Pedagogy in Higher Education during the COVID-19 Pandemic: A Review

Mohammad Nazmul Islam[1]
Tasnima Aziza[2]

Abstract: To reduce the learning loss caused due to the COVID-19 pandemic, educational institutes of all levels have shifted to online teaching-learning mode on an emergency basis. This unplanned, rapid transition has created different challenges for all the stakeholders. This review paper highlights the pedagogy challenges and experiences considering two novel practices for university teachers: teaching using digital platforms and Teaching from Home (TFH). To accomplish the purpose, the researchers has made a review of pertinent literature that came up during the pandemic and dealt with the question of pedagogy of the university teachers of different countries. The adoption of virtual education has been hurdled by poor infrastructure, lack of preparedness, low motivation, absence of student interaction, and the teachers' mental stress. On the other hand, TFH has affected the university teachers' work-life balance, work environment, and physical and psychological health. The findings can help the teachers teach more efficiently by intervening in the problems. The study will also provide insights to the policymakers to utilize the opportunities this virtual education and TFH has created and make preparations for future crisis management.

Keywords: Higher education during COVID-19, online teaching, Teaching from Home (TFH), online student assessment, university teachers.

1. Introduction

The unprecedented COVID-19 pandemic has affected all the sectors throughout the world, and education is not an exception. The UN Secretary General expressed his worry that the learning loss might extend beyond one generation (UNESCO, 2020). Technological advancement through different digital learning platforms has enabled to reduce the learning loss due to the closure of educational institutes to prevent the spread of novel coronavirus. Across the globe, the pandemic has caused an enforced transformation of the education system from traditional face-to-face (F2F) mode to online mode. But this sudden shift towards online teaching has created different effects on the institutes and their stakeholders at various degrees (Leal Filho et al., 2021). Daniel (2020) investigated how the governments of different countries have taken initiatives to shift the teaching-learning process during this crisis. He also put some insights for successful implementation of this process during the other crisis in the future. The educational institutes have faced two main challenges: an emergency shift to online teaching mode and a financial crisis (Izumi et al., 2020). To meet the crisis, entrepreneurs of educational institutes at primary, secondary, and tertiary levels have adopted different strategies

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[1] Associate Professor, Institute of Business Administration (IBA-JU), Jahangirnagar University., Savar, Dhaka. Email: bulbul_ju@juniv.edu

[2] Associate Professor, Institute of Business Administration (IBA-JU), Jahangirnagar University, Savar, Dhaka. Email: tasnumaju@juniv.edu

(Huque et al., 2021a). The success of the most significant initiative shifting to digital mode has been hampered by lack of internet facility, poor internet and electricity connectivity, lack of devices and ICT skills, and has created a digital divide among the students (Bordoloi et al., 2021). The educators should have proper skills to maintain attendance records, assess the students, and ensure proper student engagement in this remote teaching (Khan & Abid, 2021).

Pham et al. (2021) found that teachers' perceived support, stress, and readiness significantly affect their satisfaction and performance. The policymakers and the authority of the institutes are recommended to take initiatives to reduce the stress and anxiety of the teachers due to the transformation, income effect, etc., along with arranging capacity building initiatives to improve the ICT skill and knowledge of the teachers (Sia & Abbas Adamu, 2020). Invasion of Privacy, non-cooperation, and lack of student participation also create stress among the teachers (Mehta, 2021). Sulaiman et al. (2021) found a strong negative relationship between the motivation of the teachers and their stress level during COVID-19. Technical glitches faced by the teachers initially slowed down the teaching-learning process. University teachers also faced hurdles with preparing course content for the digital mode overnight (Mittal et al., 2021).

Huque et al. (2021b) have classified the challenges of the university teachers as infrastructural, financial, policy-related, physical, and mental health-related issues. To meet the challenges, universities have adopted initiatives like emergency crisis management committee, financial aid to the students, technical support to both the teachers and the students (Aziza, 2021). Along with the experiences of the university teachers, different studies have stated their readiness, perception, and preferences regarding online classes, challenges they have faced during the COVID-19, and strategies they have followed to meet the hurdles successfully. This information may help policymakers and academia formulate and implement policies regarding virtual or blended teaching, work from home arrangements, and finally, face various crises successfully in the future.

