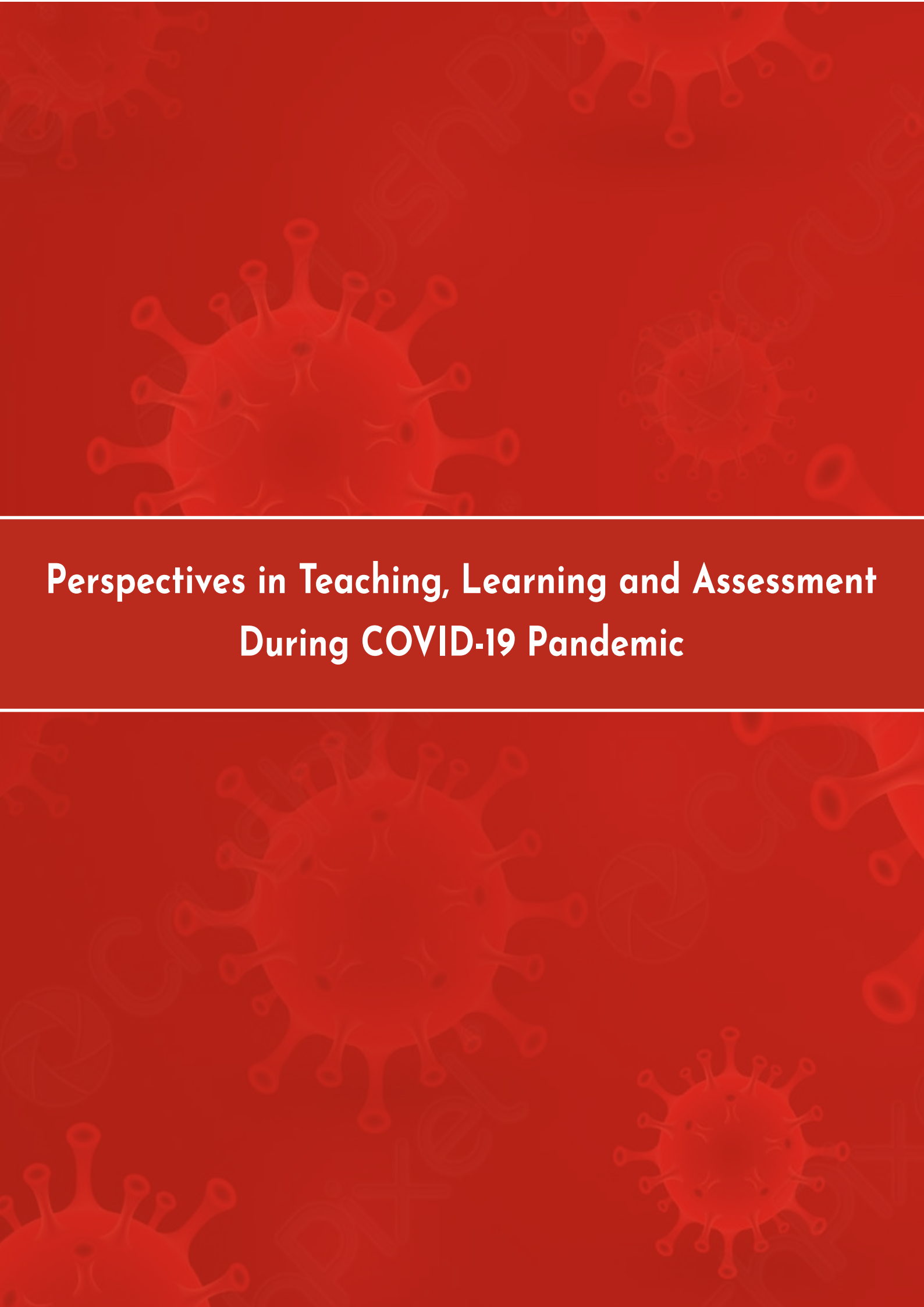




Perspectives in Teaching, Learning and Assessment During COVID-19 Pandemic

Perspectives in Teaching, Learning and Assessment During COVID-19 Pandemic

Editor

Prof. Adit Gupta

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Preface

The COVID-19 epidemic has left an enduring effect on the history of education, upending the foundation of conventional methods for instruction, learning, and evaluation. In my capacity as the editor for "Perspectives in Teaching, Learning, and Assessment," "I am delighted to present a mosaic of insights and reflections that have emerged from the crucible of a global crisis during the COVID-19 Pandemic."

Our journey through the realm of education during these unprecedented times is illuminated by a diverse array of chapters, each a testament to resilience, innovation, and adaptability. The kaleidoscope begins with an exploration of Blended Learning, where the fusion of traditional and digital methodologies unveils a new paradigm for the future. We delve into Web-based learning environments, navigating the virtual landscapes that have become our classrooms, and traverse the frontier of augmented reality, where technology becomes an ally in enhancing students' learning experiences.

The role of information technology in professional development is a focal point, underscoring its transformative power amidst the challenges posed by the pandemic. The impact of COVID-19 on higher education unfolds as a narrative of disruption and adaptation, inviting us to reimagine the very foundations of academia, including the assessment and evaluation of students' progress during these times.

Student engagement takes centre stage in exploring online learning environments, where strategies are crafted to bridge the digital divide. The voices of educators echo through the pages, revealing their perceptions towards online assessments during the pandemic. At the same time, the challenges students face in this new educational landscape come into sharp focus.

This compilation stands as a testament to educators' resilience, students' adaptability, and technology's transformative power in the face of adversity. As you embark on this journey through the pages of Perspectives in Teaching, Learning, and Assessment During the COVID-19 Pandemic, may you find inspiration, insights, and a shared sense of camaraderie in pursuing knowledge during these extraordinary times.

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Perspectives in Teaching, Learning and Assessment During COVID-19 Pandemic

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Abhilasha Kumari & Vimal Kishor

ABSTRACT

Blended learning combines offline (face-to-face, traditional) and online learning in such a way that one complements the other. In Online Learning, the students study from home or any other place and acquire learning material online. That is most convenient for them, whereas offline learning is face-to-face learning in a traditional manner, which provides a classical medium for educating students by allowing an open communication forum between the pupil and teacher. A blended learning program is an innovative teaching method that combines the conventional classroom with technology use where students are actively engaged. Because of the following characteristics, Blended Learning programs are used: They combine conventional methods with technology-enhanced learning. It adds new, emerging open online resources and free tools. It also incorporates many teaching methods, like team teaching, discussion, demonstration, project, and case study methods. These learning activities engage students and increase their motivation level. An intelligent blend of online and offline teaching can help bridge the digital divide (Pawar, 2021). The deadly and infectious Coronavirus, known as COVID-19, has deeply affected the global economy. Closures of schools, institutions, and other learning spaces. (During the COVID-19 pandemic) have impacted more than 94% of the world's student population. The mixed method of learning, or Blended learning, is the Need of the Hour.

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Teachers, parents and governments are also in favour of this mode of learning these days (Pokhrel and Chhetri 2021). The objective of the paper is to analyse blended learning programs, which give learners and teachers an environment to learn and teach more effectively. Learners can select the best activities to suit their own pace, learning style, level, time, and place. Learners can be more independent and self-reliant in their learning.

Keywords: Blended-Learning, Online-Learning, Traditional-Learning, Face-to-Face Learning.

INTRODUCTION

Blended learning combines offline (face-to-face, traditional) and online learning in such a way that one complements the other. In Online Learning, the students study from home or any other place and acquire learning material online. That is most convenient for them, whereas offline learning is face-to-face learning in the traditional manner. There are a lot of definitions and approaches to describing blended learning in the literature. Depending on the learning targets, in blended learning environments, students learn face-to-face in class and technology-based e-learning environments. The percentage of in-class and e-learning environments varies. The definition of Blended Learning, used in American literature for the first time, concerns both pedagogical approach and learning methods, using media, technology, and relations between all of them, bearing in mind what to learn (Gynther, 2005).

According to Wikipedia, blended learning is a formal education program in which a student learns at least in part through the delivery of content and instruction via digital and online media with some element of student control over time, place, path, or pace.

Currently, blended learning, also known as mixed learning, contains rich learning strategies. According to Harvey and Chris (2001), a blended learning program may consist of one or more program combinations, combining online and offline learning environments and collaborative and individual learning environments.

Combining structured and non-structured learning environments · combining pedagogical approaches ('e.g., constructivism, behaviourism, and cognitivism') to produce an optimal learning outcome with or without instructional technology

Singh and Reed's (2001) definition of blended learning approaches it as progress and considers that it should be composed of different environments so that instructors can get optimised learning outcomes and budgets. Therefore, they proposed an elaborated definition and said: Blended learning focuses on maximising the achievement of learning objectives by applying the "right" learning technologies to match the "right" personal learning style to transfer the "right" skills to the "right" person at the "right" time. According to their definition, blended learning is a learning program that improves learning effectiveness by extending access, optimising the cost of development and time, and optimising learning outcomes. In literature, the most accepted definition includes Osguthorpe and Graham's (2003) definition, which combines face-to-face (F2F) instruction with computer-mediated instruction in education.

REVIEW OF THE RELATED LITERATURE

1. Technological development and the internet have changed people's lives on different scales, including teaching and learning. Online learning is a new technological innovation that is increasingly used in education. The web has become one of the channels of learning that opens the door for people around the world to access education for free or at lower costs (Selinger, Sepulveda, and Buchan, 2013).
2. It can be said that blended learning is, to some extent, the solution to problems prevailing in our educational system. If implemented in a well-planned, organized way with the right type of attitude, it can become the future of our educational system. It is to our benefit that steps for adapting blended learning are soon initiated. (Lalima and Dangwal, 2017)
3. Blended Learning is not inherently good or bad. It was not a solution to everything. Rather, it was a pathway to student-centred learning at scale. Also, to yield the best result out of Blended Learning, school leaders must not start with Blended Learning or technology for its own sake but instead undertake a careful design process to unlock its potential. Horn and Staker (2014)
4. A good merit of blended learning is that it can cater to individual preferences in learning styles. Students are free to choose their preferred learning style to some extent, though some components may be compulsory (Harding, Kaczynski, & Wood, 2005). Thus, differentiated instruction is possible to a large extent. Self-pacing allows for the engagement of every learner at any given time in blended learning. Students also visualize that the learning involved becomes a process, not isolated individual learning tasks.

NEED AND SIGNIFICANCE

Blended learning is a teaching method that combines traditional classroom instruction with online learning. The need for blended learning has become increasingly significant in today's fast-paced world. With the rise of technology and the internet, people have access to vast amounts of information at their fingertips. However, this information overload can be overwhelming, making it difficult for students to keep up with the pace of traditional classroom learning.

Blended learning provides a solution to this problem by allowing students to learn at their own pace while still receiving guidance from a teacher. This approach combines the best of both worlds, allowing students to benefit from face-to-face interaction with their teacher and peers while having access to online resources that can be accessed anytime, anywhere. In traditional classroom settings, students are often limited to learning one subject at a time. However, blended learning allows students to learn multiple subjects concurrently, allowing them to cover more material in less time.

In conclusion, blended learning is a necessary solution for the modern world's fast-paced lifestyle. It allows students to learn at their own pace, access information anytime, anywhere, and learn multiple subjects concurrently. Therefore, it is crucial to incorporate blended learning into traditional classroom settings to provide students with the best possible learning experience.

FEATURES OF BLENDED LEARNING

The important features of blended learning environments are:

- Increased student engagement in learning.
- Enhanced teacher and student interaction.
- Responsibility for learning.
- Time management and flexibility
- Improved student learning outcomes
- Enhanced institutional reputation.
- More flexible teaching and learning environment
- More amenable to self and continuous learning
- Better opportunities for experiential learning

MODELS OF BLENDED LEARNING PROGRAMME

A blended learning program means blending many teaching methods for many people. It can be implemented using a wide range of models. Blended Learning can occur at different levels, such as the student activity level, course level, program level, and institutional level (Graham, 2004).

Six Models of Blended Learning Programmes are:

1. *Face-to-Face Driver Model:* In the face-to-face driver model, the teacher uses different methods of teaching than in the conventional classroom. Students learn at their own pace.
2. *Rotation Model:* In the rotation model, students rotate between different situations, such as face-to-face classrooms and online learning platforms, on a fixed
3. *Flex Model:* In this method, the material is primarily delivered through an online platform. Teachers provide only support and guidance. It is self-learning, as students learn independently and practice new concepts in a digital environment.
4. *Online Lab Model:* The online lab method course is completely designed for the platform, and students should complete their course in a computer lab. It leads learners to struggle in their learning journey.
5. *Self-blend Model:* The self-blend model allows students to take classes beyond what is already offered at their institution. They should attend traditional classes and also supplement their learning through online courses offered remotely.
6. *Online Driver Model:* In this model, students work from remote locations, and material is primarily delivered through an online platform. Students are allowed to interact with teachers on an online platform if they have doubts.

LEVELS OF BLENDED LEARNING

Blended learning can be classified into four levels. They are;

1. Component level:

This depends on the combination of several information transfer media and the learning content to form a whole that consists of several separated components that differ according to the learners' nature and available traditional or electronic learning resources.

2. Integrated level:

It is an integration of different elements of electronic learning based on the Internet. Each component supports other components, and evaluation is one of these integrated components to measure the learners' ability to perform the assigned learning tasks.

3. Collaborative level:

It is based on a blend between the teacher and the cooperative learning groups in the conventional classroom or the collaborative learning groups online.

4. Expansive level:

The blend between traditional classroom learning and offline electronic learning resources (email, electronic documents, programs, and books) (Al Fiky, 2011).

BLENDED LEARNING AS A PEDAGOGICAL STRATEGY

Blended learning is a combination of online and classroom learning. It is essential to consider various aspects such as time management, classroom activities, resource allocation, and the role of teachers in a blended learning environment. The development of blended learning is based on several learning and instructional theories. Research on blended learning has explored how pedagogical assumptions have evolved from different conceptual understandings of learning and instruction. Pedagogical assumptions of blended learning are:

- High priority is attached to student learning and pedagogical needs while considering and applying blended learning approaches.
- Strategic and systematic use of technology in association with a quality face-to-face environment to support student learning
- Enhancement and ultimate transformation of existing learning and teaching processes
- Accommodation of diversity in student learning experiences
- Enhanced interaction among students, teachers, peers, and the community
- Increased capacity for student-managed learning

- Learners learn how to become architects of their learning processes.
- Learning takes place at students' discretion in terms of time and place.
- Learning takes place in multiple contexts to support flexible knowledge transfer.
- A teacher acts as a facilitator rather than a knowledge transmitter. With the growth of blended learning, the pedagogy of blended learning is also evolving. As mentioned, the role of a teacher is getting transformed from a 'lecturer' to a 'mentor' who gives continuous support, guidance, and assistance.

DISCUSSION AND CONCLUSION

The blended learning models are so flexible and adaptive that teachers can create instructional activities that allow students to work collaboratively, tapping their interests and abilities in social learning (Eduviews, 2009).

A good merit of blended learning is that it can cater to individual preferences in learning styles. Students can choose their preferred learning style to some extent, though some components may be compulsory (Harding, Kaczynski, & Wood, 2005). Thus, differentiated instruction is possible to a large extent. Self-pacing allows for the engagement of every learner at any given time in blended learning. Students also visualise that the learning involved becomes a process, not isolated individual learning tasks.

RECOMMENDATIONS

Blended learning, which combines traditional classroom instruction with online learning, has become increasingly popular in recent years. However, to ensure its success, it is important to prioritise concurrent time - the time when both the teacher and the students are present and engaged in the learning process. Here are some recommendations to make the most of concurrent time in blended learning:

1. Set clear expectations: Communicate clearly with students about what is expected of them during concurrent time. This includes being present, engaged, and prepared to participate in discussions and activities.
2. Use technology effectively: Technology can be a powerful tool in blended learning, but it must be used effectively. Ensure that all students have access to the necessary technology and that it is reliable and easy to use. Use technology to enhance learning activities and engage students in meaningful ways.
3. Plan engaging activities: During concurrent time, it is important to plan activities that are engaging and interactive. This could include group discussions, collaborative projects, or hands-on activities that allow students to apply what they have learned.

4. Monitor student progress: Blended learning can be challenging for some students, so it is important to monitor their progress closely. Use formative assessments to gauge understanding and provide feedback to help students improve.
5. Foster a positive classroom culture: Finally, it is important to foster a positive classroom culture during concurrent time. Encourage students to support each other, celebrate successes, and work together to overcome challenges.

By prioritising concurrent time and following these recommendations, teachers can make the most of blended learning and help their students succeed.

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CHAPTER 2

An Assessment of the Web-Based Learning Environments at the Secondary Level

Arpana Koul

ABSTRACT

Web-based learning is a way to learn by using web-based technologies or tools in a learning process. Web-based learning environments have been used to support student learning, provide a platform for a dynamic engagement between students and lectures outside the physical classroom, and enhance student autonomy. Research has been done on Web-Based Learning Environments in the schools of Jammu City. This study presents an Assessment of the Web-Based Learning Environments at the Secondary Level. This study employed one tool, i.e. Web-Based Learning Environment Inventory, WEBLEI (Chang and Fisher, 1998). The sample consisted of 135 students taken from private secondary schools in Jammu. The analyses and interpretation of data indicate that WEBLEI is a reliable and valid tool. There was a significant relationship between the four scales of Web-based learning environment inventory (WEBLEI). This study concluded that Web-based technology enables one to study areas of interest. It encourages exploring material on your own and enables you to skip over materials already mastered. Web-based learning supports personalised learning and is self-directed. It builds self-knowledge and self-confidence and encourages students to take responsibility for their learning.

Keywords: Web-based Learning Environment (WEBLEI), Secondary Level.

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INTRODUCTION

Technology has played a major role in improving the modern education system at various levels of learning, whether in school, college, or university education. Not only has the use of technology increased to make the process of teaching and learning in the classroom more effective, learner-centered, and outcome-focused, but it has also given an impetus to teachers to use it as a tool to bridge the gap between traditional learning and modern educational requirements for the overall development of the learner. A look at the use of various levels and in different settings shows how rapidly various information and communication technologies are being adopted as a catalyst to enhance learning (Gupta, 2007).

The online community is increasingly important to learning environments and, in some cases, has replaced the traditional bricks and mortar classroom. Thornburg (2000) discusses how the use of the internet is having some interesting effects on the disintermediation of the teacher as the teacher “middle man” and also the disintermediation of the institution (School, university) as the sole evaluator of what is happening in the classroom or academic matters. For example, the Internet has forced some democratisation of feedback and evaluation by students in discussion boards and chat rooms. In July 2006, a website was launched in New Zealand named ‘rate my teacher.co.nz’, which allows students to rate their teachers and give anonymous comments on their classroom effectiveness. “Many institutions are hurrying to get a foothold in the distance learning marketplace, both locally and globally” (Muirhead, 2003). There are many genuine reasons for providing distance education, such as marine education for maritime workers, rural citizens, and full-time workers. Salmon (2004) acknowledges the tension between tertiary educators who are excited about the opportunities afforded by technology but also uncomfortable with the possibility of losing aspects of social contact in physical teaching spaces.

As the fastest-growing mediator of distance and flexible education, the World Wide Web (WWW) has created new possibilities for the delivery of instructional materials (Kerrey & Akson, 2000). Although there continues to be enthusiasm in many quarters about integrating the WWW into education in general (Armstrong & Chen, 2002; Pittinsky, 2003), others have become disenchanted (Cuban, 2001; Nobje, 2001; Oppenheimer, 2003). Regardless of one’s stance, it should be clear that simply placing content online does not provide effective solutions for teaching and learning problems. Without employing appropriate theories and instructional strategies in harmony with the unique features of the WWW, the expectations of higher learning outcomes will not be reached (Windschitl, 1998). To sufficiently engage students in active learning and encourage sufficiently strong mental effort in a Web-Based Learning Environment (Web-LE), educators must attempt to stimulate and sustain student motivation through the design of effective interactions (Reeves & Reeves, 1997). Some interactive programs accessible via the Internet may initially attract students’ attention because of unique screen designs or the inclusion of features such as animation and sounds, but unless the interactions are designed to be cognitively engaging, students will become disenchanted and unmotivated (Lajoies, 2000).

LEARNING ENVIRONMENT

The concept of a learning environment existed in the 1930s (Fraser, 1994, 1998; Goh & Fraser, 1998). During the last 40 years, learning environment research has been firmly established in the traditional classroom environment, particularly in the field of science education (Mc Robbie Fisher and Wong, 1998; Tobin & Fraser, 1998), and this research has recognised that student’s perceptions are important social and psychological factors in classrooms (Fraser, 1994; Fraser, 1998). Very often, these perceptions are assessed using questionnaires. Fraser (1998) has collated and explained a number of these learning environments questionnaires’ development over the last decades. These instruments have mainly been

used in the assessment and investigation of classroom environments in primary and secondary schools (Fraser, 1998).

The learning environment research paradigm maintains how the students perceive and react to their learning task, and classroom instruction could be more important in influencing students' outcomes than observe the quality of teaching behaviour (Knight and Waxman, 1991; Winnie and Marks, 1982; Wittrock, 1986). A milestone in the historical development of the field of learning environment occurred over years ago. The pioneering work of Walberg and Moss built upon the ideas of Lewin 1936 and Murry 1938, Presented several decades before. Lewin's field theory recognised that both the environment and its interaction with the personal characteristics of the individual are potent determinants of human behaviour. Lewinian formula, $B = f(P, E)$, stressed the need for new research strategies in which behaviour (B) is considered to be a function (f) of the person (P) and the environment (E). Lewin also distinguished between beta press (a description of the environment as observed by a detached observer. There are many advantages to considering beta press, particularly in schools and classrooms, because an outside observer can miss important events and interactions.

WEB – BASED LEARNING

Web-based learning is one way to learn, using web-based technologies or tools in a learning process. In other words, the learner uses mainly computers to interact with the teacher, other students, and learning material. Web-based learning consists of technology that supports traditional classroom training and online learning environments. “Pure” web-based courses are wholly based on computer and online possibilities. In this case, all the communication and learning activities are done online. On the other hand, web-based courses may have some face-to-face sessions besides the distance learning tasks and hence are also called blended courses as they blend web-based activities with face-to-face activities.

Web-based learning can also be formal or informal. Formal web-based learning is purposed and organised by teachers. Informal learning takes place while you are searching for material on the Internet. It is self-paced, depending on your goals and ambition to learn. Web-based learning environments are becoming more widely used for on-campus and distance education course delivery. A review of articles on the topic by faculty shows that only a few mention issues related to library access or resource integration. Moreover, only a small number of courseware evaluations posted on academic Web sites include criteria related to libraries. However, a few articles and reviews share common themes that point to a greater library involvement in courseware implementation, which is consistent with arguments made by distance education librarians calling for an active role in technical, pedagogical, and instructional support decisions concerning the Web-based learning environment. Since the creation of the World Wide Web, its potential as an instructional tool and learning environment has attracted intense academic interest and commercial development.

Tim Berners-Lee, who originated the Web while working at the European Organization for Nuclear Research (CERN), identified Web-based education as one of four major areas that are Web-based education, open data, social networking, and mobile as the four major areas for the future of the web. These are responsible for driving commercial participation in the World Wide Web Consortium (W3C), providing consensus on protocols that allow new applications to speak the same language, and collectively becoming “Key to the development of the Web”. This convergence of academic interest and commercial development has led to the creation and marketing of software packages variously termed Web-based courseware, Web-based learning environments, and, in distributed extensible form, asynchronous learning

networks (ALNs). These products arrive at a time when colleges and universities are under growing pressure to undertake new or expanded distance education initiatives. However, as Web-based courses have been implemented, another trend has been noted, namely, that significant numbers of students enrolled on campus are seeking to participate in them. Thus, Web-based learning environments have broken out of the distance-learning milieu and are becoming part of the larger academic agenda.” Online courses are offered to both on and off-campus students, and courses are indeed blurring as technology is incorporated into all aspects of education”. The ongoing parallel migration of library catalogues, databases, gateways, and full-text resources to the web would seem to offer libraries opportunities to rethink and perhaps redefine their role in this rapidly evolving academic enterprise.

With the introduction of Web-Based Education at the school level, our children and youngsters will grow as “Computer kids”. Their exposure will increase, which will improve their knowledge level. The use of the Internet for education has the potential to change many aspects of our lives. In conclusion, we can say that WBE is Platform independent, convenient in access, cost-saving, and easily updated content, and with emerging technologies, it can be made more effective. Web-based learning adds human support through online tutors, thereby extending the scope of what can be effectively taught into many new subject areas. In addition, more supporting material can be made available through website links to other documents and systems. With all these important features incorporated in Web Based Learning system, it will enhance the quality of education in our country at all levels, i.e. Primary, Secondary and Higher Education (Pawar, 2001).

The objective of web-delivered education is to provide tele-education to minimise the place or time constraints of students and also to maximise the utilisation of instructional technology to enhance the absorption of knowledge. The growing role of the Internet as the main communication and information delivery channel in society at large will make web-based learning environments an important vehicle for delivering educational programmes to more students at a lower cost. By the mid-1990s, the first World Wide Web (WWW) based learning environment appeared and facilitated Internet use in academic learning environments. Courses offered over the Internet can be full courses, with sole Internet interaction, or maybe supplementary to an on-campus course, in which case the student and faculty interaction remains on a face-to-face basis (Shinde & Deshmukh, 2002).

Web-based teaching and learning is rapidly emerging as a predominant paradigm in the delivery of education in society. So, Information Technology & related tools can be introduced in school education by using the World Wide Web (WWW) as an education delivery medium. In the era of IT, e-learning / Web-based learning (WBL) can be efficiently used for different types of education. This paper discusses the present scenario of education and discusses that Web-based education/learning has the potential to meet the perceived need for flexible pace, place & face. A survey was conducted in various schools of Satara District to find the effectiveness of the implementation of WBL in school education. At the end of the survey, a very positive outcome occurs that if web-based education is implemented in schools along with traditional education, it will have a tremendously positive effect on teachers, students, and schools. (Sawant&Shinde)

STUDIES RELATED TO WEBLEI

Skelton and David J. E. (2007) conducted a study to investigate the learning environment of tertiary students undertaking their studies through a mixture of online learning management systems and traditional tertiary classroom delivery. This study examined student and staff perceptions of learning

environments in different contexts and served to generate recommendations to help tertiary teachers optimise online and traditional teaching practices within a mixed-mode environment. Students' experiences of their learning environment were discovered through quantitative and qualitative methods. Quantitative data on students' experiences were gathered by using an adapted version of the Web-based Learning Environment Instrument (WEBLEI). Qualitative data on students' experiences were collected by discussion questions added to the WEBLEI survey. Qualitative data on the use of online and blended learning environment experiences by tertiary staff were gathered by email and supplementary interviews. The study synthesised results from these multiple sources within a tertiary institute environment, made recommendations, and gave insight into optimal blended learning environments within the tertiary sector. Overall, the study provided a perspective on psychology and a strategic view of the learning environment for future tertiary institutes.

Chandra, V.Fisher, DarrellChang and Vanessa(2011) conducted a study on higher education and secondary school web-based learning environments using the WEBLEIand investigate students' perceptions of their technology-rich learning environments and impact on the effectiveness of the new technologies in classrooms as classroom learning environments are rapidly changing as new digital technologies and have become more education-friendly. Numerous reliable and valid learning environment instruments have been used to ascertain students' perceptions of their learning environments.

Snell and Sarah (2012) investigated students' actual and preferred perceptions of a mobile-enhanced learning environment at a tertiary institution in New Zealand based on gender and age. For this to be achieved, a new learning environment instrument was developed based on modifying the existing Web-based Learning Environment Instrument (WEBLEI) with scale items being modified to create the Mobile Enhanced Learning Environment Instrument (MOBLEI). The use of mobile technologies in learning environments was provided, along with a discussion about gender and age and differences between males and females and generational groups regarding learning and technology. Students' perceptions of their learning environment were determined through the use of qualitative and quantitative methods, with open-ended questions included in the MOBLEI and follow-up focus groups. The MOBLEI was distributed to 141 tertiary business and computing students and was found to be a valid and reliable tool for application in a tertiary environment in New Zealand. Results from the MOBLEI showed no significant differences between the perceptions of males and females; however, younger age groups had a more positive attitude toward the use of technology than did their more mature counterparts. Overall, the study provided insight into how students perceive a mobile-enhanced learning environment, along with practical implications for education practitioners to provide direction for an ideal mobile-enhanced learning environment for education practitioners in the tertiary environment.

RESEARCH OBJECTIVES

1. To determine the reliability and validity of the web-based learning environment inventory (WEBLEI) for use with secondary school students.
2. To study the nature of web-based learning environments in secondary classrooms.

METHODOLOGY

The descriptive Survey Method was used to conduct this research. Descriptive research is an appropriate choice when the research aim is to identify characteristics, frequencies, trends, correlations, and categories.

It aims to describe a population, situation, or phenomenon accurately and systematically. It can answer *what*, *when*, *where*, *when*, and *how* questions, but not *why* questions. It can use a wide variety of quantitative and qualitative methods to investigate one or more variables. This research design is carefully developed to ensure that the results are valid and reliable.

SAMPLE

The sample included students of secondary level from selected Private Schools of Jammu where web-based technologies are implemented to teach students. The sample was chosen carefully to be representative of the population and comprise of coeducational classes to permit an unbiased test of gender differences. The sample includes 135 students (both boys and girls) at the Secondary Level from schools in Jammu city.

TOOLS USED: WEBLEI

Web-Based Learning Environment Instrument (WEBLEI) was developed by Chang and Fisher (1998) to assess the nature of Web-Based learning environments at the school level. This instrument has been widely used in several research studies and is reliable and valid. Web-based Learning Environment Instrument (WEBLEI: Chang & Fisher, 1998, 2003) was used to gather data on students' perceptions of their web-based learning environments in a tertiary environment. In the design of the WEBLEI, Chang and Fisher (1998) created four scales, and the first three were adapted from Tobin's (1998) work on Connecting Communities of Learning (CCL). Tobin developed the CCL to study the perceptions of Math and science education students enrolled in an asynchronous mode. The WEBLEI measures students' perceptions across four scales- Access, Interaction, Response, and Results.

According to Chang and Fisher (1998), the first step in successfully using a web-based learning environment requires learners to access the Internet effectively. Consequently, the Access scale establishes the extent to which the variables associated with accessing this medium met students' expectations. Once the students have logged in successfully, they should be able to interact productively with their peers and their teachers. Hence, the Interaction scale explores the extent to which this is achieved from students' point of view. The Response scale indicates how they felt about using a web-based medium. The Results scale shows whether they accomplished any learning objectives by using the learning resources accessed through this medium. Table 1 gives details about the WEBLEI instrument in terms of scales and their description.

Table 1
Description of Web-Based Learning Instrument (WEBLEI) Scale

S.No.	Scale name	No. of Items	Scale Description	Sample Item
1.	Access	8	Access scale establishes the extent to which the variables associated with accessing this medium met student expectations	I can access the learning activities at times convenient for me
2.	Interaction	8	The interaction Scale explores the extent to which this is achieved from the student's point of view.	I was supported by a positive attitude from my peers.

3.	Response	8	Response scale indicates how they felt about choosing a web-based medium	I enjoy learning in this environment.
4.	Result	8	The results scale gives an idea of whether they accomplished any of the learning objectives by using the learning resources accessed through this medium.	The scope or learning objective is clearly stated in each lesson.

Responses of the items are scored 1, 2, 3, 4, and 5, respectively, from Almost Never, Seldom, Sometimes, Often to Almost Always

DATA COLLECTION

The data collection for the study was quantitative as well as qualitative in nature. The quantitative data was collected by administering the questionnaires WEBLEI. The qualitative data was collected with the help of interviews with students.

DATA ANALYSIS

The first objective aimed to determine the reliability and validity of the web-based learning environment inventory (WEBLEI). To fulfil this objective, the Cronbach alpha reliability coefficient was used as an index of scale internal consistency of the test items relative to other test items designed to measure the same construct of interest. A discriminant validity index (namely, the mean correlation of a scale with other scales) was used as evidence that each WEBLEI scale measures a separate dimension that is distinct from the other scales in the questionnaire.

MAJOR FINDINGS

Research Objective 1: To establish the reliability and validity of the web-based learning environment inventory for use in Indian classrooms.

Data Collected from 135 students at the secondary level was analysed to investigate the reliability and validity of the WEBLEI questionnaire which was made on Google form. Three indices for scale reliability and validity were generated. The Cronbach alpha reliability was used as an index of scale internal consistency that indicates the reliability of the item items relative to other test items designed to measure the same construct of interest. A Discriminant validity index (namely, the mean correlation of a scale with other scales) was used as evidence that each WEBLEI scale measures separate dimensions that are distinct from the other scales in this questionnaire.

Firstly, inter-scale -correlations between the four scales of the WEBLEI were calculated. It was found that all the scales were positively correlated with each other and that inter-correlations are significant ($p < 0.01$). Using the individual student as the unit of analysis, scale reliability estimates for the different scales of the WEBLEI ranged from 0.86 for the Access Scale to 0.78 for the Result Scale. The reliability results of WEBLEI were consistently above 0.80. This suggested that the WEBLEI could be considered a good and reliable tool (De Vellis, 1991) for use at the secondary level. The mean correlation for the four scales

of the WEBLEI ranged from 0.385 for the Result Scale to 0.51 for the Access Scale (Table 2). This shows WEBLEI is a valid tool for assessing the Web-based learning environment.

Table 2 illustrates the inter-correlations between the four scales of WEBLEI. It is evident that all the scales are positively correlated and that the inter-correlations are significant ($p < 0.001$). This shows that the scales of web-based learning environment inventory are in harmony with each other and will contribute to the study of web-based learning environments in science classrooms.

Table 2

Inter Scale Correlations for the Web-Based Learning Environment Inventory (WEBLEI)

Access	Interaction	Response	Result
Access	1.00	0.20*	0.14**
Interaction			0.25 **
Response		0.249**	0.22**
Result		0.31 **	0.22 **

$N=135^{**}$ Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Research Objective 2: To study the nature of Web-Based Learning Environments in secondary classrooms.

Items mean, and standard deviations were computed to determine the nature of the web-based learning environment in science classrooms using the WEBLEI. The mean scores of the different scales of the WEBLEI ranged from 4.54 for the Response scale to 4.76 for the Interaction scale. This shows that the mean score of WEBLEI is high, which indicates that students can Access, Interact, and Respond and find out the results of their study immediately. The results of the Access scale immediately indicate that students can access the learning activities. The online material is available at their suitable locations, and they can decide when they want to learn and work at their own pace. Data for the Interaction scale indicates that students can communicate with other students in their subjects electronically, they become self-disciplined to learn, they can regularly access online resources, and they have the autonomy to ask their tutor what they do not understand. The response scale result indicates the students can interact with other students, feel a sense of satisfaction and achievement, enjoy learning in an online environment, and feel it is easy to work collaboratively with other students.

The standard deviation value for all the WEBLEI scales is less than 1, which suggests that there are no major deviations in students' perceptions of Web-based learning environments in their web-based science classrooms. The high mean score for all the WEBLEI scales conveys a very positive picture of a web-based learning environment at the secondary level.

Table 3
Mean and standard Deviation for the WEBLEI.

Scale Name	No. of items	Means	Standard Deviation
Access	8	4.69	0.49
Interaction	8	4.76	0.46
Response	8	4.54	0.62
Result	8	4.60	0.50

IMPLICATIONS OF THE STUDY

The result of the present study has revealed many important implications for the introduction of Web-based learning environments in secondary classrooms. The study shows that students can work at their own pace when they want. Web-based technology enables us to study areas of interest more deeply. It encourages exploring material on your own and enables you to skip over materials already mastered. Web-based learning supports personalised learning and is self-directed. It builds self-knowledge and self-confidence and encourages students to take responsibility for their learning.

The study is significant because it helps students to study anywhere and anytime if they have access to a computer and the internet. Web-based learning provides continual and also direct access to materials, and resources in many different formats and of good quality.

CONCLUSION

A major contribution of the present study is the validation of a widely applicable and distinctive questionnaire (WEBLEI) for assessing Web-Based learning environments in secondary-level schools of Jammu. This questionnaire was used for the first time, and its reliability and validity were established at the secondary school level.

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CHAPTER 3

BLENDING COOPERATIVE LEARNING STRATEGIES WITH AUGMENTED REALITY APPLICATIONS FOR ENHANCING STUDENTS LEARNING: AN INNOVATIVE ENDEAVOUR

Aman & Shivali Verma

ABSTRACT

Cooperation is the need of the hour to reduce the stress of competition among students. With the help of cooperative learning strategies in teaching-learning situations, teachers can develop the feeling of cooperation rather than competition. Mobile phones are the most commonly used devices by students nowadays. If we use mobile phones to enhance the learning of students; this will definitely work better for the achievement of their academic goals. There are many learning applications available nowadays which can be used in this direction. One such area of these kinds of apps is 'Augmented Reality Applications'. Many efforts are being made to develop these apps. They are going to be very helpful for students, especially those who are studying science. The government is also keen to work in this direction, and NCERT has been directed to work on it. They have developed the e-pathshala AR app, which converts the contents of the books into augmented realities. The question before the teachers is how to use such apps by blending them into their pedagogy. Cooperative learning strategies nowadays are proving to be the best strategies where pupils work in a collaborative manner to strengthen their learning under the guidance of teachers. If efforts are made to blend such strategies with augmented reality apps, it will prove to be a boon for the students. Through this paper, the presenters have made efforts to highlight the blending modes of such applications in teaching-learning situations.

Keywords: Augmented Reality Applications, Cooperative Learning, e-pathshala AR

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INTRODUCTION

"I hear, and I forget, I see, and I remember, I do, and I understand" – Confucius.

Innovation in the field of technology has increased the use of the latest technological innovations in every field of life, and education is also included in that category. Today, teachers have to be innovative and creative so that they can use plenty of teaching methods in the classroom. Learning with cooperation is a joyful way of teaching- the learning process. Cooperative learning is the latest strategy to enhance the learning among the students. The word blending means mixture. Blending cooperative learning strategies with new applications of augmented reality will be helpful in increasing motivation and interest among students. Students learn everything with real life and lively experiences, and this learning will remain with them lifelong. Augmented reality technology is a valuable means of teaching and creating interest in learning among students. Augmented reality (AR) is an important educational and technological means that has been newly employed. AR combines computer-generated and actual elements (Azuma, 1997), and teaching resources that are arranged using Augmented reality applications offer a congenial learning atmosphere that is near to the actual creation (Cai, Wang, & Chiang, 2014). Augmented reality applications can be of two types: image-based and location-based (Cheng & Tsai, 2013). Applications that are Image-based Augmented reality needs data through pictures, QR code, and Location-based Augmented reality applications give us virtual evidence by GPS technology.

COOPERATIVE LEARNING

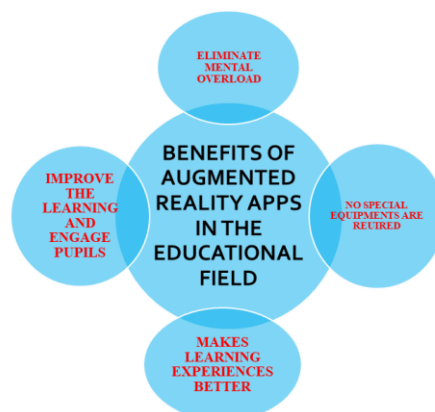
Cooperative learning is grounded on the idea that working together on a task or a problem can improve student's learning. This idea is based on Vygotsky's social constructivism, which emphasises social interaction as a mechanism to support cognitive development. In cooperative learning strategies, students enjoy learning in groups. Working in groups provides them the opportunity to participate actively in teaching and learning and helps in enhancing their achievement. Most importantly, in cooperative learning strategies, students become less hesitant, and they can clear their doubts easily with their friends. Working cooperatively with peers and valuing their feelings enhances the psychological health of the students. "Cooperative learning is a set of teaching strategies used to help learners meet specific learning and interpersonal goals in structured groups (Slavin, 1995)". Johnson and Johnson (1999) revealed that "cooperative learning is the instructional use of small groups so that students work together to maximise their own and each other's learning. It may be contrasted with competitive and individualistic learning". Tripathy (2004) supported that "when the cooperative group situation is used, it could create a non-threatening environment in the class in which students can more readily take academic risks. They find it much less threatening to make a mistake in front of their group members. The verbalisation and feedback from peers help reinforce all the skills the teacher has taught. Students working in groups are more likely to stay on task and remain motivated because of peer support and encouragement. Working together, provided that the students have a clear view of the task at hand and have potential strategies, can bridge the gap between computational skills and problem-solving. Another big gain is the idea that working together is good. It does a lot to increase self-esteem and reduce normal peer rejection, which is so important for our students. Cooperative group learning induces cooperative attitude in the learners, which in the long run, has the potential of carrying over into other areas of our competitive world".

AUGMENTED REALITY

Augmented reality is the mixture of actual and virtual data. It is cooperating in real-life experiences and works in a 3D environment. Those people who use Augmented reality applications can access information about the nearest places easily by using their current location. We can see the pictures in 3D form with the help of Augmented applications. In these applications, the user just, with the help of the camera of the AR application, can scan the 2D picture and can observe that picture in 3D. AR Applications are now accessible in large numbers for publicity, education, healthcare, and entertainment. Many Augmented Reality apps are available for smartphones, computers, tablets, etc. and can be downloaded through Android and other stores. AR apps that are location-based are the most important forms of Augmented Reality applications. Augmented Reality (AR) improves learning capacity among those learners who learn through visual experiences because it is easy for people to observe real-world objects through display through technological devices like cameras. Application of Augmented Reality in an educational setting is like using “technology to add virtual objects to real scenes by adding missing information to real life” (El Sayed et al., 2011).

AUGMENTED REALITY APPLICATIONS AND ITS USE IN EDUCATION

Over the last few decades, the research on augmented reality has been increased. With the application of Augmented Reality in fields like promotion, advertisements, entertainment, etc., it also become popular in the educational field (Lee 2012). The foremost goal of the education system is to increase the quality of learning among the learners. Augmented reality can revolutionise the education system. To empower the students to learn by combining their textual knowledge with real-life experience and through experiential learning. Augmented reality games have immense benefits in early childhood. With the help of augmented reality games, children can have real and lively experiences. In the contemporary world, augmented reality applications are getting popular among students, and this can be used in making their learning more realistic and lifelong. “the use of augmented reality (AR) in formal education could prove a key component in future learning environments that are richly populated with a blend of hardware and software applications” (Kerawalla, Luckin, Seljeflot, & Woolard, 2006, p. 1). Digital resources have greater roles, which helps to provide learners with experiential learning and develop problem-solving abilities. The e-Pathshala AR (Augmented Reality) App is an initiative of NCERT under the aegis of MHRD-Government of India, which aims at real-time interaction between students and books, students and students and students with teachers.



The combination of augmented reality applications and cooperative learning strategies can revolutionise the educational future of the coming generations. This combination doesn't require any special settings or equipment. These apps require a mobile device, which is easily available in the present scenario. It will make learning experiences better and engage the students in a constructive process. The use of augmented reality applications also reduces the stress load of students while learning. They will start to enjoy learning. Klopfer and Sheldon (2010) highlighted that Augmented reality applications have the capacity "to enable students to see the world around them in new ways and engage with realistic issues in a context with which the students are already connected."

This paper proposes the blending of cooperative learning strategies with augmented reality applications to enhance student learning. There are many Augmented reality applications that can be used in the educational field. The names of a few AR applications are Geo AR, Vuforia View, HBR Augmented Reality, AR Anatomy, AR Solar System, AR Core, and GeoGebra 3D Calculator, etc.; these apps can be proven beneficial for opening the horizons of the teaching-learning process in future. For this, in the present study, two augmented reality applications (Google Translator and Google Earth) were used in a demonstrative lesson plan. In the following lesson plan, among various cooperative learning strategies, only Jigsaw as a cooperative learning strategy is used, and this lesson plan is delimited to the textbook of Geography for class X proposed by NCERT. Chapter 3 of this book was taken as a demonstrative lesson plan for the blending of cooperative learning strategies with Augmented Reality applications. Now, the investigator has suggested the following way to teach the specific subject, and the planning of the lesson to teach that topic is as follows:

LESSON PLAN ON WATER RESOURCES BY BLENDING JIGSAW AS A COOPERATIVE STRATEGY WITH AUGMENTED REALITY APPLICATIONS

Subject- Geography

Class X

Chapter- Water Resources

Duration of the class- 50 minutes

Number of students: 20

Topic- Multi-Purpose River Projects and Integrated Water Resources Management

Learning Outcomes:

Students will be able to:

- Identify the various methods of water conservation
- Define terms like hydraulic structure, dams, irrigation, etc.
- Locate the various dams in India
- Explain about various multi-purpose projects in India
- Appreciate the importance of water resources to living beings

Key ideas:

- Hydraulic structures: dams, stone rubble, reservoirs or lakes, embankments and canals

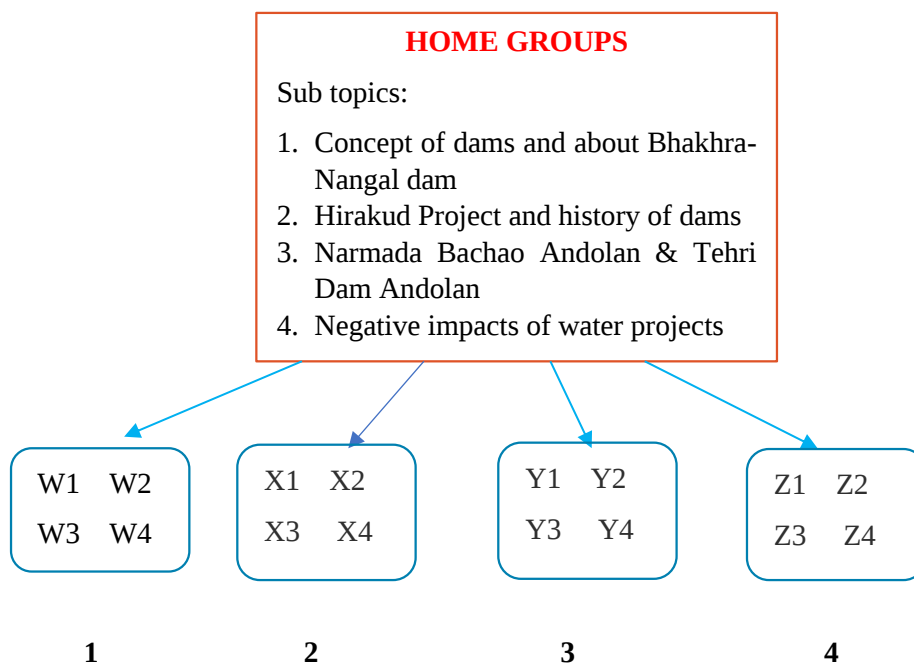
- Bhakhra- Nangal project, Hirakud project, Salal project
- Narmada Bachao Andolan, Tehri Dam Andolan
- Aquatic life
- Negative impacts of water projects

Prior Knowledge:

- Knowledge of Various water bodies
- Previous experience regarding means of irrigation
- Various benefits of water and water resources

Day 1:

- The teacher will explain the jigsaw as a cooperative learning strategy to the students and demonstrate how they can use various augmented reality apps during their group learning to make their learning better and easier.
- Four heterogeneous groups (known as home groups) will be formed by the teacher with the help of their previous year's academic achievement scores. Each home group consists of 4 students. A leader must be appointed by the teacher in each group to represent and for directing the group.
- After Group formation, the teacher will announce the topic (Multi-Purpose River Projects and Integrated Water Resources Management) and sub-topics to be covered.
- The teacher will tell each group member which sub-topic each member of the group has to study and discuss.
- Afterwards, the teacher will instruct the students to study by themselves. The teacher will move inside the class among the groups to facilitate the learners and to explain difficult terms to them and how they can use Augmented reality applications on their mobile phones for the enhancement of their learning.



Augmented Reality integrated learning experiences:

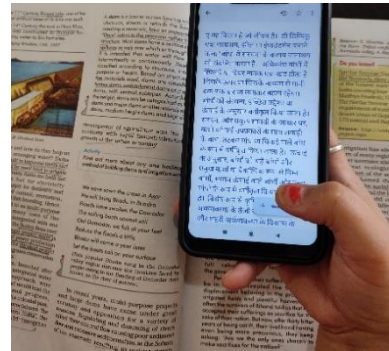
- **Google Translator:** While reading the text, students may find it difficult to understand the language of the text; here, they can use Google Translator (An Augmented Reality application) to translate the text into any language that they can easily understand. The following pictures will demonstrate the usage of this application:



Content with smart phone



Scanning Text with Google Translator



Text After Translation

Note: this figure was developed by the author and not published anywhere

- **Google Earth:** In order to have a clear understanding of the concepts of dams, the location of dams, other water resources and 3D pictures of dams, students can use the Google Earth application AR. The following pictures will demonstrate the usage of this application:



Google Earth view of Hirakud Dam



3D view of Dam



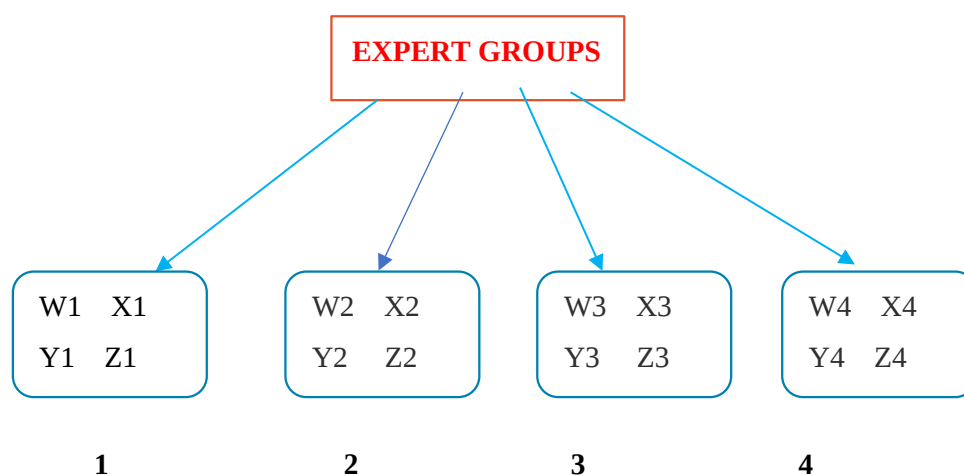
Actual pictures of Dam

Note: This figure was developed by the author and not published anywhere

- Other augmented reality applications (like Google Maps, AR Geography, ARC Geography, etc.) can also be used by the students to clarify the concepts.

Day 2:

- After understanding the topics assigned to them, the pupils are directed to make expert groups. Pupils who have the same sub-topics will combine and formulate four expert groups.
- Next, each pupil must formulate and present the topic. 15 minutes will be given to each pupil for their presentation on the topic.
- The teacher will also witness the pupils and clarify difficult terms like hydraulic structures in India, locations of dams, etc., to the students.



