existing technological resources and professors and researchers who lacked the necessary technological skills. In a context of digital transformation, disruptive technology innovation, and rapid change in the educational framework, the university system must be able to provide high-quality education (Thompson and McDowell, 2019).[x] The growth of disruptive innovation is a time of uncertainty and risk, but it is also an opportune time, bringing talent and creativity to the educational system. Several of the higher education institutes were not ready for this change, where as time was running and stressed all the stake holders, thus, some even could not run their institutes for days and months for lack for readiness (Carolan et al., 2020;[xi] Aguilera-Hermida, 2020).[xii]

The definition of disruption is a sudden stop or interruption. In education, disruption refers to a break from established information transfer patterns. Innovations in education either replace or destroy previous paradigms and comes with new offerings (Marcillo & Desilus, 2016).[xiii] They inadvertently impede the operation of well-established educational paradigms, first by enhancing them and later by providing novel perspectives on how they grow over time. By bringing new learning opportunities, disruptive educational innovation disrupts conventional procedures and mechanisms of information transfer. In addition, it brings new educational system enhancements through the use of information and communication technology which is described as "ICT". This educational revolution advocates an open curriculum made possible by modern digital education by viewing both the instructor and the student as learning engines. In addition, it necessitates the development of new learning tools, platforms, venues, and methodology, as well as a change in the student's role and the manner in which they acquire and apply academic and understand knowledge. Disruptive innovations satisfy both the needs of existing customers and the needs of existing services. However, the longevity, scope, and scale of educational innovation and transformation must serve as its basis. Universities that effectively migrate away from antiquated learning systems should encourage participation and encourage participants to make fact-based decisions, and review findings openly (García-Morales et al. 2021).[xiv]

Due to Covid's disruption, online education has become increasingly prevalent. Modern pedagogy has witnessed a rapid movement from face-to-face education to online courses, individual training to virtual training, and seminars to webinars (Muthuprasad et al. 2021).[xv] The pandemic's effects will usher in a period of profound technological transformation and speed the global digitisation of higher education. The disruptive impacts of Covid-19 have provided not only ample chances for reforming HEIs, but also obstructions and challenges in this process, as universities and higher education institutes must rethink and

reconstruct their educational programmes to adapt to this new scenario. While chatting the rapid changes in academic settings, the format was completely changed and this brought in lots of challenges and a mind set shift (Shih-Ling Lin et al. 2021).[xvi] After highlighting the deficiencies, we will seek to solve them by demonstrating how HEIs are swiftly transitioning to digital education and training. To successfully transition, institutes must be aware of potential obstacles, adopt new tools and methods, and integrate technology into the teaching-learning process. The present paper will examine a number of noteworthy technological tools and approaches that universities are employing, as well as describe the most pressing problems that the academic community - professors, students, and the institution as a whole face.

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An observation was undertaken by Dhawan S. (2020)[xvii] that addressed the online learning issues during the COVID-19 in the context of India. A recent empirical study undertaken by Muthuprasad et al. (2021)[xviii] addressed the students' perceptions and preferences for the online mode of learning. COVID-19 forced many schools to close (p. 2). During the outbreak, 70% of respondents were open to using online courses to educate. Rural students, however, could not access online learning programmes due to a lack of broadband. The study adds that ineffective instructor communication, technological limitations on internet connection, and delayed responses from the instructor made online programmes appear more challenging and different. According to Barrot et al. (2021),[xix] COVID-19 pandemic had the greatest impact on the quality of the learning experience and students' mental health." In terms of strategies employed by students, includes resource management and utilisation, help-seeking, technical aptitude enhancement, time management, and learning environment control (p. 7321).

A large number of research studies on online learning have been undertaken to determine student satisfaction, acceptability of e-learning, distant learning success criteria, and the effectiveness of online learning. Bozkurt and Jung Xiao (2020)[xx] conducted the study to determine whether face-to-face or traditional teaching methods are more effective than online or hybrid learning. According to the findings of these studies, students perform substantially better in online learning than they do in traditional learning environment. While there has been research into the elements that influence students' enjoyment and performance in online classes during the COVID-19 outbreak, there has been a flurry of activity in this area.