University teachers has faced different types of challenges as they had no opportunity to plan for the new mode and arrangement of teaching. Therefore, this paper rummages and employs descriptive analysis of relevant literature regarding the emergency shifting journey of university teachers from traditional F2F teaching to the digital mode to provide a timely guide for the academics to manage COVID-19 and other crisis in future. From the literature the authors have tried to investigate the challenges and experiences the university teachers have faced and the factors that affect the challenges.

2. Materials and Methods

This paper is a review that requires a summary of the current findings of an issue or concept thoroughly and neutrally (Petticrew, 2001). Based on the literature, this review aims to provide an overview of the experience of university teachers regarding the enforced transition to online teaching. To attain the goal, this paper utilized peer-reviewed published academic journals. This review did not include other publications like conference papers, books, and dissertations. Mainly five online databases were explored to collect the peer-reviewed relevant articles: EBSCO, Emerald, Springer Link, Sage, and Google scholar using the search term like "online teaching," "online classes," "higher

education during the pandemic," "work from home during COVID-19. The electronic search conducted last on 20th February, 2022 resulted in 237 articles from which 44 duplicates were removed. Finally, from 193 articles, 23 were included in this review based on the selection inclusion and exclusion criteria (Mallett et el., 2012). Six criteria have been used for the review inclusion: level of education, language, publication status, perspective, study design, and time frame. The inclusion and exclusion criteria are presented in Table 1.

Table 1: Inclusion and Exclusion Criteria for Paper Selection

Criteria	Inclusion	Exclusion
Level of Education	University level	School, higher school and other levels.
Language	English	Other than English
Publication Status	Published in any international peer-reviewed journal	Not published in any international peer-reviewed journal.
Perspective	Articles containing the experience of the teachers	Articles on student and authority perspectives.
Study Design	Empirical	Conceptual and Reviews
Time Frame	Published in 2020 -2022	Articles published before 2020.

The review findings and information were recorded in a data extraction sheet which has been used for literature analysis (Denyer and Tranfield, 2009).

3. Results

Table 2 provides an overview of the authors, year of publication, country, and the main findings of the selected 23 articles. All the papers have focused on the COVID-19 pandemic situation. That is why the publication year is between 2020-2022. The majority of papers i.e., 15, have been published in 2021. The papers have collected information from different universities of the world.

The pandemic has brought two novel practices for most university teachers: online teaching and work from home practices. The selected articles focused on these issues. Some papers have focused on the teachers' adoption and readiness, whereas others concentrate on the effective implementation of these practices. Several articles also have focused on the teachers' challenges at higher studies level and tried to learn about the coping strategies of the teachers in this unique situation. Though some countries have a previous practice of virtual teaching experience to some degree, they don't have the experience of teaching using the digital platform on a large scale. On the other hand, most countries did not have experience of online pedagogy. They have to start the mode on a contingency basis to face the unique crisis. Their readiness for this teaching mode, the determinant factors of adoption, and effective implementation have been reflected in some papers.

Though Work from Home (WFH) has been used in some countries to provide flexibility for the employees, it is a new practice for many countries. Enforced WFH for the teachers, termed Teaching from Home (TFH) have changed the home environment and

has brought some unique challenges for the university teachers. These challenges vary across culture, gender, age etc. Some articles focus on the challenges and the determinant factors of the problems.