Sub-topics	Distribution of Topics in Expert Group
• Concept of dams and about Bhakhra- Nangal dam	W1, X1, Y1, Z1
• Hirakud Project and history of dams	W2, X2, Y2, Z2
• Narmada Bachao Andolan & Tehri Dam Andolan	W3, X3, Y3, Z3
• Negative impacts of water projects	W4, X4, Y4, Z4

Day 3:

- After all the discussion and understanding of the topics, the pupils will return to their home groups and converse on their topics.
- An observation sheet will be prepared by the teacher to evaluate each pupil and their individual progress.

Day 4:

- On the 4th day, the knowledge of the pupil was evaluated by the teacher through an achievement test and an assignment to each group.
- A conversation should be held where the teacher asks the response of students regarding the jigsaw teaching strategy. The teacher can ask the pupils a few questions, such as: Did you find any difficulty while performing this activity? What did you like about the activity? What do you dislike about this technique of learning? Etc.

EDUCATIONAL IMPLICATIONS OF THE PAPER

The following points will highlight the educational implications of this paper:

- As in the present time of education, which is the time after pandemic, the mobile devices are mostly available with students. They can easily use these devices to make their learning more strengthened.

- This paper will be helpful for the administrators and curriculum planners in developing the curriculum according to the needs and requirements of the learners by combining technology and teaching pedagogy.
- This will be also beneficial for the teachers. They can plan their class according to the new technological circumstances and can make their teaching a fun time activity for the learners.
- This will also be a boon for the learners because learning will become more realistic and enjoyable, just like watching a movie, and this will be more permanent and lifelong learning for them.
- Parents will also benefit from this new innovation in technology because children can learn on their own without any type of stress and feeling of competition. They study only for the sake of learning and not for competing with others.

CONSTRAINTS THAT CAN BE FACED

- Since for this type of teaching devices like mobile phones, tablets, laptops are needed inside the classrooms. This may not be feasible for each and every classroom.
- Use of digital devices may divert the attention of the learners from learning applications to other applications of that device.
- It may not be accessible to each and every individual due to financial constraints. Schools that are well-funded and maintained may have access to these modern mobile devices, whereas several schools and students may not.
- In the Indian context there is a need of drastic change on the side of curriculum planners to apply this kind of technological innovation directly into the classroom. It will take time to execute this type of planning.
- There may not be availability of teachers who are well-trained in using these types of technological innovations in the classrooms.

Once we are able to overcome these constraints, there will be a huge change in the process of learning. By overcoming these constraints, learning will become a more joyful and fun activity for the learners.

CONCLUSIONS

The chief aim of education is to produce meaningful knowledge for the students. Learning in cooperation can develop a feeling of oneness among the students, which will be very beneficial in the present education system of competition; this system will develop the feeling of cooperation rather than competition. Many researchers in the zone advocated that the jigsaw teaching strategy is more effective than lectures because of its emphasis on cooperation. Cooperation is a major characteristic of humans that helps them connect. Mobiles are very popular these days, and combining augmented reality mobile applications with cooperative learning strategies in pedagogical practices can make learning more interesting, lively and lifelong. Today's learners are rising up in a digital world where developing technologies like augmented reality can become an essential part of their lives. It can be concluded that augmented reality applications can be proved effective when these applications are blended with cooperative learning strategies in educational settings. This technology will soon become prevalent not only in education but in society in general.

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ABSTRACT

Globally, the COVID-19 pandemic forced the closure of educational institutions, resulting in a sudden move to online distance or online teaching and learning. Teachers and students turned from face-to-face engagement to online environments, impacting curriculum, pedagogy, and student outcomes across disciplines. The role of technology is undoubtedly an indispensable tool in remote or online learning but there are so many challenges accompanied by the sudden or abrupt worldwide shift to online teaching. E-learning is a learning system based on formalised teaching but with the help of electronic resources. In education, there are different e-learning tools for productivity, e-learning content creation tools, e-learning research tools, networking tools, and communication tools of e-learning. In contrast, blended learning provides a mixture of online methods and traditional face-to-face learning methods in the classroom. Both these forms of learning have made learning possible, flexible, and accessible even during the difficult times of the pandemic.

Keywords: Online Teaching and Learning, Trends, E-Learning, Web-Based Learning, Blended Learning, Challenges, Higher Education.

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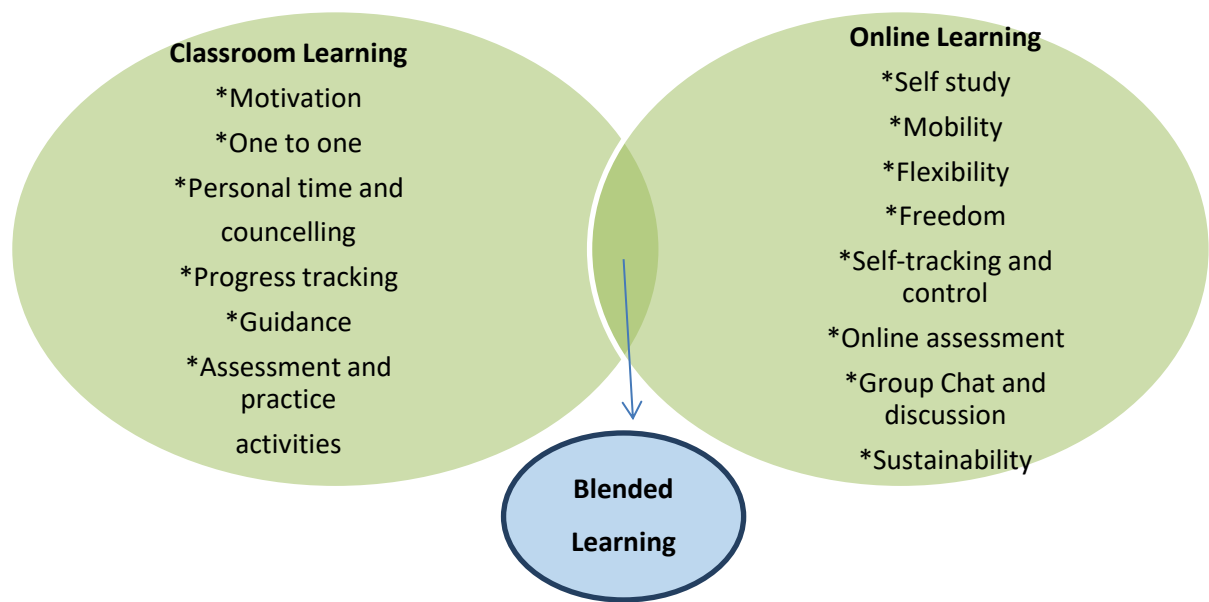
INTRODUCTION

The global pandemic crisis has forced the world to quickly adapt to online learning and its emerging trends. Technology has made online interactions and the transition from in-person to online learning possible, facilitating everyone's access to education. The technology-enabled online learning enabled teachers to continue teaching and students to continue learning. Online learning and teaching is a comprehensive term that includes several instructional environments and approaches in which teaching and learning take place. The different online teaching-learning approaches are immersive learning and virtual reality, gamification of learning, artificial intelligence, nano-learning, project-based learning, blended learning, online schooling, virtual and empowered learning, and e-learning. The paper focuses on applicability, advantages, and challenges in blended learning and e-learning and also suggests measures for effective implementation of e-learning and blended learning within teaching and learning environments.

BLENDED LEARNING

Blended learning refers to the practices that combine traditional face-to-face classroom instruction with online learning (Siemens et al., 2015). Compared with other forms of online learning, blended learning provides students with more fruitful channels for getting connected with their peers and instructors (Park & Shea, 2020). Academic research also suggests that blended learning gives students a better understanding of course content due to the support of social interactions (Garrison & Kanuka, 2004).

As the above definitions suggest, online learning and blended learning are different, but not entirely distinct. According to Pearson (2020), online learning involves a learning environment that exists online, while blended learning is a mixture of both face-to-face learning and online learning. The University of the West Indies' Center for Excellence in Teaching and Learning (CETL, n. d.) differentiated online learning from blended learning by stating that in an online learning environment, the responsibility for learning shifts primarily to the students while teachers mainly play a role as a guide to facilitate the learning process. In a blended learning environment, however, students can both learn at their own pace through the convenience of online learning and have the opportunity to interact with peers and their teacher in face-to-face sessions. It is an instructional methodology, a teaching and learning approach that combines face-to-face classroom methods with computer-mediated activities to deliver instruction. This pedagogical approach means a mixture of face-to-face and online activities and the integration of synchronous and asynchronous learning tools, thus providing an optimal possibility for the arrangement of effective learning processes. The difference between the two models i.e traditional and online learning and also the overlap of these two models in blended learning as illustrated in the following diagram.



BLENDING LEARNING IN HIGHER EDUCATION

Higher education has been transformed by technology to better meet students' unique learning needs and styles. These innovations have changed how and where students study, from learning management systems (LMS) to adaptive learning software and video conferencing. Blended learning models are important for higher education institutions to sustain enrollment and enable students to continue learning safely during periods of crisis or instability, such as the recent global pandemic. According to a survey conducted by the Institute of International Education (IIE), approximately nine out of ten higher education institutions used a blended learning model in the fall of 2020. In higher education, through blended learning, students can be engaged online to complete their assignments, ask questions, connect with other learners, and communicate remotely with their teachers. In blended learning, teachers can schedule face-to-face meetings or sessions and delegate students to write an online forum post outside class time to clarify their doubts or ask questions (Su, 2020).

DIFFERENT MODELS OF BLENDING LEARNING

There are different models of blended learning (Bryan and Volchenkova, 2016; Horn and Staker, 2014), such as;

- ***Flipped Model***

In a flipped classroom blended learning model, the original learning framework gets inverted. Instead of learners attending a face-to-face training session followed by some online self-paced learning, this model puts the focus on online learning. Learners go through the content on their own time at home, and in-class time is devoted to active learning and applying new learned skills. This can be done in the form of discussions, case studies, or group projects.

- ***Face-to-Face Driver Model***

The face-to-face driver blended learning model is the closest to traditional classroom training, as most of the training takes place in a classroom setting under the guidance of an instructor. This approach offers individual, personalised support to learners who are struggling to grasp new concepts or are falling behind the training curriculum.

- ***Rotational Model***

In the rotational blended learning model, learners are expected to follow a fixed schedule and rotate through both self-paced online learning and face-to-face interaction. The schedules are fixed but flexible. Different training methods allow learners to practice what they have learned, filling any learning gaps. This makes tracking training progress easier, since learners are following a fixed schedule.

- ***Flex Model***

The flex blended learning model gives learners a flexible and personalized learning experience by tailoring to their needs. This model allows online learning to take the lead as the core transmitter of the material in the overall learning experience while instructors provide needed support in small-group settings. Flex models allow students to customize the paths and the schedules followed throughout the learning process.

- ***Enriched Virtual Model***

The enriched virtual blended learning model is very similar to the flex model. However, learners must go through a scheduled Instructor-led classroom session, either in physical or virtual classrooms. This model enriches the remote learning experience by enabling learner-instructor interaction through online platforms.

MERITS OF BLENDED LEARNING FOR STUDENT

- Blended learning provides students flexibility and freedom. Students can access material from anywhere at any time which is valuable for students who may have physical or geographical challenges (Phil Morgan, 2021). Blended learning provides students the facility to work with instructors; they are able to connect with them individually through technology, creating a bond between students and their teachers.
- Student learning is more flexible, allowing students to study at their own pace and giving them more ownership over their learning with the flexibility of time and location.
- Blended learning provides different ways in which information can be delivered which allows deeper learning and engagement. It can use of real-world scenarios, social learning, and the application of knowledge to new situations (Lalima and Dangwal, 2017).
- This helped student retention in the system while giving them the freedom to earn their livelihood while continuing with their education.
- Regarding practical work in blended learning, students can explore key themes and topics through online learning ahead of face-to-face demonstrations. This allows them some familiarity with the material and they could be more engaging in activities.

- Educators can draw on a wide range of resources to provide learning materials across different contexts. For example, they could use lectures, tutorials, and practical settings when teaching a particular topic (Sarah Bright, 2015).
- By creating online resources, educators can then focus on tailoring their face-to-face class time to the needs and queries of their students.
- Blended learning also improves accessibility and inclusion, which can increase the amount of students who are able to attend and continue with higher education.

LIMITATION OF BLENDED LEARNING

Even though there are many benefits of blended learning, some of the limitations (Luo, 2021) are:

- Blended learning models often require students to utilise technology outside of the classroom. Therefore, not all students will have equal access to the required resources, which can make online learning difficult.
- Students with different needs, abilities and digital literacy may not find technology-based learning accessible without the right level of support.
- Although self-directed learning can be beneficial, learners that are struggling with online material may not be able to find solutions by themselves.
- There is a need for formal instruction and professional development to support their blended learning practice.
- Educational institutions may find it difficult to set up the internal infrastructure facilities needed to implement blended learning.
- Moving towards a blended learning environment can take time and requires training and time for material preparation.

SUGGESTION FOR EFFECTIVE IMPLEMENTATION IN HIGHER EDUCATION

Blended learning is a buzzword in education. Below are some of the suggestions for effectively implementing blended learning in higher education:

- The educators need to identify and select a model of blended learning according to the needs and resources available, such as Station rotation or b) Flipped (Sagar, 2021).
- In blended learning, different multimedia tools can help in better comprehension and output, such as Gamified learning, Simulation, Audio/Video insertion, Branching scenarios, Case studies, Animation, Virtual/Augmented reality and Interactive illustrations.
- Based on student needs, blended learning can be molded into lessons that are based on customized resources. Teachers can find out student's knowledge or what they have comprehended and how far they need to go to progress. Students can access a multitude of information, content, games, quizzes, activities, and books whenever they want and wherever they want.

- In the beginning, implementing blended learning in higher education can be a little daunting. However, when educators start to draw a blended policy and course framework, things will eventually fall into place.

E-LEARNING AND HIGHER EDUCATION

E-learning, also referred to as online learning or electronic learning, is the acquisition of knowledge that takes place through electronic technologies and media. In simple language, e-learning is defined as “learning that is enabled electronically”. Typically, e-learning is conducted on the Internet, where students can access their learning materials online at any place and time. E-Learning most often takes place in the form of online courses, online degrees, or online programs. There is the possibility for students to make use of self-paced learning and to choose their own learning environments. Additionally, e-learning removes the geographical obstacles often associated with traditional classrooms and education as it is the delivery of education through various electronic media (Koohang& Harman, 2005). e-learning is an online education defined as the self-paced or real-time delivery of training and education over the internet to an end-user device (Lee & Lee, 2006). e-learning is the delivery of a learning, training or education program by electronic means (Li, Lau & Dharmendran, 2009). It is also defined as education delivered, or learning conducted, by Web techniques (Liao & Lu, 2008).

The sudden rise in the field of e-learning is due to the COVID-19 Pandemic as it has led to finding an alternate way of learning, and this is when online learning came into frame. Higher education sectors use e-learning as a major element to facilitate the learning process and to keep up with the rapidly changing competitors and future technologies. Along with the advancement of Information communication technology, the development of interactive media has resulted in changes in the traditional teaching method. E-learning plays an important role in the transformation of information expertise and improved performance in higher education. E-learning refers to the use of information and communications technology (ICT) to enhance and/or support learning in higher education. This covers a wide range of systems, from students using e-mail to accessing coursework entirely online to following a course on campus. Web-supplemented courses focus on classroom-based teaching but include elements such as putting a course outline and lecture notes online, using e-mail and links to online resources. Web-dependent courses require students to use the Internet for key elements of the course, such as online discussions, assessments, or online project/ collaborative work, but without significant reduction in classroom time. (OECD, 2005).

TOOLS OF e-LEARNING

There are various tools for e-learning, and depending on the purpose, need, and availability, they can be used in higher education to provide better learning experiences (Oye, Salleh and Iahad, 2012; Bhalla, 2014). Below are some of the tools of e-learning:

E-LEARNING TOOLS FOR PRODUCTIVITY

Google Drive

Google Drive provides a safe and central location where all team members can access the files they need at any time and even work from different locations across the globe. Google Drive is useful for ensuring that team members have instant access to the most recent version of a file, avoiding the delay and potential confusion of email chains. It also helps store information or archive documents for later use.

Momentum

Momentum is a to-do list extension for the Google Chrome browser. Its main strength is that it is user-friendly and can be used to personalise your to-do list later. An online to-do list is an essential e-learning tool that can help increase the productivity of educators or learners.

Google Calendar

Google Calendar is an e-learning tool for staying on top of team meetings and keeping up with employees, customers, partners, etc. It offers many features, such as the ability to add notes, send text notifications and schedule recurring reminders. It's important for students and educators to have their days fully organized as organization is the key to productivity (Emma O'Neill 2019).

Just Press Record

It's a mobile audio recorder that allows you to record, transcribe, share and organize audio. Recorded audio content can also be synced between devices via iCloud. If you as an instructor utilize blended learning, Just Press Record is perfect for recording and sharing in-person training sessions or webinars.

e-LEARNING CONTENT CREATION TOOLS

Camtasia

Camtasia is a screen recording and editing software suite that makes it easy to capture what's happening on computer. Instructors will find it useful for recording videos that learners can watch at their convenience. As an instructor, you can also create courses, add animations, quizzes, etc.

YouTube

YouTube hosts a huge repository, where users (instructors) can upload videos or create playlists to curate content in a way that suits the course. Video content is a trend in e-learning, and it's a tool all e-learning professionals should utilize. Adding video content in your e-learning courses makes them more interactive and interesting (Emma O'Neill, 2019).

Google Docs

Google Docs is a free e-learning tool. Spreadsheets, presentations and slides are created and stored online, making collaboration, editing and sharing across teams, students and professionals. With all files stored in the cloud, team members can give feedback and make edits in real-time.

Zoom

Zoom gives you the ability to communicate via video for meetings, presentations, webinars, and more. By recording your Zoom sessions, you, as an instructor, would have some great e-learning content at your fingertips (Emma O'Neill, 2019).

e-LEARNING RESEARCH TOOLS

Quora

On Quora, users can ask questions on widely varying topics, and the questions are answered by a community of approximately 300 million monthly users. Quora can be used for three main purposes in e-learning: research, advice, and networking.

Scoop.it

Scoop.it is a tool used by professionals, including educators, to find, curate, and share content. Through its software and technology, Scoop aims to make content publishing more time-efficient and impactful. Scoop.it is useful for searching, curating and sharing the most relevant content with learners and colleagues, thus creating communities of learning.

Feedly

Feedly is a free tool that helps you to source and collect content from your favorite websites, blogs, RSS feeds, and YouTube channels. It provides a single location where one can read and store information on whatever topics you choose. It is easy for you as an instructor, researcher or student to go through your articles while quickly identifying and selecting information they need.

NETWORKING TOOLS FOR e-LEARNING

LinkedIn

LinkedIn is the leading social network for professionals with member profiles, specialist groups, and a news stream, it is used even by employers and professionals to network, promote services, and find jobs. LinkedIn also provides a platform to network with people in your field and stay in touch with real-world connections.

Twitter

Twitter is a social network built around conversations. It's the place to get real-time updates on what the people in your field and in general are thinking, reading and watching. It is also essential for keeping up with and contributing to major e-learning conferences and ongoing debates.

COMMUNICATION TOOLS FOR e-LEARNING

Mailchimp

Mailchimp is a marketing automation platform and an email marketing service. It allows you, as a teacher, to create newsletters and email campaigns, making it easier for you to communicate with your learners.

Mailchimp's built-in analytics tools help you, as an instructor, to analyse data to understand what works and what doesn't.

Tiny Letter

Tiny Letter offers an easy way to send e-learning content to your student's inboxes. You can also share your readings and use emails to update learners on courses or projects.

LearnUpon

LearnUpon is a powerful Learning Management System that makes it simple to manage, track, and achieve your learning goals and outputs. It's quick to upload and create course content without needing technical expertise. You, as a teacher, can also use reports to track and analyse learning performance.

SUGGESTIONS FOR EFFECTIVE IMPLEMENTATION OF E-LEARNING IN HIGHER EDUCATION

- Analyze your learners and get to know their characteristics, habits, learning behaviours, and needs in order to know their expectations from the e-learning experiences, as different people learn in different ways and through different strategies.
- Setting clear learning objectives at the beginning of the course will help your learners see the benefits of their learning,
- Incorporating interactivity into your course helps learners to stay focused and interested as they progress through the course (Katrina Hatchett, 2020).
- Avoid cognitive overload as it prevents learners from engaging and focusing on key points and also distribute the information in effective ways to align with your e-learning objectives.
- Keep your learning modules short, as it is easier to connect with small parts of information than complex comprehensive content (Katrina Hatchett, 2020).
- Create meaningful e-learning experiences, you as a teacher need to focus on resonating with your learners' personal experiences and evoke their emotions. Activate your learners' existing knowledge using both relevant information and their emotions, and offer them a meaningful, engaging e-learning experience.
- Allowed your learner to navigate and explore freely through their learning platform and scan the information themselves. It helps them build context, create their own paths, move around, and engage much more with their e-learning experience.

In a nutshell, Blended learning and e-learning have connected the teacher and student more during the COVID-19 pandemic and made learning possible, but these trends need to be continued to provide learners with more freedom, flexibility and accessibility in creating their learning experiences. The use of technology has transformed the entire teaching pedagogy to learner-centered pedagogy. A suitable roadmap needs to be prepared at the policy level, and a quality online learning design needs to be developed to help both the teachers and learners for quality teaching and learning at present as well as in future.

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CHAPTER 5

Blended Mode: An Innovative Approach to Learning

Bindu Dua & Shivali Kallu

ABSTRACT

The popularity of e-learning is growing by the day, and blended learning is one of the instruments that can be used to put this concept into practice. Blended learning is changing the paradigm of information transfer from teaching to learning. In social collaboration with peers and teachers, learners are responsible for discovering, developing, practising, and confirming the learned information. As a result, the classroom's focus switches from a presentational format (i.e., lecturing and information transmission) to one that emphasises active learning (i.e., discussion and debate). Teachers can utilise a range of teaching strategies since mixed mode mixes face-to-face and computer-based learning chances. Case studies, tutorials, self-testing tasks, simulations, and other online work can be substituted for some lecture or lab material using computer-based tools. The traditional Indian educational system is constantly transforming. As a result, by using a blended learning method in education, new constructivist educational models can be used alongside traditional learning. The problem is that the combination must be both effective and efficient. The goal of this research is to look into the technology challenges that Indian educational institutions confront, as well as potential solutions for making blended learning more effective. This paper also discusses the methods used in Blended Learning, such as the synchronous instructional method and the asynchronous instructional method, to help readers choose the best instructional strategy. In addition, this study discusses blended learning tools and dimensions. This paper also discusses the difficulties that this technique faces, such as technical difficulties, organisational difficulties and instructional design difficulties. The method of blending is then outlined in terms of its

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numerous benefits. This research also discusses factors that support successful blended learning. Finally, some future recommendations are made.

Keywords: Blended Learning, Tools, Challenges

INTRODUCTION

"Our grandchildren's grandchildren will construct a new counterpart of our classrooms someday in the distant future." They'll be spending a lot of time in front of boxes with fires inside. May they be wise enough to distinguish between light and knowledge?" - Socrates (as cited in George-Palilonis & Filak, 2009).

In the twenty-first century, Plato's 2,000-year-old remark has become a reality. Today's students are undeniably web-savvy, as they live in a world where information is at their fingertips. Much of this may be ascribed to the Internet's birth and exponential growth, which has had a profound impact on all aspects of life. As communication and network technology has progressed, broadband connectivity has become more accessible.

The educational system is undergoing a transformation. It aims to adopt new technologies and explore new avenues in order to face the challenges of expansion and to adapt to individual needs in order to fulfil the goal of offering great educational opportunities for all. However, it is not totally successful because of a variety of problems, such as limited resources, a lack of facilities, and the benefits of face-to-face engagement. Even the students have a double personality. A group of teacher trainees were nearly evenly divided between traditional classroom instruction and ICT-enabled education when asked which kind of teaching they preferred. Despite its shortcomings, the traditional way of teaching provides the teaching-learning process with a much-needed human touch. Teachers' personalities and behaviours have a direct impact on the development of pupils' personalities. Face-to-face engagement is the only way to attain emotional, cognitive, and psychomotor objectives. Traditional face-to-face communication aids in the development of a solid value system. Cooperation, sharing, expressing oneself, and respecting others' perspectives are all social qualities that are more easily learned in a traditional context. Students learn not just from books and teachers in the classroom but also from their classmates in the playground, who teach them various skills and through little social interactions in canteens, lounges, and other places. All of this is necessary for a person's personality to develop properly. <https://files.eric.ed.gov/fulltext/EJ1124666.pdf>

ICT-assisted teaching and learning is a potential choice for aligning students' knowledge with current technological advancements and globalisation, as well as for minimising teaching errors, improving quality, and broadening students' exposure. ICT-assisted learning adds a new dimension to the learning process, exposes students to a vast reservoir of knowledge, and gives them a variety of possibilities to learn, unlearn, and relearn. This form of training can help a variety of students, including those in the military and those who are physically challenged. It aids in reaching out to all students. In the words of Swami Vivekanand, "If people can't get to school, schools must get to them," and ICT-enabled learning is achieving exactly that. For student learning, an approach that combines the advantages of both forms is used.

BLENDED LEARNING MEANING

Blended education is a form of education that mixes traditional place-based classroom instruction with online educational materials and participation opportunities. It needs both the teacher's and student's physical presence, as well as some student control over time, place, path, or pace. Blended learning, also known as hybrid learning, combines the best features of traditional education with the advantages of online learning to give customised, individualised teaching to a group of students. According to the Sloan Consortium, hybrid courses "integrate online with traditional face-to-face class activities in a structured, pedagogically effective manner." According to Singh (2003), blended learning is a combination of different delivery mediums that are designed to work together to provide meaningful learning experiences. From an organisational standpoint, Driscoll (2002) suggested four different methods to understand blended learning:

- A variety of web-based technical modes;
- A variety of instructional approaches (e.g., constructivism, behaviourism, cognitivism);
- Any sort of instructional technology combined with face-to-face instructor-led training; (in order to create an effective mix of learning and working).

According to Staker and Horn (2013, as cited in Powell et al., 2015), blended learning is "a formal education programme in which a student studies at least in part online with some aspect of student control over time, place, path, and/or pace, and at least in part at a supervised brick-and-mortar location away from home," after conducting research on 80 organisations and interviewing about 100 teachers involved in the process of blended learning. The modalities along each student's learning journey are paired inside a course or subject to provide an integrated learning experience."

WHY BLEND?

The purpose of blended learning is to change the way students are taught so that they can benefit from both face-to-face and online learning. Some classroom or laboratory activities, such as listening to lectures, taking notes, taking quizzes, and completing pre-lab assignments, can be accomplished online ahead of time. This benefits students with various learning styles while also reducing the workload of teachers.

1. **Improve Learner Efficiency:** Teachers may give students immediate access to their learning resources, no matter where they are or when they need them. This is owing to the fact that blended learning incorporates technology as well as online learning tools. Learners can go at their own pace and acquire the knowledge and skills they need in the method that best matches their learning preferences. This method of learning is more efficient since students can complete more work in less time, allowing them to finish their education or training programmes sooner.
2. **Increases Student Engagement:** One of the most difficult things for teachers is to engage students and keep them involved in the learning materials. The attention span of the students is limited. In this circumstance, effective blended learning is the best option.
3. **Improved Communication:** We can simply notify learners on new announcements, assignments, exam results, and anything else related to your course using blended learning.
4. **Improved Collaboration:** Collaboration is one of the most crucial parts of effective learning. Blended learning allows students to communicate, participate in discussions, and provide constructive feedback

to one another, all of which are clearly valuable. Learners' knowledge and abilities can be considerably improved through dynamic online discussions and peer feedback, especially in the workplace. Everyone is driven to participate actively, which leads to significantly improved learning outcomes.

5. **Keeping Track of Students' Development:** Tracking your learners' progress is crucial, but traditional learning approaches don't make it easy to see how the course participants are doing before you assess them. Blended learning allows you to keep track of your student's progress at any time, allowing you to have a deeper understanding of their strengths and limitations.

BLENDED LEARNING CHARACTERISTICS

The following are the main characteristics of blended learning: students can choose between two forms of learning.

1. **In blended learning, students have the option of choosing between two modes of instruction:** Traditional classroom instruction, in which they can interact one-on-one with their teacher and peers, or ICT-assisted instruction. This is very reliant on the type of content being produced and the objectives being pursued. The course creator or lecturers themselves may choose the best mode for the topic being presented.
2. **Teachers are knowledgeable about both modes:** Teachers are very energetic, techno-aware, and fully prepared to operate successfully in both traditional classroom format and ICT-enabled format, which is a key element of blended learning.
3. **Students get face-to-face interaction as well as virtual interaction:** Students have plenty of opportunities to communicate with other students enrolled in the same course. They can communicate with them both on and off campus, as well as in virtual space. As a result, their group grows in size and diversity, the students' knowledge expands, and they develop a sense of understanding, love, and harmony with kids from other cultures and countries.
4. **Students gain hands-on experience with new technology:** The twenty-first century is the Information and Communication Technology (ICT) century. Today's illiterate includes not only those who are unable to read and write but also those who are unfamiliar with current technologies.
5. **Students get training in different life skills:** Students are taught several life skills, which are the abilities required to live a happy, peaceful, and prosperous life. Empathy, decision-making ability, love, patience, communication, self-management, and critical thinking are the major life skills. Students can practice these skills using blended learning. Students learn a few abilities in the classroom, such as love, empathy, and patience, from their professors and classmates, and others, such as self-management, decision-making, critical thinking, and communication, from their online encounters.
6. **All-round personality development is emphasised:** Blended learning provides students with enough opportunities for all-around personality development. Blended learning develops all parts of personality, including cognitive, physical, and emotional development, which is difficult to do in the traditional manner or using ICT alone. Traditional classroom teaching aids in memory and comprehension, thereby aiding in cognitive domain development; at the same time, teacher behaviour, playground experiences, and social groups with classmates aid in the development of affective and

physical domains; and online experiences aid in the development of a reflective level of learning, thereby aiding in cognitive domain development.

7. **Physical development is possible within school campuses:** Online learning and ICT-assisted teaching and learning processes are frequently criticised for ignoring students' physical development. This constraint is overcome with blended learning. Because it incorporates a school experience, students have time to play, do physical work, and practise yoga on the college campus. Students acquire broad exposure to the course subject and fresh views on it—due to a range of experiences, students gain broad exposure to the course content and their content knowledge is expanded; they perceive various new facets of the content and obtain practical, useful knowledge.
8. **It has a human touch-** Due to the teacher's physical foresight, pupils receive that human touch, which is critical for a balanced student's emotional quotient, especially at the secondary level.
9. **It provides a multicultural and multi-dimensional approach to the teaching-learning process-** Blended learning allows students to communicate and share their thoughts and feelings with students from all over the world, making the teaching-learning process multicultural and bringing with it the interdisciplinary and multidimensional factor.

TOOLS OF BLENDED LEARNING

Blended learning is not a new concept. Earlier, in the past, blended learning was comprised of physical classroom formats, such as lectures, labs, books, notes or handouts. Today, educational institutions have countless learning approaches and choices. Blended learning aims at orchestrating an effective composition of learning experiences. Instructional design has a long history of blending classroom work with homework, field trips, labs, reading assignments, and audio-visual media.

DIMENSIONS OF THE BLENDED LEARNING

1. Blending offline and online learning.

At the simplest level, it is the blending of offline and online forms of learning, where online learning usually means “over the internet”, and offline learning happens in a more traditional classroom setting.

2. Blending self-paced and live collaborative learning.

The blending of self-paced and collaborative learning may include review of important literature on a new product by the learner followed by a moderated, live, online, peer to peer discussion of the materials.

3. Blending structured and unstructured learning.

Not all forms of learning imply a premeditated structured or formal learning program with organised content in a specific sequence, like chapters in a textbook. In fact, most learning in the workplace occurs unstructured via meetings, hallway conversations, or e-mail. A blended program design may look to the active blending of these two structures.

CHALLENGES

1. **Managing Instructional Complexity:** In blended learning the instructor has a wider choice of delivery mediums to combine. With wider choice also comes greater complexity and pressure on the instructor and designer. This is due to the variety of combinations of technology and possibly the lack of patterns to follow for that particular mix. These issues need to be addressed and taken into account during the design.
2. **Designing it.** Designing a blended learning course that maximises the potential of both the face-to-face and online components raises questions: What is the best definition of blended learning? How much of each modality should comprise a course? We argue that students and faculty should not view the face-to-face aspect of a blended course and the online element as separate components (Sloan-C). The instructional design perspective requires a re-evaluation of teaching and learning to blend or harmonise the distinction between the two, which is made even more formidable by the presence of the new learners (Microsoft Corporation. Higher Education Leaders Symposium).
3. **Managing roles and responsibilities.** Unlike traditional classroom learning in which there usually is a single instructor, in blended learning, there are multiple individuals, each taking a role in the blend. Clarification of instructor and assistant roles is essential for success and the reduction of potential conflict and learner confusion.
4. **Creating a seamless learning experience.** Good communication among instructors during planning is an important element in the success of blended learning. It is to be made sure that instructors and assistants communicate with one another throughout the instruction, not just before the course. All prerequisites are to be met by the previous learning objects as different segments of the blend are designed.
5. **Meeting expectations.** Managing expectations for instructors and learners is also important to realistically perceive the benefits during the training or course.
6. **Controlling costs:** The cost savings of ICT introduction in blended learning still remain in theory while it seems that the greatest pedagogical advantages of ICT are the costliest, personalisation, real-time communication, and other advanced functionalities lead to significant costs. Other costs may include courseware development costs, incremental capital and recurrent equipment costs, costs associated with the provision of appropriate resources, infrastructure costs, maintenance, user support costs, costs of adoption, access costs, security costs, replacement costs and institutional overheads. These costs can be reduced by collaborative organisational structure and internal partnerships. Costs may be cut significantly by sharing e-resources among the faculty, students, and instructional staff. Furthermore, initial investments will make this approach cost-effective in the long run.

BLENDED LEARNING STRATEGIES

The abundance of modern e-learning tools and the challenges in implementing them in real-world scenarios have only served to highlight the essential need for a paradigm shift in the existing information transfer educational model (Xenos et al., 2002; Hiltz and Turoff, 2002). Many experts believe that this change should focus on knowledge production rather than information transfer, as this will complement rather than replace the existing information transfer paradigm (Warschauer, 2003; Etheris and Tan, 2004). Active collaboration among human peers is facilitated by several types of collaboration technology,

particularly increased presence, which is a major enabler of the knowledge production paradigm. Human learning is a social process that involves people sharing and completing activities to achieve a common objective. Learning is not an isolated activity in this context (Hung and Nichani, 2001). Traditional learning methods are reinforced by e-services in blended (enhanced) learning, which is a mixed educational paradigm. New pedagogies (the shift from teacher-centred to student-centred paradigms), new technologies (for example, the rapid spread of the internet, the World Wide Web, and personal computers), and new learning theories (constructivism) are enabling entirely new models of teaching and learning, and this shift is large enough to be called a paradigm shift. Blended learning is a pedagogical strategy that blends the classroom's effectiveness and socialisation opportunities with the online environment's technologically improved active learning opportunities.

- **Method of a Live Classroom (Traditional):** Traditional classrooms allow professors and students to interact face-to-face. Topics (complicated, broad, programmatic, or novel content) that require face-to-face interactions, expert observation, culture building, team building, networking, business issue solving, or materials to be provided by an instructor or facilitator are frequently included in the subjects. When learners have job/family duties that allow for extended absences from everyday activities and abilities that require substantial practice in face-to-face interaction with people or complicated physical skills, this method can be used. Group engagement around subjective topics is required for comprehension.
- **Using a Virtual Classroom:** Instructors and students can be in separate places at the same time in a virtual classroom, and the instructor can record the session for later viewing. Virtual meeting tools are commonly used for these gatherings. Unless the subject is excessively technical or contentious, the subjects covered can be equivalent to those in a live classroom. In less than one to two hours, content can be provided successfully.
- **Live Demonstration or Practice (Labs)** When team-based practice is crucial to comprehending complex hardware, and there is an excess of real products and instructors for in-person training, this method is used.
- **Broadcast (TV or streaming video) Method** This method rapidly distributes information to widely dispersed groups. Businesses will benefit from professional quality broadcast recording. This method is used when Content needs to be created quickly, but will not be updated frequently.
- **Interactive Chat Session Method** Consider using this method when Learners have divergent needs that cannot be met by 'one-size-fits-all' instruction and Expert resources are available for one-to-one information sharing and support.
- **Online Information via Web Site Method:** This Method is used when basic concepts, policies, procedures, and information need to be available to a widely dispersed audience over an extended period.
- **Online Instructional Materials Method:** This method is suitable to geographically dispersed learners who demand rapid acquisition of new skill. Learners should have the right technology to access content and practice at their own pace, and resources should exist to maintain and update content. Content can be linked to other learning resources.

- **Online Reference Materials Method:** Consider using this method when learners are geographically dispersed and demand rapid acquisition of new skills and maximum learning schedule flexibility. Learners should have the right technology to access content and practice at their own pace, and resources should exist to maintain and update content. Content can be linked to other learning resources.
- **Offline Instructional Materials Method:** This method is used when a small number of learners are present, which makes distributing content easy. Content has a relatively long shelf life. Basic concepts, policies, procedures, and corporate information never change and do not need to be communicated widely.
- **EPSS Electronic Performance Support System (EPSS) Method:** In this method, content supports users developing software application skills, and Learner benefits from on-the-job access to context-sensitive support. EPSS can be very useful for thematic networks or for communities, as everybody can produce and share common knowledge. EPSS can also contribute to the development of core prerequisites for running and implementing blended learning programmes
- **Threaded Discussion Method:** This method is suitable for learners who have divergent needs from the content that cannot be met by one-size-fits-all instructions. Expert resources are available for group information sharing and support. Learners need to enter discussions at different times and be able to catch up on conversations that have occurred.
- **Product Simulation Practice (Virtual lab) Method:** Consider using this method when Learners can't easily access live systems and the need for trained users is greater than the systems available for training.
- **Live Practice Method:** This method is useful for small, geographically centralized learner population. It provides access to repeated practice. It encourages team work to use and learn new skills.
- **Simulation-Based Practice Method:** Consider Using This Method when complete comprehension is critical before the live application
- **Written Tests Method:** This method aims to test knowledge and information recall. Case study analyses are good indicators of job performance.
- **Performance Tests Method:** Trained Observers are deployed to observe performance or analyse work products in this method. It is used when the physical performance of a skill or behaviour is required as an outcome of the training.
- **Books Method:** Books are Inexpensive, consistent, pleasantly tangible, portable, easy to transport, and readily available. There is a high comfort level since everyone knows how to navigate. The strengths of each method can be combined to create synergy and increased effectiveness. Media selection must be based on the learning context, skills to be taught, and practicality of the situation.

CONCLUSION

Now is the time for countries to use technology in the field of education and let students and teachers discover the knowledge on their own terms. The biggest challenge any teacher faces in an Indian school is capturing the students' attention and putting across ideas in such a way that they stay with them long after they have left the classroom. For this to happen, classroom experience should be redefined, and innovative ideas that make teaching methods more effective should be implemented. Blended learning can prove to be a powerful strategy if learning experiences are well-designed. Despite obvious issues related to the implementation of blended learning, it has the potential to improve Indian elementary education. The positive outcomes are most likely when participants share an inspiring vision, seek maximum possible involvement and bring out the best in others, celebrate accomplishments and model behaviours that facilitate collaboration. The other very important issue is the development of positive attitudes towards blended learning. Forums should be organised to allow government officials, parents, community members, teachers, and students to become aware of programmes, seminars, and discussion forums. These can be utilised to make people aware of the benefits of blended learning so that a more open mindset is prepared for its implementation.

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CHAPTER

6

Role of information technology in professional development during covid-19 - a study with reference to the holistic approach

B. Dhana Lakshmi & Veena Murali

ABSTRACT

In the changing scenario, it is compulsory to adopt the changes in all fields; teaching is also in no way exempted. The drastic changes in teaching and learning methods due to the COVID-19 pandemic proved that changes alone never change forever. From the 70s kids to the millennials, those who are teaching are in a compulsion to understand and switch from traditional blackboard teaching to advanced blended and collaborative teaching methods. In this regard, it is important to study the role of information technology in motivating teachers in higher educational institutions to develop their profession and to the extent to which they can cope with modern technologies in teaching. This study, based on a holistic approach, aimed to study the attitude, knowledge, skills and practices of the teachers as a result of professional development and to analyse the level of impact of technology in their professional development. For this purposive study, the Purposive sampling method was used to collect the data, and the basic descriptive analysis along with the structural equation modelling method was used to study the proposed model.

Keywords: Information Technology, Holistic Approach, Professional Development, Covid-19, SEM.

INTRODUCTION

The integration of technology into the teaching and learning process has become the focus of major educational initiatives and reform efforts in teacher education (US Department of Education (1999). It has

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been analysed over a period of time that higher education teachers can effectively integrate technology into their teaching for the following reasons: lack of access to technology (US Department of Education, 1999; Drent and Meelissen, 2008; Agyei and Voogt, 2011; Education Services Australia, 2012; Tondeur et al., 2012), insufficient courses or workshops to provide teacher educators with information and communication technology skills (ICT) s (Wentworth et al., 2009), lack of knowledge on how to integrate technology in the classroom (Tondeur et al., 2012) and lack of technical support (Matthew et al., 2002).

But when it comes to their professional development during the time of COVID, it is very true that most of the higher educational institutions such as Universities, Teacher Training Colleges, and Colleges have started conducting several webinars, Faculty Development Programmes (FDP), workshops, and the like which can facilitate the teachers to learn about the latest developments in teaching methods along with the professional requirements. Professional development should also be like a holistic approach because the early research on child education started giving emphasis on all the factors related to feelings, skills, knowledge, and predisposition, so it is applicable to the teachers' education (professional development) also. In order to study the impact of information technology on the professional development of higher education teachers, the researchers have adopted the whole-teacher approach, which was proposed by Jie-Qi Chen and Charles Chang. The factors related to the whole teacher approach include attitude (confidence in using a computer in the classroom, comfortable using the internet, teaching children how to use computers), Knowledge and Skills (understanding basic computer functions and commands, skilled in selecting appropriate software, capable of learning new software, install new programs independently), Classroom Practices teaching Methods (encourage children to explore software, pairs a more-competent with less competent child, uses computers as a learning centre, incorporates the use of software when planning activities).

1. Review of Literature

Faculties in higher education need to update and develop their professional skills by undergoing Faculty Development Programmes (FDPs), Workshops, Webinars and Seminars, Conferences, Symposiums and the like. So, they can be considered continuous learners (Sylvie Lidof and Denis Pasco, 2020). The development in technology takes us to the digital world where everything has been done digitally (Mauss, 1990). However, when it comes to teaching, we still have a dilemma of which mode of teaching is effective (US Department of Education, 1999), either formal education (Drent and Meelissen, 2008) or online teaching (Agyei and Googt, 2011), majority researchers insisting the point that traditional way of teaching which also consists of modern learning methods which facilitate both teachers as well as the students to have in-depth knowledge and acquire it with ease (King 2002). The different proposed models such as ETPD (Educational Technology Professional Development), TPACK (Technological, Pedagogical and Content Knowledge) framework (Koehler and Mishra, 2005; Mishra and Koehler, 2006; Harris et al., 2010) SAMR (Substitution, Augmentation, Modification, Redefinition) model of Technology Integration (Psiropoulos et al., 2016), three levels (Entry, Adaptation, and Transformation) (Coughlin and Lemke, 1999; Seels et al., 2003), the four stages (Emerging, Applying, Infusing and Transforming) of Anderson and Van Weet's model (Esterhuizen et al., 2013), dealt with the different levels of understanding about the technology development in teaching by the higher education teachers. It paves the way to

understanding the research gap, which is that not much research is being conducted to study the role of information technology in bringing about professional development among higher education teachers with a holistic approach. So, the researchers have attempted to develop a model for this.

Objectives

- To understand the factors contributing to the holistic approach to teaching.
- To study the mediating effect of ICT on the relationship between Factors of the Holistic Approach to Teaching (*Attitude, Skill and Knowledge and Classroom Practice*) and Professional and Skill Development.

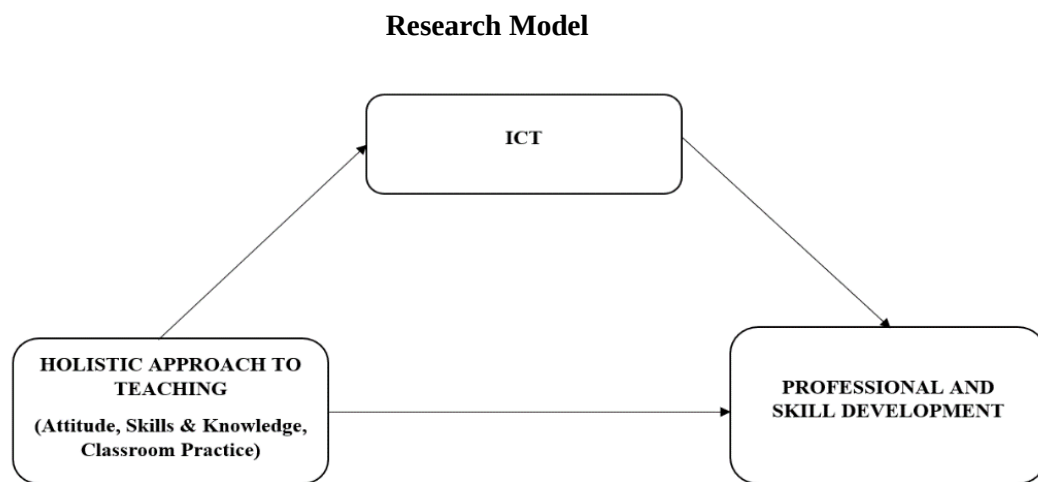


Fig 1. Research Model

DISCUSSION

The present study is based on a purposive sampling method with a reliability of 0.978. The factors considered for this study have been derived from past research done by different researchers in this same research area. A standardised questionnaire was used for the data collection. An attempt has been made to study the holistic approach to teachers' professional development in higher educational institutions. For this purpose, the researchers have used factors such as the attitude of the teachers towards information technology in teaching, knowledge and skill of information technology and the latest developments in teaching methods, classroom practices with information technology, and their professional development during the time of COVID'19 with the help of information technology.

Table 1 Frequency Distribution of Demographical Factors Related to Higher Education Teachers

Sl.No	Factors	Frequency	Percentage
1.	Gender		
	Male	117	53.9
	Female	100	46.1

2.	Age Group in years		
	Below 25	39	18.0
	25-29	31	14.3
	30-39	42	19.4
	40-49	38	17.5
	50-59	32	14.7
	Above 60	35	16.1
3	Employment Status		
	Full-Time	78	35.9
	Part-Time (50-90% of full-time hours)	73	33.6
	Part-Time (less than 50% of full-time hours)	66	30.4
4	Employment Status as a faculty of this college		
	Permanent	111	51.2
	Temporary	106	48.8
5	Education		
	Post Graduate with NET/SET	57	26.3
	M.Phil and NET/SET	49	22.6
	Ph.D.	51	23.5
	Ph.D and NET/SET	60	27.6
6	Duration of Employment		
	Less than 1 year	44	20.3
	1-2 years	32	14.7
	3-5 years	29	13.4
	6-10 years	27	12.4
	11-15 years	30	13.8
	16-20 years	26	12.0
	More than 20 years	29	13.4

Source: Primary Data

Table 1 presents the demographical factors of the higher education teachers. The majority of male teachers (53.9%) are in the age group of 30-39 years (19.4%), working full time (35.9%) or permanently (51.2%), having the educational qualification of PhD along with NET/SET (27.6%), and working in the present institution for less than one year (20.3%).

A question on whether they attended professional development courses during the last 18 months had a cent percent yes. This shows that the teachers are making efforts in professional and skill development.

The unforeseen COVID-19 pandemic required teachers to shift from traditional classroom teaching to digital instruction (Lockee, 2021). Hence, the teachers had to depend on resources supporting teachers and learners, develop skills for remote teaching, and augment the capacity to support online teaching and learning (Reimers et al., 2020). This led to the growing importance of platforms like Google Meet, Webex, Zoom, Google Classroom, and the like. In this context, it is important to understand the role of information technology in gaining the necessary professional development, keeping in mind the holistic approach to teaching. SOBEL test was conducted to understand the mediating effect of ICT on professional development. The holistic approach to higher education teaching has been developed to include factors such as attitude towards information technology in teaching, knowledge and skills on information technology in teaching, and classroom practices with information technology.

5.1 Mediating Effect

SPSS was used to identify the total effect of the independent variable holistic approach to teaching (X) on the dependent variable professional and skill development (Y). From Table 2, it can be seen that there is a 63.5% impact of X on Y. The analysis of ANOVA and coefficient values shows significance at a 1% level.

Table 2. Model Summary of Total Effect of X on Y				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797	.635	.632	.51888
Source: Primary Data				

Table 3. ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.580	1	56.580	210.147	.000
	Residual	32.578	121	.269		
	Total	89.159	122			
Source: Primary Data						

Table 4. Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.510	.235		2.173	.032
	HOLISTIC	.868	.060	.797	14.496	.000
Source: Primary Data						

After identifying the total effect of X on Y, regression analysis was undertaken to identify the direct effect of the independent variable on the mediating variable ICT (M). On analysing Tables 5, 6 and 7 it can be seen that the direct effect of X on M is 67.2%, significant at 1% level.

Table 5. Model Summary of Direct Effect of X on M				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.820 ^a	.672	.669	.51648
Source: Primary Data				

Table 6. ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.020	1	66.020	247.498	.000
	Residual	32.277	121	.267		
	Total	98.297	122			
Source: Primary Data						

Table 7. Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.275	.233		1.178	.241
	HOLISTIC	.938	.060	.820	15.732	.000
Source: Primary Source						

Regression analysis was also undertaken to study the direct effect of independent and mediating variables on the dependent variable. There was a 66.5% impact of X and M on Y. It was significant at the 1% level.

Table 8. Model Summary of Direct Effect of X and M on Y				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.816 ^a	.665	.660	.49855
Source: Primary Data				

Table 9. ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.332	2	29.666	119.355	.000 ^b
	Residual	29.826	120	.249		
	Total	89.159	122			
Source: Primary Data						

Table 10. Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.429	.227		1.894	.061
	HOLISTIC	.594	.100	.545	5.919	.000
	ICT	.292	.088	.307	3.327	.001
a. Dependent Variable: PSD						

Later, Sobel's test was administered to study the mediating effect of M on X and Y.

Fig 2. Results of Sobel Test

Based on the results of the SOBEL test, the test statistic is **3.24587352** with a standard error of **0.08438283** significant with a p-value of **0.00117091**. The crucial parameter is the p-value, which is less than 0.05. It shows that the indirect effect between Factors of the Holistic Approach to Teaching (Attitude, Skill, Knowledge and Classroom Practice) and Professional and Skill Development via ICT is statistically significant. The point estimate of this indirect effect at which the p-value is statistically significant is calculated as the product of unstandardised coefficients beta for A (X to M) and B (M to Y).

$$\text{Point Estimate} = 0.938 \times 0.292 = 0.2739$$

This point estimate value of 0.2739 is the estimate of the indirect effect between Factors of the Holistic Approach to Teaching (Attitude, Skill and Knowledge and Classroom Practice) and Professional and Skill Development through ICT at the p-value of 0.00117091 as shown in the Sobel Test.