Course design can increase students' happiness with the system if it is well thought out and executed. If, on the other hand, the course is well-made, students will be more likely to use the e-learning system and do better overall (Mohammed et al., 2021).[xxi] Friedman et al. (2021)[xxii] conducted a study using data from the Household Pulse Survey for the early fall 2020 school session to illustrate U.S. children's "learning online" during pandemic without the Internet or a computer. The results indicated that, on a national level, 10.1% of children engaged in online learning do not have sufficient access to the Internet or a computer, according to the authors. Children's learning capacity in the U.S. appears to be divided in a concerning way, according to these data. When it comes to student happiness in online courses, the quality of the instructor is essential. An instructor of high quality is a professional who is well-versed in the educational needs of students, possesses distinctive teaching qualities, and understands how to meet those demands. In spite of the fact that students have expressed pleasure with the high calibre of professors lecturing online, from the above mentioned studies and the findings made by the authors, we can assert that four key predictors of students' learning outcomes and satisfaction during online sessions emerge: 1) course design, 2) instructor quality, 3) timely feedback, and 4) students' expectations.

Research Gap

Although different researchers have looked into the factors that influence student satisfaction, no study has looked into the effects of course design, instructor quality, prompt feedback, and students' expectations on students' satisfaction with online classes during the pandemic period of COVID-19, according to the findings from the review of the

literature. As a result of the epidemic, educational institutions were forced to relocate to a new platform with which they were unfamiliar, including instructors and students. The students had not mentally prepared themselves for such a drastic change. As a result, the purpose of this study is to investigate the concern regarding online courses due to the effect of pandemic. This research will investigate what factors influence students and how students perceive these changes as indicated by their degree of satisfaction, which will be explored in greater depth, and how online course can be better offered for the students.

Significance of Present Study

The global pandemic has had a dramatic impact on the delivery of education worldwide. The entire educational system turned virtual and online as a result of the pandemic. This was the typical mode of contact between such organisations and institutions and students and faculty members. Initially, numerous obstacles and difficulties had to be overcome before this strategy could be implemented (Gupta, 2021).[xxiii] To keep students involved, the virtual learning process incorporates brief, high-quality films, interactive graphs and activities, presentation and engagement, and cold calls. Many individuals believe that online education will continue to increase in popularity after the epidemic and for many years to come (Al Lily, 2020).[xxiv] In fact, a substantial percentage of instruction will take place online, and students will be offered a number of courses using this manner (Nguyen et al. 2020). [xxv]Several elements, including teaching and learning, course outcomes, teacher ability, and deployed technology, influence academic success. Interaction with peers is an integral component of what makes online learning distinctive. You engage in idea exchange, provide input, and seek the perspectives of a global community of learners. You leave the programme with a more expansive view of the world as a result of learning from each other's experiences and viewpoints. Although technology is advantageous, it cannot be assumed that everyone would utilise it or that all students will adapt to its offerings. To demonstrate that technology has many advantages, we must examine the impact of virtual collaboration and online learning on academic accomplishment in greater depth. Virtual collaboration and online learning reflecting on academic achievement enables policymakers to design academic programmes that affect a large number of students in higher education, and the present study has policy consequences. There is a requirement for a systematic study intervention. The significance of the present study rests in the investigation of the issues students confront as a result of the online teaching-learning and the solutions that may be developed for future implementation of online courses.

The Purpose of the Study

As a result of the pandemic, for the first time in modern history, many aspects of public life were curtailed, including the elimination of all in-person education and training. The study's goals are to identify how these shifts affect students' ability to cope with stressful situations, as well as their study habits, academic performance, and health. The study's ultimate purpose is to explore faculty and students' difficulties and propose future-proof remedies, and how can online learning be made effective and user friendly for all category of students.

Assumptions and Inferences

1. Quality of the instructor and satisfaction of the students

Student satisfaction is a significant indicator of instructor quality, and instructors who care about students' education (Paul & Jefferson, 2019).[xxvi] Assume the teacher communicates content well and motivates pupils; it enhances student enjoyment and learning on online mode. So this study covers the instructor quality assumption, thus,

> Assumption 1: The quality of the instructor positively affects the satisfaction of the students offering on online mode.

2. Course design and satisfaction of students

How the course is designed impacts students' learning and happiness. The dynamic course design out performs the standard design (Bozkurt and Jung Xiao (2020).[xxvii] Course design must take into account learning styles. While students' learning

habits vary while creating an online course, the course design attributes could potentially be developed. This study assumption that course design influences student satisfaction, thus,

Assumption 2: Course design positively affects the satisfaction of students in online mode.