Table 2 : List of the selected articles and their major findings

Author	Year	Title	Region/Country	Major Findings
Alqabbani et al.	2020	"Readiness towards emergency shifting to remote learning during COVID-19 pandemic among university instructors."	Saudi Arabia	Strong positive correlation between perceived effectiveness regarding online teaching and attitude of the teachers.
Gautam & Gautam	2020	"Transition to online higher education during COVID-19 pandemic: Turmoil and way forward to developing country - nepal."	Nepal	Infrastructure, student and teacher perception have been determined as antecedents of the effectiveness of online classes during the pandemic.
Izumi et al.	2020	"Managing and responding to pandemics in higher educational institutions: initial learning from COVID-19."	29 countries	More time involvement while WFH, technical difficulties, poor internet connection and financial crisis were found as major challenges.
Joshi et al.	2020	"Impact of coronavirus pandemic on the Indian Education Sector: Perspectives of teachers on online teaching and assessments."	India	Different hurdles have been categorized into four groups: home environment settings, institutional barriers,technical difficulties and personal problems.
Kaldeen & Nuskia	2020	"Work-From-Home (WFH) Benefits and Challenges: Evidence from State Higher Education Sector in Sri Lanka."	Sri Lanka	WFH during the COVID-19 pandemic results in both positive and negative consequences on work, family, and health of the university faculties.
Rapanta et al.	2020	"Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity."	Switzerland , Australia Spain, and Canada.	Planned course design, efficient teaching skill and proper assessment have been suggested for effective online pedagogy.

Author	Year	Title	Region/ Country	Major Findings
Abid et al.	2021	"Online teaching experience during the COVID-19 in Pakistan: Pedagogy–technology balance and student engagement."	Pakistan	Experience has been described under five themes: gender and culture, teaching effectivenss, challenges, coping strategies and post-covid perception.
Almhdawi et al.	2021	"University professors' mental and physical well-being during the COVID-19 pandemic and distance teaching."	Jordan	A mild higher level of depression, anxiety, and stress were found among the Jordanian professors.
Chakraborty & Kar	2021	"How did covid-19 impact working professionals – a typology of impacts focused on the education sector."	India	Lack of training and technical infrastructure, poor work-life balance, and research publication stress have been identified as the main impact on the university teachers.
Ebohon et al.	2021	"Evaluating the impact of covid-19 pandemic lockdown on education in Nigeria: Insights from teachers and students on virtual/online learning."	Nigeria	Poor student interaction, difficulties and malpractice in student assessment and challenge to explain the complex scientific concepts.
Farah Naz et al.	2021	"Managing the porous boundaries: Impact of working from home on work life balance of university teachers during COVID 19."	Pakistan	Female teachers face more work-life conflict and difficulties in maintaining work-life balance than their counterparts.
Islam et al.	2021	"E-learning in the time of covid-19: Lived experiences of three university teachers from two countries."	Bangladesh and Saudi Arabia	Lack of timely decisions and proper policy regarding digital teaching, infrastructural facility and digital skills are the major impediments of the new teaching mode.
Kuleto et al.	2021	"Factors affecting the efficiency of teaching process in higher education in the Republic of Serbia during COVID-19."	Republic of Serbia	Management support, work-family conflict, and home infrastructure affect online teaching efficiency.

Author	Year	Title	Region/ Country	Major Findings
Leal Filho et al.	2021	"Covid-19: The impact of a global crisis on Sustainable Development Teaching."	Across the globe	Lack of student interaction and engagement have been identified as the main challenge on the teachers' part.
Mittal et al.	2021	"A unified perspective on the adoption of online teaching in higher education during the COVID-19 pandemic."	India	A strong influence of performance expectancy, hedonic motivation, and social influence have been found on behavioral intention of adoption.
Müller et al.	2021	"Covid-19 emergency e-learning and beyond: Experiences and perspectives of University Educators."	Singapore	Though teachers have faced different challenges during the transition period they prefer blended teaching for the future implementation.
Paliwal & Singh	2021	"Teacher readiness for online teaching-learning during COVID − 19 outbreak: A study of Indian institutions of Higher Education."	India	The competencies required for course design, communication , time management are not sufficient among the teachers but the technical competencies are sufficient for the readiness to adopt online mode.
Shambour & Abu-Hashem	2021	"Analysing lecturers' perceptions on traditional vs. distance learning: A conceptual study of emergency transferring to distance learning during COVID-19 pandemic."	11 countries	Younger teachers perceive virtual teaching more positively than their elder counterparts and remark the new mode as full of prospects. Teachers having previous experience have a positive perception regarding online education.
Shrestha et al.	2021	"Preparations for and practices of online education during the COVID-19 pandemic: A study of Bangladesh and Nepal."	Bangladesh and Nepal	Poor network, lack of digital skill, and scanty support from the institutions have been mentioned as main challenges for a smooth transition.
Valsaraj et al.,	2021	"Faculty experiences on emergency remote Teaching during COVID-19: A multicentre qualitative analysis."	India, Malaysia, Oman, UAE	Preparedness is required to successfully adopt the new mode and combat the challenges teachers have faced in virtual teaching.