CONCLUSION

The emergency challenges put forth by the pandemic have provoked educational institutions to adopt ICT. The days after the pandemic will continue the blended mode of teaching and learning. However, it requires copious training to adapt to the changing technology and required skills. Teachers should be competent and skilled in online teaching and their pedagogical and content knowledge. The situation warrants the need for educational institutions to recognise ICT as a bottom-up process in guaranteeing teachers' professional and skill development.

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CHAPTER 7

Impact of Covid-19 Pandemic on Higher Education

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ABSTRACT

The COVID-19 epidemic has caused a downward spiral in the world economy and caused a huge impact on the higher education system. The sudden closure of campuses as a social distancing measure to prevent community transmission has shifted face-to-face classes to online learning systems. This has thrown the focus on utilising eLearning tools and platforms for effective student engagement, which may have limitations in accessibility and affordability for many students. The pandemic has exposed the shortcomings of the current higher education system and the need for more training of educators in digital technology to adapt to the rapidly changing education climate of the world. In the post-pandemic situation, eLearning and virtual education may become an integral part of the higher education system. Higher education institutions and universities need to plan post-pandemic education and research strategies to ensure student learning outcomes and standards of educational quality.

Keywords: COVID-19, Higher Education, eLearning, Virtual Education, Teaching-Learning

INTRODUCTION

COVID-19 infection was reported originally from Wuhan, China in late December 2019, and quickly spread throughout the world. It was declared a pandemic by the WHO on 11 March 2020 (WHO,2020). The COVID-19 outbreak had a devastating impact on human life and shattered economies around the world (Xiang et al., 2020) with a massive jolt to the education systems both in developed and developing countries. The COVID-19 pandemic quickly led to the closure of universities and colleges around the world, with government instructions to follow social distancing that could help to flatten the infection

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curve and reduce total fatalities from the disease. The most important pandemic precaution, called “social distancing” or “physical distancing”, has attempted to reduce interpersonal contact and thereby minimise the kind of community transmission that could develop quickly in dense social networks like the university campus (Weeden & Cornwell, 2020).

RISE OF DIGITAL TECHNOLOGY FOR E-LEARNING AND VIRTUAL EDUCATION

The impact on higher education has been dramatic and transformative and a common trend in education systems around the world has been to respond to the pandemic with “emergency eLearning” protocols, marking the rapid transition from face-to-face classes to online learning systems. Educational institutions are facing a challenge to adapt to this change and trying to choose the right technologies and approaches for educating and engaging their students. The campus closure and sudden switch from in-person face-to-face education to remote instruction is just a baby step experiment in the long journey to offering online education, which includes effective student engagement tools and teacher training. This may pave the way for stronger bonds between universities, online education companies, and technology providers post-pandemic. The universities will need to pay serious attention to having educators trained and equipped with digital technology for a smooth teaching-learning process. The government will have to step up and commit to sustained programs for professional development to boost educators’ teaching capabilities. The pandemic has exposed the vulnerabilities and shortcomings of the current education systems and has also emphasised the need for digital literacy development, particularly in times like these, for both developed and developing countries. The greater digitalisation of educational services and communication may become a norm post-pandemic. The current situation has challenged deep-rooted notions about the role of higher education institutions in providing quality education, mode of delivery, accessibility, the importance of lifelong learning, and educator’s perceptions about the type of learners. This may provide insight to educators and policymakers for the overall improvement of the education systems around the world.

Relying on and adapting to eLearning during a pandemic may cause a shift in educators' adoption of more online elements in their teaching. This, however, has many practical problems and limitations in terms of the availability of digital technologies for education. There is a vast “digital inequality” in society. One cannot assume that all students, as well as educators, would have access to internet connectivity and associated powerful devices outside of their university to be able to communicate.

Affordability is another factor that limits access to eLearning, with students from economically weaker sections facing a greater burden. The impact of accessibility and affordability can have serious implications on students in the higher education system unless student-friendly government policies are in place, which can ensure affordability and accessibility of the Internet to students.

The students face major hurdles with remote learning as face-to-face communication is more conducive to the learning process, presenting a better opportunity to share knowledge and ask for help, which is “easier” and more interactive (Miliszewska, 2007). The camaraderie and sense of belonging are limited in a virtual class. The students who have less ability to self-regulate or study autonomously struggle with no teacher providing in-person support. The online videos, digital content, and discussion forums may not provide a holistic teaching-learning outcome.

Many civil liberties groups and activists have increasingly raised apprehensions over the privacy and surveillance implications of hundreds of millions of students being forced onto commercial software that has not been properly tested and vetted for educational uses.

The sudden shift to adapt and implement online learning has led to overwork and stress among the teaching faculty. Educators need to re-imagine modes of curriculum planning, development of content, assessment, and reporting, which may have been developed without proper planning and forethought. To achieve more focused learning outcomes and develop effective eLearning methods, educators should be provided with professional autonomy and be trusted with their judgment; they should also ensure clear and compassionate communication with all higher education.

One might argue that remote learning may offer an advantage for individuals who are unable to attend traditional full-time face-to-face university due to personal or financial circumstances. Also, the flexibility of asynchronous remote learning may provide wider access. Even within traditional higher education institutions, hybrid or blended forms may help improve the quality of face-to-face teaching by moving content delivery online and focusing in-person sessions on active learning (Bowen, 2012; Riffee, 2003).

These diverse reactions highlight that there are always wider connotations and unintended consequences of any adoption of technology in education. So, with COVID-19 post-pandemic, all universities and higher education institutions need to introspect about the implications of their choices and decisions on the lifelong learning of students, which will ultimately shape the future of this generation.

IMPACT ON HIGHER EDUCATION

As we all know, this was a crucial time for students as different universities and college examinations were usually held during this period. Different entrance tests from various universities and competitive examinations were also to be held during this period. Since there was no immediate solution to prevent the outbreak of COVID-19, college, school and university closures had to be made compulsory to prevent the spread of the virus. It has affected more than 285 million young learners in India. Students had to face severe problems as they were not aware of the future examination, especially students who were in the final year and also those who were to answer the entrance test. This closure of educational institutions disrupted the structure of learning, assessment and examination, which made the Indian education system go through an irreversible teaching & learning crisis. Therefore, a sudden shift was made from the traditional face-to-face classroom method to the online mode of education. It just became like yesterday's disruptors became today's survivors. The online method was considered as the threat, but today, it has come to the rescue. However, several issues also started coming up along with the introduction of online teaching modes in higher educational institutions (HEIs).

INITIATIVES TAKEN BY THE POLICYMAKERS TO MAKE THE EDUCATIONAL SYSTEM LEARNER-FRIENDLY

Though COVID-19 has had many negative impacts on education, it has also brought a new dimension to the teaching-learning process in India. Though online learning has many drawbacks, it has become a survivor during the worst situation in the country. It enhanced digital literacy. People started learning and using digital technology. Electronic media was used for sharing information worldwide. Students and

teachers got good opportunities to interact with different people around the globe, improving communication.

E-Gyankosh- One of the initiatives taken by the national government to share digital learning resources, which the open and distance learning institutions in the country develop. Study material is also made available for the students.

Gyandhara- is an internet service where students can listen to live discussions with experts and interact with them through telephone conversation.

SWAYAM- It is said that SWAYAM covers over 1900 courses, which cover school and higher education.

Development and change are inevitable parts of human life. However, during the pandemic, people had to accept sudden change as it became necessary for survival. This encouraged personalized learning, which in the long run will be beneficial for the qualitative teaching and learning process. It also facilitated improvement in collaborative work.

CONCLUSION

There are no best practices for universities and higher educational institutions to mimic and no known models to follow. Post-pandemic educational institutions may need to identify the issues they may face and prepare to make tough decisions in the coming months. The university communities will need to reflect on their educational vision and mission to ensure student learning outcomes and standards of academic quality are not compromised. The universities must engage and consult all their stakeholders in balancing financial costs and public health intertwined with missions of education, knowledge creation, and service to society. Higher educational institutions must be ready for a tough road ahead post-pandemic, where their decisions will shape and steer the future of their students.

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CHAPTER 8

Changing Role of Library Professionals during Covid-19 Pandemic

Eesha Sharma

ABSTRACT

The COVID-19 pandemic shook the whole world badly in 2020. Everything was muddled as life became disrupted and seemed to be at a halt. The world has been influenced by the pandemic, which has caused more crucial and sudden changes across all spheres of life than anything in recent memory. The pandemic enforced the worldwide lockdown. It has adversely affected the education sector, resulting in the closure of more than 90% of schools, colleges and universities. Turning away from face-to-face interaction across the globe, people have turned to online and virtual work. The sudden outbreak of COVID-19 forced a shift from the traditional teaching-learning process to web-based teaching-learning, and this creates a need to transform the role of traditional libraries as well as library professionals. The present paper focuses on the numerous roles of library professionals during a pandemic. It emphasises the number of digital platforms available around the world and also highlights the use of social media/networks for facilitating information and e-resources in the form of e-books, e-journals, e-magazines and links of e-content etc., to the users as per the requirement.

Keywords: COVID-19 Pandemic, Libraries, Challenges, E-Resources, Digital Platforms

INTRODUCTION

The COVID-19 pandemic has spread all over the world and jolted the global economy. It had shaken the whole world badly in 2020. Everything was muddled as life became disrupted and seemed to be at a halt. It has not only affected the lives and health of the people but also affected the economy of the whole world in one way or another. But it had significantly disrupted the education sector. The outbreak of Covid-19

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has created educational disruptions, which led to the closure of schools and colleges. The pandemic has changed the lifestyles of the entire world drastically, with billions of people being forced to stay at home to remain safe and to learn and work from home. (Onyema, 2020). It was first reported in Wuhan, Hubei Province, China in December 2019. On March 11, 2020, the WHO declared Covid-19 a global pandemic due to the speed and scale of the transmission of the disease. The first case of COVID-19 infection in India was reported in Kerala, state on January 27, 2020, and the affected had a travel history from Wuhan, China, as she had returned to Kerala from Wuhan on January 23, 2020, owing to COVID-19 outbreak situations there. On March 24, 2020, the Government of India under Prime Minister Mr Narendra Modi ordered a nationwide lockdown for 21 days, limiting the movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India. WHO suggested maintaining social distancing as the first preventive measure. So, every country started the act of lockdown to separate the infected people (Sharma, 2021). However, these lockdowns came with severe economic and social consequences, which has also presented unique challenges in the educational sector and have forced not just students but also policy makers and service providers, including librarians, to adapt and adopt technology as a viable and valuable option to ensure fulfilment of the educational needs of the stakeholders and in overcoming various hurdles in this pandemic time (Dadhe and Dubey, 2020).

Dr Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization, said, “We will not be able to return to normal and will need to keep adjusting our strategies according to the latest evidence.” He added, “We need to prepare for a new normal, which will require all of us to change our behaviour for the foreseeable future.” COVID-19 has created numerous challenges for libraries and librarians; libraries are being opened with some restrictions. The sudden and unexpected outbreak of the novel coronavirus (COVID-19) forced library professionals to ascertain ways of working in a rapid time frame, like shifting to digital platforms wherever possible and providing adequate remote services to users. During pandemic situations, libraries have been the gateways of relevant information and knowledge for conducting the search and development on the related subject areas (Asif, 2020). Technology has become a saviour for educational institutions during the Covid-19 pandemic.

OBJECTIVES

- To understand the impact of Covid 19 on libraries and how Library Professionals dealt with various challenges during the pandemic.
- To discuss the different types of digital platforms available around the world.
- To discuss various teaching platforms for faculty members.
- To define the role of social media in sharing information.

CHALLENGES FACED BY LIBRARY PROFESSIONALS DURING COVID-19

Library Professionals faced complex challenges during COVID-19. Earlier, they used to provide books/resources to learners and instructors in physical form, but during COVID-19, lockdowns were imposed as a safety measure, and everyone was fighting against the pandemic in one way or another. But to save the future of the students teaching-learning never stopped. And then, the library professionals join hands with the teachers/instructors to help them in the teaching-learning process. They redesigned their

positions to meet the evolving needs of instructors and learners. They implemented new practices, new technologies, and new technical skills. They provide study material to the learners/students with the help of the internet in the form of e-resources such as e-books, e-journals, and scanned PDFs, etc., as learning cannot be possible without learning resources. The major challenge was to provide relevant information and knowledge to the students during the lockdown as the Government sometimes ordered full closure of all institutions. In these situations, library professionals have to follow the Standard Operating Procedures (SOPs).

Guidelines / SOP for Libraries during the COVID-19 Pandemic

- Stay at home if you are not well.
- Use sanitiser frequently.
- Follow Duty Roster
- Keep books at separate places for at least 48 hours when check-in/check-out
- Maintain social distance
- Follow good health and hygiene habits
- Use a mask and cover while sneezing or coughing
- Avoid sneezing or coughing while handling books
- Keep surfaces clean, including library computers, door knobs, switches, and railing etc.
- Limiting concentration of users in the reading room while maintaining social distancing.
- Use online platforms or social media to share Information.

VARIOUS DIGITAL PLATFORMS FOR E-RESOURCES

E-resources are all electronic resources, i.e. books, magazines, journals, newspapers, dissertations, etc., that are available in print form. They play pivotal role all over the world because of their accessibility, affordability, usability and readability. Different open-access digital platforms are available that can be used to access different e-resources. A few are given below:

- **National Digital Library of India (NDLI)**

It is the biggest digital repository containing textbooks, articles, videos, audiobooks, lectures, simulations, fiction and all other kinds of learning media. It is sponsored and mentored by the Ministry of Education, Government of India, through its National Mission on Education through Information and Communication Technology (NMEICT). It is designed to hold content of any language and provides interface support for ten most widely used Indian languages.

It provides support to all academic levels, including researchers and life-long learners. It covers all disciplines. It is designed to enable people to learn and prepare from best practices from all over the world and to facilitate researchers to perform inter-linked exploration from multiple sources. It is developed, operated and maintained by the Indian Institute of Technology Kharagpur. It is a single-window search engine platform. During Covid -19 pandemic it had created Covid-19 Research Repository with scholarly content, documents, videos, ideas, -funding, challenges and startups etc. for the welfare of the society.

- **E-PG Pathshala**

It is a Gateway to all Postgraduate Courses. It is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC. It has high-quality, curriculum-based, interactive e-content in 70 subjects across all disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages. The e-content was developed by subject experts working in Indian universities and other R & D institutes across the country.

- **Bharat Padhe Online**

The Union Ministry of Human Resources Development launched the Bharat Padhe online campaign on April 11, 2020, to crowdsource ideas for improving India's online education system. The week-long campaign was launched by HRD Minister Ramesh Pokhriyal. The main objective of the campaign is to invite and share suggestions or solutions to overcome the challenges and constraints of online education. It promotes online education through digital platforms. The main target audiences of the Bharat Padhe Online campaign were the students and teachers.

- **YUKTI Portal (Young India Combating COVID with Knowledge, Technology and Innovation)**

It is a unique portal and dashboard that monitors and records the efforts and initiatives of the Ministry of Education. It was launched on 12 April 2020 by the Hon'ble Minister of Education, Dr Ramesh Pokhriyal "Nishank". It will cover a wide range of initiatives and efforts of academics and research institutions that are especially associated with COVID-19. YUKTI Portal 2.0 was also launched on 23 June 2020 to better plan and monitor activities effectively.

- **E Pathshala**

It is a joint portal which was initiated by the MHRD and the National Council of Educational Research and Training (NCERT) in November 2015. Educators, teachers, and learners can easily access e-content on multiple devices like mobile phones, tablets, laptops, and desktops. The learning materials are available in English, Hindi, Sanskrit, and Urdu. It also allows users to download as many books as they want. It has digital books, video, audio and flip books for classes 1 to 12.

- **National Programme on Technology Enhanced Learning (NPTEL)**

It is a project of MHRD initiated by seven Indian Institutes of Technology (Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati and Roorkee) along with the Indian Institute of Science, Bangalore. It is the largest online repository in the world of courses in engineering, basic sciences, and selected humanities and social sciences subjects. Under this, numerous online courses in different fields are available on a single platform.

- **Study Webs of Active-learning for Young Aspiring Minds (SWAYAM)**

It is India's first Massive open online course platform, which was initiated by the Indian Government. It offers over 2,150 courses taught by close to 1,300 instructors from over 135 Indian universities. One aspect that sets it apart from other providers is that it allows students in India to earn academic credit online. It is specially designed to achieve the basic objectives of the Indian Education Policy. The main objective of this platform is to provide the best teaching-learning platform and learning resources to students.

- **Shodhganga-A Reservoir of Indian Theses**

It is a platform which is designed by the Information and Library Network (INFLIBNET) for young researchers to deposit their Ph.D. theses. The theses are available in open access to serve the whole scholarly community. The repository has the ability to capture, index, store, disseminate and preserve electronic theses and dissertations submitted by the researchers.

- **National Repositories of Open Educational Resources (NROER)**

It is developed by the MHRD, Department of School Education and Literacy, and managed by the NCERT, Central Institute of Educational Technology. It is a common platform for different types of users. It works on Metastudio, the platform hosting the repository, which is an initiative of Knowledge Labs, Homi Bhabha Centre for Science Education, Mumbai. It hosts a large number of educational resources in many subjects and in different Indian languages for Primary, Secondary and Senior Secondary classes. Resources are available in different formats, such as audio, video, image, document, and interactive.

UTILISATION OF SOCIAL MEDIA PLATFORMS AS A DIGITAL LIBRARY

- Traditional library professionals worked as digital library professionals through social media platforms. It is a very vast platform for sharing information amongst users. Library Professionals can create a Social Media Group on any of the platforms like WhatsApp, Facebook, Instagram, Telegram, etc., according to the needs of the users. In this group, library professionals can share study material and other relevant information with students /learners.

Popular Social Media Platforms are:

- WhatsApp (<https://www.whatsapp.com/>)
- Telegram (<https://telegram.org/>)
- Facebook (<https://www.facebook.com/>)
- Instagram (<https://www.instagram.com/>)
- LinkedIn (<https://www.linkedin.com/feed/>) etc.

Various Teaching Platforms for Remote Access to Continue Teaching -Learning Process

- **Google Classroom:** Google Classroom is a free online teaching/learning platform for educational institutions. Teachers can make online classrooms, upload teaching material and conduct online quizzes.
- **Google Meet** is a video communication service developed by Google. Instructors and learners can remain connected in virtual form through this.
- **Zoom for Virtual Classrooms and Video Conferencing:** It is a platform that allows instructors to live-stream class sessions or pre-record them and share them with students at a later date.
- **WebEx:** It is the leading and widely used platform for webinars, official meetings and video conferencing.
- **Go to Webinar:** It is an online interactive software.
- **Google Form:** Instructors can use Google Forms for assessment purposes and take online quizzes.

- **Moodle:** It is an open source software which is designed for learning and to help educators to create effective online courses for learners.
- **Kahoot:** is a game-based learning platform used for multiple-choice quizzes that can be accessed via web browser or the Kahoot! App.
- **Quizizz:** is a learning platform that uses gamification to make content immersive and engaging.

CONCLUSION

Library Professionals faced complex challenges during COVID-19. They redesigned their positions to meet the evolving needs of instructors and learners. They implemented new practices, new technologies, and new technical skills; therefore, they performed all the duties of information manager and information provider and disseminated the right information to the right user at the right time. In a Pandemic situation like Covid-19, where social distancing is the only way to control the speedy transmission of the virus, web-based library is in more demand than traditional libraries. Thus, library professionals have to teach the students how to access online resources and how to use open educational resources through various orientations, awareness programmes, workshops book talks etc. Apart from learners and instructors, they aided the different sections of a community and society during the pandemic by providing mental relaxation, emotional development and stress-free environment to senior citizens as well as to kids through different books of Spirituality, Motivation, Fiction, Folktale and Poetry. American writer and producer Mr. Sidney Sheldon rightly said, “Libraries store the energy that fuels the imagination. They open up windows to the world and inspire us to explore, and achieve, and contribute to improving our quality of life”.

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CHAPTER

9

A STUDY ON TEACHING AND LEARNING DURING COVID 19 PANDEMIC AMONG TEACHERS AND STUDENTS OF THRISSUR DISTRICT

Haritha C.R

ABSTRACT

COVID-19 put forward unprecedented opportunities and threats before the education system. The pandemic caused shocks to the education system, but it offers numerous opportunities. It is in this background the study is initiated to explore study on teaching and learning during the COVID-19 Pandemic among Teachers and students of the Thrissur district. In order to examine this, data was elicited by using a structured questionnaire among 50 students and 50 teachers. On the basis of the nature of institutions, the sample was selected using stratified random sampling, and convince sampling is also used for the study. For this, both primary and secondary data was used. The study revealed that teachers' and students' adaptability to new learning platforms have enhanced, but the teacher-student relationship cannot be e-developed. From the study, it is revealed that a blended form of teaching and learning will produce the most desired result.

Keywords: Blended Learning, Teaching and Learning

INTRODUCTION

Over the last few decades, the educational system in India has shown fast-paced changes. COVID-19 has brought tremendous changes to the educational field. It made changes to the teaching and learning process. It mainly discusses three aspects: usage, access, and pedagogical skill gaps. Conventional teachers who are experts in teaching and learning by chalk and board system are entirely wiped out. Schools have moved to an emotional lockdown rather than an intellectual one. Teachers become digital experts; physical classrooms are converted to Zoom classrooms and the like. Each teaching faculty member has to be oriented to teaching in an online mode. This helps the learner to become an independent learner.

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Digital learning platforms allow students to learn and acquire more knowledge according to their own convenience. It has been observed that children who are not active participants in a classroom are showing much interest in online classrooms as there is less chance of anxiety, fear, etc., as compared to traditional classrooms. It also improves communication and mutual sharing among teachers, students and between students. The government is also trying to provide digital learning through various platforms like e-pathsala, swayamprabha channel, etc. Digital learning has a wide scope to supplement traditional classroom learning in order to facilitate the cognitive development of students, bring every student to the mainstream of education, and cater to the needs of differentiated classrooms. It allows the learner as well as the teacher to learn and relearn a new platform of learning, to test their knowledge and to procure new sources of information. It allows education beyond the 3Rs: reading, writing and arithmetic, thinking, and relearning.

The real problem arises because online learning is not able to cater for the needs of the underprivileged section of society. Teachers and students are not equipped to adapt to a new medium of education over a night. We know that learning is an active interface between experience, problems, and decision-making on how effectively human life can be managed with the needs of society are lacking now. By interacting with society, students are budding their own knowledge is also not possible via online learning. Moreover, mere content transactions are occurring digitally. It is in this light that a study is initiated to learn about the teaching and learning among students and teachers of Thrissur District.

OBJECTIVES

1. To examine the attitude of school teachers and students towards ICT in education.
2. To understand the extent of ICT integration and its impact on education.
3. To examine the relationship between gender and the usage of technology in education.
4. To understand the major challenges faced by students and teachers during online education

HYPOTHESIS

- There is no association between gender and usage of technology.

METHODOLOGY

Design: For the successful completion of this study, Descriptive Research Design was used.

Population and sample: The study is mainly concentrated in the Thrissur district of Kerala, and the school teachers and students of the Thrissur district are considered as the population of the study. On the basis of nature of institutions samples are selected by using stratified random sampling. From this population a sample of 50 teachers and 50 students was selected by using convenience sampling.

Method of data analysis: The main method used for the study is percentage analysis, weighted average method and chi-square test.

Tools for presentation: The main tools used for the presentation of the data are graphs and diagrams.

REVIEW OF LITERATURE

A review of the literature indicates that it relates to previous research on the topic. Extensive studies are conducted regarding teacher stress, and the major is mentioned here.

Sawhney and Sharma (2022) studied the challenges faced by students in online classes during COVID-19. The study assessed the challenges faced by students and their impact on their studies due to online classes during COVID-19. A total of 140 respondents participated in the survey, which was pursuing their graduation. The results reveal that the low connectivity issue was one of the hurdles students were facing. Results also indicate that online learning has reduced the quality of education.

Younesi and Khan (2020) examined English language teaching through the Internet in the post-COVID-19 Age in India: Views and Attitudes. In this study, researchers found the importance of English language teaching post-COVID-19 and attitudes toward Internet-based English learning and teaching programs.

Bharati (2018) examined the organisational role stress among college teachers related to gender and management. The study's main objective is to examine the role stress experienced by the college teacher with respect to gender. The study was conducted using 100 college teachers. Both descriptive and inferential statistical techniques were employed for the study. The study's findings revealed a significant difference in organisational role stress in male and female teachers. Expectations from parents, the public and authorities were responsible for creating more organisational stress among college teachers.

Ahamad (2021) studied digital learning in the pandemic (Covid 19). The study intends to find its impact on the education system- advantages, disadvantages, opportunities, and challenges in times of crisis both from the perspective of the student as well as educators.

ANALYSIS AND INTERPRETATIONS

Objective 1: To examine the attitude of school teachers and students towards ICT in education

Table 1: Attitude of school teachers towards integration of ICT in education

Attitude	No. of Respondents	Percentage
Positive	14	28
Neutral	31	62
Negative	5	10
Total.	50	100

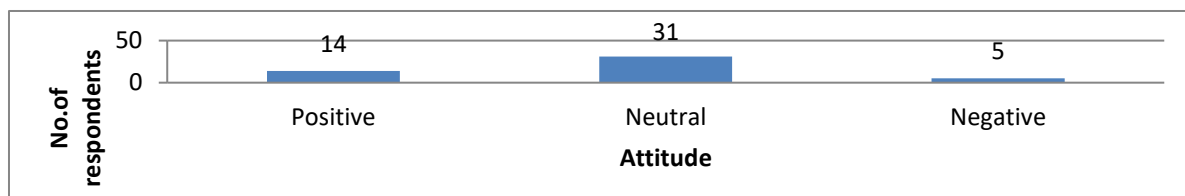


Fig 1: Attitude of higher secondary school teachers towards integration of ICT in education

From the above table, it is clear that 62% of respondents had a neutral response towards incorporating ICT in education, whereas 28% had a positive response towards incorporating ICT, and 10% had a negative response towards incorporating ICT in education.

Table 2: Attitude of school students towards integration of ICT in education

Attitude	No. of Respondents.	Percentage
Positive	10	20
Neutral	26	52
Negative	14	28
Total.	50	100

From Table 2, it is clear that 52% of respondents had a neutral response towards incorporating ICT in education, whereas 20% had a positive response towards incorporating ICT, and 28% had a negative response towards incorporating ICT in education.

Objective 2: To understand the extent of ICT integration and its impact on education

Table 2: Extend ICT Integration in Content Transactions Among Teachers

Extend of ICT Integration	No. of respondents	Percentages.
High	18	36
Average	20	40
Lower	12	24
Total	50	100

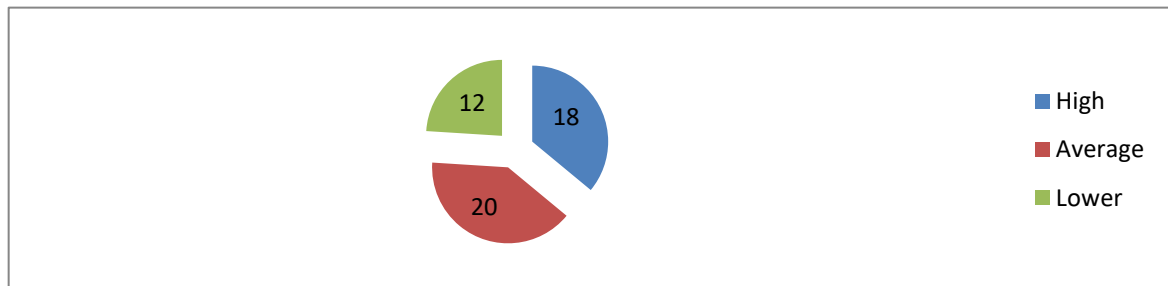
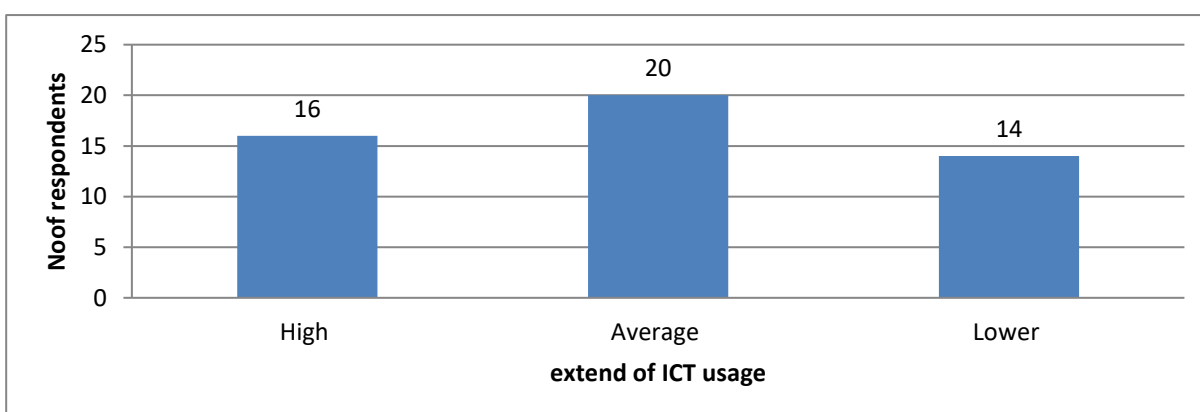


Fig 2: Extend ICT integration for content transaction

According to the above table and diagram, it is revealed that about 40% of respondents integrate ICT for content transactions at the average level, whereas 36% are at the high level and 24% are at a lower level.

Table 3: Extend ICT Integration In Learning Process Among Students

Extend of ICT Integration	No. of respondents	Percentages
High	16	32
Average	20	40
Lower	14	28
Total	50	100

**Fig 3: Extend ICT integration in the learning process**

According to the above table and diagram, about 40% of respondents were integrating ICT for content transactions at the average level, whereas 32% were at a high level and 28% were at a lower level of integration.

Table 4: Frequency of ICT integration in education

Mode of ICT Integration	Regular	Percentage	Once in a while	Percentage	Never	Percentage
Preparation of learning resources	12	24	18	36	20	40
Better content transaction	15	30	16	32	9	18
Facilitating Online teaching and learning	19	38	24	48	7	14
Research purpose	2	4	5	10	43	86
Developing Educational videos	16	32	27	54	7	14

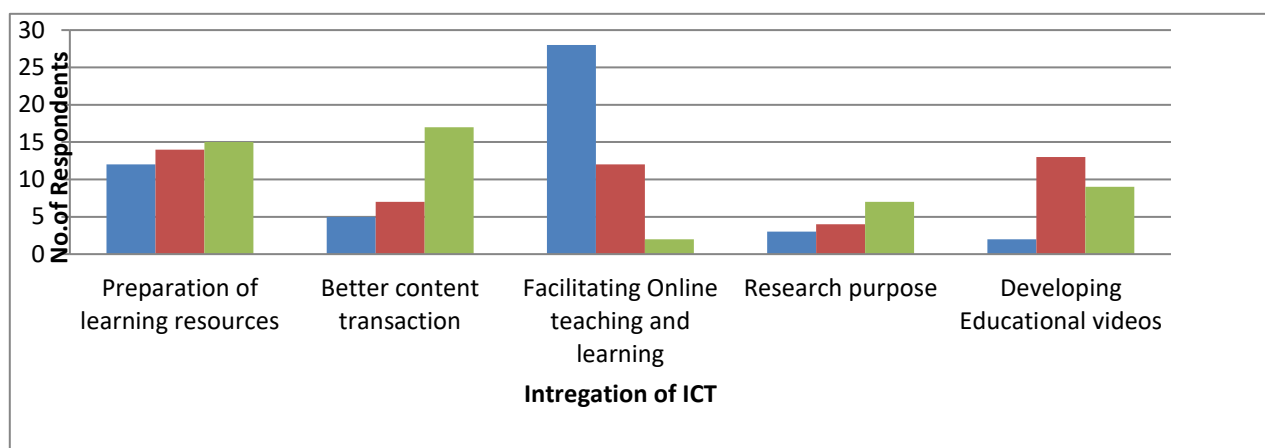


Fig 4: Frequency of ICT integration in education.

From the above table, it is observed that 24% of respondents used ICT to prepare learning resources regularly, 36% used it occasionally, and 40% never used it. Moreover, 30% of respondents used ICT regularly for better content transactions, 32% used it occasionally, and 18 % never used ICT for better content transactions. 38% of respondents used ICT to facilitate online teaching and learning, 48% used it occasionally, and 14% never used it. For research purposes, 4%, 10%, and 86% used it as regular, once in a while, and never, respectively. 32% of respondents used educational videos regularly, 54% of respondents used them once in a while, and 14% never used ICT for educational videos and movies

Objective 3: To understand the extent of ICT integration and its impact on education

Table 5: Relation of gender and technology integration among students.

HO: There is no association between gender and usage of technology.

Gender	Using technology	Not using technology	Total
Male	24	1	25
Female	19	6	25
Total	43	7	50

Table no: 6 Chi-square Test

Chi- square test.	Calculated value	Degree of freedom	Table value
	0.910	1	3.841

Table 6 revealed that the calculated value of the chi-square test (0.910) is less than the table value (3.841), and hence the null hypothesis is accepted. So, it can be concluded that the two attributes are independent, which means gender and technology usage are independent and not associated.

Table 7: Relation of gender and technology integration among Teachers

HO: There is no association between gender and usage of technology.

Gender	using technology	Not using technology	Total
Male	17	8	25
Female	15	10	25
Total	32	18	50

Table no: 8 Chi-square Test

Chi- square test.	Calculated value	Degree of freedom	Table value
	0.347	1	3.841

Table 8 revealed that the calculated value of the chi-square test (0.910) is less than the table value(3.841), so the null hypothesis is accepted. So, it can be concluded that the two attributes are independent, which means gender and technology usage are independent and not associated.

Objective 4: To understand the major challenges faced by students and teachers during online education

Table no: 8 Challenges faced by students during online Teaching and learning.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean score
Lack of Motivation	23	12	9	2	4	50	3.96
Digital Illiteracy	17	13	11	5	4	50	3.68
Technical Issues	20	9	13	4	4	50	3.8
Direct Personal Contact	19	17	9	3	2	50	3.96
Lack of Availability of Digital Tools.	17	15	13	3	2	50	3.84

The table shows the challenges students face using the weighted average method. The criteria used in this study by the investigator is for Always (5 Marks), Often (4 marks), Sometimes (3 marks), Rarely (2 Marks), Never (1 Marks)

From the above data, it is clear that lack of motivation and lack of direct personal contact are the main challenges faced by students during online teaching and learning.

Table no: 9 Challenges faced by teachers during online teaching and learning.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean score
Poor Experience in online teaching	13	17	20	0	0	50	3.86
Lack of direct face-to-face contact.	17	9	15	3	6	50	3.68
Accessibility for all students.	16	6	12	8	8	50	3.28
Digital illiteracy	12	17	13	2	6	50	3.7
Hard of hearing students.	16	12	11	6	5	50	3.56

The table shows the Challenges teachers face using the weighted average method. The criteria used in this study by the investigator are Always (5 Marks), Often (4 marks), Sometimes (3 marks), Rarely (2 Marks), and Never (1 Mark). From the above data, it is clear that poor experience in online teaching is the major challenge faced by a teacher, with a mean score of 3.86.

FINDINGS

- 62 % of school teachers have a neutral response towards incorporating ICT into education
- 52% of school students have a neutral response towards incorporating ICT into education
- 40% of respondents are integrating ICT for content transactions at the average level
- 24% of respondents use ICT for the preparation of learning resources regularly, 36% use it occasionally, and 40% of respondents never use it. 30% of respondents use ICT regularly for better content transactions, 32% occasionally, and 18 % never use ICT for better content transactions. 38% of respondents use ICT to facilitate online teaching and learning, 48% use it occasionally, and 14% never use it. For research purposes, 4%, 10%, and 86% are regular, occasionally, and never, respectively. 32% of respondents use educational videos regularly, 54% of respondents use them occasionally, and 14% never use ICT for educational videos and movies
- Gender and usage of technology among teachers are independent and not associated.
- Gender and usage of technology among students are independent and not associated.
- Lack of motivation and lack of direct personal contact are the main challenges faced by students during online teaching and learning.
- Poor experience in online teaching is the major challenge faced by teachers, with a mean score of 3.86

CONCLUSION

The main hope of the nation lies in the proper education of its youth. The development of every nation solely depends on the quality of teachers. Even with the best curriculum, good infrastructure facilities do not possess any worth more than the quality of a teacher. A highly motivated teacher is enough to bring societal changes, and they are viewed as an agent of change. He/she is the cornerstone of the education system. There are a large number of factors that influence the performance of teachers during the pandemic. Covid-19 put forward threats before teachers. The findings from the study lead to the conclusion that students are facing troubles in online teaching and learning. One main issue is that they lack motivation and direct personal contact, and teachers face problems due to online teaching and learning. So, a blended curriculum can only produce the most desirable educational outcome.

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CHAPTER 10

Blended learning Approach in STEM Education: Benefits and Challenges

Jaya Shukla

ABSTRACT

After passing through the pandemic, we all have realised that we need to revamp our traditional way of delivering education. During the pandemic, all offline teaching-learning processes for all subjects shifted to online mode. This makes us realise the importance of the online mode of teaching and learning. Still, along with this notion, people also showed a lack of interest and monotonous behaviour in the online mode because of some factors. So, there is a need for a blended learning approach where subject content can be delivered offline and online. The blended learning approach is significantly useful in delivering instructions in STEM (Science, Technology, Engineering, and Mathematics) subjects because these subjects need high-quality explanations and presentations. This could be made possible through the use of a blended learning approach. Even the new education policy of 2020 has given more emphasis on the integration of technology to improve every dimension of the education system, so that's why it has focused on online teaching platforms and tools, virtual labs, and the use of blended models of learning so that the education system of our country would become resourceful and easily feasible to all. The paper aims to describe the role of the blended learning approach in STEM Education and the different digital platforms mentioned in NEP 2020. It emphasises the challenges that play a role as hindrances in implementing the blended learning approach and different types of digital tools in the teaching-learning process in India.

Keywords- Blended Mode of Learning, STEM Education, NEP 2020, Virtual Labs, Online Learning, Offline Learning.

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INTRODUCTION

During the time of the pandemic COVID 19, all education systems worldwide have adopted online digital infrastructure. The COVID-19 pandemic has taught us the importance of digital learning and online platforms. In India, the use of digital platforms and online modes to provide education to students is not a new concept, but it has flourished during the pandemic. Many schools, colleges, and universities in India have adopted the online mode of the teaching-learning process for giving instruction to students. The recently launched National Education Policy 2020 also envisaged the use of technology in the teaching-learning process. The National Education Policy of 2020, which has come after 34 years, emphasises the significant role of technology in the education system. The recommendations and suggestions that are given in this new policy regarding online and digital learning platforms will give India's education system to the global standard and will create a new benchmark. So, we can say that this is the inflexion point of India's education system because, at this time, India is ready to assimilate digital online learning platforms with the traditional teaching-learning approach. The blended learning approach uses both media, i.e., the traditional classroom model of teaching-learning and the online mode of teaching-learning, to deliver instructions. This blended learning approach is not only useful in delivering instructions in other subjects but also significantly useful in delivering instructions in STEM (Science, Technology, Engineering, and Mathematics) subjects. Undoubtedly, these subjects need high-quality elaboration and explanation of the topic and a suitable blended learning approach. We know there is a need to reform and restructure the pedagogy of STEM subjects, and the blended learning approach plays a promising role in this. In this approach, where students gain content and technical knowledge through online videos outside of the school day to prepare them for more active, applied learning of the content in the classroom, and other technology advancements can improve students' performance in STEM education (Wibawa & Kardipah, 2018). So, we can say that hands-on learning and experiential learning are the basic requirements of STEM Education.

Blended learning is the concept that includes framing the teaching-learning process that incorporates both face-to-face teaching and teaching supported by ICT (Lalima & Dangwal, 2017). Blended learning is the teaching-learning methodology where we combine face-to-face classroom methods with the use of technology, i.e., computer-mediated activities, to deliver the content to students. It is a pedagogical approach where the mixture of face-to-face and online activities ensures the possibility of creating an effective learning environment. Blended Learning refers to a perfect combination of meaningful activities in both modes, i.e., online and face-to-face learning. But its perfect implementation requires a learner-centric environment and pre-decided learning outcomes. With the emergence of digital technology and after knowing the importance of technology at all levels, i.e., from the primary level to the higher level of the education sector, the National Education Policy 2020 recommended using a blended learning approach in the teaching-learning process. A blended learning approach is student-centric, and the recently launched NEP 2020 fully supports the student-centric pedagogical approach.

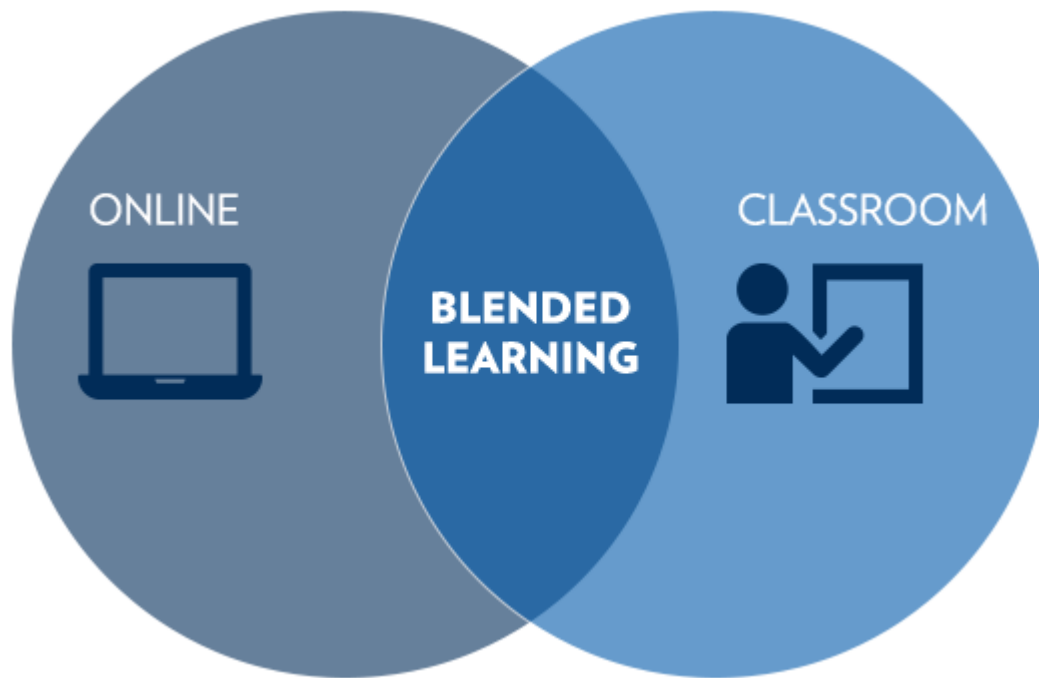


Fig:1 Blended Learning Approach

Figure Source: Google Image

Blended Learning Environment: It contains both an online and a traditional face-to-face learning mode.

Online Mode of Learning: It deals with the use of many synchronous and asynchronous online learning activities such as:

- e-Resources, i.e., OER
- MOOCs
- Online Virtual Sessions
- ICT Tools and Platform
- Webinars
- Virtual Lab
- e- Conferences
- Online short-term training program

Traditional face-to-face mode of learning: It deals with the use of several activities that take place in the classrooms.

- Classroom Instructions
- Peer group learning
- Use of Institutional Library
- Physical Laboratories
- Sports

How the Blended Learning Approach is useful: Many points show its usefulness. These points are given as follows:

- This is a fully student-centred approach.
- This approach is useful to maintain students' concentration and attention toward their subject topic.
- It promotes students' engagement in the teaching-learning process.
- This approach is useful to maintain students' concentration and attention toward their subject topic.
- It promotes students' engagement in the teaching-learning process.
- It is a flexible approach.
- It promotes self-learning.
- It allows experiential learning.
- It provides a conducive learning environment.
- It increases greater interactivity between students, as well as between students and teachers.

So, these are some points that are showing the usefulness or advantages of the Blended Learning Approach in the classroom.

STEM EDUCATION AND THE ROLE OF BLENDED LEARNING

STEM is an acronym for Science, Technology, Engineering, and Mathematics. STEM Education was originally called Science, Mathematics, Engineering, and Technology (SMET) and was an initiative created by the National Science Foundation (NSF) (White, 2014). NSF also coined the acronym STEM to replace SMET, and it has become the acronym of choice. However, a consensus has not been reached on the disciplines included within STEM. To clarify its intent, NSF published a list of approved fields it considered under the umbrella of STEM (Li et al., 2020). STEM Education includes four disciplines i.e., Science, Technology, Engineering, and Mathematics in it. No doubt, these disciplines significantly play an important role in the growth and development of the nation. According to the prediction of the National Science Foundation, 80% of the jobs created in the next decade will require STEM skills. An effective STEM education is going to be the Game Changer at a critical time when the Indian Government is promoting Initiatives such as Make in India, Skill India and Digital India (Iyer & Kalyandurgmath, 2022). To implement better STEM education, schools should provide practical learning through experiments. Thus, the curriculum of STEM Education should be designed in such a way that it provides maximum practical exposure and experience in particular subjects. This kind of curriculum should be a perfect amalgamation of theoretical knowledge and practical experiences so this will increase the lifelong learning of students. According to P21, Partnership for 21st Century Learning, which is a national non-profit organisation advocating for 21st-century skills in the classroom, these skills include several key elements, and they are divided into the 4 C's of 21st-century learning: critical thinking, collaboration, communication, and creativity (Seage & Türegün, 2020). In STEM education, students learn and develop the 4 C's, i.e., critical thinking, collaboration, communication, creativity, and other useful skills. The blended learning approach is useful to teach these skills to the students.

The recently launched National Education Policy 2020 states, “Curriculum content will be reduced in each subject to its core essentials, to make space for critical thinking and more holistic, inquiry-based, discovery-based, discussion-based, and analysis-based learning. The mandated content will focus on key concepts, ideas, applications, and problem-solving. Teaching and learning will be conducted more interactively; questions will be encouraged, and classroom sessions will regularly contain more fun, creative, collaborative, and exploratory activities for students for deeper and more experiential learning.” The NEP 2020 elaborates that digital online learning environments and traditional face-to-face learning are important for increasing the effectiveness of the teaching-learning process. So according to this, effective models of blended learning will be identified for appropriate replication for different subjects.

DIGITAL PLATFORMS MENTIONED IN NEP 2020 FOR BLENDED LEARNING IN STEM

National Education Policy 2020 has given a special focus on the technology-driven digital platform for improving the quality of the teaching-learning process. NEP has emphasised the development and use of digital infrastructure more. Undoubtedly, the Digital India campaign is the base on which NEP 2020 has promoted the use of the digital online platform in the teaching-learning process in STEM education. The Digital India campaign aims to create a digitally empowered society and promote the knowledge economy in India. That is why many organisations and institutions in the education sector, from the primary level to a higher level, have launched several ICT (Information Communication Technology) initiatives. Different digital platforms mentioned in NEP 2020 are shown in Figure 2.

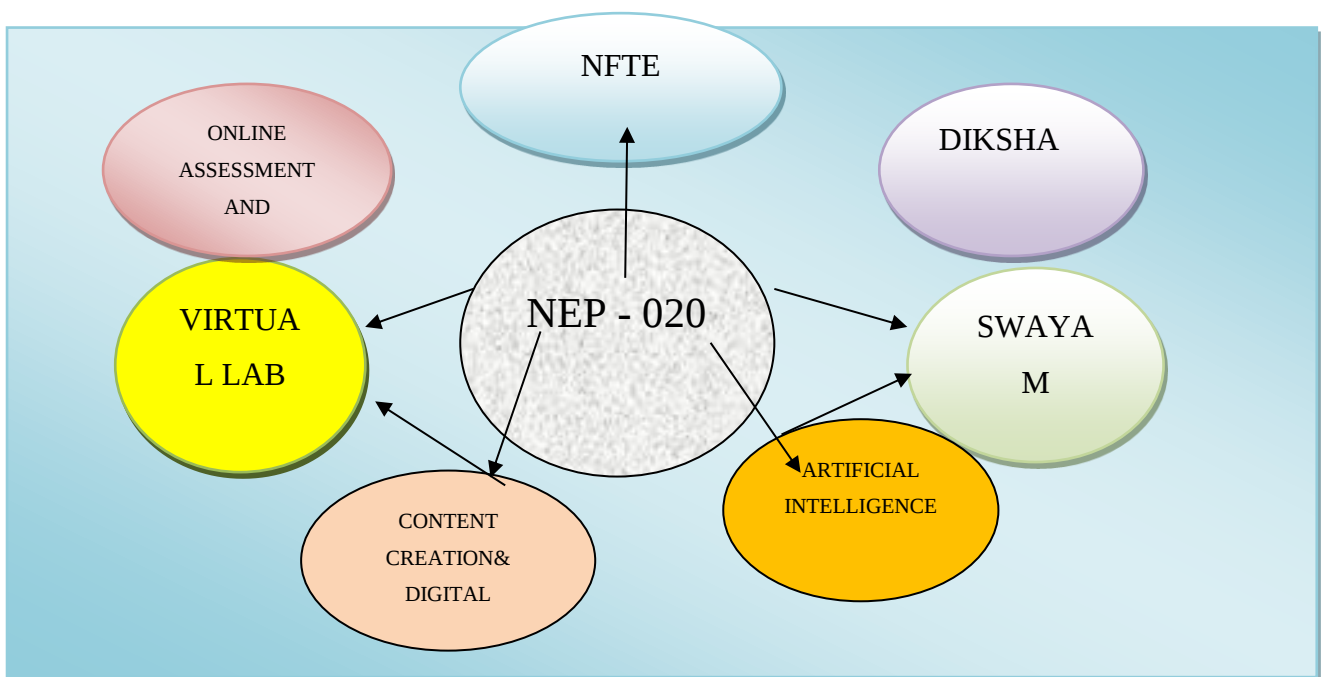


Figure 2. Different digital platforms of NEP 2020 that promote the Blended Learning Approach.

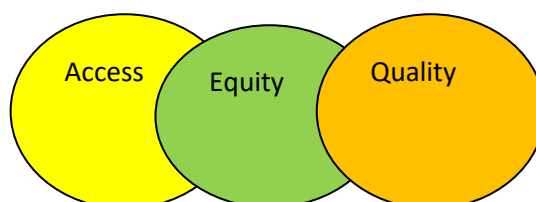
Apart from these, other ICT initiatives are there to promote a Blended learning environment at all levels of the education sector in STEM education. These are given as follows: -

OER: NMEICT, NPTEL, ePG, ePathshala NDL: Open educational resources (OER) are any educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia

applications, podcasts, and any other materials that have been designed for use in teaching and learning) that are openly available for use by teachers and students, without an accompanying need to pay royalties or license fees. An OER is an educational resource that incorporates a license that facilitates reuse and potential adaptation without requiring permission to be first requested from the copyright holder (UNESCO,2018). These OER learning materials are legally approved and free to copy, share, and use. We can say that OER is the quality guide for the blended learning approach, and most importantly, it is cost-effective. It promotes knowledge sharing globally. Through OER and a blended learning approach, we can provide high-quality, accessible and easily feasible education. OER helps in innovatively teaching STEM subjects. STEM subjects need a creative and adaptable approach, and OER fulfils it by providing an enriched learning experience full of content.