3. Prompt feedback and satisfaction of students

Feedback communicates students how they did (Thompson and McDowell, 2019),[xxviii] and prompt feedback influences satisfaction. Thus, this study assumption that prompt feedback affects happiness, thus,

Assumption 3: Prompt feedback of the students positively affects the satisfaction offering online mode.

4. Expectations and satisfaction of students

Expectations impact students' happiness, and many online learning seminars use a positive approach to enhance students' expectations (Shenoy and Shenoy, 2020).[xxix] The Expectation Disconfirmation Theory (EDT) assesses satisfaction. This study assumption that student expectations affect student satisfaction, thus,

Assumption 4: Expectations of the students positively affects the satisfaction on online mode.

5. Performance and Satisfaction of the students

Performance is defined as the conclusion of student-teacher efforts. Accomplishment is vital in education. Thus, the entire educational system is centred around student achievement. Student academic achievement influences the success of educational institutions, and student academic achievement positively affects socio-economic growth. Academic achievement is important in attaining knowledge and skills. Periodic evaluation or examinations are required, according to Jessie et al (2021).[xxx] So the study assumption that student happiness affects performance, thus,

Assumption 5: Students' satisfaction positively affects the performance of the students on online mode.

6. Satisfaction as mediator

The goal theory illuminates the significance of students' pleasure and academic progress. Pupils do better if they understand their performance variables. These institutional aspects include course design and instructor quality, rapid feedback, and expectations (Barrot et al. 2021).[xxxi] This study assumption that instructor quality, course design, prompt feedback, and student expectations greatly affect students' performance through satisfaction.

Assumption 6: Quality of the instructor, course design, prompt feedback, and student' expectations affect the students' performance through satisfaction in online mode.

Research Question

The recent pandemic had both positive and negative effect on all sectors, more so on the education sector. While negative effects overshadowed the positive one, most institutes found it challenging in shifting to new normal. Some could do it, some took time and many could not adjust to the new pattern. Students who were used to the traditional teaching-learning format, also found too stressful to online mode. It was inevitable but more challenges made students grades lower and performance decline. The immediate solutions for this was to understand from the stake holders point, how can this online mode of education can have a remedy and bring in better acceptance. An exploration into understanding the challenges, difficulties, and issues will drive us for better and appropriate solutions for online education.

Data collection

An Online education offering institute were included in the study. All those students institute who adopted online course offerings and students registration were invited to participate in the study. A randomised institutes with students data base which was supplied by the respective institute were included to take part in the study. However, it was instructed that, those who took online courses for almost one year of their study were invited, since the severity would be measured as you are with the system for longer time. An online survey for data

collection was communicated with time line for the participation and responses replies.

Data analysis

A subsequent number of participants took part in the study. Then total number is not mentioned during the analysis due to reason beyond explanation. However on personal communication with the first author, the numbers and the nature of sample inclusion and participants can be procured. Due to non disclose of this information, the analysis is done and presented.

Transformation of Higher Education To Face Pandemic Disruption

Methods and Technologies Adopted

To sustain service during emergencies and as a direct result of Covid's efforts to socially distance itself from the students, universities have turned heavily to online learning. Academics from around the globe have had to work quickly to translate information and methods into an online-friendly style. This transition was hurried and compelled by the circumstances and the context demanded. The pandemic demanded a time of global trial with remote education (Govindarajan and Srivastava, 2020).[xxxii] Some studies refer to this new method as "emergency online education" (Marinoni et al., 2020).[xxxiii] The system provided new hurdles for personnel and university administrators, who had to immediately reinvent themselves in order to maintain institutes operations, as well as students who required technical assistance. There were some institutes who could do it, some were able to do it, some din’t do it, and for most it was not possible due to various reasons and actors.