Author	Year	Title	Region/ Country	Major Findings
Zou et al.	2021	"Evaluation of the effectiveness of EFL online teaching during the COVID-19 pandemic."	China	Teachers' skills, proper training, and confidence increase the digital platform's teaching effectiveness.
Afrianty et al.	2022	"Working from home effectiveness during covid-19: Evidence from university staff in Indonesia."	Indonesia	Digital orientation has a significant influence on digital capability, increasing productivity during working from home.
Saha et al.	2022	"Teaching during a pandemic: Do university teachers prefer online teaching?"	Bangladesh	Most of the teachers prefer blended teaching for the post-covid situation.

4. Findings and Discussion

To reduce the learning loss caused by the unprecedented COVID-19, universities across the globe have adopted online teaching on an emergency basis. At the same time, to reduce the spread, the teachers were forced to teach from home. Sudden adoption and execution of the new mode and work arrangements have resulted in different reactions, outcomes, and challenges for academia. The review findings have been discussed according to the framework presented in figure 1.
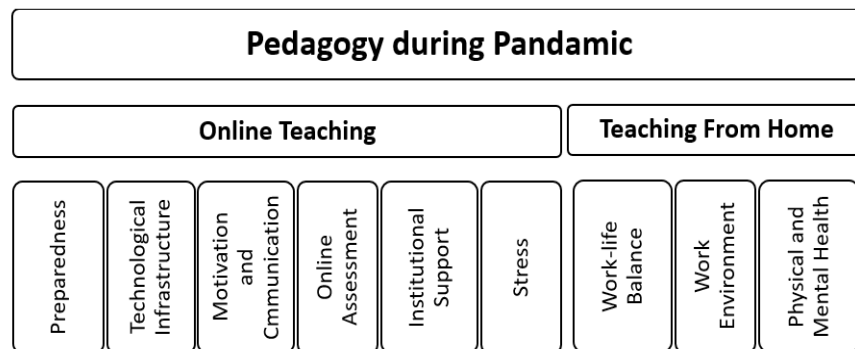

Figure 1: A framework of Pedagogy during Pandemic

Adoption of Online Teaching

The prompt and successful implementation of the emergency transition to online teaching depends on various factors related to the individual, society, institute, and the country. The main challenges the university teachers faced to adopt and implement the teaching on the digital platform are their insufficient preparedness, poor technological infrastructure, low motivation, poor interaction and engagement in the class, difficulties in student assessment, inadequate institutional support, stress to adopt the new mode.

Preparedness of the Teachers

The ease, speed, and success of the adoption of teaching in digital platforms depend on the teachers' preparedness, perception, attitude, and anxiety toward the mode. Teachers who have high preparedness are satisfied with the new platform and have faced lower levels of uncertainty and higher positive perception regarding the platform's effectiveness. Teachers who are trained, supported with device and internet access, and acquainted with different e-learning tools are being considered prepared. This support and infrastructure have assisted the rapid transition quickly (Alqabbani et al., 2020; Kuleto et al., 2021). Besides, teachers who had the previous practice of e-learning to some degree have been able to shift their teaching mode into online quickly and easily without any learning loss (Islam et al., 2021). In another study, Mittal et al. (2021) revealed that performance expectancy and social influence impact the behavioral intention of the university teachers to adopt the online teaching during the pandemic. Performance expectancy is the degree to which teachers believe that using online education will benefit them to perform better and social influence means the influence of others to adopt the digital platform.