MOOCs: MOOC (Massive Open Online Course MOOC). Massive Online Open Courses (MOOCs) are among the newest additions to distance learning/e-learning (Universities UK, 2013). Dave Cormier first coined the term MOOC to define connected learning on networks (Hollands & Tirthali, 2014). MOOCs are important in teaching STEM subjects because they are an online education system that aims to provide real-time educational assistance through various features like videos, study materials, and quizzes. All these things can enhance the interest of students in STEM subjects. MOOCs ensure large-scale interactive participation and provide various courses. It tries to remove time constraints and location constraints by facilitating real-time education in classrooms. It offers interactive discussion sessions that help to build a community for the students and professors.

SWAYAM: SWAYAM (Study Webs of Active Learning for Young Aspired Minds) is a programme designed to achieve the three cardinal principles of Education Policy: access, equity, and quality.



SWAYAM is a programme initiated by the Government of India. It aims to provide the best teaching and learning resources to all, including the most disadvantaged sections. SWAYAM provides STEM subjects-related educational material to the learners so that they can easily access it.

LMS PLATFORMS

LMS are web applications that assist educators in creating a course website and providing access control. They run on a server and offer a wide variety of tools that can make the course more effective, ensure an easy way to upload and share materials, hold online discussions and chats, give quizzes and surveys, gather and review assignments, and record grades. With their numerous qualities, LMS platforms can provide a better learning environment in teaching STEM subjects.

Virtual Lab: Labs are an integral part of teaching STEM subjects. These are the basic requisites for providing practical knowledge to students. So, the concept of a Virtual lab came into existence. Virtual labs cater to students at the UG & PG levels as well as to research scholars and provide remote access to Labs in all major disciplines of Science and Engineering. These labs reduce the effective cost by 24x7uses and provide better reliability, repeatability and access. It assists students in conducting experiments and learning basic and advanced concepts through remote experimentation. It ensures more safety and security

and is considered a part of the Learning Management System where the students can avail themselves of various tools for learning.

Robotics: it is considered a branch of engineering and science. It involves electronics engineering, mechanical engineering, computer science and so on. This branch is associated with the design, construction, and use of control robots, sensory feedback and information processing. These robots provided a base for delivering lessons in Science, Technology, Engineering, and Mathematics concepts that are crucial in the educational curriculum. The utilisation of robotics in learning is ideal for interaction in classrooms. It can improve and encourage collaboration among students. It signifies that Playing (and learning) with robots also recommends additional benefits for students with disabilities.

FOSSEE: The complete form of FOSSEE is “Free/Libre and Open-Source Software for Education”. It ensures the promotion of educational tools in academia and research. The FOSSEE is part-funded by the National Mission on Education through Information and Communication Technology (NMEICT), the Ministry of Education, and the Government of India. This software helps teach science, technology, engineering, and mathematics topics in the classroom.

MERITS OF BLENDED LEARNING APPROACH

There are many merits of the Blended Learning Approach, which are given below:

- Students’ comprehension and understanding levels usually increase when teachers use a blended learning approach in the teaching-learning process.
- This approach increases student engagement in the classroom.
- It provides a healthy learning environment for the students.
- This approach helps achieve learning outcomes.
- It promotes the enrolment of students.
- This approach provides a suitable environment for self-paced learning.
- This approach saves time and money.

CHALLENGES OF BLENDED LEARNING APPROACH

The challenges of the Blended Learning Approach are given below:

- Teachers and students are not habitual of this approach, and there is a lack of proper training for teachers.
- The need for more infrastructure of technology.
- Technological things are too costly. So, this approach becomes expensive.
- Technological issues
- Digital divide

CONCLUSION

To achieve the effectiveness of the blended learning approach in STEM education, teachers should be friendly to technology and aware of the psychological principles of the learning process. We know STEM education is essential for the nation's growth and development. So, it becomes the duty of teachers to enhance students' interest and curiosity in STEM subjects, and this can be done through a blended learning approach. That's why the recently launched National Education Policy 2020 emphasises the Blended learning approach because of its flexible and learner-centric nature.

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CHAPTER 11

Blended Learning: Student's Perspectives in the New Normal

K. Srinivas & Kajal Yadav

ABSTRACT

Blended learning is an innovative strategy that integrates face-to-face teaching with web-based learning. This mode of usage is increasing slowly and gradually. As a result, it is necessary to investigate the theoretical foundations of blended learning research and how blended learning is adopted and implemented in the Indian setting. Western studies done in the past proved that the teaching-learning environment improved through blended learning. In India, a lack of awareness, infrastructure, proper access, digital gadgets, etc., affects the implementation of blended learning. However, in the new normal, knowing and appreciating the value of blended learning in India is critical to improving educational quality. This qualitative study aims to understand student perceptions of blended learning as an instructional methodology for addressing the needs of diverse learners. The researcher explored the perspectives of higher education students. The researcher examined students' experiences as they learned to adapt pedagogical practices to address the learning needs of the 21st century through blended learning. The researcher sought to understand better how students perceived utilising a blended learning methodology impacted pedagogical beliefs, practices, and learning. In this exploratory study, the researcher used the qualitative research methodology. Based on the research questions guiding this study, data was collected from questionnaires and semi-structured interviews. The researcher analysed the data using thematic analysis. The study found that students worked more autonomously and focused while becoming more responsible for their own learning and were more enthusiastic about the blended mode of learning.

Keywords: Blended Learning, Indian Higher Education, Students Perceptions, Teaching- Learning, ICT Integration, Implementation and Adoption

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INTRODUCTION

The swift and rapid innovation of technologies has changed the field of education during the past decades. This has changed how people teach and learn, especially in distance education. The arrival of the World Wide Web (WWW) has increased the demand for distance education, and concepts like online learning or e-learning have emerged. Numerous research has been conducted to determine the online learning system benefits and drawbacks, and it has been widely employed in higher education (Wang, 2010). Learning is an essentially social activity that can employ various effective learning strategies (Strobl, 2007). Using new technologies in teaching and learning, such as e-learning, can help improve traditional teaching methods while also assisting students in building technical skills. Several e-learning technologies are currently accessible (Garrison, 2011). Many of these address students learning mobility, enabling students to learn anywhere, anytime, and with various devices (Herrington, 2012). Learning management systems provide a virtual platform for students to access educational resources and connect with classmates and other students, as well as web-based flexible learning environments and media to foster collaborative learning among students. When it comes to improving technological abilities, a variety of technologies can be employed to help students learn. These can range from videos for demonstration, recording, and reflective analysis purposes to simulation-based e-learning (SIMBEL) systems.

A circular (2021) by the University Grants Commission (UGC) argues that this blended mode of teaching and learning paves the way for increased student engagement in learning, enhanced student-teacher interactions, improved student learning outcomes, and more flexible learning and teaching environments, among other things. The document proposes that all higher education institutions (HEI) should teach 40% of any course online and the rest 60% offline. The policy document on education, NEP-2020, highlights the major objective of blended learning is “to make the process of learning not only impactful but also engaging, encouraging, interesting and challenging for learners”. It has also emphasised the importance of the wide use of technology in teaching to improve student learning and achieve the aim of 100 per cent literacy. The policy calls for the development of digital infrastructure as well as to empower teachers to create high-quality e-learning resources. Importantly, blended learning will assist in achieving the NEP-2020 objectives of internationalising Indigenous knowledge through digitised course content while maintaining traditional learning and teacher roles. Additionally, to improve teaching-learning skills, there is an emphasis on increasing the use of ICT.

According to the UNESCO World Education Report (1998), "Teachers and Teaching in a Changing World", as new technologies emerge, the teaching profession is shifting from a focus on teacher-centred lecture-based instruction to a focus on student-centred, interactive learning environments (UNESCO, 1998). The use of ICT is widely acknowledged as a key component of educational reform in the design and implementation of educational programmes. At the same time, no modern technology can substitute the place of a teacher. Electronic devices, in conjunction with the teacher, can help to enhance learning experiences. Blended learning is "New Models for the New Normal". According to UNESCO and the World Health Organization (2020) report, the COVID-19 pandemic has accelerated the use of distance learning systems around the world. On the other hand, traditional teaching is now referred to as a passive teaching approach since it discourages students from practical usage. Only focusing on face-to-face interaction leaves no room for active and collaborative learning, nor does it allow educators to use higher-order thinking skills. Many university students believe that what is taught in class is boring and unrelated to the requirements for practising critical thinking and analytical reasoning. They don't frequently see the classroom

environment as stimulating or encouraging. Students' experiences change as they learn and communicate in and out of class while adapting and implementing technology. As a result, teachers must reorganise the learning process and change their teaching resources. According to Laster (2005), having a diverse group of students with varying learning preferences, the use of several learning modalities to convey the appropriate content in the appropriate format.

REVIEW OF LITERATURE

In higher education, BL is a popular strategy for fostering a more collaborative and inviting learning atmosphere and reducing students' concerns about making errors (Wong et al., 2014). It was first used in universities in the late 1990s (Edward et al. 2018), and by the 2000s, many more university courses were being provided in a blended format (Graham et al. 2013). BL uses a hybrid of online-mediated and face-to-face instruction to assist lecturers in achieving pedagogical goals such as teaching students algorithmic and constructive logical skills, improving teaching quality, and achieving social order (Kaur 2013). Some academics [such as Bowyer and Chambers (2017)] claim that incorporating technology into the classroom encourages students to learn via discovery. In addition, it increases interactivity and drive, resulting in improved feedback.

As shown in Figure 1, BL implementation typically includes face-to-face and other online learning delivery techniques. Students typically attend traditional lecturer-led F2F sessions with computer-mediated technologies to create a BL environment for gathering experiences and promoting learners' learning achievement and engagement (Moskal et al., 2013; Baragash and Al-Samarraie, 2018). In fact, according to Graham et al. (2013), BL will become the next course delivery model that uses many media resources to improve student involvement. BL uses a variety of asynchronous and synchronous teaching tactics, such as forums, social networking, live chats, webinars, blogs, and more, to create engaging and relevant learning experiences for students (Graham 2013; Moskal et al. 2013; Dakduk et al. 2018).

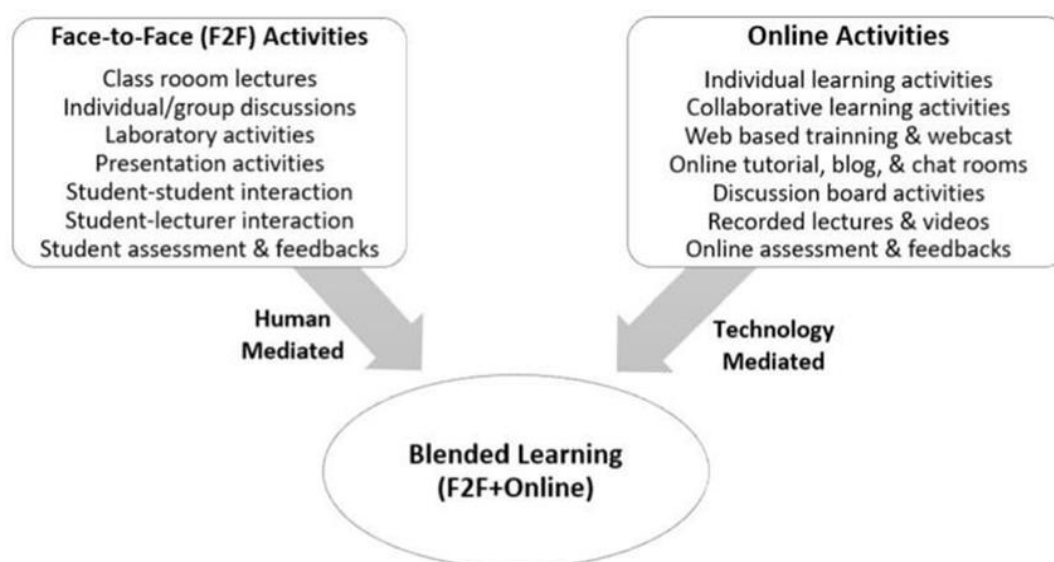


Fig1 Key aspects of BL derived from (Graham 2013; Moskal et al. 2013)

“Blended learning may be a new sort of education prepared for a specific group by combining the positive aspects of various learning approaches” (Kazu & Demirkol, 2014, p. 79). Taking different aspects of the curriculum ideologies and mixing them into one package puts into practice a number of the foremost

valuable parts of each of the ideologies. Each of the individual ideologies has its roots in educating the kid, albeit with different methods and with different goals in mind, leaving an unlimited array of approaches available to show the kid. Blended learning is one such approach. “The lack of one accepted definition for the term blended learning causes teachers to know blended learning in several ways, and so design their courses in line with their own understanding of the concept” (Alammery et al., 2014, p. 440). Blended learning has the potential to become a popular educational approach.

Liu et al. (2016) found that blended learning had a beneficial effect on learning when compared to no intervention in a comprehensive review and meta-analysis of 56 papers. Furthermore, blended learning training was found to be as successful as or more practical than traditional instruction for knowledge acquisition. Blended learning has a good influence on the course level. In a meta-analysis, Liu compared student performance in a mixed-learning course to student performance in a traditional classroom. According to the findings, students in STEM fields had better learning outcomes than those in a regular classroom setting. Although a blended learning environment leads to favourable student results, little study has been done on the dynamic relationships that lead to those positive outcomes.

Psycharis (2013) has endorsed the improvement in student performance and how it relates to participants' conceptual grasp, as well as the fact that students had more positive views about blended learning.

Tylor, M. L. (2012) has contributed to the research by identifying variables unique to the blended learning process and leading to an organised and positive transition experience for the scholars from critical stakeholders of students and deliverers.

According to Driscoll (2002) and Abdelaziz, H. A. (2012), such a learning environment should engage learners in activities to authenticate within the discipline in which they're learning, provide collaboration and the opportunity to interact with multiple perspectives on what's being learned, support learners in setting their goals and regulating their own learning, and encourage learners to reflect on what and how they're learning.

According to Horn and Fisher (2017), learning models usually include a variety of learning pathways and modalities rather than a single path or development toward meaningful technology integration in the classroom. Teachers who participated in Horn and Fisher's (2017) study recognised that blended learning uses technologies to not only distinguish more precisely but also to break down rigid silos of bell schedules, courses, and age-based cohorts. As a result, richer practices, such as multi-week projects, are developed, resulting in deeper learning.

According to the Chinese government, one of the most crucial strategies for developing a sustainable society is to promote educational advancement, notably through cutting-edge technology (Yao, 2018). Because technology promotes pupil growth and awareness, studies have demonstrated the effectiveness of new technology or educational approaches in promoting long-term development (Yao, 2018). Introducing and using technology can benefit students' learning, training schemes, administration, and management development (Yao, 2018). To expand coaching, educational leadership, and self-learning, education in the United States must embrace technological components by collaborating with other countries (Alaniz & Wilson, 2015; Singh & Liang, 2010).

While blended learning deviates from standard classroom teaching approaches, it has a variety of benefits, including less seating time, improved flexibility in learning outcomes, and increased learner control over their learning environment (Horn & Fisher, 2017). Because of the belief that this strategy improves student engagement, more institutions are implementing blended learning environments. This pedagogical transformation could help students have a better learning experience and achieve better learning results

(Garrison & Kanuka, 2004; Graham & Robison, 2006; Manwaring, Larsen, Graham, Henrie, & Halverson, 2017). The Blended Learning instructional paradigm employs a stage-by-stage approach to instruction production, with stages such as analysis, design, development, implementation, execution, and evaluation (Boitshwarelo, 2009). This method underpins a focus on content structure, cognitive processes, and collaborative activities. The various kinds of information and performance goals determine the content structure. The focus of cognitive processes is on aspects that will improve cognitive activity, such as using visual formats to improve perception. Collaborative activities are defined by co-participation in activities and the trainer's facilitative role.

NEED AND SIGNIFICANCE

Blended learning is important because it breaks down the traditional walls of teaching, one that only works for some students. It is a live interaction between teacher and student that uses technology and face-to-face teaching. This type of learning allows flexibility for students and teachers. It offers flexible time frames that can be personalised to each student, allowing them to learn at their own pace. It will enable students to personalise their learning experiences by using additional tools beyond the classroom. Through blended tools, learners can identify areas that need more attention and personalise their learning schedule to suit their study plan. Teachers can also use blended learning methods to enhance their teaching lessons. They can interact with students more efficiently by monitoring their growth and giving instant feedback. This is a modernised way of teaching that can positively impact a student's training experience. This type of learning prepares students to work in digital-based jobs that require technology proficiencies. This paper explores the need for a blended learning approach in addressing rapid technology change in higher education to gauge learning and teaching efficiency and evaluate the content and use of new technologies in education. The key purpose of this research is to understand the student's views on blended learning, their perceptions of it, and the primary reasons for it in higher education. Next, the paper also attempts to know the most and least effective aspects of blended learning from students' perspectives while implementing and adopting it.

OBJECTIVES OF THE STUDY

The core objective of the study is to understand the students' perceptions of blended learning in terms of its suitability and feasibility in higher education. The study will explore students' perspectives on blended learning, their understanding of it, the primary reasons for learning using the blended mode of learning, and the reasons behind adopting and implementing it. The study also explores its difficulties and weaknesses from the perspectives of students.

RESEARCH QUESTIONS

The following research questions have been identified to fulfil the objectives and current scenario of blended learning in higher education.

1. What are students' views on blended learning adoption and implementation in higher education?
2. How do applications of blended learning influence learning?
3. What are the main issues and problems perceived by using blended mode?

METHODOLOGY

The methodology design of every research focuses on the research and directs the researcher. This helps to attain the objectives set out. Qualitative research with an exploratory research design is planned to understand participants' opinions and experiences and gather in-depth insights into the problems. Under the methodology section, the following would be looked at: the study tools, the locale, the population/participant of the study, and the sampling strategy.

Research Study Tools

This research study tool includes a survey questionnaire via Google form and semi-structured interviews via telephone conversations and G-meets. The questionnaires included both open-ended and closed-ended questions. The interviews contained a set of questions not strictly in a fixed pattern but structured such that the subject matter of the research was not lost.

Locale of the Study

The principal objective is to determine the perception and grounded reality of blended learning in higher educational institutions. Delhi-based universities, colleges, and higher educational institutions were chosen as the locale for this study.

Participants' Selection and Sampling

Higher education institutions were taken. Purposive and snowball sampling from non-probability sampling have been used for the research because the sample is drawn from a smaller population.

Data Analyses

The data collected is subject to qualitative analysis. Using thematic analysis, data is analysed.

RESULTS AND DISCUSSION

Based on the responses received from participants in regard to blended learning perceptions, challenges, adoption, and implementations in the Indian scenario, the findings are discussed below:

Students' Profile

This study also aimed to examine students' perceptions of blended learning environments. The data for this study is based on students' views and opinions on online and offline learning modes. The students were purposefully chosen from graduation and master's levels. The students were given an online survey and asked to share their experiences and perspectives on synchronous and asynchronous learning. Some students were known to the researcher, while others were through snowball sampling. Most were approached through their contact number, and online survey links were shared. Students were asked about their willingness to participate and whether they could leave the study anytime. After receiving filled survey links, students who were convenient for the interview were contacted. Similar to teachers' identity, students' identity is also confidential.

Table 7: Students' Profile

Qualification	Respondents	%
Graduate	13	65
Post-graduate	7	35
Total	20	100

Table 8: Gender Distribution

Gender	Respondents	%
Females	11	55
Males	9	45
Total	20	100

As shown in Tables 7 and 8, students' demographic profiles are shared. The students who participated in the research data collection were from different colleges and universities. Amongst the total number of students, 13 (65%) were from the second or final year of graduation, and the remaining 7 (35%) were from the previous year of master's. All students were in the age group of 19-21. As per the gender distribution, there were more females than males.

Table 9: Students' understanding

Bullets	Key terms/ themes	Frequency
Understanding of the term BL	Combination of both online and offline modes	18
	Used Hybrid learning	5
	No idea	2
NEP and UGC rolled out BL	Yes	2
	No	15
	Not much familiar	3

The student's basic understanding of blended learning is shown in Table 9. Since the students had never taken a blended course, they were less experienced in how it would be. However, they were part of both online and offline classes. From that experience, students shared their understanding. Therefore, the survey was designed to determine the student's perceptions of understanding content and their learning and the combination of online and offline delivery methods (blended learning). Some students reflected on their understanding of blended mode and used the term blended learning as a hybrid model of learning; it is a practice of using digital tools in education or e-learning, and opportunities for online interaction with traditional classroom methods are given. With respect to awareness of what UGC and NEP 2020 say about incorporating technology in teaching and learning, most of the students are not aware. From an overall sample of 20, only 10% (2 students) know that

the government and ministry emphasise a blended mode of teaching-learning. The remaining 75% of students are not aware. This shows that blended learning awareness is not among students.

Table 10: Students' views on the blended learning process

Bullets	Terms/themes	Frequency
Primary reason for learning through online mode	Flexibility	15
	Saves time, energy, money	10
	Job responsibilities/ dual tasks	6
	Convenience	8
Adoption & different from traditional classroom	More effective & time-saving	16
	More incorporation incourse	15
Preference for learning	Online Offline both Only	18
	Offline	2
	Only Online	0

Interpretation from the table emerged in response to students' perception of blended learning. These themes mentioned above are the students' understanding of hybrid models, their primary reasons for including technology or e-learning in their classroom, How they compare traditional learning with online learning, and why including both modes is essential. Researchers can say that the perception of students toward blended learning is positive. Since the mode is new, students compare it with the traditional mode and share a positive attitude towards it. Students describe solo methods as monotonous and boring; they were unhappy with only online learning or e-learning and offline or traditional chalk-and-talk methods. Students were keen on incorporating technology in classroom learning and more practical experiences.

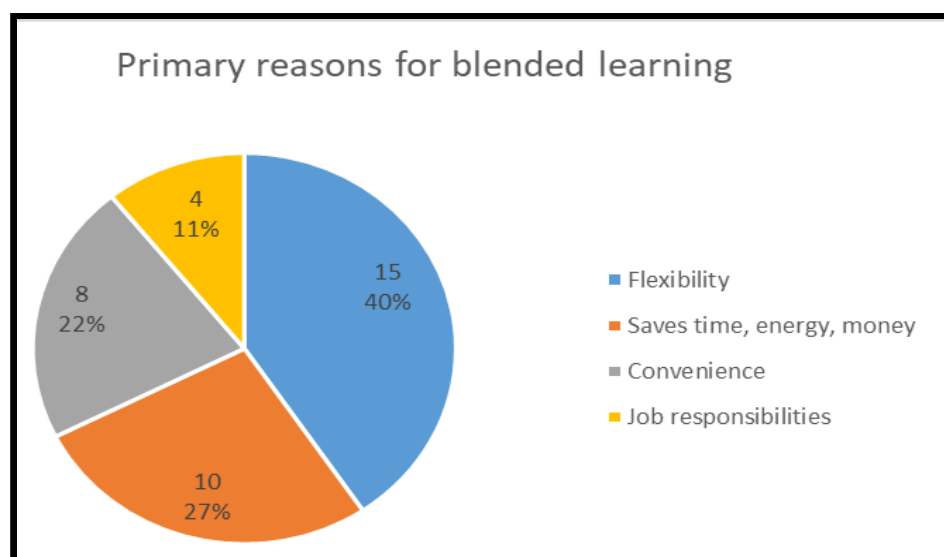


Figure1: Primary reasons for learning through online and face to face mode

The above graph shows students' views as primary reasons for choosing both face-to-face and online modes of learning. Blended learning models offer students the best of both worlds because instructors and students have greater flexibility and accessibility without sacrificing face-to-face contact. Students highlight that blended mode is convenient as going to campus is rare and saves time, energy, and money. Sometimes, students cannot attend college due to jobs, other household roles, and responsibilities. More than half of students prefer blended learning to either online or offline mode. As a learner, they prefer both modes. The content taught through blended mode helps them remember the information for a long time since multiple ways of learning and acquiring content are used. This helps them in independent learning since there are diverse learners; some are fast learners, while some need time to accumulate things. Table 10 also depicts that students agreed to blended learning. Three-fourths of the students consider the blended mode effective, and it should be implemented in all higher education courses.

Table 11: Strengths and Weaknesses of Blended Learning

Bullets	Key terms/ Themes	Frequency
Strength and positive aspects	Interesting and Effective	16
	Flexibility and convenient	17
	Access anywhere, anytime, saves time	13
	Self-pace & independent learning Better concept understanding	08
		05
Weakness and negative aspects	Access & technical issues & network connectivity	18
	Understanding instructions and concepts	08
	Inability to manage or assess progress	03

According to students, there are many positive aspects of the blended mode. When respondents were asked what the most effective aspect was, they mentioned that one can take the class from the comfort of their home; it is virtual, with their device. We can enter the platform, start the virtual class, and do your assignments. According to students, blended classrooms are classes you take at different places; you are only sometimes in a physical classroom. The classes are online, and you can access them any moment you want, but yes, it is more convenient for time management and organisation. Students get more time to organise their ideas and retake or watch them as often as possible. It helps us be outside our comfort zone. Students are more enthusiastic and interesting because they are not only using a textbook and taking notes; they are more accessible. Nowadays, everybody has access to an electronic device, and they can access it anytime, anywhere. It has excellent flexibility in terms of schedule because you can do the readings whenever you have time; you do not have to be connected at an exact time to be in class. Once you have accessed the resources, you can join the face-to-face interaction and discussion with peers and teachers and raise queries and parts that are not understood. However, when describing both modes of the classroom, the students did not mention the face-to-face practices they discussed or implemented. They described the face-to-face traditional practice as monotonous and sometimes creates boredom, suggesting negative

attitudes towards the solo practices. Simultaneously, they disagree on only online learning. It is likely that the students just focused on describing the online sessions because they were the new component of the class, and they were getting familiar with their dynamics. Researchers can interpret that most students suggest a blended mode of teaching and learning.

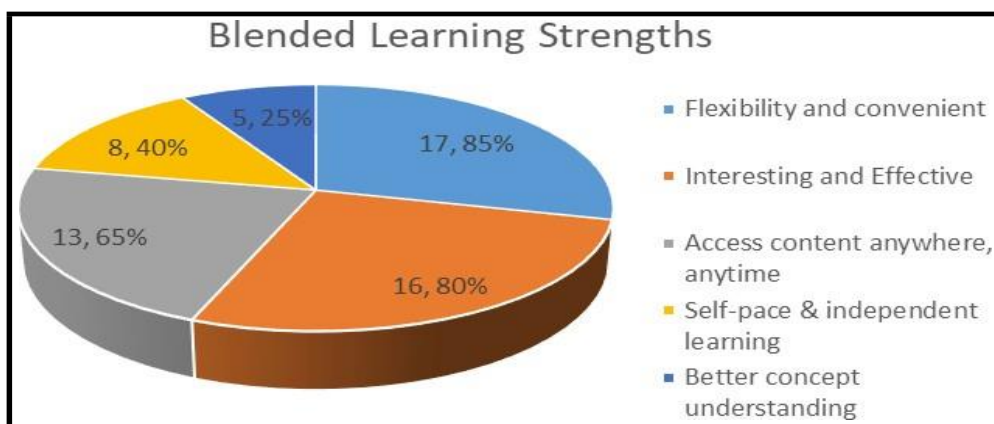


Figure2: Strengths of Blended learning as per students

The above graph shows that 85% of the students from the overall sample consider the flexibility of learning and convenience as significant strengths of blended learning. They highlight that this mode has great flexibility in learning and scheduling as they can read, learn whenever they have time, and connect with their peers. They can easily access the content multiple times and understand the concept better. This makes their learning effective and interesting, builds their concepts and ideas stronger, and makes them able to think and reflect. Students can access reading materials anytime and anywhere; from data, around 80% of the students believe it. Using multiple resources, they are earning not only textbooks and notes but also through presentations, videos, e-learning materials, and resources shared by educators prior to their class. Incorporating blended learning encourages them to learn and increases their interest in the subject matter. They better understand the concepts when they can read and go through them multiple times before discussing them in the classroom. 40% of students believe that blended learning makes them independent learners. The sole purpose of blended learning is to make learning interesting, engaging, impactful, and challenging. Blended Learning, in particular, helps students increase their interactions, communication skills, self-confidence, and self-awareness, as well as encourages discussion and collaboration not only with their lecturers but also with their peer classmates and course materials, leading to an overall positive experience.

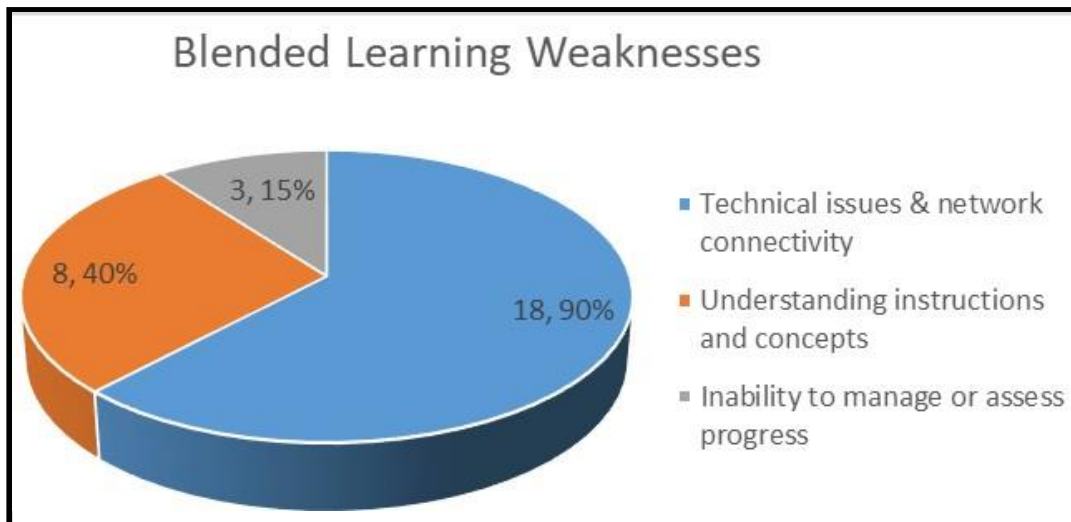


Figure 3: Weaknesses of Blended Learning as per students

As per the graph and student details, they faced significant technical issues and network connectivity while attending online classes. Some of the students are at places where network connectivity is poor. There is a need to fill the gap in access to digital technology. Attending only online classes makes it challenging, and during the pandemic, classes were online. Additionally, understanding all the concepts online is difficult; theoretical concepts can be built, but for practical experiences, classroom learning and regular discussion are essential. Students feel that time management and organisation are crucial. A few students mentioned that monitoring self-progress is difficult in online mode. At the same time, during interview interactions, many said that while there is an opportunity for classroom interaction, such issues are the least.

CONCLUSION

The conclusions based on the findings suggest that students agreed that blended learning encourages the learning process. Incorporating technology into the curriculum increases student-centred learning and creates a personalised classroom. Instruction is more effective for students, and learning is meaningful when teachers are provided with different ways to teach learning standards. Based on the qualitative data collected, due to technical issues and inadequate resources in technology-based environments, sometimes there needs to be more certain benefits to enhance active learning. Results obtained from the study involving the Blended Learning (BL) approach have shown that teachers feel that measures are to be taken before adopting blended mode since, till now, we are either in offline or online mode, and the blended model needs to be implemented more. Results demonstrate that students had positive perceptions of learning and are optimistic about incorporating BL in Higher Education. Students feel that the incorporation of technology is good for teaching and learning. Teaching and learning are two areas in education that the rapid rate of innovation in technology has influenced. It describes a blended learning approach in the teaching application of integration. Therefore, with the help of technology, Blended Learning can be used as an alternative approach to teaching and learning to motivate students. Blended learning has come into focus, as it aims to provide these benefits to students, which include several key elements: critical thinking, collaboration, communication, and creativity. The government is putting in its efforts, but they have had little success in seeking the desired outcome. As we move forward into the future, technology

innovation will take over careers, and everyone must create a successful technology-integrated teaching-learning system for students to gain skills.

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CHAPTER 12

ASSESSMENT AND EVALUATION DURING COVID -19

Manmeet Kour

ABSTRACT

Old-fashioned paper and pencil methods and new technologies are evolving daily to assist teachers. Online assessment and evaluation are pivotal in monitoring a student's learning progress. It helps teachers identify children's grey areas and improve their academic performance. Furthermore, it gives parents an accurate picture of their wards' progress, enabling them to focus more on improving their child's performance. Since the outbreak of COVID-19, online assessment and evaluation have become essential in carrying out online exams. Today, most educational institutes have opted for smart learning tools and school management software to increase the productivity of both teachers and students, which includes exam modules. Different types of assessment can be used, i.e., Formative assessment, Summative assessment, Norm-referenced assessment, and Criterion-referenced assessment. Various types of applications can be used to assess and evaluate student performance, like Quizizz, Google Forms, Kahoot, etc. The digital tools that can be efficiently utilised for e-assessment are hotspot questions, digital 'open book' exams, and computer-assisted e-assessment. The hurdles faced during online classes were figuring out online class etiquette, parents hovering during online classes being an issue, maintaining discipline online being tough, etc. Teachers mostly face challenges like lack of IT support, continuous technological changes, unequal access for all students, unoptimised software for mobile devices and security issues. This paper attempts to learn about the various assessment techniques and challenges teachers and students face.

Keywords: Assessment, Evaluation, Online Education, Covid-19, Online Assessment

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INTRODUCTION

Talking about the relationship between assessment and evaluation, ‘To assessment, evaluation adds the ingredient of the value judgment of the social utility, desirability, or effectiveness of a process, product or program, and it sometimes includes a recommendation for some course of action.’ Best & Khan (2006, p. 119) To make things clear, we can say that we assess learning, and we evaluate results in terms of some set of criteria. These two terms are indeed connected, but it is helpful to think of them as separate but connected ideas and processes.

Assessment

The word “assessment” has taken on a variety of meanings within the education system. We must understand that assessment is a process by which information is obtained relative to some known objective or goal. Assessment is a broad term that includes testing. A test is a particular form of assessment. Tests are assessments made under contrived circumstances, mainly so that they may be administered. In other words, all tests are assessments, but not all are tests. A test or assessment yields information relative to an objective or goal. In that sense, we test or assess whether a purpose or goal has been obtained.

The term ‘assessment’ generally refers to:

- The final learning outcomes of students are the result of their learning activities in a course.
- The teacher's process of grading students’ course assignments or activities is designed to collect information on the success of a course, a program of study, or a university curriculum.
- Standardised measures imposed on institutions as part of increased pressure for external accountability.

Assessment describes the status of a phenomenon at a particular time. It describes a prevailing situation without value judgment; it attempts no explanation of underlying reasons and makes no recommendations for action. It may deal with prevailing opinions, knowledge, practices, or conditions. As it is ordinarily used in education, assessment describes students' progress toward educational goals at a particular time (Best & Khan, 2006, p. 118).

In sum, we can say that:

- Assessment is an essential way for students to receive feedback on their state of learning, and it thus needs to be part of any practical course.
- Assessment helps us determine whether the course itself is “working” for student learning, what is going well, and what is not.

There are different types of assessment:

- a) Formative Assessment: Feedback given to students to help their learning, such as questions at the end of lectures, is termed formative assessment. Formative assessment can be self-assessment, peer assessment, or teacher assessment.
- b) Summative Assessment: The results used to grade students at the end of a course are examples of summative assessment. We must keep in mind that, at this point, feedback is too late; a grade is recorded.

- c) Norm-Referenced Assessment: An individual's performance in relation to the norms established by a peer group is termed a norm-referenced assessment.
- d) Criterion-Referenced Assessment: A criterion-referenced assessment occurs when a student is assessed on his or her ability to meet a required level of skill or competence.

Evaluation

Evaluation is a process used to determine what has happened during a given activity or in an institution. An evaluation aims to see if a given programme is working, if an institution is booming according to its goals, or if the original intent is being successfully carried out (Best & Khan, 2006, p. 119). Inherent in the idea of evaluation is "value." When we evaluate, we engage in some process designed to provide information that will help us make a judgment about a given situation. Teachers, in particular, are constantly evaluating students, and such evaluations are usually done in the context of comparisons between what was intended (learning, progress, behaviour) and what was obtained. During an evaluation, we must keep in mind that

- The process will yield information regarding the worthiness, appropriateness, goodness, validity, legality, etc., of something for which a reliable measurement or assessment has been made.
- The process will require information about the situation that considers ideas such as objectives, goals, standards, procedures, and so on.

Online Assessment

Online assessment is conducting a test online to gauge the participants' learning and mastery over a particular subject. An online assessment may be administered with a specific intent, such as ascertaining a candidate's skills, knowledge, or learning abilities. The term online learning (or, as it is sometimes called, distance learning) includes several computer-assisted instruction methods. In simple terms, online teaching and learning is faculty-delivered instruction via the Internet. Online instruction includes real-time (synchronous) and anytime, anywhere (asynchronous) interactions. Two parallel processes take place in an online learning environment:

- Students become more active, reflective learners.
- Students and teachers engage in learning through the use of technology and become more familiar with technology by using it.

In assessing online learning, creating a "mix" of assignments that cover the multiple dimensions of learning that online courses can employ is essential. Traditional tests become a minor part of the grade as we move towards encouraging student interaction on group projects and other activities.

Different Forms of Online Assessment

- End semester paper
- Weekly tests
- Group projects
- Case study analysis

- Reading responses
- Chatroom responses
- Threaded discussion participation
- Virtual presentations/ Online Seminar

With the growth of online education, there is naturally growing interest in online assessment tools. A quick search on the Internet will reveal a great deal of information. Moreover, the most prominent learning management systems (LMS), such as Blackboard and Moodle, come with built-in assessment tools that allow the development of questions and surveys with objective type and open-ended responses. These are useful in online education as they enable frequent testing and provision of feedback. However, they remain somewhat unsuited for assessing more complex learning activities such as group work and project work.

OBJECTIVES OF ONLINE ASSESSMENT AND EVALUATION

- To know the importance of online assessment and evaluation in schools.
- To use various applications in online assessment and evaluation.
- To know the challenges faced by teachers and students.
- To know about challenges and management in online assessment and evaluation.

IMPORTANCE OF ONLINE ASSESSMENT AND EVALUATION IN SCHOOLS

As we all know, Assessment is pivotal in monitoring a student's learning progress. It helps teachers identify children's grey areas and improve their academic performance.

Furthermore, it gives parents an accurate picture of their wards' progress, enabling them to focus more on improving their child's performance.

It also serves as a feedback tool for teachers enabling them to identify new teaching styles that resonate best with the students. It aids teachers in setting goals for every semester and tracking the performance of students throughout the academic year.

Since the outbreak of COVID-19 online assessment and evaluation has become an essential module in carrying out online exams.

Today most of the educational institutes have opted for smart learning tools and school management software to increase the productivity of both teachers and students which includes exam modules.

CHARACTERISTICS OF ONLINE ASSESSMENTS

1. Flexibility

The online assessment module enables students to take their exams from any location at any time without any hassles. It also enables teachers to invigilate and navigate the assessments easily, which in turn reduces the stress of both students and teachers.

Its flexibility makes it an essential tool during this pandemic. It enables teachers to monitor students from the comfort of their homes.

2. Create Exams with ease

Online Assessment allows teachers to create a bank of question papers that can be utilized to create automatic papers time and again. Teachers can upload questionnaires once and use them throughout the academic reducing workload. It also helps in streamlining the process of monitoring and grading exam results.

3. Increases productivity

Online assessment eradicates the tedious task of printing and distributing exam papers, thereby saving time and effort for teachers. This decreased work enables teachers to focus on their students and find more ways to engage students.

It also reduces the administrative burden of school, making time for other important school operations.

4. Fast Evaluations

Online assessments are easier to evaluate and many assessment modules have auto scorable options that reduce the grading time of teachers. Easier grading leads to faster results which reduce the anxiety and stress level of waiting students.

5. Secure Solution

All the exam papers, candidate details, examination marks and school results are digitally stored with access to only limited staff. No one can access anything without permission.

6. Easy Report Generation

The report generation is easier and faster and can be customised according to school guidelines. Reports give a graphical report or summary of examination statistics for easy analysis of student performance in exams.

7. Cost-Effective

Online assessment reduces the administrative costs associated with traditional examination systems like printing and distributing papers, thereby reducing overall school costs.

ONLINE ASSESSMENT AND EVALUATION APPLICATION

Quizizz

Quizizz is an open-access website created in 2015 by Ankit Gupta and Deepak Joy Cheenath. It is used as an online assessment tool that helps teachers create and assign quizzes to students. It also provides the feature to create lessons for students, along with quiz and poll questions and an inbuilt option of saving. It provides the facility to present the quizzes live or as homework with a specific deadline.

Google Forms

Google Form is a simple, widely used tool for building surveys and graded quizzes. You can create multiple-choice or short-answer questions for students to complete, specify correct answers and points, and provide feedback for correct and incorrect responses.

Kahoot!

Kahoot! is an open-access, easy, game-based learning platform that provides the facility to conduct gamified quizzes during online teaching-learning sessions. It can be used as an educational technology in schools and higher education institutes to assess students' performance. Teachers can use Kahoot! in two ways: either during an online class to check a student's knowledge, or it can be assigned to students at a later date where it works in a student-paced manner. The most attractive part of this platform is its time-bound questions, where one can allot a time duration from 5 seconds to 240 seconds per question in a quiz.

TYPES AND TOOLS OF ONLINE ASSESSMENT AND EVALUATION

The digitalisation of the world today presents one with a plethora of opportunities to exhibit innovation and creativity in the arena of pedagogical assessment. With a wide range of availability of digital tools and pervading information, there exists an immense capacity to prolifically utilise a wide array of assessment approaches that promote and evaluate student learning in higher education. Considering the crucial role online assessment plays in the current pandemic and otherwise, the following section outlines the various tools which can be efficiently utilised for e-assessment.

Computer-Assisted E-Assessments

While multiple-choice, true-false, multiple-response, and extended matching questions are routinely used, a few old and newer ones, like filling the gap (cloze), text or number entry, and labelling questions, are being used by some medical educators globally. The focus of MCQs can range from recall-type questions to questions that demand higher levels of cognitive engagement.

Hotspot Questions

These require students to place a mark on an image or a diagram while dragging labels directly over an image. Such systems will enable examiners to formulate questions, store them on a shared online system, select from such questions for the actual examination and then finally test them before the examination.

Digital 'Open Book' Exam

This consists of either a traditional sit-down/limited-time exam, with varying degrees of access to resources and references, or a take-home open-book exam, which can be conducted offsite in an unproctored environment. The papers are marked automatically online. Open-book exams allow students access to any resource material needed during the exam. In addition, it can consist of questions pertaining to patient diagnosis and clinical scenarios. Properly designed open-book assessment for formative assessment can enhance learning outcomes.

Online assessment tools save time and money.

- Easily accessible and easy to handle. One can use mobile phones, tablets, laptops and compute

- Free availability of basic versions.
- Teachers can download the report card just after the assessment is over, and it can be saved for later.

ADVANTAGES OF ONLINE ASSESSMENT AND EVALUATION

For Students

- Higher control, friendly interface
- Higher flexibility
- Fast and easy to use
- Easy accessibility from remote areas
- Receive immediate feedback
- Increased motivation to enhance performance.

For Teachers

- Greater flexibility with any place and any time assessments
- Better utilisation of time through simplified and quicker examination procedures
- Improved quality of feedback to students
- Can track students' progress
- Easy to make analysis across assessments
- Reduced workload
- More flexible and imaginative assessments possible, with greater relevance for students, for example; by using simulations, audio and video clips.

For Institution

- Fast and accurate results
- Reduced cost for the institution

For Educational Goals

- Supports higher-order thinking skills like critiquing, problem-solving, and reflection on cognitive processes and facilitates group work projects
- Provide accurate results by adaptive testing.
- Creates a friendly competitive environment in the online platform, which motivates and engages
- Students can get instant results and feedback on their performance.
- Results in effective learning by students due to involvement of more than one sense.

DISADVANTAGES OF ONLINE ASSESSMENT AND EVALUATION

Online assessment tools save time and money.

- Easily accessible and easy to handle. One can use mobile phones, tablets, laptops and co
- Free availability of basic versions.
- Teachers can download the report card just after the assessment is over, and it can be saved for later
- In online mode of teaching, learning and assessment, internet connectivity is a major problem for both instructors as well as learners.
- Lack of expertise on the part of instructors to handle these online tools.
- The basic free version of these tools can accommodate only a limited number of students, and limited facilities are available.
- Teachers cannot control malpractices by students.
- As students are unaware about the uses of these kinds of tools, it takes them time to get comfortable and familiar.
- Limited character length for questions.
- Creates a friendly competitive environment in the online platform, which motivates.
- Students can get instant results and feedback on their performance.
- This results in effective learning by students due to the involvement of more than one sense.

CHALLENGES FOR TEACHER AND STUDENTS

The various hurdles faced during online classes were figuring out online class etiquette, parents hovering during online classes being an issue, maintaining discipline online being tough, etc. Teachers mostly face challenges like lack of IT support, continuous technological changes, unequal access for all students, unoptimised software for mobile devices and security issues.

CHALLENGES AND THEIR MANAGEMENT IN ONLINE ASSESSMENT AND EVALUATION

A major challenge for the future of online assessment will be finding ways to shift from a cottage industry approach led by individuals to a mass-produced system led by a management process. Since online assessments are totally dependent on technology, they can involve high costs for assessment system software licenses, servers, large numbers of computers, well-trained support staff and large spaces. In addition to this, dedicated assessment servers and content educationalists also incur additional costs. It is debatable whether using high-end online assessment strategies is cost-effective or not. Instead, we can use this COVID opportunity to build capacity for future disruptions.

Online assessment is relatively new, administrators should conduct regular faculty development programs to keep all stakeholders updated with all technological mechanisms of assessment delivery. Similarly,

student awareness programs should also be regularly conducted to make them familiar with online assessment strategies.

The biggest challenge in online assessments is safety from hackers and viruses. This can be overcome by investing in good licensed anti-viral software and anti-hacking systems. A firewall (either hardware or software) is a system that controls requests and protocols accepted and transmitted by a server. Most assessment systems will require HTTP or, ideally, HTTPS (encrypted) protocols, so a firewall can be used to deny access to other protocols such as FTP and e-mail.

Another issue is legal in the form of copyright of the content, pictures, videos, sound, assessment material from other institutes, etc. Hence, the copyright of all the content material intended to be used has to be obtained from the concerned authorities. Academic dishonesty in the form of online cheating and plagiarism is an important issue to deal with in online assessments, especially in high-stakes summative online tests. Ensuring the identity of the student is a big challenge. Since students are not face-to-face, the chances of identity fraud are higher. Certain steps can be taken to ensure the identity of students, like monitoring specific login IDs, face and eye recognition through computer software, proctoring through video, etc. Extra attention should be given to planning for online assessments with respect to students having special needs like colourblind students, students having physical disabilities, etc.

CONCLUSION

Paper-based student assessments are now counted as an old tradition. In this digital world, online assessment to evaluate students' overall performance is gaining momentum. This process reduces teachers' work and increases their productivity, which enables them to focus on creative/innovative ways to deliver their lectures. Schools are transforming digitally, and there is a dire need for schools to opt for School Management Software more than ever.

CYBER SCHOOL MANAGER is one such software that streamlines your day-to-day school operations, turning your school into a virtual one. You can manage all the school activities like admissions, online classes, generating timetables, online tests, etc., with ease from anywhere at any time.

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CHAPTER 13

STUDENT ENGAGEMENT STRATEGIES IN ONLINE LEARNING ENVIRONMENT: TOWARDS A SUSTAINABLE TEACHING- LEARNING MODEL

Meenakshi, Rashu Sharma & Ritu Bakshi

ABSTRACT

The teaching and learning process has undergone a massive change due to the COVID-19 outbreak. This change has ultimately brought out a significant transformation from traditional face-to-face instructions to forced online learning. Online learning has become the new normal, particularly with the popularity of e-learning 4.0. The development of online learning systems has accommodated and facilitated personalised learning, wherein the instruction is also tailored to a student's individual needs and learning styles. Owing to the students' different needs and learning styles, designing and delivering effective course material and creating an adaptive learning environment is the most challenging. Thus, student engagement has become a significant issue in online learning systems because no learning system is considered good until it fulfils student needs and accommodates learning styles. Similarly, the online learning environment is considered adaptive only when it reinforces student engagement. Student engagement increases student satisfaction, enhances students' motivation to learn, reduces the sense of isolation, and improves student performance. Student engagement in the online learning system is significant because online learning system seems to have fewer opportunities to be engaged with the

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institution. Hence, creating various opportunities for student engagement in the online learning environment is essential. Instructors can improve and increase students' engagement by applying multiple strategies and techniques in the online learning environment. The present paper attempts to understand students' engagement strategies in creating a conducive online learning environment and the challenges and opportunities instructors face in online learning systems. The study sample was 60 students pursuing a Four-year integrated B.A., B.Ed. Programme from Central University of Jammu. This paper also focuses on students' viewpoint regarding their experience with online teaching-learning and, on that basis, proposes a sustainable teaching-learning model.

Keywords: - Online Learning, Learning Environment, Student Engagement and Strategies

INTRODUCTION

The emergence of COVID-19 has resulted in a significant increase in online learning among students. As a result, major shifts have been brought in the education sector where virtual classrooms, web conferences and many others have replaced traditional classrooms. The present online learning scenario is figuring out a change in the teaching and learning pedagogy. However, there are serious challenges related to online learning regarding quality and productivity due to certain distracting factors and a need for more interest among students. Students generally need more motivation once they can cope with online learning as it requires a lot of inspiration to complete the task and engage students with the teaching-learning process. Since technological advancements in education have brought a paradigm shift, the online learning environment is still considered influential and adaptive only when it reinforces students' engagement.

Additionally, looking at our present policies and education schemes based on the concept of constructivism, where the main emphasis is laid on learner-centred and interest-based education, it becomes essential to ensure that the teaching-learning environment should be such that it will actively involve students in it. However, due to the learners' different needs and learning styles, designing and delivering effective course material and creating an adaptive learning environment is the most challenging. Therefore, the paper explores the opportunities and challenges that online learning provides. Further, the paper will discuss the various strategies to help engage students in online learning environments and discuss a sustainable teaching-learning model.

For technology integration in online learning, there is a great need for training for teachers and learners related to the various LMSs so that they can utilise the advanced technology in the field of education. Only then will teachers proficient in technology be able to develop different strategies to make their teaching more effective. Moreover, our National Education Policy 2020 also talks about advancing online teaching-learning methods to transform the country's educational system and structure. However, education has been one of the significant areas disrupted by the Covid-19 pandemic. This change has ultimately brought out a considerable transformation from traditional face-to-face instruction into forced online learning and provided many opportunities for teachers and learners to facilitate an effective teaching-learning process.

Research Questions

- 1) What are the challenges and opportunities faced during the online teaching-learning process?
- 2) What are prospective teachers' preferred modes, gadgets and mediums during online learning?