Table 1 - Students Challenges during Online

Adoption of Online
Emotional
Active Academic Involvement
More time spent in class (day-today arrangements)
Stress
Strong and full Infrastructure support
Network
Decreased engagement
High Quality participation
Practical class understanding
Unstructured evaluation methods (different format)
Managing several assignments
Timely submission
Source: Primary Data collection

The epidemic has hastened the pace of the digital revolution in higher education, which began years ago but has already resulted in significant changes within weeks. As most HEIs are aware, this technological transformation of education necessitates substantial changes in teaching techniques, key competencies, skills needed, and assessment systems and the methodology for students engagement (Jensen, 2019).[xxxiv] Universities need transition from a predominantly "lecture-based learning" approach to "problem-based learning" methodologies that actively engage students in a virtual environment (Marinoni et al., 2020).[xxxv] The shift from "in-person" to "virtual" education had a profound effect on the entire learning process, prompting a re-evaluation of the skills and abilities expected of students in this new setting (Jensen, 2019).[xxxvi] It also called for faculty orientation to use and adopt the Online format, which was easy for few and more challenging for many as observed in the present study. However, online teaching without orientation of technology and use of format would make anyone challenging (Lin et al. 2020).[xxxvii] Infact, the existing social distancing practises will endure for some time; therefore, educational institutions must completely rethink their offers to meet the requirements of the new environment. Universities should develop digital learning methodologies and provide digital learning environment, resources, and support systems in order to create a successful online learning environment. While it is evident that online will stay for longer time, adoption of technology based teaching-learning is the future (Şahin et al. 0221).[xxxviii]

Digital education necessitates the required infrastructure and technology platforms (such as Blackboard, Moodle, and Microsoft Teams), servers that can handle the virtual demand, and instructor and student training in online delivery methodology. Professors have access to a range of webinars and manuals, and most of the institutes have contracts with firms like Microsoft that give Office or Teams tools or technology platforms to facilitate virtual communication. But majority still rely on temporary timed platforms as was outcome of ten results in the present study. Numerous online communication tools and platforms are readily available on a global scale to facilitate the digitalisation of the entire teaching-learning. In a recent empirical study conducted in a university setting, it was observed that the university web platform, instant messaging tools (WhatsApp, Telegram), video-conferencing tools (Zoom, Skype, Google Hangouts, Google Meet), and educational apps (Google Classroom) were the technologies most frequently used to support teaching during the lockdown period. Individual communication with students was also maintained by e-mail and telephone. Other technologies were generally advantageous as well (Microsoft Teams, GoToMeeting, Cisco WebEx).

Table 2 - Faculty Challenges during Online

Situational and environmental
Existing IT infrastructure
Learning technology support
Staff Digital Literacy (back end support)
Ambitious Future Career Goals
Disguised learning and Teaching practices
Learning difficulties of students (Course outcomes)
Decreased Efficiency Delivery
Quality participation by students
Transparent assessment of outcomes
Students engagement
Quality and contents of Debate, Discussion, Participation
Could not use all Assessment methodologies
Intensity of case study discussion declined
Group activity declined
Could not follow completely Rubix (project based)
Source: Primary Data collection

Faculty used options for instructions include giving lectures via online videos, sharing content (such as slides, videos, and presentations), chatting, establishing debate forums or workgroups, supervising practical activities, evaluating and tutoring students, recording explanations and making them accessible to students, etc. The quality varied depending on the infrastructure used. These tools can be utilised both synchronously and asynchronously when integrated. To maintain students' engagement and interest in the course, an instructional approach must be implemented in conjunction with all of these resources on online delivery. To ensure that the instructional purpose of each activity is clear, teachers must provide audiovisual materials, schedule student work time, and employ the appropriate technologies for each activity, such as tutoring, mentoring, and student assessment. Therefore, it is essential to develop ways that encourage both peer collaboration among students and professor communication. While most institutes studied had challenges and limitations in this area. Effective online teaching and evaluation systems have arisen in response to the current epidemic. The evaluation method is crucial since it represents the culmination of the entire educational process. During the shift from traditional in-class face-to-face education to online education, a number of institutes have encountered substantial barriers and advances in the teaching-learning process during lockdowns. Either the process had errors or the effectiveness was not up to the required standards.

Increased Obstacles and Difficulties in the Present Context

The disruptive effects of Covid-19 resulted in swift modifications to instructional activity. As discussed, the abrupt end of face-to-face teaching requires both students and teachers to adjust to a significant shift in the teaching-learning process (Carolan et al., 2020).[xxxix] For example, during the COVID-19 epidemic, some students were disappointed with online learning owing to connectivity issues or eye fatigue, but others were satisfied because it helped cover the learning gap left by the protracted lockdown. This adaptation technique was not devoid of obstacles and difficulties. In order to achieve a smooth transition and a successful transformation, universities must be aware of these potential obstacles (Marinoni et al., 2020).[xl] To overcome these obstacles, proper actions must be implemented. The present paper describe these obstacles from the standpoint of the key stakeholders in the learning process—students, instructors, and institutions.