Technical competencies and proper internet facilities affect the adoption of online teaching-learning. Overall, the successful adoption of online teaching depends on the infrastructure and the expertise of the teachers and students (Gautam & Gautam, 2020). Teachers' sensitivity, i.e., their degree of acceptance to work in different schedules, at the different patterns, and with new technology, is a determinant factor for online teaching adoption. Moreover, previous experience increases teachers' self-efficacy, positively influencing online teaching adoption (Shrestha et al., 2021).

The digital capability of university teachers depends on their digital orientation. Digital orientation is the teacher's commitment to applying digital technology in pedagogy. On the other hand, digital capability is the ability to effectively utilize digital technology, which is a requirement for successful TFH (Afrianty et al., 2022; Shambour & Abu-Hashem, 2021; Valsaraj et al., 2021). The capability gives confidence among the teachers and influences their perception of the effectiveness of online teaching (Zou et al., 2021).

Experience in teaching influences the teachers' preparedness to adopt the new teaching mode. Experienced faculty with over 15 years of experience have less preparedness and consider this a temporary situation than less experienced teachers (Valsaraj et al., 2021). Saha et al. (2022) and Shambour and Abu-Hashem (2021) also have found that young academics prefer online classes more as they are better conversant with the technology.

Moreover, the absence of timely and consistent decisions and policies from policymakers has also influenced the rapid adoption of online teaching (Islam et al., 2021).

Technological Infrastructure

A smooth internet connection is an essential requirement for virtual education. Most of the studies have found poor and slow internet connectivity as the hurdle for uninterrupted online education (Chakraborty& Kar, 2021; Ebohon et al., 2021; Farah Naz et al., 2021; Gautam & Gautam, 2020; Islam et al., 2021; Izumi et al., 2020; Joshi et al., 2020; Kaldeen & Nuskia, 2020; Saha et al., 2022; Shrestha et al., 2021). Besides, Gautam and Gautom (2020), Islam et al. (2021), and Shrestha et al. (2021) also found unstable power supply and expensive internet service as a challenge for teaching using the digital platform. Saha et al. (2022) mentioned poor mobile networks impede remote education in urban and suburban areas, especially in developing countries. Joshi et al. (2020) has also found lack of devices for video conferencing has created problems for academics.

Motivation and Communication

For any job, performance depends on both ability and motivation. Though on average, university teachers have a positive perception regarding online teaching (Saha et al., 2022), these academics have reported less motivation caused due to poor student interaction and engagement (Ebohon et al., 2021; Joshi et al.,2 020; Kaldeen & Nuskia, 2020; Leal Filho et al., 2021; Saha et al., 2022; Shrestha et al., 2021; Valsaraj et al., 2021). Teachers can not realize the students' understanding level and reaction due to a lack of immediate feedback (Paliwal & Singh, 2021). As most students turn their cameras off, their expressions cannot be understood by the faculties for which they cannot adjust their lectures instantaneously. The situation is worse for the educators in asynchronous teaching, where recorded lectures are uploaded for learning (Müller et al., 2021; Shrestha et al., 2021). The opposite findings have been revealed by Gautam and Gautam (2020). In their study, the respondents have perceived online teaching as an opportunity connected with technology for teaching, allowing them to collect and share the teaching materials easily and connect with international resource persons, positively impacting their professional development. Moreover, they believe that digital teaching enables them to connect geographically diverse students in a pandemic situation. Some faculties accused students of late and irregular attendance and low commitment at the same study. But at the same time, some shy students are found more interactive during online classes (Islam et al., 2021; Müller et al., 2021). Izumi et al. (2020) mentioned lack of group work and poor student engagement as significant challenges university teachers face during online teaching. Saha et al. (2022) echoed the other researchers stating students' lack of enthusiasm and attention as a significant problem of the online classes.