- 3) What engagement strategies are used in prospective teachers' online teaching-learning process?
- 4) Is there any workable online teaching-learning model to cater for the needs of Indian students?

Objectives of the Study

- 1) To explore the challenges and opportunities of online teaching-learning through a review of related literature.
- 2) To study the preferred mode, gadgets and medium used by the prospective teachers during online learning.
- 3) To study the various parameters related to engagement strategies of the online teaching-learning process of prospective teachers.
- 4) To propose an emerging workable model of online learning approach in the Indian context.

ONLINE TEACHING-LEARNING: OPPORTUNITIES

The terms web-based learning, e-learning, and online education have all been used to describe online learning. Online education gives educators an opportunity to reach students who are not able to enrol in traditional classroom courses and also helps learners who want to study at their own pace and as per their schedule. Especially during COVID-19, online teaching-learning has become a very viable and exciting method for instructional delivery all across the globe.

Following are the opportunities that are provided to teachers and students through online teaching:

- **Mobile Learning**—Students can learn by sitting in a faraway place and access learning resources at their own ease from anywhere in the world.
- **Flexible learning:** Online learning allows students to take classes from wherever they want. Students can record, preserve, and share teacher lectures for later viewing, which provides them with access to read the instructional material at their convenience.
- **Accommodates different learning styles:** The online learning system provides various options and resources to instructors to make their teaching more effective and attractive to students. The teacher can customise his /her teaching instructions differently to create an ideal learning environment for students so that it meets the different learning styles of the pupils.
- **Enhances Efficiency:** Another opportunity brought forward by online teaching is that it enhances the teaching efficiency of teachers by allowing them to use different online tools, such as PDFs, Videos, Podcasts, etc., as part of their lesson preparations.

CHALLENGES FACED BY TEACHERS DURING ONLINE TEACHING

Since online learning provides a lot of new opportunities for imparting education, it still possesses some challenges as well. India still needs proper developments and infrastructure in order to make online learning available to all the students in the country. During the COVID-19 crisis, online learning faces several obstacles, including internet connectivity concerns, internet availability for students, learning equity, content selection, student anxiety, online learning resources, and student engagement during online learning. Some of the Challenges being faced by teachers in Online Learning System include: -

- **Seeking Attention:** One of the biggest challenges teachers face while teaching is seeking the attention of the students and keeping them engaged and motivated throughout the online session. Keeping track of students' progress is another challenge.
- **Lack of sufficient digital infrastructure:** Although the government of India has taken many initiatives to develop digital infrastructure, more needs to be done. The biggest problems are high-speed internet and a stable power supply. The need for a computer, adequate software, constant electricity, and high-bandwidth internet is quite a big demand.
- **Limited Social Interaction:** -There is minimal direct interaction with the students during online teaching, as much of the learning is completed asynchronously, and students often feel disconnected from their instructor. Hence, students develop a sense of isolation, slowly eroding their desire to learn. The physical presence of a teacher inside a classroom with fellow peers often creates an ambience that a virtual learning mode cannot replace.
- **Digital Literacy and Technical Issues:** -Another challenge that teachers are constantly facing is technical problems. These technical problems often require technical support, causing frequent disruptions in the learning flow. Moreover, digital literacy is another issue. Many teachers and students may have a basic understanding of technology, but sometimes they encounter disruptions that devices can bring out, making it difficult for both to sort out. Thus, teachers need more professional development and access to ICT improvements for classroom implementation and to keep up with continuous technological advances.
- **More Distraction and Less Discipline:** The online teaching method needs more accountability, which hampers the quality of education. Distractions have become more common due to the free use of laptops and mobile phones. Students regularly use devices for social media and text messaging simultaneously with the ongoing class, which is not in the control of teachers, and it's easy for students to be distracted.

Believing that the adoption of student engagement strategies ensures the students' participation, which will hence help to achieve the goals of learning at their maximum, the researchers have decided to propose a model for sustainable online teaching-learning, and before that, they also studied the viewpoint of students regarding their involvement and experiences during online learning because it's a great concern that further how the online education should be provided to the students to make it more effective and what strategies can be brought to use.

SAMPLE OF THE STUDY

A descriptive survey research method was adopted for the present study. The population of the study constituted all the students studying in the four-year integrated B.A., B.Ed. programme at Central University of Jammu. The study sample consisted of 60 students pursuing the Four-year integrated B.A., B.Ed. programme at Central University of Jammu.

TOOL FOR DATA COLLECTION

The data was collected through a self-administered online survey tool. The tool consisted of 15 items categorised into two parts- Part A had multiple choice questions related to technology adoption, and Part B

had 3-point Likert scale-type items related to student engagement strategies. Five alternatives were given against each statement: A-Agree, N- Neutral, Disagree. Respondents were required to answer each statement by choosing the option that matches their view.

ANALYSIS AND INTERPRETATION OF DATA

To achieve the formulated objective, the investigator collected data from 60 students in the study. The data was analysed using frequency percentages, and pie charts were also used to represent it.

Part A: Responses Related to Adoption of Technology

Table 1: Gadgets Used by Students for Accessing Online Classes

S.No.	Devices	Frequency	Percentage
1	Mobile phones	50	83.3%
2	Computer	2	3.3%
3	Laptop	6	10%
4	Any other	2	3.3%

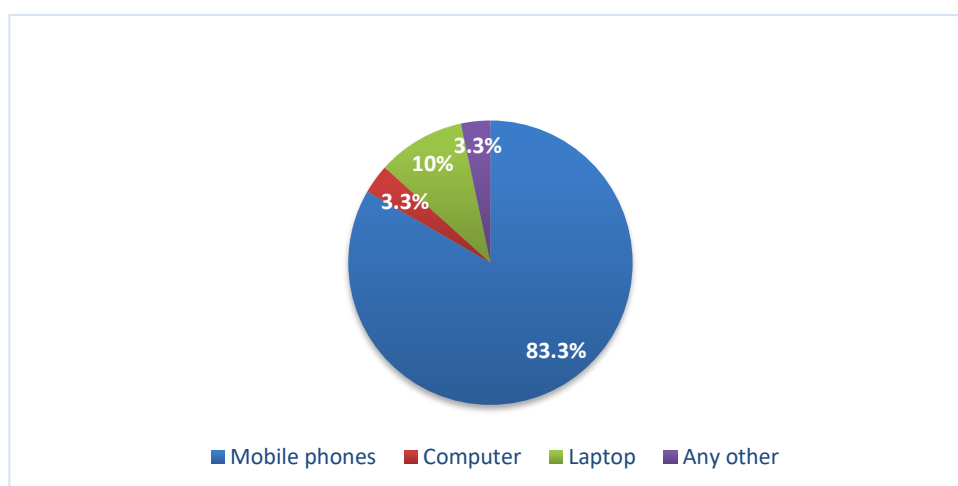


Fig. 1: Pie Chart Depicting the Percentage Wise Distribution of Devices Used by Students for Accessing Online Classes

Table 1 shows that 83.3% of students use mobile phones to attend their classes online, 10% of the respondents use laptops, 3.3% use computers, and the remaining prefer to use any other gadgets.

Table 2: Mode Used by Teachers for Teaching Students

S.No.	Mode	Frequency	Percentage
1	Blended	43	71.7%
2	Traditional	10	16.7%
3	Online	7	11.7%

Table 2 depicts that 71.7% of teachers use a blended mode for teaching, 16.7% teachers prefer a traditional mode of teaching, and only 11.7% of teachers prefer online teaching. Figure 2 shows that most teachers are inclined towards a blended teaching mode.

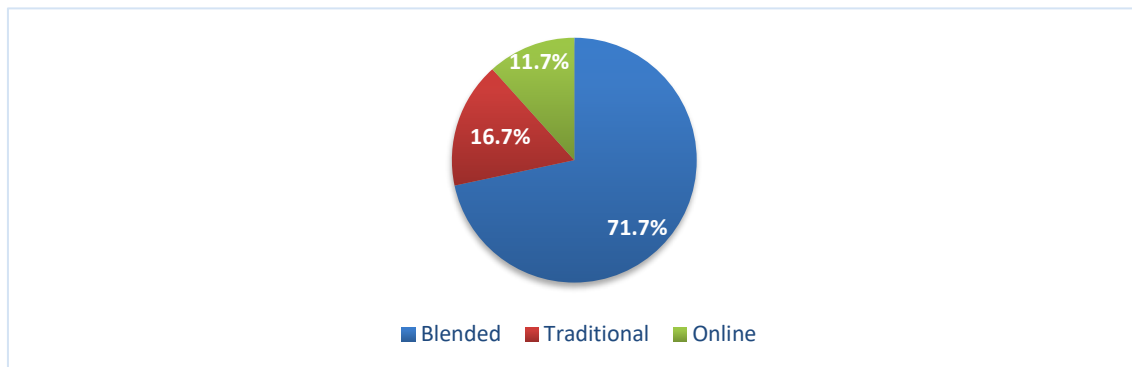


Fig. 2: Pie Chart Showing the Modes of Teaching Used by Teachers

Table 3: Preferable Medium Used by Teachers in the Online Class

S.No.	Technology medium	Frequency	Percentage
1	Video and chat sessions	38	63.3%
2	Assignment based projects	9	15%
3	Discussion boards	10	16.7%
4	Any other	3	5%

Table 3 shows that 63.3% of teachers prefer video and chat sessions as the major medium and strategy for imparting instructions and engaging students in an online learning environment. Despite this, 16.7% prefer discussion boards, and 15% prefer activities and assignments.

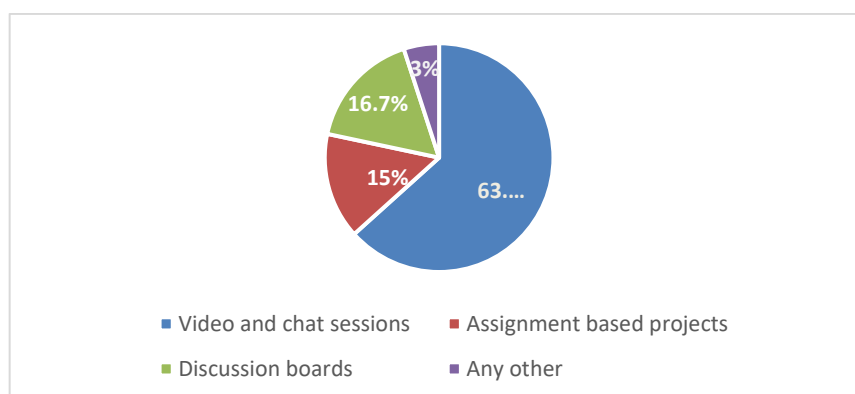


Fig. 3: Pie Chart Depicting the Percentage Wise Distribution of Medium Used by Teachers

Part B

Table 4: Responses Related to Engagement Strategies in Online Teaching-Learning (N=60)

S.No.	Items	Agree	Neutral	Disagree
1.	Student Engagement in Online learning is critical for enhancing the effectiveness of the teaching-learning process	41 68.33%	12 20%	7 11.7%
2.	Opportunities to interact with the instructor and peers through videos, chats and assignments	35 58.3%	9 15%	16 26.7%
3.	Students feel more engaged and active during online learning	18 30%	10 16.66%	32 53.4%
4.	Low confidence and hesitation as hindrances to students' engagement during the online course	31 51.6%	16 26.6%	13 21.7%
5.	Poor internet connectivity and technical issues hamper students' engagement in online learning	53 88.33%	5 8.3%	2 3.33%
6.	Teacher's physical absence in online learning leads to low student engagement	46 76.66%	8 13.33%	6 10%
7.	Rapport and collaboration between instructor and students lead to healthy engagement and high interaction	45 75%	15 25%	-
8.	Incorporation of different engagement strategies by the instructor helps in creating a conducive online learning environment	37 61.66%	17 28.33%	6 10%
9.	Student engagement is a core of the online learning environment	48 80%	7 11.66%	5 8.3%
10.	Activity-based course content makes the student more engaged in online learning	48 80%	9 15%	3 5%
11.	Project-based, application and assignment-based content to enhance the engagement of the students 7	52 86.66%	7 11.66%	1 1.6%
12.	Instructor should provide technical assistance to the students to boost their engagement in online learning	52 86.665	7 11.66%	1 1.66%

Table 4 depicts the responses of the students related to the engagement strategies in online teaching-learning where 68.33% of the respondents agreed that student engagement in online learning is necessary for enhancing the effectiveness of the teaching-learning process as 20% of the students were of neutral view in this regard and 11.7% disagreed with the statement. 58.3% of respondents believed online learning

provides more opportunities for interaction with the instructor and peers through videos, chats, YouTube and assignments, whereas 15% were neutral, and 26.7% disagreed. Only 30% of students believed that online learning is a more engaging and active mode, whereas approximately half (53%) did not consider it as active and engaging, and 16.665 disagreed with the statement. Half of the respondents (51%) believed that low confidence and hesitation are hindrances while sharing their perspectives and experiences with the instructor, affecting students' engagement in online classes.

Out of 60 students, the majority (88.33%) agreed that low internet connectivity and technical issues also hamper students' engagement in online learning, whereas 3% disagreed, and 8% were neutral in considering technical issues as hindrances. 80% of respondents believed that student engagement is core for effective online learning and agreed that activity-based learning ensures student engagement. Hence, the majority of the respondents also agreed that instructors should design project-based, application and assignment-based course content to enhance the students' engagement in online learning and also provide technical support to improve their proficiency in technology usage, thereby increasing their engagement in the learning environment.

Viewing the above findings that signify the importance of activity and interaction-based strategies to support the online learning environment, the researchers have proposed a sustainable teaching-learning model, which is described as follows:

STUDENT ENGAGEMENT STRATEGIES IN ONLINE LEARNING ENVIRONMENT: TOWARDS A SUSTAINABLE TEACHING-LEARNING MODEL

As online learning is evolving, we must continue to find more efficient ways of creating classroom environments in online classrooms that we achieve in face-to-face classes. We can deliver virtual learning experiences to students that are as successful as their traditional face-to-face classroom experiences by putting out the effort to use classroom technology professionally and communicate effectively through online learning platforms (Kelly and Westerman, 2020). The increased demand for online education and unprecedented circumstances (COVID-19) demands a major transition in the instructional method, i.e., from traditional learning to online learning. Online teaching can be considered effective only if it enhances student engagement and facilitates rich learning experiences. Student Engagement is “the student’s psychological investment in an effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote.” (Newmann. Wehlage, & Lamborn, 1992, p. 12). Teachers must incorporate strategies to maximise student engagement to develop high-quality learning experiences in an online environment. To develop a sustainable teaching-learning model, student engagement in online teaching is more important because in the online system, students have fewer opportunities to be engaged with peers and teachers, and perhaps there is greater demand for time and attention. Thus, student engagement is an important component of online teaching. By adopting various techniques and strategies of engagement, teachers can create a conducive online environment that enhances student engagement in the courses and brings sustainability to the teaching-learning process. A sustainable teaching-learning model is a model which arouses students’ desire to learn and explore more, reinforces their creativity, satisfies their curiosity, helps in the realisation of specific instructional goals and overall helps in making the whole teaching-learning process more interactive. Student Engagement

strategies generally revolve around one focal point, i.e., Interaction. According to Moore (1993), three types of interaction are inherent in effective online courses. These three types of interaction are the core of Student Engagement, which ultimately forms the basis of the Sustainable teaching-learning model:

1. Learner-to-learner interaction,
2. Learner-to-instructor interaction,
3. Learner- to-content interaction.

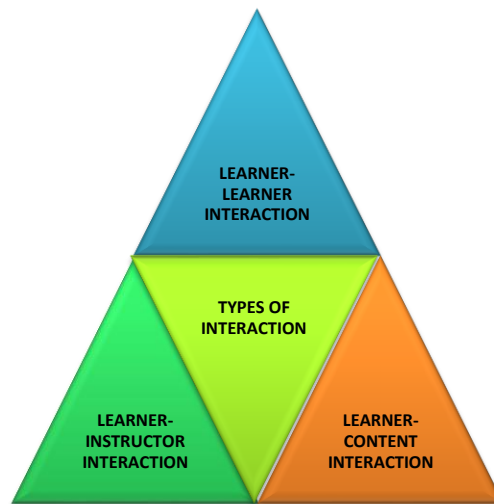


Figure 4 Depicting the Types of Interaction Based on Moore’s Framework.

1. **Learner-to-Learner Interaction/Engagement:** Student engagement is the effort a learner makes to maintain his or her psychological commitment to stay involved in the learning process to gain knowledge and develop critical thinking skills. Because online learners appear to have fewer opportunities to connect with the institution, student involvement in online learning is vital. As a result, it is crucial to provide students with various possibilities for participation in an online environment. At this level, teachers strive to provide a platform for the student to share their experiences with their peers through interactive assignments, activities or in the discussion board by sharing their perspective on a particular activity so that a sense of isolation can be removed and a feeling of community and belonging in a class can be maintained. Interaction between learner to learner is essential and valuable for online learning as it enhances student engagement. Banna et al. (2015) suggest that traditional technologies for engaged learning, such as discussion boards, chat sessions, blogs, wikis, group tasks, or peer assessments, have served well in promoting learner-to-learner engagement. Students might utilise online delivery platforms and other technologies to post images and other personal media artefacts that describe their origins and interests in ways that allow their peers to remark and join discussions about common interests and experiences.

2. **Learner-to-Instructor Interaction/Engagement:** At this level, students are expected to engage by modelling positive behaviours and by establishing the teacher’s presence in the form of regular check-ups, feedback, through emails, informal question-answers forums, discussion board postings and also by course orientations. This increases student engagement and motivation to engage with the course. Research has found that rapport and collaboration between students and instructors leads to the highly interactive online

environment. Revere and Kovach (2011) and Robinson and Hellinger (2008) suggested the use of new but well-established technologies, such as discussion boards, chat sessions, blogs, wikis, group tasks, Twitter, Skype, YouTube etc., to foster student engagement in an online learning environment. Educators should identify students who are taking online courses for the first time and give technical assistance to boost their engagement and ways to enhance self-regulation in remote learning contexts. Students can be engaged with course information in online learning through asynchronous (when students learn at various times) and synchronous classrooms (wherein students learn simultaneously).

3. Learner-to-Content Interaction/Engagement: At this level, student engagement is developed by planning different activities and organising such instructional material, which proves crucial for enhancing sustainable learning. Here, the focus is laid on developing a course with a high social presence because the social presence in the course makes the students feel like a face-to-face course. Developing assignments that have realistic scenarios (e.g., case studies, reports, presentations, projects, etc.) is essential to engage students in course concepts because it brings a strong sense of reality to the class so that these concepts feel part of their world rather than concepts constrained to their learning environment. Research has found that student engagement in an online environment occurs more when real-world application of projects is focused and when the content of the course depicts real-world examples. Moore (1993) has also focused on the same thing: that engagement of learners to content should be such that it can change a learner's understanding and perspectives. Thus, online instructors should design activities-based content that makes the students think critically and provides them with opportunities to feel engaged in their courses.

SOME OTHER STRATEGIES FOR ENHANCING STUDENT ENGAGEMENT IN ONLINE LEARNING ENVIRONMENT:

- Collaborative online Learning Approach:

A collaborative approach can also be a new emerging model and strategy in which one resource teacher collaborates with other teachers at distant locations to enhance learner-instructor engagement.

Creating well-organized Internet discussion forums: Discussion boards are frequently used in hybrid learning environments, such as flipped classrooms, to introduce students to course subjects; the idea is to make them engaging, relevant, and instructional so that students regard them as crucial to the learning process rather than as busywork.

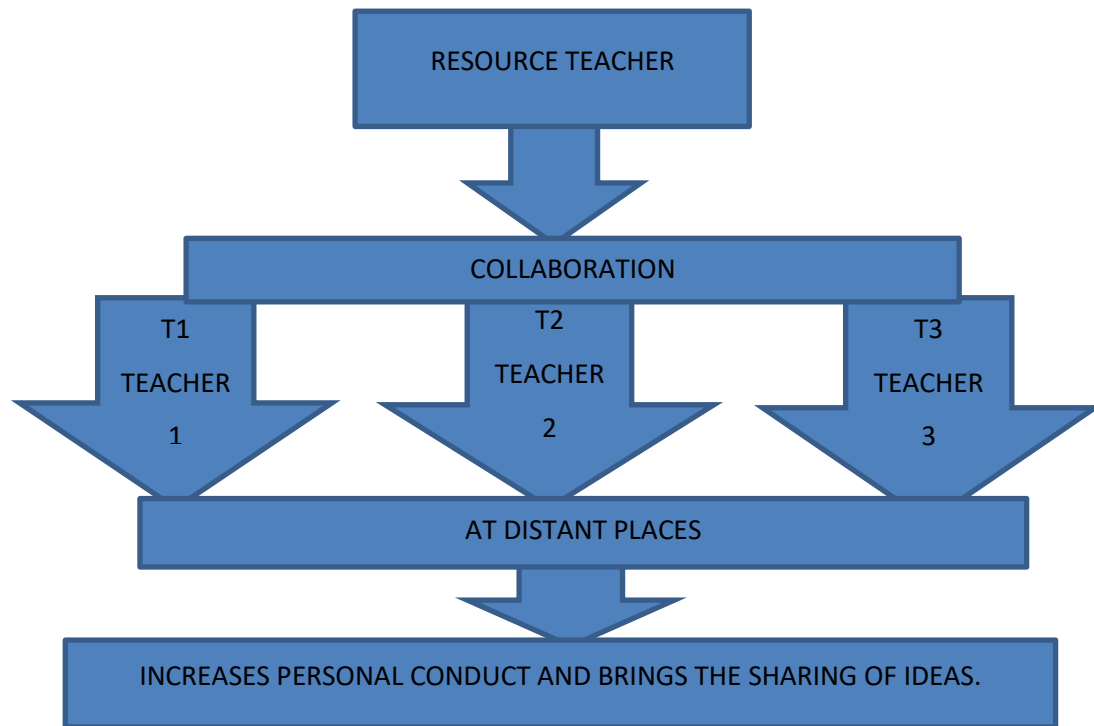


Figure 5: Depicting the Collaborative Online Learning Approach.

STEPS FOR EFFECTIVE IMPLEMENTATION OF SUSTAINABLE TEACHING-LEARNING MODEL

To enhance Learners' engagement in online teaching and for effective implementation of the Sustainable teaching-learning model, the following steps need to be followed:

- Creating content that makes students aware of the expectations allows them to explore the course resources quickly.
- Dividing the course material into weekly modules, including an introduction module. An introduction module provides a structure for the instructor to present herself/himself to the students and explain why she/he is so enthusiastic about the subject and course.
- Aligning the assignments with the course learning goals and evaluations will boost student motivation and engagement.
- Start or increase the usage of recorded lectures, giving students more opportunities to pause and review the recording. This will help students take and review their course notes, understand the information more thoroughly (e.g., elaboration and reflection), and refer to the lecture if something is unclear or perplexing.

CONCLUSION

Teachers can facilitate their teaching process by adopting a sustainable teaching-learning model, thus enhancing student engagement and working towards realising instructional goals. Students must be kept engaged throughout their learning via online mode, which may be accomplished by implementing the above-suggested student engagement initiatives. A sustainable teaching-learning model helps to achieve the aim of Engagement strategies, which is meant to provide positive learner experiences wherein students facilitate online presentations and discussions, share resources actively, participate in group work, create course assignments with hands-on components, and integrate case studies and reflections. Before beginning online learning, we must ensure the instructors have enough teaching resources, skills, and tactics. This will help teachers prepare for the classes and aid and motivate students who need assistance setting up online learning portals.

Moreover, in an online learning situation, the teacher will consider the students' personality traits and learning styles since this will help the instructor to choose strategies for student involvement in distant online learning, selecting content, resources, and technologies that will aid in not just educating but also engaging the learner throughout the online learning process. Project-based learning and collaborative-based teaching are further influencing strategies that could be adopted to enhance student engagement while teaching. Therefore, ensuring that students and teachers accept digital learning is high time. All these suggestions will promote student learning and growth, particularly amid the extraordinary circumstances we are currently facing.

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CHAPTER 14

TEST ANXIETY AMONG ADOLESCENTS OF GOVERNMENT AND PRIVATE SCHOOLS DURING COVID-19 PANDEMIC

Manoj Sharma, Ram Singh Sambyal & Satindera Choudhary

ABSTRACT

The abrupt COVID-19 pandemic outbreak forced educational institutions to close across the globe. The student community, which had difficulties transitioning to an online education style, felt anxious due to this unusual move. Anxiety is an emotional attitude or sentiment to further mingle with fear and hope. Test Anxiety, on the other hand, is a state of mind where a student has either a sense of insecurity, loss of confidence or incompetence or when the individual is overstressed, worried or tensed at the moment when he/she is to be evaluated—similarly, the evaluation done by the schools also through online mode. Given this, the present investigation was undertaken to study the test anxiety of Government and Private Schools during the COVID-19 pandemic. The objective of this study was to compare the Test anxiety of the students of Government and Private schools during COVID-19. The sample consisted of 200 students studying in class 10th in Kathua. Results reveal that significant difference exists in students of Government and Private Schools on the test anxiety scale. The students of government schools display more test anxiety than their private school counterparts.

Keywords: Test anxiety, Adolescence, Government School, Private School, Covid-19

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INTRODUCTION

Anxiety is a sign of an individual's internal unease. Rumination about any fact or incident, impulsive behaviour, and physical issues are frequently present, along with the uncomfortable state of inner turmoil it represents. According to C.V. Good (1973), anxiety is defined as "the apprehension, tension, or uneasiness characterised by fear, dread, or uncertainty; its source is unknown and unrecognised by the individual; it may consist of persistent worry about the future as well as broad-based emotional responses to any choice or decision. It is a concept frequently connected to the decline in performance (Spielberger and Vagg, 1995). The concept of test anxiety is very new in the field of educational psychology. This anxiety state is a part of general anxiety, which affects the performance of the students in the examination. Test anxiety is a transient or situation-specific anxiety. Folin, Demis, and Smillie received most of the credit for the first investigations based on emotional glycosuria that included some notions connected to test anxiety in 1914. However, Sarason and Mandler (1952) published their work on "test anxiety" and "performance". They looked into the idea for the first time under its name, setting a significant milestone in developing this field of study. To evaluate the individual differences in test anxiety among adults, they developed the Test Anxiety Questionnaire and published several publications on the topic. We live in the test consciousness age (Zollar and Ben-Chain, 1990). The concept of test anxiety, which has been extensively examined, describes a range of behavioural reactions that go along with the worry over a potential failure. Since it could negatively affect their academic performance, many researchers have long been deeply concerned with understanding students' emotional states during evaluation, according to Salend. An activity is deemed to be blocked by test anxiety. An individual with test anxiety may not be able to give a task or performance his complete attention. As a result, it is believed that worry hinders activity and, consequently, learning.

Test anxiety is a type of performance anxiety — a feeling someone might have in a situation where performance counts or when the pressure's on to do well. The child's anxiety may influence the performance of a test because he pays more attention to his responses than the task. In this given situation, when the child becomes aware that he is being tested, his essential capacity may get impaired with the increase in test anxiety. These responses of the mind can be anticipated because of ills arising from a lack of confidence within a child's personality, which is caused by his drives and impulses and unresolved problems in his life.

The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing global pandemic caused by severe acute respiratory syndrome (SARS-CoV-2). The novel virus was first identified from an outbreak in Wuhan, China, in December 2019. The World Health Organization (WHO) declared a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. As of 10 May 2022, the pandemic had caused more than 518 million cases and 6.26 million confirmed deaths, making it one of the deadliest in history. COVID-19 symptoms range from undetectable to deadly but most commonly include fever, dry cough, and fatigue. COVID-19 transmits when people breathe in air contaminated by droplets and tiny airborne particles containing the virus. Infected persons are typically contagious for ten days and

can spread the virus even if they do not develop symptoms. Mutations have produced many strains (variants) with varying degrees of infectivity and virulence.

COVID-19 vaccines have been approved and widely distributed in various countries since December 2020. Other recommended preventive measures include social distancing, wearing masks, improving ventilation and air filtration, and quarantining those who have been exposed or are symptomatic. Governmental interventions include travel restrictions, lockdowns, business restrictions and closures, workplace hazard controls, quarantines, testing systems, and tracing contacts of the infected.

The pandemic triggered severe social and economic disruption worldwide, including the most significant global recession since the Great Depression. In many jurisdictions, educational institutions and public areas were partially or fully closed, and many events were cancelled or postponed.

During the COVID-19 pandemic, education was provided to both Government and private school students through online mode. Similarly, the schools' evaluations were also conducted online. For classroom teaching, Zoom App, Google Meet, WhatsApp, and other platforms were used, and for evaluation, Google Form, WhatsApp, email, or other online platforms were used.

NEED OF THE STUDY

Adolescence is the period in human growth and development that occurs after childhood and before adulthood, from ages 10-19. In this stage, the children may experience anxiety to a great extent, which exercises positive or negative influences on their personality. A child cannot avoid anxiety in his/her life. A moderate amount of anxiety helps in performance by creating motivation. Test Anxiety is a common issue that students cannot ignore if they want to succeed in life and school. If anxiety is not addressed correctly, it can have many severe and long-lasting consequences. As a result, the students perform poorly on school work, fail classes, and withdraw from socialising with peers or pursuing activities they trust.

Since the COVID-19 pandemic, education has been provided to students by both Government and private schools through online mode. Similarly, schools also conduct evaluations through online mode.

Given this, the present investigation was undertaken to study the anxiety of adolescents during the COVID-19 pandemic. The students of government and private schools were compared on the anxiety.

OBJECTIVES OF THE STUDY

The objectives of the study are:

1. To determine the test anxiety of adolescents studying in government and private schools.
2. To determine the test anxiety of adolescent boys studying in government and private schools.

3. To determine the test anxiety of adolescent girls Studying in Government and Private Schools.
4. To find gender differences in adolescent test anxiety in government and private schools.

HYPOTHESES OF THE STUDY

The following hypotheses have been framed for the study:

1. There is no significant difference in test anxiety of adolescents studying in government and private schools.
2. There is no significant difference in test anxiety of boys studying in government and private schools.
3. There is no significant difference in test anxiety of adolescent girls Studying in Government and Private Schools.
4. There are no significant gender differences in test anxiety of adolescents studying in government and private schools.

SAMPLE OF THE STUDY

The present study uses a descriptive survey method. The population is comprised of all X-class students studying in government and private schools in Kathua. The Sample of 200 Class X students (Government: 100 Private: 100) was selected randomly from different schools in Kathua.

TOOL USED

The necessary data have been collected using an anxiety scale for children developed by Sorenson and later adopted in Hindi by Nijhawan (1972).

DELIMITATIONS OF THE STUDY

1. The present study has been delimited to 200 students only.
2. The present study has been delimited to the X-class students only.
3. The present study has been confined to the Kathua district only.

ANALYSIS AND INTERPRETATION OF DATA

Table 1 Test Anxiety of Adolescents Studying in Government and Private Schools.

Type of School	N	Mean	S.D	Std Error	t	Significance
Government	100	18.3	7.21	0.72	1.01	Sig.at 0.01 level
Private	100	12.1	7.38	0.73		

Table
1

indicates that the t-value for test anxiety, 1.01, is greater than the desired value of $t=0.01$. This means that the result is significant at the 0.01 level. So, the hypotheses stating that there is no significant difference in test anxiety of adolescent students studying in government and private schools are rejected.

Table 2: Test Anxiety of Adolescent Boys Studying in Government and Private Schools

	Type of School	N	Mean	S.D	Std. Error	t	Significance
Boys	Government	50	17.4	7.63	1.07	1.44	Significant at 0.01 level
	Private	50	11.4	6.85	0.94		

Table 2 indicates that the t-value for test anxiety, 1.44, is greater than the desired value of $t=0.01$. This means that the result is significant at the 0.01 level. The boys in government schools exhibit more test anxiety than their counterparts in private schools. So, the hypotheses stating that there is no significant difference in test anxiety of adolescent boys studying in government and private schools are rejected.

Table 3: Test Anxiety of Adolescent Girls Studying in Government and Private Schools

	Type of School	N	Mean	S.D	S.E.	t	Significance
Girls	Government	50	19.2	6.66	0.94	1.44	Significant at 0.01 level
	Private	50	12.8	7.82	1.1		

Table 3 indicates that the t-value for test anxiety, 1.44, is greater than the desired value of $t=0.01$. This means that the result is significant at the 0.01 level. The girls in government schools exhibit more test anxiety than their counterparts in private schools. So, the hypotheses stating that there is no significant difference in test anxiety of adolescent girls studying in government and private schools are rejected.

Table 4: Gender Difference in Test Anxiety of Adolescent Studying in Government and Private Schools

Type of School	Gender	N	Mean	S.D	S.E.	t	Significance
Govt	Boys	50	17.4	7.63	1.07	1.42	Not Significant
	Girls	50	18.2	6.66	0.94		
Private	Boys	50	11.4	6.85	0.92	1.46	Not Significant
	Girls	50	12.8	7.82	1.1		

Table 4 depicts that there is no significant gender difference found to exist among adolescents studying in government and private schools on a test anxiety scale. The boys and girls respectively of govt. and private schools depict similar test anxiety. So, the hypothesis stating that there is no significant gender difference exists in test anxiety of adolescent students studying in government and private schools is accepted. The findings of the study are in agreement with Kour (2002), which shows that there are no significant gender differences in test anxiety among first-generation learners of high school students.

EDUCATIONAL IMPLICATIONS AND SUGGESTIONS

In light of the above findings, the following steps should be taken:

- The government should provide mobile phones and tablets to poor students through a subsidy.
- Internet facilities must be provided in all Govt. and private schools.
- Teaching staff must be trained to adopt new technology.
- Schools should establish psychological guidance and counselling cells to guide students at every stage of education, particularly those in government schools.
- The schools should organise different co-curricular and curricular activities to reduce the test anxiety level of students.
- The government schools should pay special attention to students' learning needs, problems and issues.
- Special activities, such as seminars, Symposiums, Workshops, Painting, and Drawing Quiz competitions, should be organised, and all students should be encouraged to participate. This will reduce their anxiety to some extent.
- Remedial / Tutorial classes should be organised to increase students' academic achievement.
- Regular test series should be conducted for the students.

- Special incentives should be given to the students of different families.
- Parents should be educated on how to tackle the test anxiety level of children.
- Frequent parent-teacher meetings shall be organized. This will enable them to share and understand the problems related to test anxiety and initiate joint efforts in this regard.
- The family atmosphere should be friendly, democratic and conducive to the overall development of children.
- WHO recently pointed out that Covid-19 may never be eradicated, and people must live with it. “It is important to put this on the table: this virus may become just another endemic virus in our communities, and it may never go away. HIV has not gone away, but we have come to terms with the virus. I think there are no promises and no dates for this. This disease may settle into a long-term problem, or it may not be,” WHO emergencies expert Mike Ryan said in an online briefing (Sandhya, 2020). Concerning this statement, many countries are planning to continue education through distance or virtual mode, and Govt. should also prepare for the same.

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CHAPTER 15

PERCEPTION OF SECONDARY SCHOOL STUDENTS TOWARDS ONLINE EDUCATION DURING PANDEMIC COVID-19 IN KATHUA DISTRICT

Neha Mehra

ABSTRACT

The COVID-19 pandemic, no doubt, has affected all spheres of human life but has highly impacted education worldwide. All education institutes are closed due to the lockdown so that there will be no chance of spreading viral infection among students, jeopardising the whole education system. The consequence of this is that there was a sudden change in the entire education system, and due to these changes, educational institutes were forced to shift from traditional teaching to online learning platforms to minimise academic loss. Yet the success and effectiveness of online education are on the question mark in developing countries like India, where the digital divide of society poses a severe challenge. The present research paper focuses on studying the perception of secondary school students in the Kathua district towards online education during the outbreak of covid 19. This paper wants to investigate the answers to research questions like what kind of benefits and challenges faced by Kathua secondary school students in online education during COVID-19, how was their attitude towards online teaching and what kind of remedial measures can be adopted to overcome the challenges faced by them in online education in a pandemic. For this, the sample includes 52 secondary school students from 7 private and government schools in Kathua through purposive sampling who take education online during a pandemic. The tool for data collection consists of a self-constructed questionnaire that uses Google Forms. The conclusions of the study are Online learning improves the technical skills of students; the material is available 24x 7hrs, flexible in nature; guidance and counselling are needed to stay motivated; it saves the students from the risk of transmission of COVID-19; students don't believe online classroom can replace traditional classroom teaching.

Keywords: Perception of Secondary School Students, Online Education, COVID-19, Benefits and Challenges.

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INTRODUCTION

With the entrance of Coronavirus in 2019, our lives faced a complete lockdown. Our entire education system was affected. “Education is the key to personal development and the future of societies. It unlocks opportunities and narrows inequalities. It is the foundation of an informed, tolerant society and a key engine of long-term progress. The COVID-19 pandemic has led to the largest disruption of education ever,” said Secretary-General Antonio Guterres when he launched his policy brief on ‘Education and COVID-19’. In history, the COVID-19 pandemic has created the most significant disruption in education by affecting 1.6 billion students in almost all countries, including 23.8 million students who have dropped out and will not be able to access schools next year (Economic Times, 2020). Our educational institutes like schools, colleges and universities, to avoid any academic loss, were forced to shift to an online mode of education from a traditional mode of Education. Educational institutes adopted online learning, flexible learning and Swayam platforms. Online learning mingles the internet and technology in the education process, improving the teaching-learning experiences. Online education can become successful only in three categories: access, digital literacy, and assessment. To avoid viral infection and illness after the coronavirus, online education is the smart alternative to the traditional face-to-face teaching-learning process in the education system to overcome academic loss (Rajamously, 2022). All schools, colleges and universities are taught through Google Classrooms, wise app, Google Meet, Zoom Meet, etc. They are increasing the accessibility and affordability of education for many students, particularly those who would have been unable to obtain it during a pandemic (Bianco & Carr-Chellman, 2002). Thus, online education has become an integral part of all educational institutions.

PERCEPTION

Perception means the experience of the world through senses. Through the perceptual process, we learn about the properties and components of the environment that are crucial for survival. Through Perception, we not only feel the world in which we are enclosed; it also obeys us to act within our environment. Perception is done by five senses: sight, smell, touch, sound, and taste.

ONLINE EDUCATION

Internet education, virtual education, cyber-learning, and asynchronous learning are linked to Online Education. Kearsley (2000) described online education as shaped by collaboration, connectedness, student-centeredness, unboundedness, community, exploration, shared knowledge, multimodal experience, and authenticity. Volery (2000) reported that distributed learning delivered by the Internet is termed online Education. Paulsen (2002) said online education consists of:

- Teachers and learners are at different places during the teaching-learning process.
- Educational content is delivered to students by the use of an internet connection.
- Two-way communication by computer network must be available so that students benefit from communication with each other, teachers, and staff (yang and Cornelius).

NEED AND SIGNIFICANCE OF THE STUDY

The relevance of online education in the academic field has grown even more so in light of the current COVID-19 pandemic, which has forced all educational institutions worldwide to close. Students, in particular, must overcome many obstacles at all stages and levels of schooling. Innovative technologies and learning management systems for teaching and assessment have progressed, providing a usable answer for educators so policymakers can use information technology during lockdown to cover the course work. Stakeholders engaged, such as educational administrators, teachers, and students, are putting forth significant effort to use current technology to continue the educational process while minimising the gaps that may emerge due to the transition. There are various reasons for its widespread acceptance; some particularly relevant to learners include its ease of use, adaptability, and improved environmental management. Although it has a lot of benefits, e-learning also has several drawbacks, like social isolation, a lack of student-teacher connection, and connectivity challenges, among others. Teachers use e-lectures, e-tutorials, e-case-based learning, and other methods to conduct effective e-learning. So that continued education can be provided without being affected much during quarantine. Teachers are also experimenting with various e-teaching tools to offer the most convenience for their students. E-learning is used to improve the quality of education. Many elements influence the success of e-learning, including accessibility, appropriate methodologies, course content, and evaluation criteria. This study aims to analyse secondary students' e-readiness and perceptions of online learning amid the COVID-19 pandemic. This study gave insight into the problems and challenges faced by the secondary school students of Kathua district in online education that need improvement. It will emphasise the importance of government, parental, institutional, and teacher support in making online learning more accessible and effective for kids.

REVIEW OF RELATED STUDIES

Muthuprasad, Aiswaraya, Aditya and Girish (2021), in their study “Students’ perception and preference for online education in India during COVID -19 pandemic” investigated that respondents (70%) were willing to join online classes to manage the curriculum during this pandemic. Smartphones were preferred by most students for online learning. Dipak (2021), in his study “Student’s perception towards online-class during COVID-19 pandemic,” found that 81.7% of students joined online classes for the first time. They feel confident in using the online classes, whereas 58.1% of students faced using online classes, various problems and more than 59% found that online class is the easier and more common platform to share knowledge and collect the required information. Abhinandan and Anupama (2020) studied “A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi District”. They concluded that students get maximum support from teachers after using online classes. Due to this, they feel comfortable but don’t want to replace traditional classes with online classes. Teachers' perception of online was that they face many difficulties in conducting online classes due to technical and network issues. Arshad, Vivek and Kamalun (2020) investigated that COVID-19 students have a positive perception regarding e-learning in their study named “Student’s Perception towards E-learning during COVID-19 Pandemic in India: An Empirical Study”. Chandra (2020) studied “Online Education during COVID-19: perception of Academic Stress and Emotional Intelligence Coping Strategies among College Students”, and the findings revealed that fear of academic failure and online and home environments have

significant differences among male and female students. They almost shifted to creative activities and joined courses that helped them learn new technical skills. After using emotional intelligence, it was seen that the adverse effects were the consequences of the current pandemic, and students were trying to deal with these adverse effects.

RESEARCH QUESTIONS OF THE PRESENT STUDY

1. What is the perception of secondary school students of the Kathua district towards online education during the COVID-19 pandemic?
2. What are the benefits of online education to secondary school students during COVID-19 in the Kathua district?
3. What are the problems secondary school students face in online classes in the Kathua district during the Covid-19 pandemic?
4. What is the perception of secondary school students of the Kathua district towards plans and criteria of evaluation?
5. What is the attitude of secondary school students in the Kathua district towards online education?
6. What is the perception of secondary school students of the Kathua district towards motivation during online education?
7. What are the remedial measures to solve the problems of secondary school students in Kathua district regarding online education during the COVID-19 pandemic?

RESEARCH METHODOLOGY

The present study describes secondary school students' perception of online education in the Kathua district. The survey method was selected most appropriate to the problem under investigation. The students studying in (9th to 12th class) secondary schools located in the Kathua district constitute the population of the study. The data is collected from 52 government and private school students, comprising the study sample. The purposive sampling technique is applied to determine students' perceptions of online education during COVID-19 in the Kathua district. The number of students taken as a sample from different government and private schools is shown in the following table:

Table 1: Number of Students Selected from Different Schools

S. NO	NAME OF THE SCHOOL STUDENTS	Students
1.	Government High School, Chadwal	9
2.	Government Boys Higher Secondary, Kathua	8
3.	Government Higher Secondary, Budhi	9
4.	Rachpal Memorial Convent Higher Secondary School, Budhi	10
5.	JK Public School, Barwal	7
6.	Shishu Model High School Budhi (Nagrota)	9
	Grand total	52

TOOL USED IN THE STUDY

A self-constructed questionnaire was developed as a tool by an investigator with the help of Google Forms through an extensive review of literature related to the perception of students towards online education during COVID-19. The questionnaire consists of seven dimensions and 30 items. The dimensions of the questionnaire are given as follows:

D1: Structure of online classes

D2: Benefits of online education

D3: Problems faced during online education

D4: Plans & criteria for evaluation

D5: Attitude towards online education

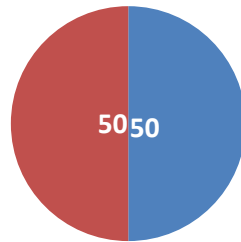
D6: Motivation during online education

D7: Remedial measures

ANALYSIS OF DATA

The percentage analysis was used to explore the total individual responses of both government and private secondary school students included in the Kathua district sample on each question under seven dimensions regarding perceptions of online education in COVID-19.

School Responses



100% response of students of private and government secondary schools was recorded

FINDINGS OF THE STUDY

The following statements under each dimension are the findings of the study:

DIMENSION 1: Structure of online classes

- ✓ 70.6% of students preferred live online classes, 19.6% preferred YouTube classes, 5.9% preferred to receive reading material only, and 3.9% preferred recorded online classes.
- ✓ 50% of students preferred video content with reading material, 26% preferred only reading material according to the syllabus, and 16% preferred finding study material independently after attending online lectures.

DIMENSION 2: Benefits of online education

- ✓ 76.5% of students found online education flexible, available 24x7, and a way to save time, which can take place at any time. Meanwhile, 23.5% of 52 students didn't find online education flexible but time-bound and a waste of time.
- ✓ 52% of 52 students found online reading content inferior to library books in their school. In comparison, 48% of 52 students found online learning material superior to school library books in quantity and quality.
- ✓ 66.7% of students admitted that their technical skills improved by using different applications, channels and software in online classes, while 7.8% didn't find any improvement in their technical skills. 25.5% of 52 students are unsure about progress in their technical skills due to the online shift in education.
- ✓ 90.2% of students think they can personalise their online learning according to their needs, while 9.8 % don't agree.

DIMENSION 3: Problems faced due to online education

- ✓ 96% of 52 students missed concepts due to poor network, 39.2% of students think they do not score well if the school suddenly conduct offline exams, 74.5% of students experienced isolation, distractions, not feeling motivated and failure in time management, and 86.3% students felt that continuous sitting in online class affect the mental and physical health.

DIMENSION 4: Plans and criteria for evaluation

- ✓ 64% of students think online exams are not better than offline exams. In comparison, 36% of students agree that online exams are better, and 72% of students feel that 5-10 min quizzes at the end are necessary to achieve a better understanding online.

DIMENSION 5: Attitude towards online education

- ✓ 50% of students show a negative attitude toward continuing with online classes over actual classroom lectures after getting rid of the COVID-19 pandemic, 40% want to continue with online courses, and 10% are unsure.

DIMENSION 6: Motivation during online education

- ✓ 82% of students agreed that personalised online material searching keeps them motivated to learn more, 18% disagreed with the statement, and 88% of students found the need for emotional motivation from teachers to cope with stress due to the COVID-19 pandemic.

DIMENSION 7: Remedial measures

- ✓ Student responses should be recorded as Reduce syllabus, Provide offline notes, Study material should be provided before taking class, Objective-type questions should be provided in the exam, Reading material should be simple and understandable, and A class-wise website should be generated for students to access learning material online easily without wasting time searching inappropriate materials available online.

CONCLUSION AND DISCUSSION

The findings of this study are in line with the findings of the studies conducted by Abhinandan & Anupama (2020), Chakraborty(2020), Teuku & Kurniawati (2020), Dipak (2021), Melisa (2021) on the perception of students towards online learning. The purpose of any research study is to find some concrete solution to the problem by using different research stages. Proper data analysis and interpretation lead to the most valid and justified conclusions. The conclusions of the study are:

1. Online education can't replace the benefits of traditional classroom learning.
2. Face to face & web-based learning environments have their respective uses but also their limitations
3. Online education is flexible
4. Online education helps in maintaining guidelines for the COVID-19 pandemic and the risk of transmission of infection
5. Technical skills and knowledge of first-time users improved
6. Students in J&K face network issues
7. Online education is stressful & affects health and social life of students
8. Audio video study material available online helps students thoroughly learn the concepts in the long term.

SUGGESTIONS FOR FURTHER RESEARCH

Further research can be done in the lines suggested below:

1. The present study can be more comprehensive by extending it to the state or national level.
2. The study involved a sample of 52 students from secondary schools. The same study can be conducted with a larger sample and in higher educational institutions, professional institutions, etc.
3. The study can be undertaken in other districts since it has only been confined to the Kathua district.
4. An unstructured interview schedule can be used to collect qualitative data.
5. The study can be further done on 'What are the intentions of students to use online learning in the future'?
6. The study can be further used to compare the effects of traditional and online education on students' academic achievement and satisfaction.
7. The study can further explore why students felt online learning was less effective, especially during the COVID-19 pandemic.
8. The study can be further undertaken to compare the perceptions of board exam and non-board exam classes towards online education and examination patterns.

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CHAPTER 16

Awareness and Use of MOOCs by Teachers Teaching in Higher Education Institutions for Their Professional Development

Nishta Rana & Nidhi Slathia

ABSTRACT

Massive Open Online Courses (MOOCs) is an online platform that provides online courses to the masses irrespective of their social background, physiological barriers, and gender. MOOCs offer a variety of courses; anyone can enrol in them and enhance his or her qualifications, knowledge, and skills. They are a boon for teachers' professional development, allowing them to upgrade their professional development without disturbing their busy schedules. This study aims to shed light on the usage, awareness and problems of teachers teaching in higher education institutions regarding Massive Open Online Courses. Mixed method research has been applied for the present research study. A sample of 29 teachers teaching in higher education institutions has been selected randomly for an online survey. Eight teachers teaching in higher education institutions for Focus Group Discussions were taken. The data were analysed through the Percentage and Chi-Square test. Qualitative data obtained through focus group discussion was analysed through content analysis. Self-prepared tools were used to assess the teachers' awareness of MOOCs and their problems while pursuing MOOCs. It was observed that for all the items, Chi-Square values were significant, indicating a high level of awareness among teachers teaching in higher education institutions regarding MOOCs. Some of the problems reported by the teachers were lack of interest, lack of internet connectivity, lack of time, lack of technological skills, health issues, etc. Qualitative data also supported the findings through quantitative data.

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Keywords: Massive Open Online Courses, Professional Development, Awareness, SWAYAM, Coursera, Google Open Online Education.

INTRODUCTION

The higher education landscape is continuously evolving, driven by the rapid advancement of technology and the growing demand for flexible and accessible learning experiences. Massive Open Online Courses (MOOCs) have emerged as a prominent force in this dynamic environment, disrupting traditional educational paradigms and reshaping how knowledge is acquired and disseminated. Beyond their role as alternative learning platforms for students worldwide, MOOCs have garnered significant attention for their potential to revolutionise teachers' professional development within higher education institutions (Falode, Usman, Ilufoye, & Awoyemi, 2019).

Teachers play a pivotal role in the quality of education and the overall learning experience for students in higher education. As the educational landscape undergoes profound changes, educators face the challenge of adapting their pedagogical approaches, incorporating innovative technologies, and staying abreast of the latest research and methodologies. MOOCs, with their flexibility, scalability, and diversity of content, offer a unique avenue for teachers' continuous learning and growth (Urrutia, Fielding & White, 2016).

This research paper explores the intersection of MOOCs and teachers' professional development within higher education institutions. By examining the evolving landscape of teacher training and the potential benefits and challenges associated with integrating MOOCs into professional development programs, this study seeks to shed light on how these digital resources can empower educators to enhance their instructional practices, promote active learning, and cultivate a culture of lifelong learning within academic communities.