While looking at the experience of the students, students indicate that the shift to online education was tough owing to technical issues. Some scholars emphasise how online education can exacerbate the digital divide (Powell et al. 2022).[xli] To eliminate this barrier, institutes and higher education universities should mobilise resources to guarantee that all students have access to a suitable IT infrastructure and internet connection, as well as technical support. Universities must ensure that students from less affluent socioeconomic backgrounds are not at a disadvantage in order to foster an egalitarian learning environment in this rare circumstance. While the challenges would be more at the less technology advantage community. According to studies, boredom, a sense of isolation, a lack of time to follow the various subjects, and a lack of self-organising skills were among the major obstacles that students reported hindering their ability to pay attention in an entirely online environment (Zhang et al. 2022).[xlii] Professors also indicated that isolation was a significant issue in course design, emphasising the need to strike a balance between student-centered, individualised learning and collaborative learning. Additionally, they promoted the establishment of virtual communities of practise in an effort to enhance student peer collaboration and interaction. Infact, this also called for more mentoring interaction between the teaching professors and students, since technology was at advantage equally to all the students. Due to new normal way of teaching-learning, mentoring and personal guidance increased in most institutes.

This forced change was also tough for the instructors, who in some cases had to respond swiftly to new online approaches with little or no training. The abrupt shift from face-to-face to online education needs a teaching staff with varied degrees of preparation to employ multiple

pedagogies and specialised talents. There may be a generational gap between older academics who have relied on traditional methods and never used digital tools and younger faculty who are more comfortable with new technologies. Not every professor is comfortable working online due to technology and also used to the face-face format. According to professors, the primary obstacles are the high demand for specialised skills such as expert computer knowledge, specialised communication skills for an online setting, proper handling of various teaching-learning tools, and the need to solve specialised problems rapidly during learning sessions. After a brief period of adaptation-experimentation and a rapid shift to remote teaching, academics highlighted some noteworthy insights for overcoming obstacles. The first stage for instructors in online education is to establish an appropriate physical environment, including lighting and acoustics. Most institutes lack infrastructure. To accommodate online sessions, the content of class sessions must be completely revised. Group activities should also be incorporated to excite and engage students, as well as to promote collaborative learning. While online teaching calls for more of the activity related to the topic to be part of the teaching-learning, how to organise and manage such group activity through online mode was a challenge. In the near future, most universities will opt for a hybrid strategy that mixes small face-to-face groups with online sessions. The challenge for academics will be to ensure that students in both settings receive a high-quality education.

During the recent epidemic, the transition to emergency remote teaching demanded a complete interruption of institution-wide operations. To move toward a sustainable model for online learning, institutes should use technology to reinvent teaching methods, transform assessment tasks, alter the use and role of traditional Faculties (providing specialised training), and place an emphasis on value through the reinvention and self-renewal of the service model. The platform should allow more discussion and interaction between the professors and the students, which was absent in several institutes under the study. However, students, educators, and administrators must collaborate to support and evaluate the digital revolution's advances. Colleges must also overcome financial restraints and limitations imposed by their current IT infrastructure in order to complete this change. The budgets of public institutes would drop as a result of decreasing government funding, while enrolment will decline due to the shaky economic climate. Access to IT infrastructure at universities will also hinder their capacity to fully embrace digital transformation, necessitating specific expenditures to enhance these technological capabilities. Despite these obstacles, institutes are typically optimistic regarding this shift.

Cumulative Outcome of Responses - Qualitative analyses

1. Their greatest challenge was linked to students learning environment at home, followed by the challenge of technological literacy and competency.
2. Students challenges were also found to be aggravated by the pandemic, especially in terms of quality of learning experience, mental health, finances, interaction, and mobility.
3. The learning environment is the greatest challenge that students needed to hurdle, particularly distractions residence and hostels (e.g., noise) and limitations in learning space and facilities.
4. The imposition of lockdown restricted students' learning experience (e.g., internship and laboratory experiments), limited their interaction with peers and teachers, caused depression, stress, and anxiety among students, and depleted the financial resources of those who belong to lower-income group.
5. The majority of the respondents said there is a lack of action with teachers in online classes and low motivation for study due to lack of interaction with teachers in online classes and low motivation for study due to a lot of distraction.
6. Students felt socially isolated because of restrictions on outdoor activities and group project to prevent the spread of the virus.