The teachers' degree of difficulties and student engagement differs based on the subject. Teachers responsible for complex disciplines and topics require more interaction, and laboratory-based research confronted more hitches in this regard (Abid et al., 2021; Joshi et al., 2020; Saha et al., 2022; Shrestha et al., 2021; Valsaraj et al., 2021).

Some universities formally have shown gratitude to the teachers for their contribution to the successful transition toward online teaching, which has motivated the teachers a lot (Islam et al., 2021). Mittal et al. (2021) mentioned hedonic motivation, the pleasure teachers achieve in using the new system, influences the adoption of online teaching.

Shambour and Abu-Hashem (2021) concluded that young teachers are more motivated toward shifting the teaching mode. The new mode has caused work rescheduling and

redesigning, resulting in problems for academia. Teachers have been overburdened to comply with the latest teaching and assessment (Leal Filho et al., 2021).

Online Assessment

Academics also have faced problems assessing the students online. They have to change the evaluation criteria and format for online assessment (Islam et al., 2021). Most of them have faced difficulties in assessing the scripts after printing them and faced troubles to the entry the evaluations in software which is a new practice for them. In maximum cases, the teachers do not have knowledge about online assessment tools (Joshi et al., 2020). Assignments and oral examinations have been considered the most suitable assessment tools in the digital platform as more malpractice of the students have been observed in online written exams reflecting in the inflated grade (Ebohon et al., 2021; Islam et al., 2021; Shrestha et al., 2021). Teachers also perceive student assessment in the pandemic situation biased as all the students do not get equal access to the technological infrastructure and devices due to financial crisis and location (Leal Filho et al., 2021).

Institutional Support

University teachers have not received enough support regarding technological infrastructure, training, and timely decisions that might contribute to smooth transition (Kaldeen & Nuskia, 2020; Kuleto et al., 2021; Leal Filho et al., 2021; Shrestha et al., 2021). Many universities asked the students to conduct online teaching and assessment without appropriate policy and guidelines, putting the teachers in a dilemma (Joshi et al., 2020). Abid et al. (2021) focused on the importance of the teachers' training needs, enabling them to transfer knowledge efficiently. Most teachers acknowledged the support from peers instead of institutional training to adopt the new mode of pedagogy (Valsaraj et al., 2021).

Stress

The sudden shift to the digital classroom has created stress among university teachers, which the authors termed technostress (Müller et al., 2021; Shrestha et al., 2021). Most of them do not know about online pedagogy, which causes anxiety for this emergency transition (Chakraborty & Kar, 2021; Shrestha et al., 2021). Content redesign, record and time management, ensuring student engagement, and work-life conflict in the new environment cause stress among these teachers. Support from family and colleagues helps teachers reduce stress when adopting a new teaching mode (Abid et al., 2021). Some faculties involved in complex course teaching also face trauma during the adoption stage. Experienced teachers are found with more anxiety and having stress regarding delivery mode (Valsaraj et al., 2021).

Digital transformation, automation, and pandemic crisis also led to downsizing the organizations, which is also observed in some higher educational institutes, putting the teaching staff in trauma and overburdened (Chakraborty & Kar, 2021). Teachers using open sources for online teaching and evaluation often complain about student data insecurity, privacy issues, virus attacks, etc. They are also concerned about student cheating in assignments and exams (Joshi et al., 2020).

Teaching from Home (TFH) During the Pandemic

As TFH has been implemented in an unplanned way, teachers have not received any guidelines for this arrangement. Though Work from Home has been practiced in different countries for some positions, it is a novel practice for most cases where employees have to embrace this forcefully. In the teaching position, it is almost new in most countries. The forced TFH enabled maintaining social distance during the pandemic, and also, with the help of technology, learning loss has been minimized. Still, university teachers have been confronted with different types of experiences during TFH.