In conclusion, as the higher education landscape undergoes rapid shifts, harnessing the potential of MOOCs for teachers' professional development has become imperative. By leveraging these innovative platforms, educators can engage in self-directed learning, collaborate with peers globally, and stay updated with the latest pedagogical approaches and technological innovations. However, while the benefits are compelling, challenges such as quality assurance, personalised learning pathways, and institutional support must also be carefully considered. As we navigate this transformative educational journey, understanding the symbiotic relationship between MOOCs and teachers' professional development is crucial for fostering a culture of excellence and innovation within higher education institutions.

REVIEW OF RELATED LITERATURE

Dhanani et al. (2016) examined the staff members' awareness of educational videos provided on the MOOC platform and found that teaching staff are very unaware of MOOCs and educational video series.

Urrutia, Fielding and White (2016) examined the problems and possibilities for university scholars employed as guides through MOOCs in colleges. Focus group discussion was used as a research instrument for gathering data; 20 participants were selected for interviews and divided into groups of four to six people. The participants of the group belong to different backgrounds. It was revealed from the results that all the university scholars in MOOCs as guides can guide career researchers to progress in

specific teaching, electronic and theoretical techniques that could be useful for the organisation they worked for.

Woon (2018) examined undergraduate learners' viewpoints regarding using MOOC for their knowledge, skill and understanding. Sixty-six students have been randomly selected as the respondents from the 87 students who participated in a MOOC as part of an offline course requirement. Four questionnaires were used to gather data. The learning strategies questionnaires comprised 14 statements with seven items for deep learning and 7 for surface learning. The first attitude questionnaire examined MOOCs PU (Perceived Usefulness) and included three statements. It was found that based on gender, feminine learners were more connected with MOOC than masculine learners. However, there is a similar challenge among masculine and feminine learners.

Sivakumar (2019) examined learners' and educators' awareness of MOOC-SWAYAM. From Annamalai University, a sample of 100 learners –educators was drawn with the help of Random Sampling, also following the “Survey method”. A self-prepared questionnaire was developed and administered to the student-teachers, which contained 30 items. It was found that learners and educators have low Awareness of MOOCs SWAYAM. The study has also revealed that student teachers do not have basic ideas about MOOCs –SWAYAM.

Wang and Zhu (2019) in their study, explored the productiveness of MOOC-based flipped education and suggested understandable restated instruction for MOOCs in the conventional tertiary school. It was reported that a MOOC-based flipped educational structure may upgrade learners' academic achievement. The finding also revealed that learners showed positiveness regarding the little instruction but negativeness regarding the online exercises provided by MOOCs.

Alhazzani (2020), in his study, explored the effect of MOOCs on tertiary schools in Saudi Arabia. All professors of the Kingdom of Saudi Arabia were the population of the study. Facts and figures were gathered with the help of a quantifiable survey. A convenient sampling technique was used. 48 questionnaires out of 75 questionnaires were distributed. Five-point Likert scale was used. The results reported that MOOCs have a remarkable effect on tertiary school learners as they are very helpful in addressing educational issues. It was also found that MOOC classes clearly positively affected Saudi Arabia's tertiary schools.

In their study, Bakogianni, Tsitouridou, and Kyridis (2020) investigated the readiness of primary and secondary public school teachers to participate in MOOCs as a way of professional development. An online version of the questionnaire using Google Forms was emailed to primary and secondary schools and teacher groups on Facebook. It is, therefore, random sampling. Two hundred sixteen teachers of various specialities from the public and secondary schools participated. The sample consists mainly of women (69.4%), and most participants are over 35 years old (84.2%). The predominant educational specialities are pedagogical (38%) followed by science specialities (25.9%); most of the teachers hold a postgraduate degree (49.5%) and have over 11 years of service in education. The teachers generally showed a high level of readiness to use MOOCs in the context of their professional development. At the same time, some of their characteristics affect specific dimensions. In particular, teachers show low awareness of MOOCs and recognise the benefits of MOOC learning as well as MOOC usefulness in their professional development.

Brouwer, Fleerackers, Maciejouiska, McDonnell, and Mocerino (2022) assessed the impact of a professional development MOOC on the teaching beliefs of University Science Laboratory Teachers in their study. The ADDIE model was used to assess the participants, who were determined before and after they completed the MOOC. It was found that a large majority developed new ideas to help them enhance their teaching.

Kaur (2022), in her study, assessed the role of MOOCs in the professional development of teachers in India and found that MOOCs can become a cost-effective professional development resource to impart continuing education to teachers.

Panja, Banerjee, De and Singh (2023), in their study regarding the attitude of students and teachers towards MOOC usage for their academic and professional development: A Comparative study of two case studies, which received a lot of attention from educational stakeholders all round the world as a result of Covid-19. A mixed-method research strategy was used, data were collected through a self-prepared tool, and it was found that both teachers and students showed positive attitudes towards it.

NEED AND SIGNIFICANCE

Today, everything changes with the impact of technology, and it is the same as in the case of our education system. The earlier teaching profession was only to provide knowledge, but in the present time, the role of teachers has changed. A teacher is successful when he or she is a continuous learner to cope with the challenging role a teacher has to play in this modern era; one has to update oneself with the latest techniques and trends of teaching and learning for one's professional development. In the present pandemic, teachers cannot go anywhere, and because of this, we cannot stop the upgrade of education. Keeping in view these things, the present research study has been conducted. This study has also become significant in terms of our Jammu and Kashmir, which has faced frequent disturbances in internet connectivity during the year (2020-2021), the peak time of the Corona pandemic. The people of Jammu and Kashmir faced the unavailability of proper internet connectivity when they needed hours to shift offline education to online mode. So, it was worthwhile to conduct this study to know about the awareness among teachers teaching in higher educational institutions and the problems faced by the teachers while pursuing MOOCs.

OBJECTIVES

1. To assess the awareness among teachers teaching in higher education institutions about Massive Open Online Courses.
2. To assess the problems perceived by teachers teaching in higher education institutions while pursuing MOOCs.

RESEARCH METHODOLOGY

A mixed method of research was employed in the study.

SAMPLE OF THE STUDY

Simple Random Sampling has been used for selecting a sample of 29 teachers teaching in higher education institutions, and 8 teachers who were pursuing a MOOC on Research and Assessment under ARPIT (Annual Refresher Programme in Teaching) on the SWAYAM Platform have been selected through purposive sampling for focus group discussion.

TOOLS USED IN THE STUDY

To accomplish objectives, the quantitative data was obtained by administering a self-prepared tool to assess the teachers' awareness of MOOCs and their problems while pursuing MOOCs. Cronbach alpha reliability was used to get an internal consistency estimate, and validity was ensured by establishing content and construct validity. For qualitative data, a semi-structured questionnaire was used for focus group discussion.

STATISTICAL TECHNIQUES EMPLOYED

The quantitative data were analysed using the Percentage and Chi-Square tests. For the qualitative data, content analysis was done.

FINDINGS OF THE STUDY

QUANTITATIVE DATA ANALYSIS

Objective 1: To assess the level of awareness among teachers teaching in higher education institutions about Massive Open Online Courses.

To assess the level of awareness among teachers teaching in higher education institutions about Massive Open Online Courses, chi-square was computed for the data through the questionnaire, which included basic information regarding MOOCs.

Table 1: Chi-Square Table for Awareness among Teachers Teaching in Higher Education Institutions about Massive Open Online Courses

Items	Yes	No	df	Chi-Sq	Level of Significance
1. MOOC stands for Massive Open Online Course.	26	3	1	18.2	0.01
2. I have completed at least one MOOC.	21	8	1	5.83	0.05
3. MOOCs are conducted in traditional classrooms.	6	23	1	9.97	0.01
4. MOOC is an online course aimed at unlimited participation and open access via the Web.	27	2	1	21.5	0.01
5. MOOCs can be accessed for free	22	7	1	7.75	0.01
6. SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) programme is an Indian MOOC platform.	25	4	1	15.2	0.01

7. MOOC-based degrees are emerging throughout the world.	25	4	1	15.2	0.01
8. Anyone can get enrolled in MOOCs.	20	9	1	4.17	0.05

It can be observed from Table 1 that for all the items, the Chi-Square values were found to be significant. There is a high level of awareness among teachers teaching in higher education institutions, and expressed a positive reaction towards the following items:

MOOC stands for Massive Open Online Course.

- MOOC stands for Massive Open Online Course.
- MOOC is an online course aimed at unlimited participation and open access via the Web.
- SWAYAM, or Study Webs of Active Learning for Young Aspiring Minds programme, is an Indian MOOC platform.
- MOOC-based degrees are emerging throughout the world.

Objective 2: To assess the problems perceived by teachers teaching in higher education institutions while pursuing MOOCs.

The percentage of problems perceived by teachers teaching in higher education institutions while pursuing MOOCs has been computed (Figure 1) to assess the problems perceived by teachers teaching in higher education institutions.

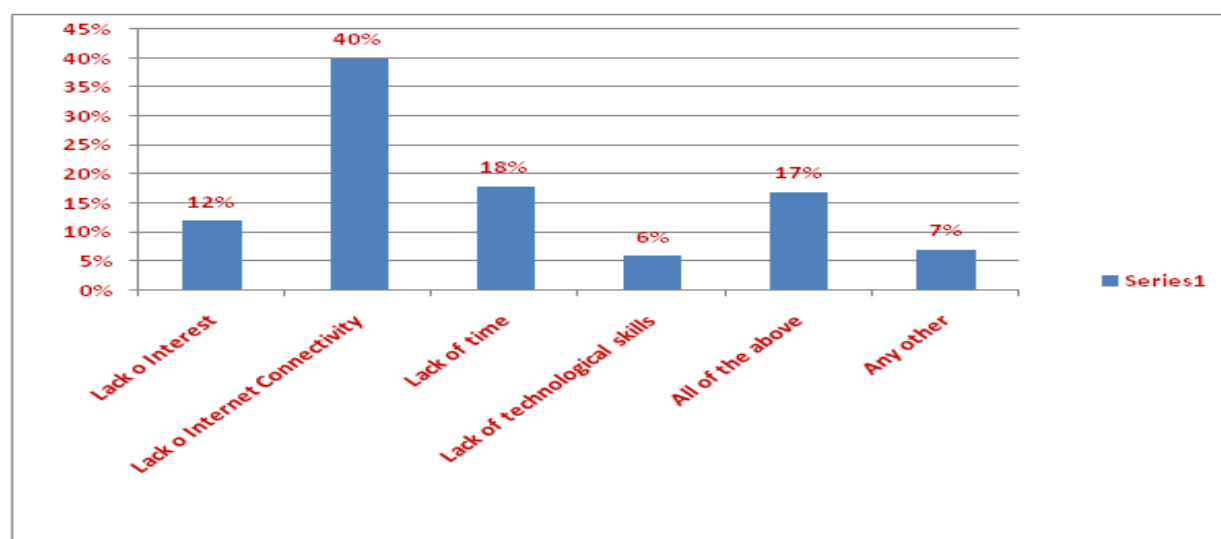


Figure 1: Problems Perceived by Teachers Teaching in Higher Education Institutions while Pursuing MOOCs

Figure 1 shows that 12% of teachers lack interest, 40% lack internet connectivity, 18% lack time, 6% lack technological skills, 17% feel all the mentioned problems, and 7% perceive problems other than (health-related) those mentioned in the questionnaire.

QUALITATIVE DATA ANALYSIS

The present research study also decided to conduct a focus group discussion to qualitatively assess the use of MOOCs by teachers teaching in higher education institutions for their professional development, as they were significant contributors to the quantitative assessment of their awareness and usage. These data were collected using the survey method to strengthen the validity of the results obtained using the quantitative method.

Focus Group Discussion was conducted through Google Meet, and semi-structured questions were framed. The following Questions were asked to the teachers teaching in higher education institutions who were pursuing a MOOC on Research and Assessment under ARPIT (Annual Refresher Programme in Teaching) during the year 2020:

Q.1 Is there any role of MOOCs in the professional development of teachers?

Q.2 In which aspects does the MOOC on Research and Assessment benefit you?

Q.3 What are the things you like most in this MOOC?

Q.4 What are the various problems you faced while pursuing MOOCs?

Q.5 What are your suggestions for making MOOC implementation effective for the professional development of teachers?

Table 2: Content Analysis for Focus Group Discussion

Theme	Code	Frequency	Percentage
Usefulness	Clarity of concepts	7	87.5
	Earning API	6	75.0
	Suited to work schedule	7	87.5
	Building self-confidence	6	75.0
	Self-Study	7	87.5
Research and Assessment	Sampling method	6	75.0
	Research method	5	62.5
	Research paradigm	7	87.5
	Test construction	5	62.5
	Inferential Statistics	5	62.5
Things liked the most	e- Content	6	75.0
	Videos	7	87.5
	Discussion Forum	5	62.5

	Self-pace	6	75.0
	Free of cost	7	87.5
Problems	Lack of internet connectivity	3	37.5
	Lack of time	2	25.0
Suggestions	Deadlines for assignment	3	37.5
	Flexible deadlines	5	62.5
	Peer assessment	4	50.0
	Immediate feedback	6	75.0
	Contact number of mentors	5	62.5
	Short length videos	6	75.0

Content analysis findings for the answers to the question “How are MOOCs useful for professional development?” by the teachers teaching in higher education institutions are presented in Table 2. While 7(87.5%) teachers stated that content shared on MOOC through the SWAYAM platform was highly enriching, 6 (75.0%) of teachers stated that MOOC helps them earn Academic Performance Indicators (API) without disturbing their professional schedule, 7(87.5%) of teachers stated that online programme suited their work schedule, 6(75.0%) teachers stated that online course strengthened their self-confidence as a teacher and 7(87.5%) teachers said that MOOC is the best source of providing quality input to self-study. Content analysis for the answers given to the question “In which aspects the MOOC on Research and Assessment is beneficial to you?” shows that this MOOC helped them in interestingly clearing the concept of sampling as per the responses by 6(75.0%) teachers, 5(62.5%) teachers stated that this course helped them in choosing an appropriate research method, 7(87.5%) teachers found this course helpful in developing and selecting appropriate research paradigm, 5(62.5%) teachers stated that the course is helpful in test construction, 5(62.5%) teachers found themselves empowered in using inferential statistics. Content analysis for the answers given to the question “What are the things liked by you the most in this MOOC?” shows that 6(75.0%) teachers liked the content provided in the MOOCs, 7(87.5%) stated that they liked the educational videos, 5(62.5%) liked the discussion forum for discussing the queries amongst peer participants and 6(75.0%) teachers liked the self-pace which help them to study without disturbing their schedule, 7(87.5%) teachers appreciated the idea of making the ARPIT(Annual Refresher Programme in Teaching) free of cost for teachers teaching in higher education institutions. Content analysis findings for the answers given to the question “What are the various problems faced by you while pursuing MOOCs?” shows that 3(37.5%) teachers perceived lack of internet connectivity as one of the significant problems they we’re facing and 2(25.0%) teachers stated that lack of time is also one of the problems faced by them while pursuing MOOCs. Content analysis findings for the answer given to the question “What are your suggestions for making MOOC implementation effective for professional development of teachers?” reflected that 3(37.5%) teachers wanted no deadlines for assignments, 5(62.5%) teachers stated that there should be flexible deadlines, 4(50.0%) teachers stated that evaluation could be done through peer

assessment review, 6(75.0%) teachers stated that immediate feedback should be provided during the course at the weekend, 5(62.5%) teachers stated that the contact number of the mentors should be provided and also keep the forum interactive and 6(75.0%) teachers said that length of the videos should be reduced.

CONCLUSION AND DISCUSSION

The present study revealed that teachers teaching in higher education institutions have a high level of awareness regarding MOOC for their professional development. This result is just opposite to the results reported by Malita, Tiru and Grosseck (2018), and Sivakumar (2019), in which a large part of the sample knows nothing or too little about the MOOCs means having low awareness and its benefits is restricted to experienced teachers who are involved in research and development (Castano-Munoz et al., 2018; Malita et al., 2018; Kundu & Bej, 2020). The present study revealed that the teachers teaching in higher education institutions also faced many problems while pursuing MOOCs, such as internet connectivity, lack of time, etc. In developing countries, especially in Jammu and Kashmir (India), internet connectivity is a significant problem that demotivates teachers to adopt online courses (Vinay & Bhaskar, 2020; Joshi et al, 2020; Kizilcec & Halawa, 2015; Bhaskar et al., 2020). Teachers primarily engage with MOOCs online, often driven by their curiosity and initiative. The successful pursuit of MOOCs relies on consistent access to technological resources and high-speed internet. Without these prerequisites, teachers may encounter challenges in completing courses. Juggling existing job commitments, educators find it burdensome to allocate time for MOOCs, as this could disrupt their work-life equilibrium. The demanding nature of MOOCs necessitates teachers' substantial dedication of time and effort, as highlighted by Tseng et al. (2019) and Chaudhary and Bhaskar (2016). Staying abreast of the swift evolution in educational innovations and learning technologies is an ongoing responsibility for educators. MOOCs, offering flexibility and convenience, empower teachers to augment their knowledge despite hectic schedules. Furthermore, these courses provide the added benefit of free content and resources. The onus rests on teachers to consistently renew and enhance their knowledge and skill sets. The educational institution at the tertiary level has to offer both financial and technical assistance to educators, aiming to bolster their expertise using Massive Open Online Courses (MOOCs). By allocating dedicated time and incorporating MOOC certifications as a component for performance evaluations, teachers could be incentivised to embrace and incorporate MOOCs into their teaching practices.

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CHAPTER

17

STUDENTS' PERCEPTION OF ONLINE LEARNING DURING THE COVID-19 PANDEMIC: A SURVEY ON AKANKSHA FOUNDATION STUDENTS

Pravin Tambat & Ashwini Halbe-Karwande

ABSTRACT

The total shift of the teaching-learning process from offline to online and the rapid and unplanned change in the online teaching format brought about by the COVID-19 pandemic has likely impacted many students' lives worldwide. To contribute to investigating this change, this study focuses on the impact of the COVID-19 pandemic on students' perception of online learning. 70 students from two schools of Akanksha Foundation (NGO) were sample participants in this study. The result showed that 23 %, 67 % and 10% of the students have high, moderate and low IT skills, respectively. 66% of the respondents were not experienced with online or e-learning, and 33% of respondents showed that they had prior experience with e-learning before the pandemic. This study also presented challenges and opportunities for the online teaching-learning process. Also, with online learning, face-to-face communication was missing. Therefore, teachers and administrative staff should concentrate more on relationship building. They should facilitate online learning experiences, adopt clear communication strategies, improve the learning tools and diversify assessment methods. The study concluded that, in the long run, a long-term plan for blended learning, a mixture of both online and face-to-face learning, is needed to improve interactive class activities and practices.

Keywords: Covid-19; Online Learning, Face To Face Learning, Akanksha Foundation

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INTRODUCTION

The spread of COVID-19 has also caused fear, anxiety and other concerns to citizens all over the world. Students have been multiply impacted by the COVID-19 pandemic: threats to their own and their family's health, the closure of schools and colleges, and pivoting to online learning. The total shift of the teaching-learning process from offline to online and the rapid and unplanned change in the online teaching format brought by COVID-19 has likely impacted many students' lives worldwide. To contribute to investigating this alteration, this study focuses on the impact of the pandemic on students' perception of online learning.

ONLINE LEARNING

Online learning is a method of education whereby students learn in a fully virtual environment. It takes place over the Internet. Learning went digital due to the COVID-19 pandemic. Educational institutions worldwide promptly responded to the pandemic by going online. Here, laptops, mobile phones, smartphones, and iPads were used for the teaching-learning process. Synchronous and asynchronous modes were used to deliver the knowledge.

Through synchronous online learning, groups of students can simultaneously participate in real-time activities anywhere in the world. This real-time interaction is facilitated by online chat and videoconferencing, allowing students and instructors to interact without delays. In contrast with synchronous online learning, asynchronous online learning methods enable students to study independently at different times and locations without real-time communication. This self-paced learning approach allows students to have more flexibility in their schedules. Technologies used for asynchronous online learning methods include email, blogs, e-books, and discussion forums.

Recent studies showed the acceptance of online learning only as a supporting tool to regular learning instead of a substitute for the regular learning mode (Garg, A. 2021). The majority of the students preferred to use a smartphone for online learning. The students opined that the flexibility and convenience of online classes make it an attractive option. In contrast, broadband connectivity issues in rural areas make it a challenge for students to use online learning initiatives (Muthuprasad, T. et al., 2021). The online learning environment was positively associated with students' well-being (Mustika, R. et al. 2021)

RESEARCH DESIGN

It is descriptive research that uses a survey design. The data is collected using an online questionnaire.

PARTICIPANTS

The present study's population is secondary 9th and 10th-grade students from different Akanksha Foundation schools.

The purposive sample of this study consisted of 70 students (ages 14 – 16). Two schools of Akanksha Foundation, D. N. Nagar Mumbai Public School (DNMPS) and Shindewadi Mumbai Public School (SMPS), were selected for the study.

MEASURES

For this study, the researcher used a ready-made tool called the ‘Perception of Online Learning survey questionnaire,’ prepared by Michał Bączek, MD, from Collegium Medicum, Jan Kochanowski University. The reliability test of the perception of online learning questionnaire was 0.76.

RESULTS

Table 1: Descriptive Statistics of Perception of Online Learning

School	Number of students	Mean	Median	Mode	S.D.	Kurtosis	Skewness
TOTAL	70	33.16	33.00	30.00	5.29	0.13	-0.14
DNMPS	28	33.43	32.50	30.00	5.04	-0.99	0.43
SMPS	42	32.98	33.00	31.00	5.51	0.59	-0.40

Table 1 indicates that the mean scores of perceptions of online learning for Total students, DNMPS students, and SMPS students are 33.16, 33.43, and 32.98, respectively, whereas the medians are 33, 32, and 33, respectively. The mode of the distribution is higher than the mean. Also, the mean, median, and mode are in ascending order.

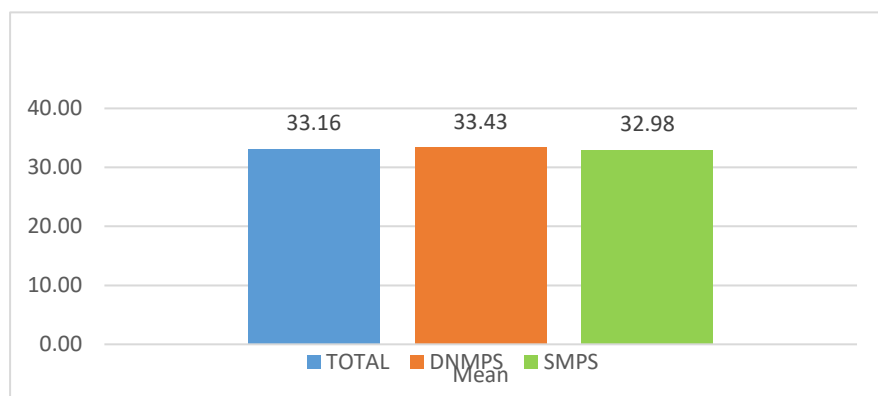


Figure 1: Bar graph representing the mean scores of Perceptions of online learning

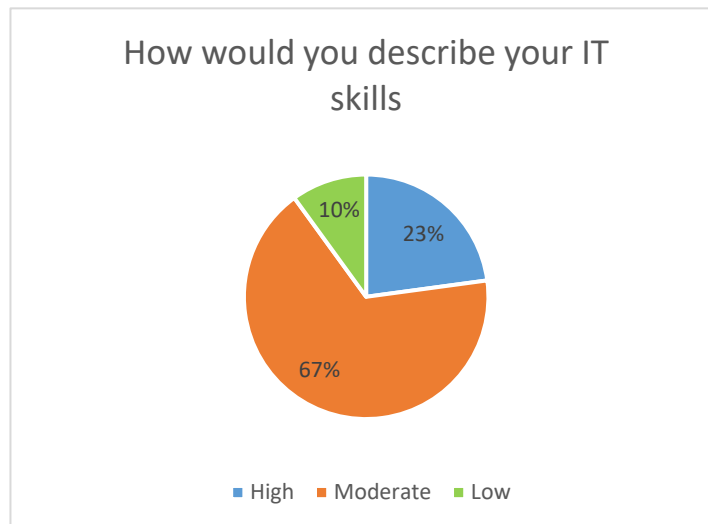


Figure 2: Pie chart representing Proficiency in IT skill

The results reveal that 23 % of the students responded that they have high IT skills. They know how to handle smartphones and laptops, install and uninstall different programs and use various educational apps independently. 67 % of the students responded that they have moderate IT skills. They still need some help while operating devices and different educational applications. At the same time, 10 % of the students answered that they have low IT skills. They struggle to handle devices and educational apps teachers use during online classes.

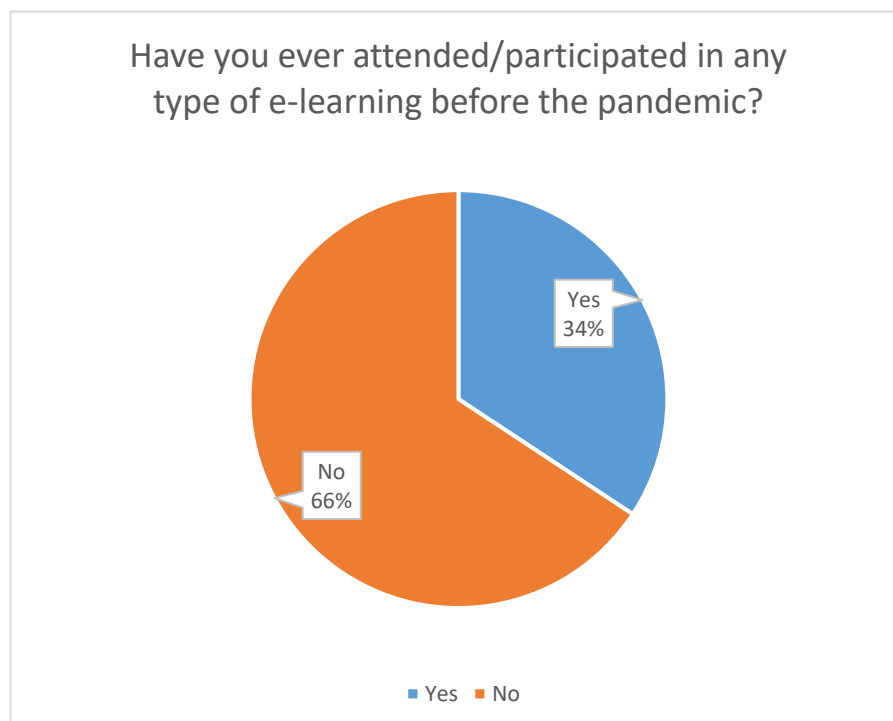


Figure 3: Pie chart representing Prior Experience of E-learning

The results reveal that 46 (66 %) students responded that they had never attended or participated in any type of e-learning before the pandemic, whereas 24 (33%) students had some e-learning experience. The respondents were asked to indicate all the possible advantages of online learning they gained during the online classes conducted during the COVID-19 pandemic. The "learning at own pace" attracted 54 (77.14%) of the respondents, "comfortable surrounding" by 48 (68.57%), "access to online materials" and "ability to stay at home" was indicated by 40 (54.14%), "classes interactivity" by 26 (37.14%), and "ability to record a meeting" got 24 (34.29%). This is summarised in Figure 4 below.

Maximum students (77.14%) responded that the most significant advantage of e-learning is learning at their own pace. At the same time, 34.24 % of students liked the feature of recording online classes, so they can go back and watch and listen to the recording repeatedly to revise the concept to strengthen their knowledge.

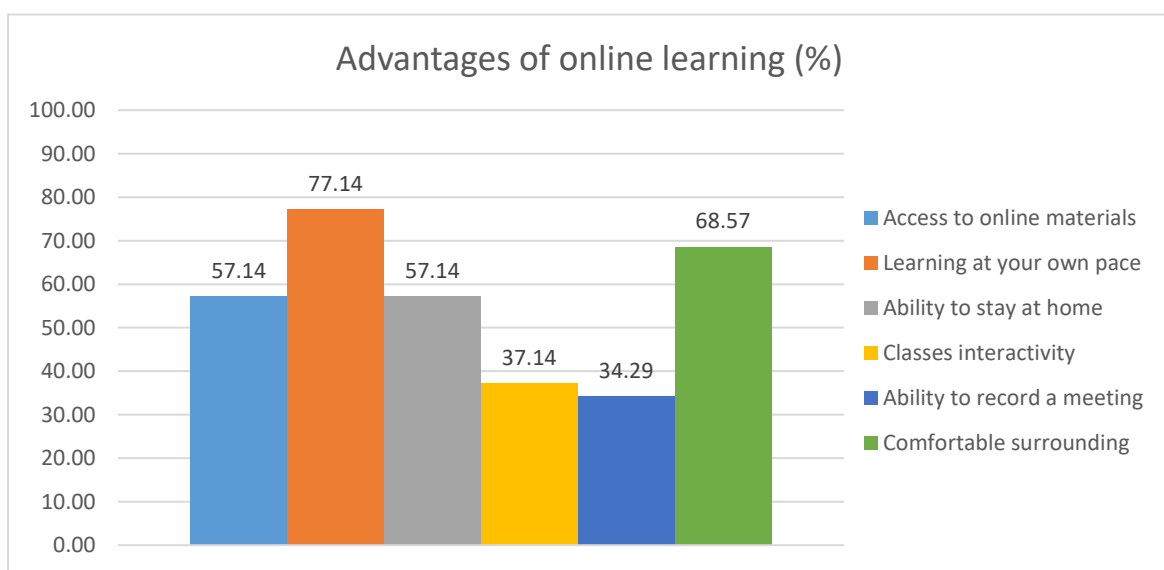


Figure 4. Bar graph representing Advantages of online learning

Figure 4 shows that students benefitted from e-learning. The respondents indicated various ways in which they benefit from using e-learning. It clearly shows that e-learning is growing during the Covid-19 pandemic as this is the only way of learning left in this lockdown, and many people are embracing it. The findings, therefore, show that a maximum (77.14%) of respondents felt it allows students to learn at their own pace. Sharpe and Benfield (2005) agree that e-learning promotes flexibility and allows for "own pace study", where students can work for as long as they wish on the online activities. On the other hand, this can create a negative impact because some students may not commit themselves online to their lessons and participate in the last hour. After all, e-learning allows flexibility. That would be the cause of failure in their modules of subjects.

The findings in Figure 4 show that the second highest percentage (57.14%) complemented the benefit of e-learning as "access to online materials". These findings also complement the internet as it is one of the most convenient, readily available methods to help students connect to a wide variety of information through e-learning. The literature also confirms that it is easy to access material online and allows students to use other services, such as blogs and wikis, to access information (University of Freiburg 2014).

Generally, it seems easy to access information on e-learning platforms because one can use any device to access information as long as you are connected to the internet.

The researcher aimed to discover the challenges students experienced regarding online classes during the COVID-19 pandemic. Students were given a list of possible obstacles to identify them, and the option of naming any other was also provided. The findings reveal that a significant challenge faced by 59 (84.29%) of the respondents is a technical issue, 35 (50%) mentioned the poor learning conditions at home and reduced interactions with classmates, 28 (40%) reported that non-availability of the device and reduced interaction with the teacher, 26 (37.14%) mentioned lack of self-discipline, and 20 (28.57)% reported social isolation. Lastly, they had to state any other challenges they were experiencing that had yet to be listed; however, they did not give any details. An overview of the responses is shown in Figure 5 below.

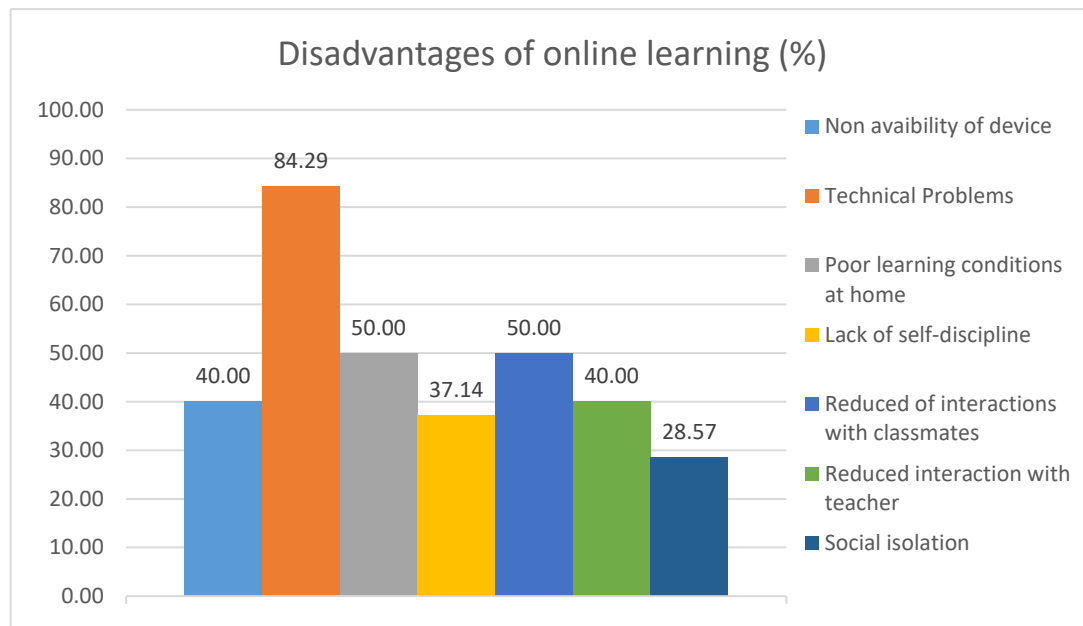


Figure 5. Bar graph representing the Disadvantages of online learning

Maximum students (84.29%) responded that the most significant disadvantage of online learning is raising technical issues like network problems and problems with devices and accessories like headphones while having online classes. Whereas 28.57 % of students felt socially isolated because of online learning

Based on the findings in Figure 5, we can identify that most (84.29%) of the students have technical problems like no electricity, load shading, signal issues, and a shortage of data packs. It is noted that students connect to the internet using their mobile phones; therefore, they have to buy internet data packs. The results also indicate that not all students can afford the Internet. This is confirmed by Neo's (2014) statements, which suggest that e-learning is costly as it requires internet availability to access information. Many students, 40%, need help with the non-availability of e-learning devices. This challenge about internet access is a common issue in India because not all students own a computer or have technological devices that could give them access to information that can assist them with their studies.

One of the challenges mentioned by the respondents is the need for face-to-face interaction with teachers and classmates. Based on these findings, it is also apparent that students feel that face-to-face interactions

provide them with opportunities to help each other and, in this way, overcome this difficult phase of life. Collaboration between students and teachers aims to create a strong relationship.

INFERENCE ANALYSIS

Null Hypothesis – There is no significant difference in the students’ perception of online learning of SMPS and DN Nagar MPS students during the COVID-19 pandemic.

Table 2: Relevant statistics of student’s perception of online learning students of SMPS and DNMPs

Type	No.	Mean	df	t-value	P-value	Level of Significance
Shindewadi MPS	42	32.98	68	0.35	0.73	NS
DN Nagar MPS	28	33.43				

From Table 2, it can be seen that the t-value of 0.35 is not significant. The p-value is 0.73 ($p > 0.01$). Hence, the null hypothesis is accepted.

The mean score of students’ perception of online learning of SMPS is not more significant as those of DNMPs students. It may, therefore, be said that the perception of online learning of SMPS and DNMPs students is almost equivalent.

DISCUSSION

A study confirmed that there was no significant difference in the students’ perceptions of online learning of students of SMPS and D.N. Nagar MPS during the COVID-19 pandemic. A Malaysian study (Khaw D and Kern ML, 2014) shows that connectedness or close relationships that depend on face-to-face interaction and direct interpersonal relationships had the greatest influence on well-being. However, since face-to-face interaction is not feasible due to pandemic constraints, schools must consider alternative ways of creating a comfortable and inclusive online learning environment.

90% of the respondents had experience handling devices like smartphones, tablets and computers. Based on the results, students do not battle when interacting with platforms because they know the operating system, which is the primary method to master online learning. A study by Piccoli, Ahmad and Ives (2001) found that when students are not afraid of using computers, they have a more positive attitude toward ICTs, which will result in a more satisfactory and effective experience for students in an online learning environment.

About 66% of the respondents needed to be more experienced with online learning. These results confirm that these students were not familiar with the online mode of teaching. 33% of respondents showed they had prior experience with online learning and had used this platform. The findings reveal that 33% of the students need IT skills. This would indicate that one-third of respondents consider themselves incompetent in computer literacy. The researcher notes that these students face significant challenges in their studies

because it is not easy to interact on the online learning platform without computer literacy. This is in line with the findings by Neo (2014), who noted that a lack of computer experience could hinder online learning. Hong, Ridzuan and Keuk (2003) indicated that the fundamental outcome measure of students' computer use is their attitude toward using any technology. This is the implication to show that few students can use the internet and have a positive attitude.

To overcome this, the Akanksha Foundation provided tablets with monthly mobile internet recharges to all students from standard 8 to 10 and trained teachers to handle devices and the primary educational platforms used in initial online classes.

It is concluded that students have benefited from online learning. The respondents indicated various ways in which they benefit when using online learning. It noted that online education is growing during the COVID-19 pandemic as this is the only way of learning left in this lockdown, and many people are embracing it. The findings, therefore, show that a maximum (77.14%) of respondents felt it allows students to learn at their own pace. Sharpe and Benfield (2005) agree that online learning promotes flexibility and allows for "own pace study", where students can work for as long as they wish on the online activities. On the other hand, this can create a negative impact because some students may not commit themselves online to their lessons and participate in the last hour. After all, online learning allows flexibility. That would be the cause of failure in their modules of subjects.

The second highest percentage (57.14%) complemented the benefit of online learning as "access to online materials". These findings also complement the internet as it is one of the most convenient, readily available methods to help students connect to a wide variety of information through online learning. The literature also confirms that it is easy to access material online and allows students to use other services, such as blogs and wikis, to access information (University of Freiburg 2014). Generally, it seems easy to access information on online learning platforms because one can use any device to access information as long as you are connected to the internet.

We can see that most (84.29%) students have technical problems like no electricity, load shading, signal issues, and a shortage of data packs. It is noted that students connect to the internet using their mobile phones; therefore, they have to buy internet data packs. The results also indicate that not all students can afford the Internet. This is confirmed by Neo's (2014) statements, which suggest that online learning is costly as it requires internet availability to access information. Many students, 40%, have a challenge concerning the non-availability of online learning devices. This challenge about internet access is a common issue in India because not all students own a computer or have technological devices that could give them access to information that can assist them with their studies.

One of the challenges mentioned by the respondents is the need for face-to-face interaction with teachers and classmates. Based on these findings, it is also apparent that students feel that face-to-face interactions offer them opportunities to assist one another and, in this way, overcome this difficult phase of life. The purpose of collaboration between students and teachers is to create a very strong relationship.

Until the beginning of the COVID-19 pandemic, traditional education was predominant compared to online education worldwide. The transition from offline to online learning occurred suddenly. Both teachers and students were not warned in advance. In the early days of online learning, students and

professors adapted to the new learning environment. Since both teachers and students were not proficient in new technologies, training was given to teachers first and then passed on to students. During online training, students became more independent and chose the time and conditions of learning.

RECOMMENDATION

This study confirms that schools should not only provide the resources needed for students to engage with online learning but also propose training on different online pedagogies for teachers to ensure a more positive learning experience for students.

Also, with online learning, face-to-face communication is missing. Therefore, teachers and other administrative staff should concentrate more on relationship-building. They should facilitate the online learning experience, adopt clear communication strategies, improve the learning tools (e.g., PowerPoint presentations, videos, and recorded lectures), and diversify assessment methods (e.g., moving from traditional exams to video-based oral presentations, Google forms, and using applications to inspire students to engage in online discussions).

Finally, it is important to note that staff well-being is essential to support this student learning experience. Therefore, whilst schools should offer different support activities to encourage student learning and academic performance, they should also put in place various resources to support staff. Pedagogy training, digital support, online wellness programs, high-quality information related to COVID-19, peer learning, appreciation attitude, and positive thinking should be promoted.

CONCLUSION

This study presents challenges as well as opportunities for the online teaching-learning process in the future. Regarding opportunities, students' satisfaction with pedagogy shows that teachers and students could adapt to the sudden change in teaching methods, which implies good potential for online teaching in the long run. As far as our experience is concerned, the students accepted the online mode of learning provided, so they could attend a wide range of classes and had no problems managing the exam. However, in the long run, a long-term strategy for blended learning, which is a mixture of both online and face-to-face learning, is needed to improve interactive class activities and practices when providing online lectures because this approach combines an essential component in education with the convenience and flexibility of online lectures for greater satisfaction and performance among students.

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CHAPTER 18

RECENT TRENDS IN ONLINE TEACHING- LEARNING

Priyanka Sharma

ABSTRACT

The sudden impact of the coronavirus pandemic in our country not only affected the global economy but harshly damaged our physical, social and mental wellbeing. Education is the backbone of any country brutally devastated during this pandemic. This pandemic led to the closure of Educational Institutions across the world. The COVID-19 outbreak has opened our eyes to the shattered healthcare system, affecting all aspects of life. The whole education system has been suddenly shifted digitally, which is a massive challenge for students and teachers. Since the education system has been turned upside down, is it a challenge, trend, boon or bane for developing countries like India? This paper focuses on Education, which became a matter of concern during the COVID-19 pandemic. It is suggested that the digital education system should be geared up, and there is a need to strengthen internet accessibility in Pan India. In this paper, I will deliberate on the challenges teachers face during online education as it has both positive and negative impacts on Education.

Keywords: Online Teaching-Learning, COVID-19, Closure of Educational Institutions, Digital Education, Challenges

INTRODUCTION

Online learning has become an important consideration particularly in higher (Kim & Bonk, 2006; Al-Adwan & Smedley, 2012), adult education (Olesen-Tracey, 2010; Cercone, 2008) and also in schools (Cavanaugh, Barbour, & Clark, 2009; Nicholas & Ng, 2009). These institutions are

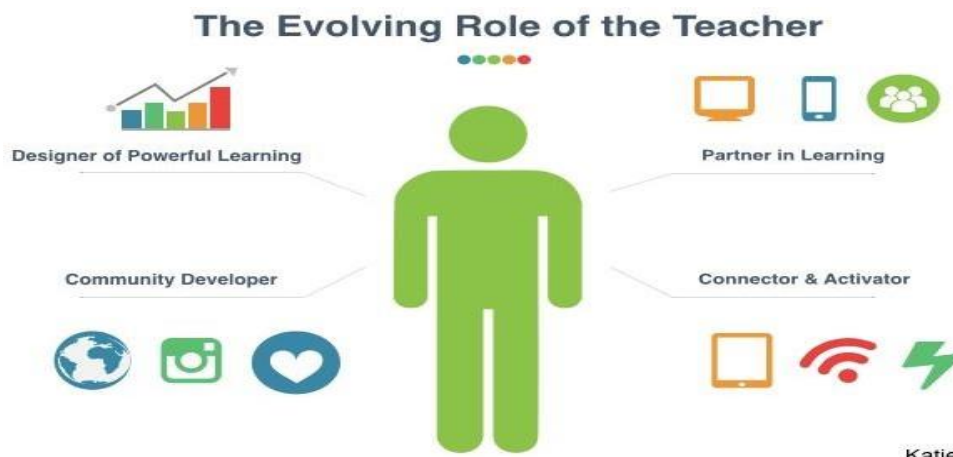
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engaged in efforts to make online learning engaging and compelling to learners. To do this, it would be appropriate to consider the trends or tendencies of online learning and its potential. These trends bring forth new opportunities in light of the potential yet simultaneously pose challenges, such as requiring more research and experimentation. In higher education, there are two distinct methods in which a learner can engage with an academic institution: the traditional method of brick-and-mortar facilities and the virtual method through online learning. We all have been wrenched out of our comfort zones from 2020 and are in crisis management mode. The status of online learning quickly changed from optional to essential during the global pandemic. However, it comes with a set of unique challenges and benefits. The first task is creating a two-way communication channel between us and students. It can avoid the out-of-sight and out-of-mind syndrome. This article will focus on the virtual platform of online Teaching-learning, Closure of Educational Institutions, Digital Education, and Challenges. Today's online learning is the newest development with the spread of the internet. Learner experience is typically asynchronous but may also incorporate synchronous elements.

Most institutions utilise a learning management system to administer online courses. This type of learning is especially beneficial to students who live far away from campus and have busy work schedules, family demands, and other commitments. Online courses are also an excellent option for students who prefer to work independently at any time. Students taking online courses will utilise the eLearning Platform. Online



Katie Martin

courses are taught using a combination of instructional technologies. Each course will vary: PowerPoint presentations, video tutorials, learning activities on the Web, discussion boards, and research using the Library or the Web. Virtual classes will never replace in-person learning perfectly, but there's room for replacement. In a recent Harvard Business School webinar on crisis management, Professor Dutch pointed out correctly, "In very difficult circumstances, I think it is fair to say what we face right now - leaders and teachers have to do two things. You must be brutally honest, and you have to offer hope." When everything is uncertain, all rules go out the window. You cannot expect things to go on as planned. Hence, during this pandemic, it becomes essential for teachers to start thinking in a more agile, innovation-first way. I suggest you follow these tools to help you indicate the chances of having a successful online learning experience.

Online Teaching-Learning

As we all know, the computer and the Internet were introduced in the late 20th century, and e-learning tools and delivery methods expanded. The first MAC in the 1980s 's enabled individuals to have computers in their homes, making it easier for them to learn about particular subjects and develop specific skill sets. Then, in the following decade, virtual learning environments began to thrive truly, with people gaining access to a wealth of online information and e-learning opportunities.

Education transfers knowledge, values, methods, skills, and beliefs from one individual to another. The Internet plays a more significant role in our lives and dictates how we live, socialise, teach, and learn. As the Internet develops into a primary educational tool, online education offers the educator and the learner access to numerous resources. Online teaching and learning are designed to reach and engage the modern learner on a one-to-one basis anywhere, anytime.

From Room to The predominance of online learning is breaking down traditional physical boundaries and creating an online culture that is unique in its own right. We are in a situation where an online presence over the Internet could be more communicative and engaging than a physical presence. In other words, the relative advantages of these two worlds—the physical and the online—are fast converging. According to research, the participants can sometimes feel that online presence is much more intimate than physical presence. For example, attending a face-to-face lecture may only involve one-way communication, whereas an in-depth discourse using a text-based discussion forum can be very interactive. However, we note that the richness of media and its technological affordances does not necessitate or guarantee the quality of online learning. This trend in the convergence of physical and online presence will likely change how we interact with people.

Online teaching offers exciting opportunities to expand the learning environment for diverse student populations. Online teaching is very similar to face-to-face teaching but has unique skills and requirements. Both approaches are identical in content, except in pace and delivery. Rather than developing the courses from scratch, a company has emerged to take care of the courses. Professors must use Course Management System (CMS) software to prepare and deliver courses. Using the software allows instructors to get it right from the beginning. The decrease in formal education/training settings resonates with and is congruent with the recent emphasis on authentic workplace learning because of the contextual nature of cognition (Brown & Duguid, 2000).

For online teaching to be successful, it is recommended that the instructor should follow the following seven principles:

- (1) Encourage student participation
- (2) Encourage student cooperation
- (3) Encourage active learning
- (4) Give prompt feedback
- (5) Emphasize time on task
- (6) Communicate high expectations

(7) Respect diverse talents and ways of learning.

The learning process is complex, involving the auditory, visual, and tactile senses. The traditional way of learning at a campus university is only for some. Online learning is for those who wish to study for a degree alongside work or other commitments. Online learning has been referred to as web-based, e-learning, and digital learning. Online learning at your own pace is beneficial for a high-quality college degree. Whether offered on campus or delivered online, each course must meet the same rigorous criteria and strict academic standards. The only difference is in the way the course is delivered. Generally, students must have access to a computer system with high-speed Internet connections. They may also expect electronic academic support services such as registration, financial aid, libraries, tutoring, and advisement.

COVID-19 AND DIGITAL EDUCATION

The covid-19 outbreak has forced us to have a look into the education in the country which has come to a standstill, whether it is schools, colleges, placements and entrance exams. Since the The COVID-19 outbreak has forced us to look into education in the country, which has come to a standstill, whether it is schools, colleges, placements or entrance exams. Since the COVID-19 pandemic has disrupted the everyday lifestyle of people across the globe, the virtual world has come to the rescue. Online education has emerged as an alternative to ordinary face-to-face classes. There has been a massive surge in search phrases like “how to teach online”, “best online teaching platforms”, “online teaching tools”, and “online teaching techniques”. Finding the right online teaching platform was the first step. Learning how to use the various features correctly is essential. However, using a platform and its features to teach effectively and ensure that all students are indeed learning is paramount.

Teaching staff had to prepare and deliver their classes from home, with all the practical and technical challenges this entails, and often without proper technical support. Various video conferencing apps like Zoom, Google Classrooms, and Go to Meeting provide the right platforms to conduct live online classes.

Teachers have been engaging the students with technology-aided teaching. Home assignments are sent over Whatsapp as PDFs, online tests are conducted, and responses are assessed virtually. Concepts are taught in PowerPoint presentations, recorded video, and audio lectures. Doubts are cleared by being available to the students all the time and participating in student-teacher Whatsapp groups.

Online teaching is slowly making inroads as it offers an opportunity to conduct virtual classrooms and provides a learning platform by being in the confines of our homes. Though online teaching has its advantages, the possibility of it replacing regular and conventional teaching is debatable. Online teaching can never replace real, face-to-face interactive teaching.

The crisis is exacerbating pre-existing education disparities by reducing the opportunities for many of the most vulnerable children, youth, and adults – those living in poor or rural areas, girls, refugees, persons with disabilities, and forcibly displaced persons – to continue their learning. Learning losses also threaten to extend beyond this generation and erase decades of progress, not least in support of girls’ and young women’s educational access and retention.

However, these changes have also highlighted that the promising future of learning and the accelerated changes in delivering quality education cannot be separated from the imperative of leaving no one behind.

This is true for children and youth affected by a lack of resources or an enabling environment to access learning. It is valid for the teaching profession and their need for better training in new education delivery methods and support. It is valid for the education community, including local communities, upon whom education continuity depends during crisis and who are vital to building back better.

CLOSURE OF EDUCATIONAL INSTITUTIONS

The COVID-19 pandemic has caused the most significant disruption of education in history, having already had a near-universal impact on learners and teachers around the world, from pre-primary to secondary schools, technical and vocational education and training (TVET) institutions, universities, adult learning, and skills development establishments. By mid-April 2020, 94 per cent of learners worldwide were affected by the pandemic, representing 1.58 billion children and youth from pre-primary to higher education in 200 countries.

The ability to respond to school closures changes dramatically with the level of development: for instance, during the second quarter of 2020, 86 per cent of children in primary education were effectively out of school in countries with low human development, compared with just 20 per cent in countries with very high human development.

LEARNING TO LEARN DURING COVID-19

As the health crisis unfolded, causing massive socio-economic disruptions, education systems worldwide swiftly reacted and adapted. Access is the first step to online learning (Salman, 2002). No matter how well the instruction is designed, if the learner can access the course learning materials via technology due to physical or financial constraints, the instructional design is rendered useful and non-existent. Governments responded quickly to ensure education continuity and protect the safety of learners and education actors by closing institutions and other learning spaces. However, the unequal provision of learning modalities during closures will likely create inequities in the longer term.