Healthy academic talks and debate were found around tea-coffee place was completely absent.

Discussion and Conclusion

The disruptive ramifications of Covid-19 and the availability of digital learning support tools present previously unimaginable prospects for global higher education reform. We live in a digital era, and online education will never disappear. Even after the spread of Covid-19, online teaching has remained crucial. The observation in the study shows that educational apps, streaming conferences, web-based learning platforms, video conferencing tools, Massive open online courses (MOOCs), and instant messaging tools are utilised to boost online learning. Due to the rapid and compelled transition to online learning, the many actors in the learning processes (students, professors, and universities) experienced a number of difficulties adjusting to this new environment. Some responded quickly, some took time, and for some, it was great challenge. Universities must be aware of these obstacles and immediately mobilise resources to overcome them. They should pay special attention to the digitisation of the educational process and provide academics, office staff, and students with specialised technology training, upgrade skills and make them technology ready. Institutions must first modernise their technical infrastructures and ensure that all students have equal access to important technological resources. This level requires a financial expenditure to achieve complete digital transformation. Although we do not yet fully comprehend the implications of the shift to virtual learning for the future of higher education, it is evident that universities should develop a sophisticated blend of in-person and online instruction to maximise the potential of the technological resources available to meet students' expectations and enhance their learning experience in the current digital environment. While looking at the transition to online format and the recent research and taking a proactive stance in order to synthesise some critical lessons for the transition of higher education to online education. The human element is an additional essential barrier to technology advancement. For the transition process to be successful, institutional management and the leadership and support that includes all stakeholders are essential (faculty, students, technical staff) have to be on the same page. In the near future, faculty development and special policies are required to build institutional resilience and improve readiness for crisis management in order for higher education to effectively transition (Wang & Chiou, 2022)[xliii]. The expansion of digitalisation and information accessibility causes new privacy and security dilemmas. Universities must address these challenges by adopting codes of behaviour to ensure an environment of openness and reliability for online learning.

Suggestions based on the Study Intervention

1. Have readiness and preparedness before Online learning is introduced next time; Or else, once it is in practice, find the difficulties and schedule a training.

2. Engagement of students can happen if variety of pedagogy during online class- discussion, quiz, Q/A are followed. Moreover, use case (short(, demonstration, and even puzzle which makes interesting.

3. Try developing the contents which address the practical aspect of curriculum with several examples, live instances and a passage for open discussions.

4. Training and mentoring for using Technology has to be done to faculty for effectiveness in teaching-learning outcomes. In-house or outsourced training be planned, more over, the use of technology can be focused.

5. Counselling and mentoring for family members can be done, since most of the time, students spend in home and family atmosphere during online class. An online interaction focusing on motivation, engagement subjects can be addressed.

6. Counselling related to stress, depression, anxiety should be undertaken by Institute and

mental health issues should be addressed. If there is the resources, specialist and experts can be invited for thesis sessions.

7. Faculty discussion and meeting as to how to offer online in most effective way has to be Oriented. In house or external experts can be roped. Impart skills, since online mode needs special approach and competency.

8. Contents to be made more interesting and motivating, with interesting subject matter in each slides, while more of diagrams and pictures can be brought.

9. Surveys to collect data about the needs of faculty and students. Based on these data, need-based intervention should be designed. This will improve engagement during sessions.

10. Institutes should have a strong internet connection (wi-fi) and build an internet hub for the students who don't have an internet connection at home, or have no such strong connections.

11. A suitable, easy to accessible, and efficient online platform should be developed and introduced to the masses. Easy to use, window for discussion and Q/A be made easy and enjoyable.

12. Minimum infrastructure has to be provided, since all type of socio-economic students will be there. There could be challenges for advanced technology deployment, but minimum requirements can be addressed.

Implication of the study

This research will help inform the decisions of university administrators in charge of online education by highlighting areas for improvement and outlining promising approaches. Findings will help improve the campus's current online programme for greater effectiveness. As a whole, the study intended result is to help the university roll out its online learning style and structure throughout all departments and courses, while also providing students with real-world answers to the problems they face as a result of the shift to online education.

Conflict of Interest

Each author confirms that he or she has no vested financial or commercial interests in the outcome of the study. However, consultancy for improvement and implementation of online format and strategies to be adopted is taken on mutually agreed commercials for higher education institutes and Universities.

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