Work-life Balance

Along with the routine administrative roles and research activities, the teachers have to keep busy with the content design, assessment planning, etc., for the new system, which requires more time engaged in their work which causes work-life conflict. Many teachers are thus facing overburdened (Chakraborty & Kar, 2021; Izumi et al., 2020; Kaldeen & Nuskia, 2020; Leal Filho et al., 2021). They have also faced trouble to make work-life balance attending the international webinars due to differences in time zone (Valsaraj et al., 2021). Besides, they have faced a lack of child support as the kids have to stay home and attend online classes, which require further supervision and care. Moreover, pressure to publish research papers in this new work arrangement has created extra pressure for academia (Chakraborty & Kar, 2021).

Gender differences have been found during teaching from home. Most female teachers reported that household chores and family expectations increased during the lockdown. Females are the main ones responsible for household chores, child care, and adult care due to the gendered stereotypes. As a result, they are overburdened compared with their male counterparts (Abid et al., 2021; Farah Naz et al., 2021). Moreover, most female academics have mentioned a lack of family support and specific space for TFH than their counterparts (Farah Naz et al., 2021). Kuleto et al. (2021) found a mixed result of TFH. Some have seen this work arrangement positive for work-life balance, while others have reported extended work hours resulting in increased work-family conflict.

Work Environment

As a new arrangement has been implemented without planning and preparation, many limitations inhibit teaching efficiency. In developing countries, many teachers do not have enough resources at their homes like smooth internet connection, proper devices, separate space, reading and research materials, etc., to conduct online classes magnificently. This problem is severely faced by the teachers residing in rural areas. (Chakraborty & Kar, 2021; Joshi et al., 2020). External distractions caused by the vehicles, neighbors, vendors, etc., disrupt the continuity and attention during the class, lecture preparation, and student assessment (Ebohon et al., 2021; Joshi et al., 2020). Family interference also affects lecture delivery and preparation. As all the members have to stay in the home, concentration is interrupted by the children and other family members and for the family responsibilities (Joshi et al., 2020).

Physical and Mental Health

Kaldeen and Nuskia (2020) revealed the health effect of TFH, comprising back pain, body pain, headache, eye strain, etc., due to excessive use of devices and screens. Huque et al. (2021b) also emphasized the physical health hazard of the university teachers during the lockdown. They have to be exposed to screen for teaching, reading materials, meetings, other administrative works, and student assessment. But at the same time, the researchers have found some good lifestyles among most teachers like good food habits, physical exercise, disciplined life, etc. Along with physical health, like other teachers, they also have faced mental health issues during the pandemic like sleep disorders, threat of COVID-19, etc. Almhdawi et al. (2021) have identified other factors like financial loss, job loss etc., causing depression to some teachers. They have concluded that though university teachers have different physical and mental problems, they have a sound health-related quality of life compared to the average population during the pandemic.

Perception regarding Post Covid Pedagogy and Recommendation for future Implementation

The digital platform has created opportunities for collaboration among the teachers even beyond the boundaries, which will be helpful for their professional growth. They will quickly get the idea about the modern pedagogy practice, tools, and ideas. Besides, with this experience, there is a scope to continue blended teaching within the universities (Abid et al., 2021; Saha et al., 2022).

The university authority should communicate the benefits of online teaching to improve the teachers' perception. The faculty members who have adopted online education successfully may positively motivate others (Mittal et al., 2021). Teachers should consider students' preparedness to participate in online classes and be available in social communication channels to maintain student interactions (Rapanta et al., 2020). In addition, academics should try to reduce the communication and interaction gap with students following different student engagement techniques (Shambour & Abu-Hashem, 2021). For successful online pedagogy, the teachers should have proper internet access, necessary equipment, and materials at their homes (Izumi et al., 2020). Besides, the educators should be provided essential skills regarding updated teaching mode and tools (Afrianty et al., 2022; Joshi et al., 2020; Saha et al., 2022; Zou et al., 2021;). Universities have to allocate resources in this regard and prepare their budget accordingly.