SUPPORT FOR TEACHERS' NEEDS

From the onset of the pandemic, teachers were immediately tasked with implementing distance learning modalities, often needing more guidance, training, or resources. In many contexts, teacher professional development has moved online or disseminated via telephone and video applications, but marginalised teachers may have missed such support. Web-based class meetings and messaging applications have become valuable tools and new ways of communicating with learners and the education community.

Teachers worldwide need to be more prepared to support the continuity of learning and adapt to new teaching methodologies. Even in contexts with adequate infrastructure and connectivity, many educators need more basic ICT skills, meaning they will likely struggle with their ongoing professional development, and facilitating quality distance learning. The COVID-19 crisis has highlighted that initial and in-service teacher education needs reform to better train teachers in new education delivery methods.

Teachers' physical health was put at risk when required to provide face-to-face education for the children of essential workers and vulnerable children. Adding to the fear of being exposed to the virus was a fear

of losing salaries and benefits, all while coping with increased workloads and family responsibilities. This is especially true of female teachers who had to continue teaching and bore a disproportionate share of family responsibilities. Education support personnel Part-time teachers on temporary contracts (includes higher education, ECE workers, substitute teachers and others)

Non-payment of teacher salaries not only poses a problem for individual, family, and community well-being but also hinders the delivery of quality education. In the short term, many teachers may need to turn to alternative sources of income and cannot support pupils in distance learning. In the long term, schools may face teacher shortages due to attrition. The crisis has been a reminder of the essential role of teachers and that the government and other key partners have an ongoing duty of care to education personnel.

OPPORTUNITIES

The students get so many opportunities through online learning. The retention power also increases as the students feel energised due to travelling. Learning from home also provides a comfortable zone to focus on as students are flexible in choosing the right environment. Online teaching helps in exploring new apps for delivering lectures. Online teaching is more flexible in terms of time and location. We strongly believe, with many writers (Smith, 2008), that sound educational foundations, not cutting-edge technologies alone, should underpin the development of new approaches to learning. Nowadays, anyone with access to the Internet can participate in e-activities (Salmon, 2002). In addition, because these e-activities are asynchronous, they give learners the flexibility of when to participate, and now they have more time to process the materials before they respond. It should be noted, however, that flexibility always comes at a price (Chen, 2003).

A NEW LEGACY OF EPISTEMOLOGY—SOCIAL CONSTRUCTIVISM FOR ALL

Underpinning many of the online learning developments, a similar orientation towards implicit or explicit notions of active learning and social constructivism is evident, for example, in Computer-Mediated Communication (Romiszowski & Mason, 1996) and in the Santally, Rajabalee, and Cooshna-Naik (2012) study to design and implement a social-constructivist environment for distance e-learning. Constructivism and social constructivism are the most popular and relevant as the emerging theoretical underpinnings of these online learning developments. Our concern is that we may be creating yet another legacy of learning that seems value-laden in terms of its benefits rather than its limitations. The tension between the newer approaches (e.g., constructivism and active learning) and the traditional (e.g., didactic) is increasing because of distinctive learning paradigms. We want to maintain that there is a place for differing learning paradigms, including the cognitivist or even behaviourist approaches (Hung & Chen, 2000).

CHALLENGES

- One of the biggest challenges we teachers face is keeping students on board. It is also difficult to avoid their distraction from other social networking sites during learning periods.
- Turning teaching material into digital format quickly has been challenging as only some teachers have solid digital and IT skills.
- Both teachers and students are facing internet connectivity issues.

- Students are from different social backgrounds; only some students can access a laptop or internet connection. Due to this, every student cannot attend online classes.
- Conferencing apps like Google Meet, Google Classroom, Zoom, and WebEx are popular for conducting interactive classes. Though very popular, these systems need to handle video content and require high bandwidth for the smooth flow of classes.
- Many channels are already webcasting popular classes on various subjects. This is one of the cheapest ways of taking online classes. The drawback is that this medium does not have video content.

Finally, from a learning psychology perspective, individual or personalised learning (Polanyi, 1964) needs to be balanced with the social dimensions of learning. Currently, there is a swing towards social levels of learning because of the trend towards social-cultural dimensions. However, it is necessary to balance this with the Piagetian notion that learning is ultimately a behaviour change individually (Chen & Hung, 2002; Hung & Nichani, 2001). How do we know that online learning environments designed for social collaborations will ultimately change the individual's thinking, understanding, and behaviour, as noted by Redecke (2009)? More research is needed. For example, studies such as Jou and Shiau's (2012), which designed web-based learning systems for self-directed learning and another one (Jou & Wu, 2012) for self-reflection, are a move in bringing back the individual within the social-cultural dimension in learning.

SUGGESTIONS

- Firstly, teachers and students should understand online teaching practices and expectations. We should fully commit ourselves and participate in the virtual classroom as required. We should complete our learning tasks and assignments on time; students and teachers should be self-disciplined.
- We should identify our learning objectives and goals to stay on track with our online course. The learning objectives and goals of e-learning can be an excellent roadmap during online learning. We should focus on our goals.
- Teachers should build a proper plan. The plan should include an appropriate system calendar, important dates like exams, deadlines for submitting assignments, etc.
- Through online classes, the teacher should set time limits.
- Although we can share study material on WhatsApp groups, we can also take these classes through the Google Meet app, which is more effective in the teaching and learning process.
- According to the timetable, regular classes make students very tired and frustrated; therefore, study breaks are necessary.
- Participating in online classes is necessary. Connecting with students virtually will enhance the learning experience tremendously, so teachers and students should participate actively in online discussions and group activities.
- Teachers should motivate the students to understand the need and ease of digitalisation and modern teaching methods, which is the only way to prevent the spread of this pandemic. Online learning can be made more engaging only with the help of online teaching strategies. Face-to-face

interaction is very necessary, even in online classes. We can interact with the students only through videoconferencing tools like Zoom, Google Meet, etc.

- Frequent changes in teaching style and online mode of lecture delivery should be minimised, as this may lead to confusion among students and can prove challenging.

CONCLUSION

The shock of the COVID-19 crisis on education has been unprecedented. It has set the clock back on attaining international education goals and disproportionately affected the poorer and most vulnerable. And yet, the education community has proved resilient, laying the groundwork for the rebound. There remains a risk of a downward spiral in a negative feedback loop of learning loss and exclusion. We can count on unlimited drive and untapped resources for the restoration of education's essential services and its fundamental aspirations. Governments and the international community are responsible for staying true to principles and conducting reforms so that not only will the children and youth regain their promised future, but all education stakeholders will find their role in making it happen.

Online teaching and learning processes are beneficial in a pandemic situation. Rest every system has loopholes. The objective is not to provide a foolproof system immediately. That seems more comfortable saying than doing. Efforts must be in place to reduce the leakages to the maximum extent, which must be done on a war footing basis. We have a reactive system that must be changed to an active and proactive one. There are many glitches in the online teaching-learning process. Still, we will have to investigate the specific needs, challenges, and opportunities and accordingly bring the best out of the situation that is healthy and productive in the long run for all the stakeholders. New challenges and solutions will only make our educational system more effective and competitive.

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CHAPTER 19

REFLECTIONS OF UNIVERSITY TEACHERS OVER ONLINE TEACHING AND ASSESSMENT DURING COVID-19: AN EMPIRICAL STUDY

Ravi Vanguri & Rama Verma

ABSTRACT

Covid 19 hurt our whole education system. There was a speedy move from in-person mode to online mode of teaching-learning. At the beginning of the pandemic, the MHRD had taken initiatives which helped a lot to promote the online teaching-learning process during COVID-19, such as Web of Active-Learning for Young Aspiring Minds (SWAYAM), Massive Open Online Courses (MOOC), and Annual Refresher Program in Teaching (ARPIT). The Universal Grant Commission (UGC), the top higher education regulatory body, has taken COVID seriously. A panel of (UGC May 22, 2021) recommended that 40% of the syllabus should be completed through online mode of teaching while 60% by physical mode and made it mandatory for all the universities in India. Although all higher educational institutions try to perform, some unavoidable problems and challenges take place as obstacles in the teaching-learning process. The current study attempted to understand the experiences gained through online teaching during the pandemic. Sixty (60) assistant professors were taken purposefully as the study sample to execute the research. The descriptive survey method was adopted, and a self-constructed structured questionnaire was employed to accumulate the required data. The study revealed that 93% of university teachers (i.e. assistant professors) declared that offline courses were more effective than online courses because psychological attributes played a vital role in effective teaching-learning. Further, it was observed that most (85%) of the teachers demanded some training to conduct an online assessment as they were partially aware of online assessment platforms. The study found that 59% of university teachers reported that the inaccessibility of the internet and the digital divide were significant challenges while adopting online assessment at the university level.

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Keywords: COVID-19, Online Teaching, Assessment, University Teacher.

INTRODUCTION

Education is a significant expedient that is a booster for the nation and its citizens. It has its most significant impact on an individual and helps to bring desirable changes in an individual's behaviour. Inevitably, the behaviour of an individual impacts the nation to a great extent. "Education will offer the tools whereby one can live for the divine, for the country, for oneself and others, and this must be the ideal of every school that calls itself national"-Sri Aurobindo. After a long time, the government of India has made some policies to bring improvements in the field of education, such as the National Education Policy (NEP) 1968, National Education Policy 1986, and POA 1992 (Modification of NPE-1986). The Government of India recently introduced NEP-2020 after a long period of 34 Years. All policies are different from one to one and evolved considering the rapid changes in society and the needs of stakeholders (locally & globally). COVID-19 has disturbed the whole education system, leaving it without former information. It has not given any educational institution time to make prior plans to continue the teaching and learning process smoothly. The effect of the pandemic on our education system could be seen in both positive and negative ways. To continue the teaching-learning process during COVID-19, there was a need for a quick shift from an in-person mode of learning (face-to-face) to online modalities and platforms. The firm believers of face-to-face mode of teaching also seem to be helpless as they have had no alternative to offline mode except online. The smooth functioning of online teaching-learning is possible only if challenges like the non-availability of electronic devices, the instability of the internet, and the digital divide are abolished. Mishra et.al. (2020) revealed that the digital divide, unstable internet connection, and lack of motivation as immediate feedback were the challenges that come under the way of online teaching and learning. NEP-2020 and COVID-19 both came about at the same time. NEP-2020 also emphasised online teaching-learning and assessment to build up the teaching-learning environment more suitable per the requirements of the contemporary world. However, the COVID-19 circumstances also played a vital role in bringing online teaching-learning into the lap of different levels of education, such as primary, secondary, and higher education. Now, the question arises at the highest level of education: what issues and challenges do the teachers encounter? What opinion did they possess towards online teaching-learning and assessment during COVID-19? The proposed study attempted to know university teachers' reflections regarding online teaching-learning and evaluation based on their experience gained (online teaching) during COVID-19.

NEED AND SIGNIFICANCE OF THE STUDY

After reviewing the related literature, the investigators found that much research was conducted on online teaching during COVID-19, but very few studies were conducted with university teachers. The present study tried to pinpoint the experiences of university teachers they met with during online teaching during the COVID-19 lockdown. University teachers struggled in the world of digital education without prior training, lack of proper preparation, and a stable internet. What kind of opinions do they possess after conducting classes online? What obstacles were responsible for the uneven functioning of their courses through online mode assessment at the university level? At present, are they interested in teaching classes online? Do they prefer to teach through online mode, offline mode, or blended mode of teaching? Most studies revealed that technical literacy, the digital divide, lack of training, unstable internet, etc., were significant issues and challenges. Do university teachers also encounter similar challenges and problems? Before COVID-19, there was already a considerable agreement to integrate information and

communication technology (ICT) in education. To explore the answers to such questions, the researchers have made substantial efforts by collecting data in physical settings.

RESEARCH QUESTIONS

1. What opinion do the university teachers possess based on teaching experiences through online teaching-learning during COVID-19?
2. What are the reflections of university teachers on conducting online assessments during COVID-19?
3. What challenges did university teachers encounter while practising online teaching-learning and assessment in the classroom during COVID-19?

OBJECTIVES OF THE STUDY

1. To understand the reflections of university teachers about online teaching-learning and Assessment during COVID-19.
2. To identify the challenges encountered by the university teachers while imparting online teaching-learning and assessments during COVID-19.

OPERATIONAL DEFINITION OF THE KEY TERM USED

In the present study, reflection means the thoughtful opinions of university teachers after having experienced or observed online teaching and assessment at the university level during COVID-19.

METHODOLOGY OF THE STUDY

The present study adopted the descriptive survey method.

SAMPLE OF THE STUDY

The Central University of Jammu was established in 2011. The university has 16 departments in different disciplines- humanities, sciences, and social sciences. A total of 97 Assistant Professors work in various Central University of Jammu departments. In the present study, the investigators collected data (purposively) from 60 assistant professors who teach in different university departments.

TOOL EMPLOYED FOR THE DATA COLLECTION

To achieve the formulated objectives of the study, the researchers employed a self-constructed questionnaire that focused on online teaching-learning and online assessment. The data were also collected in physical settings and analysed using frequency and percentage count.

Table 1: Reflections of University Teachers about Online Teaching (N=60)

S. No.	Items	Yes	No
1.	Offering online courses are effective at the university level	37 (62%)	23 (38%)
2.	Interested in teaching courses through online mode	36 (60%)	24(40%)
3.	Understanding of students would be effective through online teaching	23(38%)	37(62%)
4.	offline mode is more effective than online mode	56 (93%)	4 (7%)
5.	Preference of mode of teaching at university level a. Offline mode b. Online mode c. Blended mode	30 (50%) 7(12%) 23(38%)	—

Table 1 shows that more than half of the university teachers (62%) thought online courses were practical at the university level, but 38% were against in this regard. On the other hand, 60% of participants were interested in teaching courses online. Most respondents (62%) thought that students' understanding would not be great through online courses, whereas 38 % were against it. Widely 93% of participants expressed that teaching offline (face-to-face) was more effective than online. This finding is because, in face-to-face mode (offline teaching), physical interaction between teacher and students and among peer groups was more, and connecting psychologically leads to an effective teaching-learning process in the classroom. It was also noticed from the teachers' preference regarding the mode of teaching at the university level that only 12 % of participants preferred online education. In comparison, 38% preferred blended mode and 50% were interested in offline mode.

Table 2: Reflections of University Teachers Concerning Online Assessment (N=60)

S. No.	Items	Agree	Disagree
1.	Awareness about online assessment tools.	53 (88%)	7 (12%)
2.	Aware of online assessment platforms	21(40%)	32(60%)
3.	Interesting to go with online assessment at the university.	28 (84%)	5 (16%)
4.	Requirement of training to conduct the online assessment.	51 (85%)	9 (15%)
5.	Challenges encountered while adopting online assessment at the university level.		-----
	Lack of training	Yes 34 (57%)	
	Accessibility of internet	Yes 35 (59%)	-----
	Digital divide	Yes 33 (55%)	—
	Technical literacy	Yes 32 (53%)	-----

From Table 2, it can be observed that the majority of the participants (88%) were aware of online assessment tools, out of which only 40 % have complete awareness, and the rest were partially aware in terms of assessment tools. The majority (85%) of respondents felt the need for training to conduct an online assessment at the university level. It is also understood from the above table that 57% of participants

stated that they lacked training to teach online, and 59% of participants encountered inaccessibility to the internet sometimes for teachers and students. More than half of the participants (55%) assumed the digital divide was a challenge that obstructs teachers and students from adopting online assessments. Technical literacy was another big challenge faced by 53% of teachers during COVID-19.

Along with the Semi-Structured Questionnaire, a three-point Likert-type scale was also employed to collect data about the opinions of university teachers about online teaching and assessment. Table 3 shows the responses regarding this.

Table 3: Responses Related to University Teachers' Opinion about Online Teaching and Assessment.

S.No.	Items	Agree	Neutral	Disagree
1.	I think online teaching is not affected unless and until digital divides will abolish.	50(83%)	6 (10%)	4 (7%)
2.	I felt that teaching through online mode may not be suitable in the country like India.	23 (38%)	16 (27%)	21 (35%)
3.	I believe that teaching through online mode requires rigorous training on the part of teachers.	48 (80%)	8 (13%)	4 (7%)
4.	In my point of view, traditional teaching is much better than online teaching.	35 (59%)	15 (24%)	10 (17%)
5.	I perceived that online assessments are effective only for multiple choices Questions Examination.	42 (70%)	8 (13%)	10 (17%)
6.	I believe that online assessment will not be suitable for effective judgment pertaining to individual learner development.	42 (70%)	8 (13%)	10 (17%)
7.	I opined that digital feedback decrease the motivational level of the learners.	18 (30%)	29 (48%)	13 (22%)
8.	Online assessment enhances both creative and critical thinking skills of the students.	14 (23%)	22 (37%)	24 (40%)

Table 3 shows that the majority of the participants believed that online teaching was not effective unless and until digital divides were abolished (83%). Also, they demanded rigorous training on integrating technology for teaching online (80%). It was reported by 59% participants that traditional teaching was much better than online teaching. Further, it was understood from the above that 70% perceived that online assessment worked effectively only for multiple choice examinations, and it was not a suitable strategy for judging the learners' development. Forty per cent of the participants also voiced that online assessment was not improving the students' critical and creative thinking skills. Nearly fifty (48%) per cent of the university teachers' said that digital feedback decreases the motivational level of the learners.

MAJOR FINDINGS OF THE STUDY

- The present study revealed that the majority of university teachers (Assistant Professors) (93%) believed that offline teaching was more effective than online teaching.

- Although university teachers strongly believed in offline teaching, 60% of the participants were found to be interested in teaching through online mode.
- When the participants were investigated regarding their preference for teaching mode at university, the study revealed that 50% preferred offline mode, 38% said blended mode, and only 12 % chose online mode.
- The study stated that 88% of participants were found to be aware of online assessment tools, but only 40% were completely aware, while 60% were found to have partial awareness.
- The present study understood that most participants (80%) demanded rigorous training on integrating technology for teaching through online mode.
- The study revealed that more than half of the participants expressed that technical literacy, the inaccessibility of the Internet, and lack of training were the challenges for online teaching and assessment. Further, the study reports that the digital divide was a major challenge to teaching online for both university teachers and students.

EDUCATIONAL IMPLICATIONS OF THE STUDY

- After COVID-19, contemporary studies made an effort to understand the reactions of University teachers. The results of the study showed the actual experiences of university teachers with respect to infrastructure, awareness, digital literacy, instability of internet services, digital divide, etc. during online teaching. This would help the departments/universities bring requisite changes in terms of technological equipment wherever required.
- The study findings may also help other higher education institutions organise the requisite training and awareness programs to develop continuously in the field of online teaching and learning.
- The study's outcomes help policymakers devise a better plan to eradicate the barriers that obstruct the smooth functioning of the online teaching-learning process.

SUGGESTIONS FOR FURTHER RESEARCH

- The existing study sample was taken from the Central University of Jammu only. A similar study may also be conducted in the rest of the higher education institutions of UT-J&K.
- In the present study, the investigators have concentrated on exploring the reflections of Central University Teachers about online teaching and assessment during COVID-19 only. A similar study may be carried out on the other types of universities of India.
- Since the present study was conducted with a small sample size, it is suggested that this research may be replicated by taking large samples from various universities in India.

CONCLUSION

The researchers tried to summarise the present paper with significant findings, as the offline (face-to-face) teaching mode is not compared with other kinds of alternates. Still, due to the current circumstances, every teacher was ready to swing from the in-person mode of teaching to the online mode. Everyone accepts that face-to-face interaction is the soul of the teaching-learning process. If the soul is missing in the body, the body will work, but emotions, eye contact, gestures, face reading, and motivation as immediate feedback

will remain missing. The present study found that the majority of the participants were in favour of a face-to-face mode of teaching, but what was noticed was that 62% of teachers showed an interest in teaching through online mode. More than half of the participants declared Lack of training, Accessibility of the internet, Digital divide, and Technical literacy were significant challenges in online teaching. The study advised that policymakers must make strong efforts to encounter such challenges in the future. NEP-2020 also emphasised online learning and assessment; it will be possible only after considering such difficulties. If the obstacles are removed automatically, the University teachers will prefer online teaching and assessment to a great extent. In India, online learning started to set its feet in education before COVID-19, but there is a solid need to shift from traditional modes of learning to online learning, which was felt only during COVID-19. Everyone tried to do their best as it was the only single medium by which one could make contact with their students and continue the teaching-learning process ahead. The current study suggests that awareness of all digital platforms, online courses, and assessment platforms among teachers and students must be created through various programs, such as training, workshops, orientation, etc., to overcome the weaknesses in digital education.

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CHAPTER 20

STUDENTS' PERCEPTIONS OF ONLINE ASSESSMENT DURING COVID-19 PANDEMIC: A STUDY

Rohnika Sharma

ABSTRACT

The journey of student assessment has gone a long way, passing through public examination, internal and external assessment, oral testing, written testing, continuous and comprehensive evaluation and competency-based assessment. Assessment is a vital part of teaching and learning, as it establishes the student achievement of course learning outcomes. During the COVID-19 pandemic, the educational environment has shifted in many colleges, both nationally and internationally. This condition stresses a method of assessment that is cost-effective, safe, valid, reliable, acceptable, feasible and fair. The study aimed to investigate students' perceptions of online assessment. To determine the students' perceptions of online assessment, Google Classroom was developed and implemented as part of the assessment, followed by an online quiz examination. The study was descriptive; data was collected through interviews. A random sampling technique was employed to select 50 students enrolled in the third semester of the B.Ed. and B.Ed. Special Education programme. The results revealed that 82% of students were delighted with open-book examinations, and 60% were satisfied with online quiz examinations. 18% of students faced difficulty during online assessment due to poor ICT skills. 54% of respondents faced the problem of network connectivity. However, there is much possibility for improvement in online assessment systems by improving network connectivity and organising training programmes to meet the challenges.

Keywords: Student Perceptions, Online Assessment, COVID-19, Pandemic

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INTRODUCTION

The COVID-19 has not only affected the economy, and social life, but also academia. To reduce infection from COVID-19, many universities around the world, including those in India, have made it obligatory to conduct classes online. Technology, as it is used in education, has supported the development of the learning process. It has made it possible to access knowledge more effortlessly and has even helped students learn the skills required in their careers. Assessment is a formal way of gathering and analysing information to measure a student's learning. It can be divided into 'assessment of learning' (summative) and 'assessment for learning (formative). Summative assessment decides on a pass/fail, whereas formative assessment provides feedback. Each type has formative and summative components assigned a certain weightage. In India, most colleges use formative or continuous assessments (10-20% weightage) and summative or end-of-year assessments called final or term-end examinations (80-90% weightage). The paper has been designed to discuss student perceptions of online assessment during the COVID-19 pandemic and the assessment techniques followed by MIER College of Education (Autonomous), set up in 1981 as the first private college of education in Jammu province. The Government of Jammu and Kashmir approves the college and is permanently affiliated with the University of Jammu. The college is accredited with an 'A+' Grade by the National Assessment and Accreditation Council (NAAC). The college is also the first college of education in the private sector to have been conferred with "Autonomous Status" by the UGC and the University of Jammu in the year 2014, which is valid till 2030. The college was also conferred the prestigious status of "College with Potential for Excellence" by the UGC in the year 2016.

In MIER College of Education, the students are assessed through formative and summative evaluation methods, which weigh 60% external and 40% internal; students' assessment comprises knowledge, skill and attitude. The knowledge is generally assessed through multiple-choice, short, and long essay-type questions. Skill is tested through Practical and Viva-Voce examinations. During pre-COVID-19, these learning domains were assessed face-to-face (f2f). With the arrival of the COVID-19 pandemic, there has been a paradigm shift from traditional f2f teaching and learning to online technology-enabled learning. As expected, this conversion in the educational environment will bring long-lasting effects on teaching and learning; assessment procedures and methods also require a change. This commentary is aimed at describing different assessment options that can be used online, taking into account the educational environment in a pandemic situation at MIER college students' assessment was conducted through Online Open Book Examinations and Online Quiz Examinations for which Google classrooms were created that was presented as a feature of Google Apps for Education subsequent its public announcement on August 12, 2014. Google Classroom is a suite of online tools that allows teachers to set projects/assignments, have work submitted by students, to mark and return graded papers. Google Classroom is a learning management system (LMS) that aims to streamline creating, distributing, and grading assignments and engaging students in learning remotely or online. Google Classroom is a free application designed to help students and teachers communicate, collaborate, organise and manage assessments, go paperless, and much more. It was created as a way to eradicate paper in classes and to make virtual learning possible. It was primarily intended for use with school laptops, such as Chromebooks, to allow teachers and students to share information and assignments more competently.

As more colleges have transitioned to online learning, Google Classroom has become far more widely used as teachers quickly implement paperless instruction. Classrooms work with Google Sheets, Slides, Docs, Sites, Earth, Calendar, and Gmail and can be accompanied by Google Hangouts or Meet for face-to-face live teaching or questions.

REVIEW OF LITERATURE

Akimov and Malin (2020) point out that while academic integrity and the associated issues of identity security, plagiarism, and unauthorised collaboration are severe concerns with all types of assessments, these difficulties are more noticeable in the online setting because instructors do not physically see the students and because many characteristics of online technology improve the opportunity and temptation for untruthful behaviour. The study explains how online oral examination is a high-quality assessment tool that executes against the essential criteria for good online assessment: validity, reliability and fairness.

Cumming, Miller, Bergeron & Boer Cumming et al. (2020) are primarily concerned with the way students are assessed as the shift to online education abruptly took place. The authors argue that switching from letter grades to a pass/fail system has pros and cons. On the one hand, it may help retain students, reduce their anxiety, enable them to fulfil their academic obligations and allow them more time to deal with other relevant and vital issues without negatively impacting their GPAs. On the other hand, the pass/fail system will complicate admission and hiring decisions as it will become harder to discriminate between the students' different academic achievement levels. In addition, the pass/fail system will likely discourage students from exerting effort to excel since students with radical differences in effort and performance will receive the same grades.

Considering all these things, the investigator felt that this is a very important area where more research is needed to explore in-depth results related to online assessment. That's why the investigator chose this study with respect to local variations.

RESEARCH QUESTIONS

Question 1: What was the participants' competence with computers?

Question 2: What were the prior experiences of participants for online assessment?

Question 3: What were students' perceptions about online assessment through Google Classroom?

PURPOSE OF THE STUDY

Over the past few years, there has been a significant increase in the use of Google Classroom-based assessment. However, little has been published to date on students' views of Google Classroom-based learning and assessment. The study aimed to understand students' perceptions of using Google Classroom and investigate the potential for using student feedback to validate assessments through Google Classroom.

SIGNIFICANCE OF THE STUDY

The use of Google Classroom is increasing for many reasons. Although computer-based examinations are also growing, there is not enough research about students' perceptions of online assessment in general and of categorised fields of online assessment systems. Such research would give detailed information about which parts of the online assessment systems are essential or which parts should be developed or revised to achieve better results.

DESIGN OF THE STUDY

The descriptive study used surveys and interviews for data collection. Google Classroom was created and implemented to obtain information about the students' perceptions of online assessment. The course teacher was responsible for implementing and developing the online evaluation in the Google Classroom for the students of B.Ed. and B.Ed. Special Education third-semester students were enrolled in the Google Classroom and given online open book and quiz examinations. After appearing in the online assessment examination, students were asked to fill out the questionnaire, followed by an interview, which was conducted to learn about their perceptions of online assessment through Google Classroom.

Table 1: Demographic Characteristics of Participants

N(50)		%
Sex		
Male	6	12
Female	44	88
Age		
20-22	28	56
23-25	15	30
26-28	07	14

PARTICIPANTS

Participants were students in semester three in the UG Department of Education, MIER College of Education. All the students taking the course were informed about the research and were free to choose whether to attend interviews. In the study, all students revealed a solid readiness to participate in the research—fifty students enrolled in the B.Ed. and B.Ed. Particular Education programme and their demographic characteristics are shown in Table 1.

INSTRUMENTATION ADOPTED FOR DATA COLLECTION

An in-depth interview was conducted using the questionnaire to investigate the students' perceptions of the online assessment. Close- and open-ended questions were designed to obtain information on the

students' familiarity with Google Classroom and prior online assessment experience. In-depth interviews probed the users' opinions and suggestions regarding the conduct of online assessments through Google Classroom.

DATA COLLECTION AND ANALYSIS

After the course was completed, the paper-based questionnaire was distributed to 50 students. The responses were collated, and percentages were calculated. This was followed by in-depth individual group interviews conducted with randomly selected students using a random number sequence. Students' responses were written down during the interviews, which took almost half an hour.

FINDINGS

Question 1: What was the participants' competence with computers?

This question aimed to explore the students' competence with computer application programs such as Web browsers and e-mail programs, as being familiar with those programs is a prerequisite for using the Google classroom-based assessment (Table 2). Four per cent of all students indicated that their competence level with the Web browser was poor, and 5% indicated that their competence level with operating desktop /laptop/smartphone was poor. On the other hand, 4% of students indicated that their competence level with downloading and using different apps was inadequate, and 6% indicated that their competence level with MS Office was poor. It was enough to have an introductory competence level for the developed online assessment tool. The total percentage of students beyond the introductory competence level was 96%. Before the final examination, students were given sample quizzes and trained on the critical points of the online assessment tool. Thus, any problem caused was eliminated.

Table 2 Percentage Distribution of Students' Computer Competence (N=50)

Student Competence with	Advanced %	Good %	Introductory %	Poor %	None %
1. Operating Desktop/Laptop and smartphone	21	56	18	5	0
2. Web Browser	25	54	17	4	0
3. Browser Google Apps	25	45	13	13	4
4. Downloading and Using different Apps	12	28	52	4	4
5. MS Office	16	47	31	6	0
6. ICT Skills	14	48	20	18	0
7. Network Connectivity	12	25	09	54	0

Question 2: What were the prior experiences of participants for online assessment?

This question aimed to ascertain the students' prior experience with online assessment (see Table 3). As the results showed, most students had no prior experience with online assessment. Only 38% had used the Internet for instructional purposes, 28% had taken online Web quizzes, and 32% had previously taken some online evaluation. Unfortunately, it has been observed that none of the students had taken an online course before the research.

Table 3 Students' Prior Experiences of Online Assessment (N=50)

Prior experiences	Yes %	No %
1. I am taking course(s) online	0	100
2. I have attended an online course before	0	100
3. I have taken an online quiz on the web	28	72
4. I have taken some kind of online assessments before	32	68
5. I have taken TOEFL or GRE before	2	98
6. I have used the Web for instructional purposes	38	62

Q 3 What were students' perceptions about online assessment through Google Classroom?

Students' perceptions about the online assessment tool were also investigated. As shown in Table 4, 88% of students agreed that it was easy to log in to Google Classroom, 66% agreed that it was easy to take an open book examination, and 61% agreed that it was easy to take a quiz examination. 78% of students agreed that it provided immediate feedback, 80% agreed that online assessment was better than the paper-and-pencil format, and 90% agreed that online assessment was faster than the paper-and-pencil form. On average, 80% of the students decided that online assessment was contemporary and more systematic. Most students thought this online assessment was consistent with the teaching style. However, when asked to respond to the statement "Cheating is difficult," the majority (66%) of students disagreed, whereas only 34% agreed.

Table 4: Students' Perceptions Towards Online Assessment through Google Classroom

Students Perception towards Online Assessment through Google Classroom	Agree %	Disagree %
1. It is easy to log in to Google Classroom.	88	22
2. I have browsed among Google Classroom options easily.	74	26
3. I have followed the directions without any problem.	48	52
4. It is easy to take an online open-book exam.	82	18

5. It is easy to take an online quiz exam.	66	34
6. It provides timely and immediate feedback	78	22
7. It is easy to track my past examination results which helps me to understand my progress	82	18
8. It is better than the paper-and-pencil test.	80	20
9. It is faster than the paper-and-pencil test.	90	10
10. It is more systematic.	80	20
11. System feedback helps me to reflect on my merits in learning.	42	58
12. Assessment is fair.	74	26
13. Cheating is difficult	34	66

RESULTS OF IN-DEPTH INTERVIEWS WITH STUDENTS

After analysing the results, in-depth interviews were conducted with five students who were chosen randomly from the 50 selected students who had been taking the course. Regarding the assessment through Google Classroom, some students viewed the exam style as inconvenient because the open-book questions were purely application-based, and quiz questions were selected randomly from the units. Even few students also reported that due to network connectivity issues, it was tough to upload the answer scripts in Google Classroom within the stipulated time, and it led to so much stress among the students. Most students indicated they are delighted with online assessment as it is fair, faster than paper and pencil tests, and gives timely and immediate feedback.

SUGGESTIONS

1. To arrange training programs for users to make them fully aware of ICTs.
2. Adequate training should be given to teachers and students on how to operate Google Classroom.
3. To provide training on handling Google tools/LMS.
4. Distribution of gadgets (mobiles/laptops) to the users who are in great need of them and can't afford them due to some financial reasons.
5. The government should provide reasonable network connectivity provisions, particularly for the remote areas of J&K -UT.
6. Arrangements should be made to review the internet speed problem regularly & enhance the bandwidth.
7. National and multinational telecommunication companies should develop special data plan packages for students that are easily affordable by the student community.

CONCLUSION

Education is shifting to assess student performance through online platforms to catch up with the curriculum. It may be too early to say how students will cope with online assessment as they determine the constraints and reorient to address them. Still, the perception and readiness of teachers and students are essential considerations I have tried to document.

Can we disinclined from online teaching, learning and assessment anymore? We think the answer is 'No'. The educationally advanced countries had incorporated these techniques earlier. So, they faced less trouble imparting education online during the COVID-19 pandemic than us, where the absence of resources, infrastructure, training and acceptability hindered this form of education for a long time. It's time to shift in the right direction by adapting technology-enhanced learning and assessment for our educational system.

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CHAPTER 21

RELATIONSHIP BETWEEN META- COGNITIVE ABILITIES AND RESPONSES TO E-LEARNING IN TERMS OF ACHIEVEMENT: AN EXPLORATION

Reecha Jrall & Kiran

ABSTRACT

The coronavirus (COVID-19) pandemic had devastating impacts on not only the health and socio-economic conditions but also on the education sector in various countries. Consequently, the world of education entered a new era of learning i.e. E-learning. The management of classrooms is completely different in e-learning from traditional learning. In traditional learning teachers have maximum control on all the classroom activities whereas in E-Learning, learners should be self-disciplined and accountable for their own learning? Meta-Cognition allows people to take charge of their own learning. It involves awareness of how people learn, an evaluation of their learning needs, generating strategies to meet these needs and then implementing the strategies. Many theorists and practitioners claimed that applying meta-cognition in daily routine enhances the learning process and achievement of students. Therefore, the present paper makes an attempt to look at prospective teachers' responses to E-learning in the form of their achievement in relation to their meta-cognitive abilities. It is a descriptive study consisting of a sample of 40 prospective teachers from central university of Jammu selected by purposive sampling technique. For collection of data, Meta-Cognition inventory by (Govil, 2003) and achievement scores in the learning system were used. Mean, standard deviation and correlation have been used to analyze data obtained. It was found that there is a significant positive relationship between responses to E-learning and meta-cognitive abilities of prospective teachers. The findings suggest that the E- learning system may excel if encouragement is provided to students to use their Meta-Cognitive Abilities.

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Keywords: Meta-Cognitive Abilities, E-Learning, Prospective Teachers.

INTRODUCTION

Education is the utmost important part of our life. Without it we cannot imagine a civilized being. Educational institutions have the responsibility to educate the children formally and are responsible for inculcating manners, values, and how to study, to plan and organize their learning. But due to the emergence of COVID- 19 pandemic teachers and students got distanced from the educational institutions and to continue their teaching learning process teachers adopted e-learning as a better option. But is online learning a better option to inculcate values in a country like India. In longitudinal study effects of metacognitive training on the attribution styles where an investigator measures the attribution styles before and after the intervention of metacognitive and attributive programme. In 1976 Flavell introduced the term metacognition to refer to the ability to recognize and take into consideration one's own cognition processes and tactics (Flavell, 1979). It points out to our unique capability to be self-reflective, to not just think and know, but also to think about our own thinking and knowing.

According to Brown (1987), “Metacognition refers to understanding of knowledge, an understanding that can be reflected in either effective use or overt description of the knowledge in question”. Metacognition comprises two components: metacognitive knowledge and metacognitive control.

CATEGORIZATION OF METACOGNITION

Metacognitive knowledge (to know about cognition)

Metacognitive control processes (how to use cognitive knowledge).

Knowledge of Cognition means “what individuals know about their own cognition or about cognition in general. It usually includes three different kinds of metacognitive awareness: declarative, procedural, and conditional knowledge (Brown, Jacobs & Paris, 1987).

Declarative Knowledge

It constitutes how an individual perceives herself/himself as a learner and what are the factors that influence one's performance. Research investigation shows that Meta memory indicates that adolescents have better knowledge than kids about the processes associated with memory cognition. In the same way, learners who have more understanding about their own memory are stronger learners and are more likely than poor learners to use what they do know (Garner, Schneider and Pressley, 1989).

Procedural Knowledge

It means focusing on the implementation of practice competencies. The ones who have a high diploma in procedural information use these abilities repeatedly and use qualitatively one-of-a-kind methods to clear up issues (Glaser & Chi, 1988).

Conditional Knowledge

Conditional knowledge, which includes knowing when and why to apply various cognitive actions, continually develops in middle childhood. Skilled learners possess declarative procedural conditional knowledge of their cognition.

REGULATION OF COGNITION

Cognitive regulation refers to metacognitive activities that help to control thinking and learning.

Many regulatory skills are documented, but three key skills, planning, monitoring, and evaluation, are unique to every account.

Planning

A strategic plan impacts performance by choosing precise techniques and allocating the right quantity of resources. You could make predictions earlier than studying, sequence strategies, or allocate time or interest selectively before beginning a task, among other matters. Humans with extra studying experience have an in-depth understanding of cognition and manipulate their getting to know based on that knowledge earlier than the mission of a venture.

Monitoring

An individual's ability to monitor his or her comprehension and performance is called monitoring. The ability to test yourself periodically while learning is a good example. Studies indicated that the ability to monitor widens gradually and is quite poor in children. Numerous new researches, however, have discovered a connection with both metacognitive knowledge and monitoring accuracy. The monitor and control computer problem-solving group solved more tough issues in very little time than either of the other groups.

Evaluation

Evaluation refers to the process of coordinating product evaluation and self-learning. A typical example is reassessing one's goals and conclusions. Many studies have shown that knowledge of metacognition and regulatory skills, such as planning, are associated with assessment.

E-LEARNING

E-learning is the process of acquiring knowledge through the use of electronic technologies and media, also referred to as online learning and electronic education. In simple terms, e-learning is a method of enabling learning through the Internet. Students usually access e-learning materials via the Internet at any time and anywhere. Courses, degrees, and programs offered online most often constitute E-Learning. E-learning is frequently delivered in the form of online degrees and courses, with the learner receiving an online certificate at the conclusion of the course. It is one of the most adaptable methods of learning, allowing students to learn from anywhere and at any time. The number of people using E-Learning sites and apps has increased significantly. As previously said, it is mostly due to the simplicity and flexibility that it brings to the table. There are numerous online educational apps and platforms that have simplified this way of learning.

Value of E- learning

Compared to traditional methods of learning, online learning has numerous advantages. In addition, students have the option to choose their learning environment and to work at their own pace. As an added benefit, e-learning removes the geographical barriers often associated with traditional education methods, making it both cost-effective and cost-efficient.

Characteristics of E- learning

We can derive the features of e-learning from the arrangement of the concept of e-learning:

- E-learning is a type of learning that is primarily centered on the internet.
- Information spreads along network courses.
- Learning resources are distributed and shared globally.
- A virtual learning environment.
- A variety of study methods.
- Studying flexibility (anytime, anywhere).



Figure 1. Depicting the Characteristics of E- learning

NEED AND SIGNIFICANCE OF THE STUDY

Metacognition plays an imperative role in learning in many ways, but a study on how metacognition impacts learning performance remains rudimentary. 770 college IT students who had taken at the least one online direction were evaluated, adapted from more than one resources, a self-administered instrument used to gather statistics. Route modeling evaluation changed into carried out using structural equation modeling to test 3 hypotheses. Looking at findings suggest that scholars who skillfully use metacognitive techniques to learn on-line are able to assess their understanding of direction content, and that they are truly able to regulate their gaining knowledge of methods. These findings may be beneficial for direction instructors and college students to set up practices concerning the way to maximize students' learning

through the implementation of metacognitive strategies, as people who lack metacognition might also go through the consequences (Anthonysamy, 2021). There is a positive impact of training on the trainees and it improves their attribution styles (Giovanna, Eugenia & Maddalena 2017). A confirmatory factor analysis was conducted on 126 respondents. The relationships between metacognition and three levels of learning interest were tested using structural equation modeling (i.e., liking, enjoyment, and engagement). Continuance intention to use MOOCs was positively correlated with the three levels of learning interest. In addition to increasing interest in MOOCs, these findings indicate that enhancing students' metacognition can reinforce the benefits of developing teacher training programs using MOOCs (Tsai et al., 2018). As a student develops an awareness of their learning processes, metacognitive strategies are used. The techniques outlined here can help students reflect on what they already know versus what they still need to learn, recognize thinking errors, and develop effective learning practices. The metacognitive activity is mediated partially by media synchronicity, the social presence, and satisfaction, and utility (Johnson, Gueutal & Falbe, 2009). There are a number of initiatives that exemplify the inventive ways to refine E-Learning by relating to four fundamental characteristics: 1) motivate children Produce engaging content for children; 2) It is essential to teach them how to construct their own learning paths based on information; 3) Promote collaborative classroom learning that facilitates cognitive and social development; 4) Children are encouraged to learn outside of the classroom through storytelling and entertainment features (Huffaker & Calvert , 2003) . The study involved 67 students of higher education from a university in Colombia. Two groups were examined and a posttest was conducted. One group of students participated in a metacognitive scaffolding process using an e-learning environment and another group worked together with a standard learning environment. Results indicate that scaffolding contributes significantly to learning performance, meta-cognitive abilities, academic self-efficacy and students with various cognitive styles perform equally well on tests. Impact of a meta-cognitive scaffolding on self-efficacy, metacognition, and achievement in e-learning environments (Vallejo, vargas, & Rodriguez, 2019). An inquiry test of techniques, a meta-cognition questionnaire, and worksheets were used as data sources. The analysis indicated that the combination of meta-cognitive quick and cognitive prompts had impacted students' practices of inquiry a substantial impact on students' inquiry practices, particularly their scheduling and evaluating abilities. However, varied stimuli seemed to have a different consequence on students with poorer levels of meta-cognition, who improved significantly in their abilities of inquiry. During an inquiry cycle, a combination of cognitive and metacognitive cues was found to increase students' inquiry habits (Zang, hsu & wang , 2015). Men and women do not show significant differences in metacognitive skills, as the first analysis concluded. Having a sense of metacognition is a crucial component of successful learning, and it provides an excellent basis for measuring academic performance. In the backdrop the present research paper explores the relationship between academic scores of e-learning and metacognitive abilities of pre-service teachers.

OBJECTIVES OF THE STUDY

1. To find out the relationship between total meta-cognitive abilities and achievement scores of e learning of prospective teachers
2. To explore the relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of prospective teachers.
3. To analyze the relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of prospective teachers.

4. To study the relationship between total meta-cognitive abilities and achievement scores of e learning of male prospective teachers.
5. To study relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of male prospective teachers
6. To study the relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of male prospective teachers.
7. To study relationship between total meta-cognitive abilities and achievement scores of e learning of female prospective teachers
8. To study the relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of female prospective teachers.
9. To study the relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of female prospective teachers.

HYPOTHESES OF THE STUDY

1. There will be no significant relationship between total metacognitive abilities and achievement scores of e learning of prospective teachers.
2. There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of prospective teachers.
3. There will be no significant relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of prospective teachers.
4. There will be no significant relationship between total metacognitive abilities and achievement scores of e learning of male prospective teachers.
5. There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of male prospective teachers.
6. There will be no significant relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of male prospective teachers.
7. There will be no significant relationship between total metacognitive abilities and achievement scores of e learning of female prospective teachers.
8. There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e- learning of female prospective teachers.
9. There will be no significant relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of female prospective teachers.

RESEARCH METHODOLOGY

The present study aims to find out the relationship between meta-cognitive abilities and academic scores of e learning of prospective teachers of samba district. The descriptive method of research was used for the problem under investigation.

SAMPLE OF THE STUDY

The sample of the study constituted 40 prospective teachers from the Central University of Jammu.

TOOL FOR DATA COLLECTION

Metacognitive Inventory by Punita & Govil (2003) is used to collect data achievement scores of B.Ed students.

ANALYSIS AND INTERPRETATION

An investigator used the Pearson product-moment correlation method to analyze the data.

Table 1: Correlation between Metacognitive Abilities and Achievement Scores of Prospective Teacher Educators

N	df	Computed value of 'r'	Level of significance
40	38	0.38	Significant at .05* level

INTERPRETATION AND DISCUSSION

Table 1 depicts that the correlation between metacognition and achievement of prospective teacher educators is significant. The computed value of correlation is 0.38 whereas the table value is 0.31 which is less than the table value. It means that the hypothesis stating “There will be no significant relationship between total meta-cognitive abilities and achievement scores of e-learning of prospective teachers” is rejected. Therefore, there is a significant positive relationship between meta-cognitive abilities and achievement of prospective teachers. The findings of the study are in disagreement with (Gul and Shehzad, 2012). Meta-cognition and goal orientation had a moderate relationship with academic achievement, while meta-cognition and achievement had a weak relationship. A positive relationship between metacognitive awareness and academic achievement is found as it is measured by their (GPA) for pre-service female teachers, therefore the above conclusion is also in agreement with the study where it seems the students who get a high (GPA) are better metacognitions measures (Abdellah, 2014).

Table 2: Correlation between KCP and achievement of prospective teacher

N	df	Computed value of 'r'	Level of significance
40	38	0.38	Not significant

From the above table it is clear that the correlation of Knowledge of cognitive process (KCP) and achievement scores of pupil teachers did not come significant. The computed value of correlation is 0.38 which is less than the table value and depicted that the hypothesis 2 stating “There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e learning of prospective teachers “is accepted. Therefore it could be concluded that there is no significant relationship between KCP (Knowledge of cognitive process) and achievement of prospective teachers but the relationship is positive. The findings were in agreement with (young and fry, 2008) which states that

“There was a correlation between GPA and the knowledge of cognition factor and also between GPA and regulation of cognition factor”.

Table 3 : Correlation between RCP (Regulation of Cognitive Processes) And Achievement Scores Of Prospective Teachers

N	df	Computed value of 'r'	Level of significance
40	38	0.6	Significant at .01* level

From table 3 it was concluded that correlation between regulation of cognitive processes and achievement scores of prospective teachers came to be significant. The calculated value is 0.6 which is greater than the computed value of that table that is 0.40. Hence the hypothesis “There will be no significant relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of prospective teachers” is rejected as results showed that there is a positive significant relationship between RCP and achievement scores. Prospective teachers would be teachers they have to teach the future of the country about how to regulate their own learning and thinking so they must have a strong KCP of their own. And it is also found that an individual who controls their own thinking performs better in their academic activities.

Table 4: Correlation between Metacognitive Abilities and Achievement of Male Prospective Teachers

N	df	Computed value of 'r'	Level of significance
17	15	0.48	Significant at .05* level

From the above calculated values it is clear that the calculated value of correlation exceeds the significant table value. The calculated values are 0.48 and table value is 0.38 therefore there will be positive correlation between the metacognitive abilities and achievement of male prospective teachers. Hence the hypothesis stating “There is no significant relationship between total metacognitive abilities and achievement scores of e learning of male prospective teachers.” Hence it is rejected and that is associated with (Abdelrahman, 2020).

Table 5 : Correlation between Kcp and Achievement Scores of E Learning Of Male Prospective Teachers

N	df	Computed value of 'r'	Level of significance
17	15	0.05	Not significant

The above findings indicate that there is a positive correlation between KCP and achievement scores of male prospective teachers but not significant. Because the table value is less than the computed value. Hence hypothesis 5 “There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e-learning of male prospective teachers.” is rejected.

Table 6: Correlation between RCP and Achievement Scores of Male Prospective Teachers

N	df	Computed value of 'r'	Level of significance
17	15	0.60	Significant at .01 *level

The above table depicted that the correlation between RCP and achievement scores of male prospective teachers came to be significant at a .01 level. The calculated value of correlation is 0.60 which is greater than the table value i.e. 0.57 therefore hypothesis 6 “There will be no significant relationship between RCP. (regulation of cognitive processes) and achievement scores of e-learning of male prospective teachers” was rejected.

Table 7: Correlation between total meta-cognitive abilities and female prospective teachers

N	df	Computed value of 'r'	Level of significance
23	21	0.22	Not significant

Table 7 depicted that the correlation between total metacognitive abilities and achievement of female prospective teachers is not significant. The calculated value was 0.22 which is less than the table value. Therefore the hypothesis “There will be no significant relationship between total metacognitive abilities and achievement scores of e-learning of female prospective teachers” is rejected. The results of the study are in contrast with (Jaleel and Premchanderan, 2016) which state that there is no significant difference in the metacognitive awareness of secondary school students based on Gender.

Table 8: Correlation between KCP and achievement scores of female prospective teachers

N	df	Computed value of 'r'	Level of significance
23	21	0.45	Significant at .05 level

Table 8 depicted that the calculated value of the coefficient of correlation is 0.45 which is greater than the table value i.e. 0.39. It means there is positive and significant correlation between Knowledge of cognition and achievement scores of e-learning of female prospective teachers. Therefore hypothesis “There will be no significant relationship between KCP (knowledge of cognitive processes) and achievement scores of e-learning of female prospective teachers.”

Table 9: Correlation between RCP and Achievement Scores of Female Prospective Teachers

N	df	Computed value of 'r'	Level of significance
23	21	0.82	Significant at .01 level

Table 9 depicted that the calculated value is 0.82 which is greater than table value 0.50. There is a positive and significant relationship at .01 level between RCP and achievement scores of female prospective teachers. Therefore the hypothesis stating “There will be no significant relationship between RCP (regulation of cognitive processes) and achievement scores of e learning of female prospective teachers” is rejected.

DISCUSSIONS AND CONCLUSIONS

Following conclusions arrived at after investigating the data with regard to pre service teachers is summarized below.

It may be concluded that there is a positive and significant relationship between the total meta-cognitive abilities and achievement scores of E-learning of pre-service teachers. Because after the completion of their B.Ed. of course, the pre-service teachers have to use these meta-cognitive skills as teachers to encourage their students to use these skills collaboratively. To score good marks in any course learners have to plan, regulate and evaluate the whole process of learning and this can only be possible if an individual uses better metacognitive strategies in their learning process.

The correlation between knowledge of cognition and achievement scores of pre-service teachers came to be insignificant but positive. It means prospective teachers did not use their cognitive knowledge in their learning process. In the study conducted it was predicted that both pre service and in service teachers failed to predict the advantage of testing spacing as learning strategies. Their knowledge of learning strategies failed to increase with teaching experience (Halamish, 2018).