Though teachers have faced different problems adopting online teaching with this experience, they want to continue it with the traditional method. Online classes provide flexibility in terms of time and space, and the institutions can take advantage of it (Müller et al., 2021). Universities may formulate policies for blended teaching, incorporating a certain percentage of classes to be conducted online and in-person (Afrianty et al., 2022; Izumi et al., 2020; Leal Filho et al., 2021; Shrestha et al., 2021; Valsaraj et al., 2021).

There should be enough planning for the student evaluation in online mode which will ensure both proper judgment and honesty. Müller et al., (2021) have suggested open book exams with real-world applications for assessing the students online. As digital orientation has been found to be a determinant of teachers' productivity, this should be included in recruitment and selection criteria when hiring new teachers (Afrianty et al., 2022). TFH policies can be formulated and implemented along with conventional arrangements with the necessary measures for the home office (Afrianty et al., 2022;

Kuleto et al., 2021; Leal Filho et al., 2021). Almhdawi et al. (2021) have suggested maintaining good ergonomics for home offices to avoid health hazards for the teachers.

Governments and the related private sector should develop technological infrastructure to ensure online teaching and work from home. The efficiency of the new working mode and work arrangement will depend on smooth internet and power connection. The proper initiative in this regard will also ensure inclusion in education (Afrianty et al., 2022).

The main factors that influence the adoption and practice of online teaching and teaching from home have been summarized in Table 3.

Table 3: List of the challenges faced due to new practices along with the factors affecting the challenges

New Practices	Challenges Faced	Impacting Factors
Adoption of Online Teaching	Preparedness	• Training on online teaching. • Availability of devices and internet access. • Acquainetance with e-learning tools. • Previous experience with online teaching. • Performance Expectancy. • Social Influence. • Technical competencies of the teachers and the students. • Teachers' sensitivity • Teaching experience • Timely decision and appropriate policies.
	Technological Infrastructure	• Quality of Internet connection. • Power Supply. • Internet expense. • Mobile network.
	Motivation and Communication	• Student interaction and engagement. • Perception regarding online teaching. • Discipline and topic of teaching. • Recognition from the university authority. • Age of the teachers.
	Online Assessment	• Suitable evaluation criteria • Malpractise in exams. • Digital divide
	Instituitional Support	• Arrangement of technological infrasture, training, timely decisions. • Proper policies for online classes and student assessment. • Peer support.

New Practices	Challenges Faced	Impacting Factors
	Stress	- Technostress - Content redesign - Time management - Work-life conflict - Teaching experience
Teaching from Home	**Work-life Balance**	- Additional Time requirement. - Take care of family members. - Presuure to publish research papers. - Family support
	Work Environment	- Work settings and supports at home. - External distraction. - Family interference
	Physical and Mental Health	- Problems due to excessive use of screens and devices. - Consiousness regarding healthy lifestyle. - Stress due to new work arrangement and teaching mode and also due to Covid-19 pandemic.

5. Conclusion

This paper has reviewed the articles related to pedagogy in higher studies during the COVID-19 pandemic. The abrupt shift to the online teaching mode and Teaching from Home is a novel practice for university teachers. The experience and challenges faced by the university instructors in different countries are different as they have different preparedness, infrastructure supports, policies, social and economic structures etc.The review may help get insight into the challenges faced by these diversified academia and opportunities created for higher education. Considering the post-COVID situation, the universities have to take proper steps to make up for the learning loss, take advantage of technological advancement, and take precautions for any future crisis. For suitable policy interventions, all the stakeholders, including government, education and technology experts, apex bodies, telecommunication companies, etc., should think and discuss together to treasure collective mechanisms to overcome the challenges and exploit the prospects.

Moreover, it is the right time to think over the scope and result of blended learning, which may save some resources like paper usage, commute cost and time, fuel, etc. For the overpopulated country, it may also help to reduce traffic congestion and environmental pollution. All these consequences may contribute to the sustainable development of the nations. The emergency shift of online teaching also has created an excellent prospect for remote education worldwide. So this study has implications in education, administration, business, research, and society.

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