The relationship between regulation of cognitive processes and achievement scores of e learning came significant at .01 level. It means more use of three important skills: planning, monitoring, evaluation in learning leads to higher achievement scores in e learning. They are better problem solvers and regulate their learning process in a better way. In other research it was found that there is a significant relationship between the metacognitive awareness and technology usage among pre-service teachers (Josphine and Albina, 2020).Results indicated that GPAs of pre-service teachers increases their planning and monitoring processes. (Sendurur et al. 2011).

Meta-cognitive abilities of male prospective teachers were significantly correlated with the academic scores of e- learning whereas female teacher’s meta-cognitive abilities had no significant correlation with achievement scores. This may be due to the fact that male have knowledge of cognition as well have they regulate their cognition in a better way. The KCP of females had significant correlation with achievement scores whereas male prospective teachers had positive but not significant correlation between knowledge of cognitive process and achievement. RCP of both male and female prospective teachers had positive and significant relationships; it means they regulate their cognitive processes in a better way. This may be due to the fact that they don’t know about the meta-cognitive strategies but unknowingly applied them in their learning process. That's why applied meta-cognitive strategies in their learning improves their achievement scores. The most differences seem to firstly emerge on total meta-cognitive abilities. In this study male pre-service teachers have positive correlation between meta-cognitive knowledge and achievement scores as compared to female pre-service teachers this may be due to the fact that males are doing more thinking than females. As females have a lot of responsibilities on their shoulders they have to look at their career,

profession and also home. But males have to focus on the single aspect so he has better knowledge of cognition.

EDUCATIONAL IMPLICATIONS

The problem of cognitive incapacity among individuals is perceived as something that can be treated only by psychiatrists for a long time. Flavell coined the term met memory in 1971 to describe the ability of an individual to manage and monitor the input, storage, search, and retrieval of information from his own memory.

In order to develop good learning habits and perform well on examinations, meta-cognitive abilities must be developed.

Insufficient metacognitive abilities result in an inability to use a wide range of skills such as reading, oral skills, writing, language acquisition, memory, attention, social interactions, self-education, and personality development, affecting the achievement of life's goals.

At different levels, students develop their metacognitive abilities differently. It follows a sequential order, so a teacher should give their students different assignments that will help them to succeed.

The teacher educators need to have better metacognitive competencies in order they follow techniques to enhance the metacognitive talents of pre-service teachers via using extraordinary tasks.

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CHAPTER 22

PROBLEMS FACED BY B.ED. TRAINEES DURING ONLINE TEACHING PRACTICE DUE TO COVID-19'S EXPANSION

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ABSTRACT

This research project engages with the problems experienced by B.Ed. students during online teaching practice, when they moved their classes online due to the unavailability of schools/ classrooms in pandemic situations. An online sample of 100 B.Ed. trainees from MIER College of Education were taken through Google Forms. A random sampling technique was used. A self-designed questionnaire comprising 20 items on the issues faced by pupil teachers was administered. The data analysis has indicated that many pupil teachers are tech-savvy and are comfortable substituting online teaching for physical face-to-face or offline teaching, but only as a remedy to continued teaching during COVID-19. The survey also revealed that pupil teachers faced the challenges of internet access. Two major issues have surfaced: firstly, teachers' pedagogical skills do not cater to the online teaching environment, nor have they been trained for these situations. The picture emerged that even when pupil teachers are digitally skilled, they don't know how to teach online classes and prepare appropriate materials. Researchers concluded that B.Ed. students lacked confidence and communication, participating students lacked interaction, and pupil teachers focused on the theoretical part of teaching. They neglected the practical part and faced difficulty explaining concepts without chalk and board teaching and maintaining students' engagement in online classes. The key takeaway of the present study is that pupil teachers need more pedagogical training for online situations.

KEYWORDS: Virtual Teaching, Technology, Pedagogical Skills, Shift, Engagement

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INTRODUCTION

Since the coronavirus pandemic started to disrupt people's everyday lifestyles, the virtual world has come to the rescue, and across the globe, shopping, entertainment, work, and education have moved online. The spread of COVID-19 has profound effects on education globally. As schools and universities closed, many turned to technology to try to continue the teaching and learning process. Among many institutions, schools have also shifted their base to virtual platforms to conduct classes online. Consequently, catering to the needs of all stages of education from pre-primary to university level, online education has emerged as an alternative to ordinary/regular face-to-face classes. Accordingly, various stakeholders such as government and private organisations have been trying their best to assist each other by sprucing up their existing online platforms, web applications, apps, etc. and training teachers to use them. Moreover, efforts are being made by the government and non-government organisations, including Ed-Tech companies, to support the school system and make a smooth transition to the virtual world. Up-skilling and motivating teachers and organising counselling sessions for stakeholders such as teachers, parents, and students are just some of the measures taken by these organisations in the past few months. Continually providing customised teaching–learning material suitable for online classes has been another way of facilitating children's schooling. This research project engages with the problems experienced by B.Ed. students during online teaching practice, when they moved their classes online due to the unavailability of schools/classrooms in pandemic situations.

The researcher interacted with the pupil teachers of B.Ed. and identified that most of them needed help in online teaching practice. The issues faced by pupil teachers/ B.Ed. students during online teaching practice have been classified under the three categories of the digital gap.

- The access gap (socio-economic status of the students/pupil teachers, geography, household income)
- The pedagogical skills and digital literacy gap
- The usage gap (opportunities to use technology actively for both teachers and students)

REVIEW OF RELATED LITERATURE

Jacqueline and Zweig (2016) studied teachers tasked with both content instruction and supporting students within the online learning environment—an environment many are new to, and there is a pressing need for more focus on helping teachers respond to these tasks. Pre-service and online learning programs should consider training for online teachers, which provides more opportunities for current and future online teachers to build their knowledge and skills related to student perseverance and engagement.

Bernice, Awa and Tsitsia (2020) explored how online teaching-learning significantly impacted students' learning with an average rate of 64.8% frequency. A more significant number of respondents, about 80.4% on average, admitted to having had challenges with Online teaching-learning.

ISTES Organization 2020, the roles of participants in a classroom are often defined as teachers teaching and students learning. However, the reality is that many students may need help understanding some specific concepts. In the classroom, a good teacher can usually understand the skill or knowledge concept about which a student may have questions, which can be explained differently. This is a more complex issue in a remote setting, where the students may need help to get the support and learning they need.

Online teaching brings a considerable alteration in spreading knowledge to improve teacher trainee education quality and make teachers of global standard. In this study, the sampled teacher trainees' average age was 24. Most teacher trainees' (66) perception of online teaching was positive, but they felt they needed more support from the online class network. Average no. (139 OR 58%) of teacher trainees said they got complete information about teacher training skills, T.L.M., and practical training skills, whereas (118) 49% felt stress and restlessness during online teaching. Online teaching brings a considerable alteration in spreading knowledge to improve teacher trainee education quality and make teachers of global standard. This study's sample of teacher trainees' average age was 24. Most teacher trainees' (66) perception of online teaching was positive, but they felt they needed more support from the online class network. Average no. (139 OR 58%) of teacher trainees said they got complete information about teacher training skills, T.L.M., and practical training skills, whereas (118) 49% felt stress and restlessness during online teaching. Online teaching brings a considerable alteration in spreading knowledge to improve teacher trainee education quality and make teachers of global standard. This study's sample of teacher trainees' average age was 24.

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In their study, Garhwal, H., Ahmed, Mukhtar, Godiyal and Sunita (2021) found that online teaching brought a considerable alter in spreading knowledge to improve teacher trainees' education quality and make teachers of global standard. In this study, the sampled teacher trainees' average age was 24. Most teacher trainees' (66) perception of online teaching was positive, but they do not feel easily accessible to the online class network. Average no. (139 OR 58%) of teacher trainees said they got complete information about teacher training skills, T.L.M., and practical training skills, whereas (118) 49% felt stress and restlessness during online teaching.

Gurung, S. (2021) studied the fact that while adopting the new teaching and learning methodology, teachers have to overcome many challenges. Conducting online classes is an excellent challenge for some teachers because they have been habitual in conducting classroom teaching for many years. The most

critical challenge teachers face in online education is to reach/teach students in remote areas because there is unavailability of solid internet access, no continuous supply of electricity, and a lack of income source for parents who cannot afford to buy a laptop or android mobile for their children. Teaching numerical subjects like –math, financial accounting, cost accounting, etc, or numerical problems is complicated and sometimes tedious in online teaching compared to classroom teaching.

In their study, Karen and Quevillon (2022) explored online teaching; lectures were completely different from face-to-face learning environments. Unfortunately, online courses are often imagined (and even designed) as in-class courses without the in-class part, with an archive of PowerPoint presentations and a list of recommended reading or other teaching resources as the core part of the teaching experience.

Sri Rahayu et al. (2022) explained that Internet access is available and stable for teachers in urban areas but tends to be unstable or indecent for those in rural areas. The teachers gradually adapted to using technology to achieve the predetermined learning goals. Despite these, the participating teachers encountered complexities during the online teaching, such as explaining a lesson in detail and knowing which students understood the materials.

OBJECTIVES OF THE STUDY

To highlight the issues faced by pupil teachers/ B.Ed. students during online teaching practice.

To identify the gaps in the development of pedagogical skills among the teacher trainees.

To examine the digital literacy gap.

To analyse the usage gap (opportunities to use technology actively for pupil teachers).

RESEARCH METHODOLOGY

Observation and Survey methods of research were used.

SAMPLE AND SAMPLING TECHNIQUE

A questionnaire-based survey was conducted among 100 B.Ed. students of MIER College of Education, Jammu. A random sampling technique was used. The questionnaire was developed using Google form, and the web link to the survey questionnaire was shared with pupil teachers.

DATA COLLECTION TOOL

A questionnaire comprising 20 items on the issues faced by pupil teachers was administered. B.Ed. students were asked to mark the problems they faced during online teaching practice.

DATA ANALYSIS AND DISCUSSION

In light of the COVID-19 pandemic, a structured questionnaire was developed to assess the extent of the digital gap and its various forms among the B.Ed. students in MIER College of Education, Jammu. The survey was conducted among 100 B.Ed. students of MIER College of Education, Jammu. The questionnaire was developed using Google Forms, and the web link to the survey questionnaire was shared with pupil teachers. The researcher was aware that the survey would be constrained or limited in its reachability as only pupil teachers possessing or having access to a digital device(s) such as a smartphone, laptop, or tablet would be the potential respondents, those affected by the access gap in terms of hardware would not have been able to take part. However, due to COVID-19 restrictions on movement, it was impossible to access teachers in any other way.

The Access Gap

Pupil teachers doing online classes needed to invest money to access technology, including devices, Internet connectivity, and a reliable power source. This leads to an added financial cost, especially in rural areas where the availability of technology could be better. This research, which involved collecting data from different pupil teachers via an online survey, reflects the access gap; teachers faced Internet and network issues while responding to the administered questionnaire. Pupil Teachers without a smartphone or laptop have been excluded due to the researcher's inability to access them. In this survey, 72% of the pupil teachers reported that they already had the supporting infrastructure for facilitating online classes. However, the break-up of responses reveals that only 17% of them had such facilities. Most pupil teachers have not been equipped digitally compared to their other counterparts. The real plight of teachers came to the surface when 60% reported having poor or no Internet connection.

These results indicate that poor Internet connection is the main hindrance for pupil teachers in their endeavour to conduct online classes. Only a few participants (9%) showed a lack of and insufficient financial resources to be a significant hindrance in delivering online education.

The Digital Skills Gap

Pupil teachers must switch between prepared videos and PowerPoint lessons and host live teaching via Google Classroom and Google Meet. They need to develop lesson plans and adapted worksheets, activity sheets, and other materials. However, many are not trained, and it isn't easy to become proficient at using technology quickly. The other key issue is that online teaching requires a specialised form of pedagogy, which they need to familiarize themselves with. Exceptionally few pupil teachers have been equipped with such training support. This points to a significant skills lacuna in these trainee teachers; the lockdown situation has made this gap visible and more extensive, necessitating relevant training programs in such situations.

When asked how they 'manage the challenges of preparing classroom material and assignments for online classes'. Forty-nine per cent said they asked colleagues for help. Forty-five per cent of the respondents said they have prior knowledge and do not face any challenges. Only 16%–20% of teachers have indicated inadequate digital training, lack of experience, and lack of awareness of digital tools and software. Data suggest that pupil teachers believe they are digitally skilled. However, it needs to be noted here that being able to use technology is not the same as having the required pedagogical knowledge to teach online.

The Usage Gap

Many teachers using online platforms needed help adapting to new teaching methods. Taking online classes demands prior preparations, including lesson plans, PowerPoint presentations, assessment sheets, and adapted student exercises to create interactive classes. Online classes were more problematic for these pupil teachers, who found maintaining discipline challenging. 15–25% of teachers have reported a lack of preparedness for conducting online classes and raised concerns about engaging with large groups of students.

FINDINGS OF THE STUDY

While evaluating the test performed by the B.Ed. Students' problems were noted in the online teaching practice. The researcher concluded that B.Ed. students were lacking confidence and communication. Participating students lacked interaction. Pupil teachers were focused on the theoretical part of teaching and neglected the practical part. Pupil teachers faced difficulty in explaining concepts without chalk and board teaching. Pupil teachers faced challenges in maintaining students' engagement in online classes.

Pupil teachers' responses reveal various challenges and issues while conducting online classes. A primary concern for them is getting monitored by parents or the supervising teachers. There were differences in interaction that point to specific difficulties when teaching online. Pupil teachers were asked, 'How is the pandemic affecting their online teaching as pupil teachers?' The responses collected from the pupil-teachers /B.Ed. students are given below:

- Difficulty in maintaining students' engagement in online classes
- Difficulty in adapting the level of teaching to the needs of different students
- Complexity in explaining concepts without chalk and board teaching
- Additional responsibility of trainee students to get online and installing correct tools and software on mobile phones
- Concern of getting monitored to increase participation of students
- Increased working hours and days upon preparation of Lesson plans
- Discomfort created by the presence of parents

Online pedagogy is more important than the new dynamics between teachers, parents, and management. Teaching online requires a particular form of pedagogy that pupil teachers still need to be trained in. While the teachers believe that they are technically proficient, they mainly transfer classroom materials onto PowerPoint presentations or give lectures through the online platform of their choice. They find it challenging to keep students engaged over phones and laptops, how much extra work they must do, and how many hours to create more innovative teaching aids that the teacher might not need in a regular classroom. This is highly problematic for poorer students who need access to technology. It is well known that only some have access to stable electricity, internet connections, or a separate room to study.

CONCLUSION

The research has attempted to investigate the ground realities of B.Ed. students/Pupil teachers are facing while taking online classes. It has brought to the forefront the multilayered and multidimensional issues encompassing the digital divide regarding access, usage, and skill gaps. The data analysis has indicated that many pupil teachers are tech-savvy and are comfortable substituting online teaching for physical face-to-face or offline teaching, but only as a remedy to continued teaching during the current era of COVID-19. The surveys also revealed that pupil teachers in urban and rural areas face the challenge of internet access. The lack of internet access affects them severely. Two major issues have surfaced: firstly, teachers' pedagogical skills do not cater to the online teaching environment, nor have they been trained for these situations. The picture that emerged is that even when pupil teachers are digitally skilled, they don't know how to teach online classes and prepare appropriate materials.

The key takeaway of the present study is that pupil teachers need more pedagogical training for online situations. While we may think COVID-19 will pass and be over soon, other disasters warrant more online delivery. Hence, it is essential that in today's digital world, teachers can switch from face-to-face teaching to online teaching when required and that they can support all of their students no matter which section of society they are from. However, teachers should have autonomy and liberty in deciding when and where to integrate technology to support their teaching practices. These days, though, primarily due to the pandemic, teachers have to mandatorily resort to technology, which seemingly will become a new norm.

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CHAPTER 23

THE BRIGHTER SIDE OF M-LEARNING

Ronu Thomas

ABSTRACT

Covid 19 has changed our education system. Even people who are allergic to the digital world must depend on it. Everything turned digital- teaching, learning, training, and even shopping online. Our children, who were banned from using mobiles, were given one day to attend online classes. Mobile learning or M-learning is a modern educational trend that allows knowledge to be acquired anywhere, anytime, using portable devices. It has attracted educators at different levels because of its high potential to enhance learning. Even the teachers who thought online teaching was not their cup of tea were forced to use it, which many later found very useful. This pandemic has proved that digital learning is not something we should run away from but something that can be embraced to make the future brighter. This study aims to determine whether high school teachers know the modes and scope of M-learning. Also, through this study, the researcher wants to collect their opinion on using m-learning as a mode of instruction. The study consists of a sample of 30 high school teachers who are using the online mode of the teaching-learning process. This article does not try to ignore the adverse effects of m-learning but focuses on its advantages, which can be made into a stepping stone to a bright future.

Keywords: Mobile Learning, Advantages, Awareness in Teachers

INTRODUCTION

Mobile learning is the experience and the opportunity afforded by the evolution of educational technologies; it is anywhere, anytime learning enabled by instant on-demand access to a personalised world filled with tools and resources (McQuiggan et al., 2015, p. 8). With the

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With the outbreak of the pandemic, the use of mobile devices in education for teaching and learning purposes has increased at a rate never seen before. A smartphone is a better option in a state like Kerala, where only some homes can afford a computer system. Parents could afford a smartphone for the sake of their children's education. Also, the pandemic outbreak compelled educators to look for a readily available platform for students, and it was none other than mobile devices. The accessibility to mobile devices among students was comparatively high in central Kerala. A study conducted among MBBS students in central Kerala on the pedagogical shift to online learning during the COVID-19 pandemic by Rafi & et al. (2020) found that 89.6 % accessed online classes through mobile devices.

LITERATURE REVIEW

The Covid 19 pandemic has significantly impacted the growth and demand for distance learning via the Internet, television, desktops, laptops, smartphones, and other similar technologies. M-learning, in contrast to other forms of distance education, is one of a kind. Mayer (2009) describes multimedia learning as presenting instructional materials in words and pictures to ensure learning occurs. Mayer (2009) explains that by "words," he means that the material is presented in a verbal form, printed or spoken text. By "pictures," he means pictorial forms, which include using still graphics such as illustrations, graphs, photos, or maps, or dynamic graphics such as animations or video. He further suggested that the goal of multimedia learning is to minimise extraneous cognitive processing during learning (i.e., cognitive processing that does not serve the instructional goal), to manage essential processing during learning (i.e. cognitive processing needed to represent the essential material mentally), and to foster generative processing during learning (i.e., cognitive processing aimed at making sense of the material) (Mayer, 2013, p. 395).

Other researchers have also noted the benefits of M-learning in education. Korucu and Alkan (2011) indicated that mobile devices are small and have a lot of features despite their size increasing interest in them. This growing interest requires more study on these devices or causes the usage of these devices in more fields. The feature of mobile devices that enable an educational atmosphere encourages individuals to use them. Besides, it allows an educator who shares the information to contact more students independently of time and location using mobile educational devices (Korucu & Alkan, 2011. P.1925).

Le (2021) studied the students' attitudes towards using smartphones and portable devices for learning writing. The survey revealed that the learners enjoy m-learning as this framework helps students reach information.

Sharma & Singh (2022) studied the impact of mobile learning on Pharmacy education during the COVID-19 pandemic, which revealed that integrating mobile technology with pedagogical learning strategies enhances mobile learning. The students who used mobile technology for learning had better academic results than those who didn't. Students benefit from technologically integrated learning by improving their critical thinking and communication skills. The lessons learned during the coronavirus pandemic will help enforce new laws and regulations, which will help the country's development in terms of novel approaches to education.

NEED OF THE STUDY

With the popularity of mobile devices for learning purposes, it is high time that educators focus on the bright side of m-learning and make the maximum out of it. Since it is a gadget that students won't get apart from- something they like to hang on to most of the time- using the same to reach them is a better way to catch their attention. Tereshchenko, Zagorskaya, Polyanskaya and Bobritskaya (2020) stated that learning using mobile devices offers new opportunities for students and teachers. According to Uther (2019), "Mobile learning has become one of the more influential aspects in the field of educational technology given the ubiquity of modern mobile devices and proliferation of educational applications or 'apps' for mobile devices" (p. 1). Research shows that m-learning is a growing trend as a learning delivery modality, and its momentum will keep accelerating (Ofori & Lokee, 2021, p. 127). Shen, Wang, Gao, Novak and Tang (2009) also indicated that "the best practices for using mobile devices in teaching and learning are still unknown. Systematic studies are needed to investigate student and instructor experiences with mobile learning" (p. 539). The literature review indicates the need to look into the brighter side of m-learning and implement it into the teaching and learning process.

PURPOSE OF THE STUDY

The study aimed to highlight the brighter side of M- learning. M-learning has become increasingly popular as a style of instruction in recent years. It is necessary to investigate its benefits to implement it effectively in the teaching-learning process. This study also sought to determine whether young school instructors, who would be the forerunners of the future educational system, are aware of M-learning.

RESEARCH QUESTIONS

The following research questions were used to guide this study:

1. What is the awareness of M- learning in school teachers to use it in their teaching-learning process?
2. How far do the school teachers find M-learning beneficial in the teaching-learning process, or how far do the students benefit from M- learning?

METHODOLOGY

The methodology focuses on discussing the approaches adopted in carrying out the investigation, which entails analysing school teachers' awareness of M-learning and discovering its advantages while adapting it to the school education system.

A quantitative approach was adopted for the collection of data in the study. The population of the study consisted of school teachers. The questionnaire was adopted for the survey and distributed to school teachers using Google Forms. The questionnaire was designed in two sections related to the study's research questions. The first section of the questionnaire consisted of 8 questions to identify the level of awareness of M-learning. In comparison, the second section consisted of 16 questions for analysing the benefits of M-learning in the teaching-learning process. The age range of the teachers who participated in

the study was between 24 and 32. Out of 30 teachers, 14 (46.7 %) are teaching at Higher Secondary schools, 11 (36.7 %) are teaching at High Schools and 5 (15.7%) are teaching at primary schools.

ANALYSIS AND INTERPRETATION

The analysis and interpretation of gathered data of investigation revealed the awareness level of teachers and the usefulness of M- learning in the teaching-learning process. The questionnaire was designed to survey data collection.

The analysis of teachers' awareness of M-learning is given below. The first part of the questionnaire, which includes eight questions, was used to analyse the teachers' awareness of M- learning based on 4 Likert scales (1: not skilled at all; 2: not very skilled; 3: skilled; 4: very skilled). Table 1 shows the percentage analysis of the research questions on M-learning awareness.

Table 1. : The level of awareness of school teachers on M- learning.

Sl. No	Code	Question	Not Skilled at all		Not Very Skilled		Skilled		Very Skilled	
			n	%	n	%	n	%	n	%
1	A1	Use of Mobile phones as a mode of teaching	0	0	3	10	16	63.3	8	26.7
2	A2	Use of mobile apps to construct online quizzes	0	0	3	10	12	40	15	50
3	A3	Use of mobile devices in teaching- learning process	0	0	1	3.3	8	26.7	21	70
4	A4	Use of smartphone to implement online classes	0	0	2	6.7	19	63.3	9	30
5	A5	Use of mobile apps to conduct online teaching	0	0	1	3.3	18	60	11	36.7
6	A6	Use of smartphone to look up reference information	0	0	1	3.3	15	50	14	46.7
7	A7	Use of Learning Management System (LMS) in teaching- learning process	0	0	5	16.7	5	16.7	20	66.7
8	A8	Use of mobile apps for instant messaging/ chat with students	1	3.3	1	3.3	17	56.7	11	36.7

The data analysis revealed that almost all the participants were well aware of M-learning and were familiar with most of its features. Only one teacher needed to be more skilled in using mobile apps to communicate

with students. For all the other seven questions, teachers were proficient at using mobile phones in teaching. Even the percentage of teachers who are not very skilled in using mobile phones for the teaching-learning process was much less. From this, we can conclude that young teachers are very comfortable using mobile phones in teaching-learning. Hence, the popularity of mobile phones in the young generation can be channelled to the use of mobile phones in the teaching-learning process.

The graphical representation of the percentage of responses to each question from the section on awareness of M-learning gives a clear picture of the level of understanding of M-learning among young school teachers.



Figure 1 Awareness of M-learning among school teachers

The second part of the questionnaire contains 16 questions and was used to analyse how teachers find M-learning useful in the teaching-learning process based on a 4 Likert scale (1: strongly disagree; 2: disagree; 3: agree; 4: strongly agree). Table 2 shows the percentage analysis of questions of the research on the usefulness of M-learning in the teaching-learning process.

Table 2: The percentage analysis of the usefulness of M-learning in the teaching-learning process

Sl. No.	Code	Question	Strongly Agree		Agree		Disagree		Strongly Disagree	
			n	%	n	%	n	%	n	%
1	U1	Creates/ edits audio & video using mobile device	14	46.7	15	50	1	3.3	0	0
2	U2	M-learning provide increased contact with my students	5	16.7	16	53.3	7	23.3	2	6.7
3	U3	Wireless virtual learning environment like m- learning helps to reach students better than wired system	6	20	18	60	5	16.7	1	3.3
4	U4	M-learning is more cost effective compared to any other online learning modes	9	30	18	60	3	10	0	0
5	U5	M-learning is more flexible	7	23.3	20	66.7	3	10	0	0
6	U6	More videos, graphics and animation-based instructions can be incorporated through M-learning than regular classroom teaching	8	26.7	18	60	3	10	1	3.3
7	U7	M-learning provides one to one presentation with much richer communication	2	6.7	22	73.3	5	16.7	1	3.3
8	U8	M- learning brings in interactive learning environment	3	10	17	56.7	10	33.3	0	0
9	U9	M-learning simplifies multimedia content delivery and creation options	9	30	21	70	0	0	0	0
10	U10	M-learning leads to self-regulated learning	2	6.7	22	73.3	6	20	0	0

11	U11	M-learning improves knowledge retention and information recall in students	1	3.3	15	50	14	46.7	0	0
12	U12	M-learning provides potentially more rewarding learning experience	1	3.3	20	66.7	9	30	0	0
13	U13	Mobile apps simplify creation of assessment tools like quizzes, online tests etc.	12	40	15	50	1	3.3	2	6.7
14	U14	Mobile devices can be used to share assignments and feedback easily	11	36.7	19	63.3	0	0	0	0
15	U15	Mobile apps can be used to construct assessment tools	9	30	16	53.3	5	16.7	0	0
16	U16	M-learning helps to give one to one feedback to students	6	20	19	63.3	5	16.7	0	0

The analysis findings indicate that most teachers agree with the benefits of M-learning in the teaching-learning process. Except for questions U2, U8, U11 and U12, more than 80% of the teachers agree that M-learning can benefit the teaching-learning process.

All the teachers who participated in the survey agreed that sharing assignments and feedback and creating and delivering multimedia can be quickly done in M-learning. 96.7 % of teachers find mobile phones helpful in making or editing video/audio for their teaching. 90 % agree that M-learning is cost-effective, more flexible, and simplifies assessment tool creation. 86.7 % believe more videos, graphics and animation-based instructions can be incorporated through M-learning than regular classroom teaching. 83.3 % agree it facilitates assessment tool creation and increases contact with students. 80% of the teachers believe mobile phones can reach students better than any wired system and provide richer one-to-one presentations.

The graphical representation of the data clarifies the teachers' positive attitude towards M- learning in the teaching-learning process.

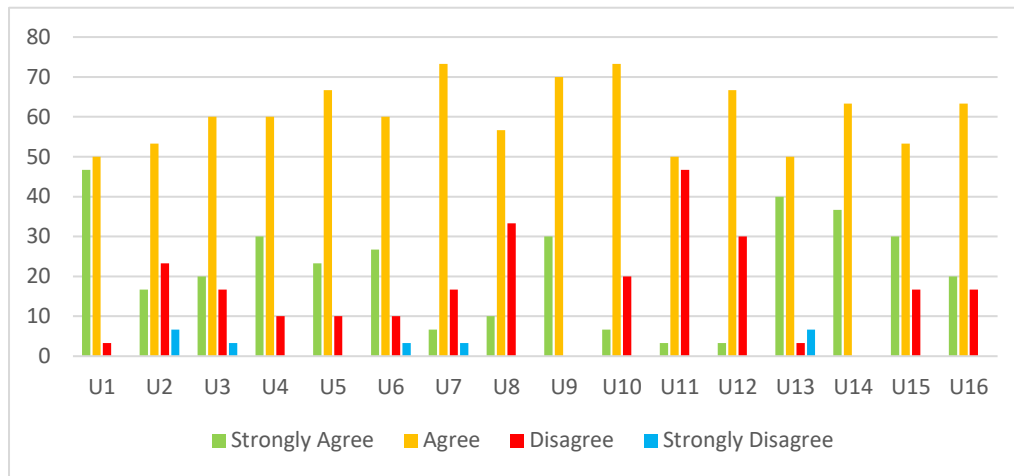


Figure 2: The usefulness of M-learning in the teaching-learning process

The study revealed that nowadays, young teachers are very much aware of M-learning and are comfortable using mobile phones in their teaching process. Due to the COVID-19 pandemic, the young generation has explored all the possibilities of mobile phones. It has equipped itself with much information that can be utilised in any field. Our teachers are still catching up and keeping up with the new trend.

FINDINGS AND CONCLUSIONS

The COVID-19 pandemic has taught us to look into the techno-pedagogic aspect of education more than at any other time. Teachers who were afraid of technology were forced to become techno pedagogues. This new phase has equipped the teachers in many ways. Now, we have to use these skills to turn the future into a brighter one. The most crucial aspect of future learning is the ease of understanding. Mobile Learning has the main potential and characteristics of what is needed for learning in the future (Pebriantika, Wibawa, & Paristiowati, 2021).

This study analysed the awareness of M-learning of school teachers in the use of mobiles in the teaching-learning process. This study showed that school teachers' understanding of the use of M-learning is relatively very high, and they are skilled at using M-learning in the teaching-learning process. Also, the analysis of the collected data highlighted the brighter side of M-learning. It revealed that M learning can be used for the betterment of education. It does not have to be used only when there is a critical situation. Instead, M-learning can be integrated into regular classrooms, making it more exciting and motivating for teachers and learners.

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CHAPTER 24

DEVELOPMENT OF A GLOBAL MINDSET: POSSIBILITIES FOR INDIA AMIDST THE COVID-19 PANDEMIC

Shivam Mahajan, Pallvi Arora & Archana Talwar

ABSTRACT

The COVID-19 pandemic has affected many lives in a brief spree. This happened at a time when globalisation was already seen as facing headwinds. Projections made by the International Monetary Forum (IMF) or the World Bank for a recovery from such a pandemic are inevitably bleak for emerging economies like India, wherein even the pre-pandemic situation could have been more promising. Against this backdrop, this paper considers the pandemic's impact on the education sector in emerging economies like India, besides highlighting some notable developments herein to foster a holistic and robust understanding. The paper also aims at bringing to light a crucial aspect of blending education (sector) with the development of a global mindset by utilising the advances in Information and Communication Technology (ICT) (like Zoom, MOOCs, etc.) as several challenges have come afresh due to this pandemic. The present research brings out how educational institutions, by using suitable interventions, can facilitate the development of a global mindset among their students in light of exploring newer opportunities that lie ahead in future despite the present-day challenges.

Keywords: Global Mindset, Educational Institutions, Information and Communication Technology (ICT), COVID-19 pandemic.

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INTRODUCTION

On January 30th, 2020, the World Health Organization (WHO) (World Health Organization issued a joint statement on February 27, 2020) declared the outbreak of COVID-19 as a public emergency and highlighted the role of international cooperation in containing COVID-19. Interestingly, education, being a global affair, has had an essential role in fostering international relations and materialising the same by having a global presence in various universities, international accreditations or through a flourishing movement of students and faculty across borders.

Education has been seen as a revolutionary idea as it encourages better relations among countries (Lane, 2018; Altbach, 2007). Utilising education as a tool for exercising „soft power“ diplomacy by countries to get through global affairs and maintain diplomatic relations is seemingly relevant today (Lomer, 2017). Stromquist and Monkman (2014) also back this notion as knowledge invariably transcends borders, affecting different global economy stakeholders (organisations, governments, students, citizens, etc.).

What is implied in the lines mentioned above, specifically for the rationale behind this paper, is to consider education an enabler for nations to purposefully come together, especially when the world is facing a crisis. Unsurprisingly, the education sector, like many others, also experienced a significant blow worldwide due to the COVID-19 pandemic (Jena, 2020; Radha et al., 2020; Dutta, 2020), increasing the knowledge of workable solutions which the sector can opt for remains a valid topic of research. This work attempts to bridge a newly created global lacuna by presenting a case for developing an international mindset.

The objectives of the present research work are twofold. Firstly, it aims to provide an insight into the impact of the COVID-19 pandemic on the education sector in India. Secondly, it seeks to highlight the vitality of developing a global mindset in the face of the COVID-19 crisis, deliberating on blending the domains (education and global mindset) as a rainbow approach with implications for future research.

METHODOLOGY

Studying the education sector in different developing countries, especially during a pandemic, while asserting the development of a global mindset is the underlying purpose of this research.

The study adopts an integrative literature review methodology to create a formal preliminary conceptualisation that integrates the study of the development of a global mindset with the activities and practices of the education sector. The integrative literature review methodology has facilitated the present work by synthesising different views on topics of interest to provide a new way of thinking with implications for future studies (Torraco, 2005). A literature review is augmented when it clearly outlines the method for a) initial searches related to the articles included in the present study and their final selection, b) platforms/search engines used for finding the articles, and c) time when the articles were searched (Callahan, 2010; Lee, Shin, Park, Kim, & Cho, 2017).

Therefore, in undertaking this study, the initial search began in January 2021 and involved an extensive use of Google Scholar and United Nations databases. Keyword combinations for this article focused on bringing out literature concerning the construct (global mindset), emergence and relevance. The different insights gained after that have been juxtaposed in the form of observations, thus making it relatable to the present study (in the context of the education sector). No specific period that might have constrained this

study was selected. Search on the platforms above was made using terms like ‘relevance of global mindset’, ‘global mindset of students’, etc., which initially yielded a total of 42 articles and a subsequent review, taken up in stages (abstract review and detailed review) lead to narrowing down to over 19 articles especially pertaining to the domain of global mindset. The 19 articles finally chosen herein were reviewed, analysed, and classified in accordance with their relation to the present study. Suggestions incorporated in the selected articles were carefully examined so the present study could further the extant work in the domain of interest.

Further, whereas the standardised or specific data analysis techniques for integrative literature review are not mainly defined (Whittemore and Knafl, 2005), it has been ensured herein that criteria for selection of country, facts, etc., remain transparent and open to scrutiny.

The present research emphasises the education sector in one of the largest developing economies. India (International Monetary Fund, 2020). The primary selection criteria is that of India's significant demographic dividend; that is, around 67.4% of its population lies within the bracket of 15-59 years of age (UNFPA, 2021). India has the potential to shape the trajectory of this planet with their reasonably large workforce and number of students (Jagtap, 2016). Therefore, India's situation (of high demographic dividend) deserves recognition and quality improvement, and thus, this is the selection for this paper.

Articles related to COVID-19 and its impact on the education sector were limited to 2020 (when the World Health Organization declared the COVID-19 outbreak a health emergency) until April 2022, as the pandemic is still ongoing.

A kaleidoscopic narrative on the education system of India and the impact of COVID- 19 on the education sector therein

A pre-COVID-19 scenario of the Indian education system has been known for its inclination toward domains like governance, regulation and personnel recruitment. This leaves little room for infrastructure, funding, research, and development (Ramaprasad et al., 2016; Sharma and Sharma, 2015; Pandey, 2004; Punneya, 1992-93). Nonetheless, on September

14, 2020, the Ministry of Education (Government of India) launched the New Education Policy (2020), the third of its kind since 1968, which envisages the internationalisation of education, creation of Special Education Zones for disadvantaged areas besides effectively making professional education to be integral to higher education. All this policy churning puts India at a pivotal point of breaking away from the historical odds and advancing into the future.

Whereas a pre-COVID-19 glimpse of the education sector has been provided, it is now imperative to highlight the impact of COVID-19 on the industry as:

Ambiguity over continuity of classes due to lockdowns (Shammi et al., 2021).

The rise of online education has created challenges, such as the compromise of over 10 million academic hours (Dutta, 2020; Nambiar, 2020). Novel methods to deal with this situation have evolved, like using MOOCs, Skype, Zoom, etc., despite issues of the affordability of digital resources, to reorient towards a digital classroom set-up (Dhawan, 2020; Jena, 2020).

Mental health issues are rising to newer levels, mainly among students and teachers, and there is a lack of emotional connection among education stakeholders (Azim Premji University, 2020; Arora and Srinivasan, 2020).

The impact upon the activity and movement of students pursuing their studies abroad affected, and thus, international education had a setback (Radha et al., 2020; Jena, 2020)

Although the education sector in India exhibits a mix of aspirations for the future, a struggle with the present, and a shade of its past, as well as misappropriated priorities, the COVID-19 crisis has throttled several gains made by educators and students alike over the years.

More than that, the world over is facing similar problems. Tangible solutions and actions are required to deal with the recently evolved issues. Through this study, we advocate the development of a global mindset as a viable solution for a resilient recovery of the education sector from the COVID-19 crisis.

OVERVIEW OF GLOBAL MINDSET LITERATURE

A global mindset is simply a multidimensional construct that caters to the global dynamics of trade, culture and whatnot, besides staying relevant to local or national agendas and in an internationalising world (Trokkel, Nummela, & Saaraenketo, 2018). Table 2 provides a thorough insight into what defines a global mindset and its relevance, as suggested by different authors.

Based upon analysis, notable similarities can be drawn about what are the underlying basics for the development of a global mindset:

A global mindset is a multidimensional construct studied at individual and organisational levels.

At the individual level, a global mindset can be understood as an all-encompassing phenomenon that includes intellectual, psychological, and social dimensions. It reflects the opening up to cultures, ideas (business or social), and people from different backgrounds.

At the organisational level, a global mindset signifies the underlying motivation of expanding/opening up to newer markets/opportunities; for example, expansion beyond borders and specific businesses does not get restricted.

Additionally, diversity in terms of culture, gender, race, or ethnicity, among other things, is integral to developing a global mindset at both levels.

DISCUSSION

With an understanding of what comprehends the development of a global mindset, it is interesting to note that the present-day COVID-19 crisis provides an opportunity that may be blended with the education sector in India and beyond. This is crucial for now as:

Education in India and beyond is transforming, and online learning is being embraced due to COVID-19 (Dhawan, 2020; Paudel, 2020). Educational institutions can offer several prospects to aid students' development of a global mindset (Chan, Hung-Gay, and Jot, 2018). We suggest that the development of an international perspective can be ingrained as an underlying component for numerous courses running

online in the pandemic era and even when this pandemic ends. As the pandemic has, to a great extent, hampered the process of going abroad to study (Mok et al., 2021), the literature suggests that blended teaching/ learning (Peter, 2018) can offer immense scope for providing maximum exposure in facilitating the development of a global mindset with the help of trending and accessible, online education (Adedoyin and Soykan, 2020). This can eventually be an aid not only for students in India alone but for students worldwide to connect/re-connect with processes, people and minds across the globe.

Further, India aspires to be a five trillion-dollar economy. While education today is not restricted to a classroom set-up (due to advancing digitalisation and the launch of the New Education Policy, 2020), the sector is reckoned to be a stipulating element for the economic and social development of an individual and the collective as a whole (Kaurav, Narula, Baber, & Tiwari, 2021). This argument convincingly urges the inculcation of innovative methods in the education sector. Hence, innovation in teaching a global mindset can be the stipulating element for India to achieve the five trillion-dollar mark.

Education institutions in India can tap into the potential of students to be global citizens even while staying at home and save on time and costs involved in travelling abroad to study that are relatively high otherwise. This may positively affect India's balance of payments and contribute to the progress of its economy. In this regard, developing a global mindset among students in India can be organised into e-study-tourism without compromising their learning aspects (Gretzel et al., 2020).

As COVID-19 has offered people and students a chance to introspect and open up to multiple options like creativity to develop in a multipronged manner (Darnhofer, 2020; Tortorelli et al., 2021), this can be concurrently advantageous for the development of a global mindset as educational institutes can further imbibe a sense of creativity (Aggarwal, 2011) among their students in India. In its recent report on upskilling, the World Economic Forum (2021) also provided information on the importance of investing in human capital.

Unsurprisingly, countries worldwide, including India, have suffered economically due to COVID-19 (Susskind and Vines, 2020). Arguably, developing a global mindset can offer a new possibility in the pandemic era as it leads to integrating demographic capabilities and technological forces of globalisation (Aggarwal, 2011). Fortunately, India has been enormously bestowed with a demographic dividend and resilience. Thus, educational institutions holding the demographic dividend as a reservoir of future leaders (business, political, etc.) as their students can step up to realise this possibility of the development of a global mindset amidst the COVID-19 crisis by focusing on the development of a global mindset as a competency that can act as a bridge for innovation, entrepreneurship and internationalisation (Kyvik, 2018). Thus, here we explicitly suggest that the education sector, which is struck by the pandemic globally, can also fuel up the economies through “purposeful up-skilling of students” by undertaking the development of a global mindset by way of, say, international co-curricular activities (Le, Ling, & Yau, 2018).

However, it should be reiterated that the case for the education sector to develop a global mindset cannot and should not be restricted to India alone. Even developed nations can comprehend such a novel conceptualisation and explore different ways to bring it closer to students and the masses.

Undoubtedly, the COVID-19 crisis has, to an extent, hindered India's progress in dealing with the challenges of the 21st century or our march towards achieving the UN SDGs (Srivastava, Sharma, & Suresh, 2020). The ongoing Ukraine-Russia war has also created newer uncertainties, like those in global supply chains and the movement of human resources (Boungou & Yatie, 2022). India, as the largest democracy, has expressed deep concerns regarding maintaining the international order and world. The inertia of „business as usual“ may not work well in India's favour when overcoming such untoward incidents. With this study, we bring out the fact that irrespective of the pandemic or war-born policies and cultural clashes (like ethnic wars or race-based acts of prejudice), the development of a global mindset is critical in the present scenario for aptly tapping the potential of the students and the society for India to lead from the front. Lastly, India's aspiration to be the 'Vishwa Guru' (spiritual, ethical or religious teacher to the material world) is holistic. Developing a global mindset would instead add to its strength.

Nonetheless, while one and all are impacted by COVID-19 (directly or indirectly), the steps Indian educators and students take today will determine our capacity to be resilient and proceed further.

CONCLUSION AND SUGGESTIONS

This work is an *ab initio* effort to study the possibility of integrating the development of a global mindset with the education sector as the COVID-19 pandemic has dawned in a new era of exploring different permutations and combinations. India and many other developing or least-developed countries seemingly missed the bus as the Industrial Revolution unfolded. Amidst the COVID-19 pandemic lies an opportunity to hop on the path of holistic development. Suppose this opportunity is tapped dexterously with a global mindset while the education sector acts as a catalyser for its development. In that case, newer vistas of integration in a pandemic-hit world can be opened. In light of this, this study has the following suggestions to offer to policymakers, education institutions, and students, as well as further research in the domain.

For policymakers, educational institutions, and students: Policymakers in India can run trials or pilot studies as a policy measure by integrating the academic syllabi with the available measures or techniques, as enlisted below, to develop a global mindset as per the country-specific requirements. Utilising the nuanced guidelines of the New Education Policy 2020 can be favourable in developing a global mindset with the aid and support of educational institutions.

Based on the policy so formulated, Indian educational institutions can further collaborate with foreign institutions and invite professionals from across the globe to nurture the development of a global mindset across different streams and at various academic levels. COVID-19 has now opened the doors for online courses, interactions, networking, etc., along with an array of opportunities to flourish and encourage equality in education. Words and applications like Metaverse, immersive experience, experiential learning, etc., are gradually becoming a daily affair in education and can provide a distilled expertise towards developing a global mindset among students. Online education was mainly in its infancy a few years ago, especially in developing nations (Qazi et al., 2020). However, with the spread of COVID-19, it is becoming mainstream, and thus, we can resolve to hybrid formats to educate students.

For educating global mindset in a hybrid format, Vygotsky's (1978) assertion that children learn through their interaction with others can be utilised by providing them with an enriching environment (like both parents as well as teachers engaging students to read international and national updates to be followed by

discussions, linguistic training, drama etc.) both offline and online. While many parents in India may be illiterate, the role of teachers becomes crucial in this scenario (Wojcik, Pieski and Espinetti, 2021). Also, besides upgrading themselves about international affairs, it has become essential for teachers to incorporate technology into the academic curriculum and to go beyond discussing local issues and encourage students to use digital means to become a 21st-century communicator who accepts his/her role as a global citizen addressing global concerns like climate change, world trade in Industry 5.0 etc.

Eventually, with the re-opening of educational institutions as the pandemic slows down, classrooms can turn into a platform for discussing what's new in the world or for hosting seasoned global leaders in a way that students stay curious about who is coming from which country today, etc. Such interventions can suitably be calibrated into Watson's (2008) Blended Learning Continuum, and students can be assessed about the gains they have made for improvising further.

Additionally, whereas Lyons and Voges (2018) emphasise reflective experiential learning, Nonis, Relyea, and Hunt (2020) have outlined an „Event-based approach“ to develop a global mindset that involves student groups hosting an event (exhibition) to promote a country (it's culture, business opportunities etc.) of their choice and eventually learn more about it. This encourages heterogeneity, student creativity, and innovation and can be conducted offline or online. While in the COVID-19 times, online learning is a new normal, Pathak (2018) suggests that multiple intelligences approaches like- linguistic, naturalistic, logical, mathematical, etc., can be utilised to build a global mindset among students taking up online international management. These tools can also be instrumental in leveraging the information and communication technologies of the day, like MOOCs or phone applications.

Pitfalls like bad internet connections or a lack of real-time and physical experience of an international environment could occur when educating global mindsets online. Still, measures like internet etiquette or "netiquette" may help train students to overcome their inhibitions and xenophobic outlooks.

For future research, experimental models that evaluate education policies through the prism of developing a global mindset can be arrived at with data-based outcomes by undertaking, for instance- comparative studies across developed and developing nations or continent-specific studies. The effectiveness and impact of the strategies listed above can also be examined with the help of data. Periods of waves of COVID-19 can be taken as a base year to evaluate students enrolled in different countries, and various programmes to measure achievements in post-pandemic and other outcomes of blended teaching can be drawn. Future research can also explore the possibilities of developing a global mindset among students so that such a development can contribute to making them more resilient and conscious about the local and global dynamics in the wake of a rapidly changing world.

Therefore, placing bets on the data-driven outcomes of future research in this domain, we can finally conclude that regardless of the COVID-19 pandemic, the education sector can leverage the development of a global mindset to “future-proof” humankind's progress.

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CHAPTER 25

COMPARATIVE STUDY OF CLASSIFICATION ALGORITHMS FOR ANALYSIS OF STUDENTS' ACADEMIC PERFORMANCE IN ONLINE LEARNING

Shraddha Bhurre & Shaligram Prajapat

ABSTRACT

The education sector has massive data that could be analysed and used to improve the teaching-learning process in online and blended learning. The education sector in India has witnessed considerable changes in the field of the teaching and learning process since COVID-19. During this pandemic, online teaching-learning was the only option, which led us to have a variety of student performance datasets through online learning. There are several data mining algorithms used to analyse this dataset. Data mining has recently received significant attention in the Educational area due to the availability of large amounts of data and the forthcoming need to convert such data into meaningful information and knowledge. This paper will perform a performance evaluation and comparative analysis of J48, Naive Bayes, Random Forest, Bayes Net, Multilayer Perceptron, and SVM using two different datasets. One dataset is from Kaggle. This is based on educational and e-learning backgrounds, with 480 instances and 16 attributes. Another dataset is the exam scores of students accessed from Kaggle. Weka was selected to perform tasks based on a comparative analysis of data mining tools. The Performance evaluation will be done through a confusion matrix.

Keywords: Online Learning, Classification Algorithm, Machine Learning, Weka, Educational Data Mining.

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INTRODUCTION

Many changes have happened to the teaching-learning process, the nature of students, the outcome of different educational systems, the learning style of students, the teaching style of teachers and so on. Data mining, data science and machine learning to save, retrieve and use educational data has become necessary for this sector to determine the effectiveness of expected outcomes. Considering these opportunities and problems, the efforts include educational data mining trials and studies (EDM) (Rahman, 2018). This paper focuses on several EDM classification strategies and procedures researchers utilise to maximise the task. Classification techniques such as Naive Bayes, Bayes Net, J48, Multilayer Perceptron [MLP], SMO [SVM], REPTree, and Random Forest were used. In the final stages of this paper, a real dataset from Kaggle xAPI-Edu-Data is used to test the classification algorithms, and the results are interpreted using the Waikato Environment for Knowledge Analysis (Weka) data mining and analysis tool developed at the University of Waikato in New Zealand. The relationship between Data Mining and Educational Systems is that it merges numerous categories of student data into a single dataset frame. Then, the inevitable data mining procedures are used to unearth hidden student information (Rajeswari, 2013).

LITERATURE REVIEW

Data mining, Learning Analytics, and Machine Learning are making effective changes in educational data. During the COVID-19 pandemic, online teaching-learning was the only option. This paper studied and analysed recent data to improve academic performance and institutional effectiveness. This paper examined classification techniques like Naive Bayes, Bayes Net, J48, Multilayer Perceptron [MLP], SMO [SVM], REPTree, and Random Forest.

Educational data is pre-processed and analysed using multiple attributes and performance prediction methodologies. It yielded an accuracy of 6.13 for the Decision tree, 73.8 for ANN, and 72.5 for NB (P. Ajith, 2013). It also reveals that using this method, the Decision tree (C4.5/J48) has only a 6% to 7% performance improvement.

The behavioural features of students extracted from e-learning systems have been considered to evaluate their impact on student performance. However, in the other study, the same set of approaches was utilised with the ensemble and boosting outperformed all algorithms with an average accuracy of 74%. This paper shows a nearly 26 percent improvement (Aljarah, 2015).

The knowledge is hidden among the educational data set and is extractable through data mining techniques. Several studies have been done to justify the capability of data mining techniques in online teaching and learning. A performance evaluation was done in the study (Pal, 2012). Algorithms ID3 and C4.5 have taken into account various measures of calculation such as Entropy, Gini index, and Gain also considered. Special categories of students who need attention can be easily identified.

Various data from Moodle and Facebook have also been used to improve educational quality. A personality reconciliation helped students improve their performance. The model tested best, giving 93.23% for Random Forest and 92.19% for J48 (Sharma, 2012).

The advancement in the data mining field makes it possible to mine educational data to improve the quality of the educational processes (Dharunya, 2019). The study used data mining methods to study the performance of dropout students. To address this issue, several approaches have been discussed in educational data mining to identify the rate of failure in students. Therefore, a clustering-based approach has been proposed to identify failed students outperforming existing approaches. In this research, efficient clustering algorithms such as Clara, Clarans, and Density-Based Clustering are utilised, and their performance is compared.

Educational mining is concerned with establishing ways of obtaining knowledge from educational data. It uses data mining techniques and tools to uncover hidden patterns and discover new knowledge from huge educational databases. Educational mining knowledge can be used for decision-making in higher education institutions. According to Sharma (2018), in Classification technique C5.0, Naïve Bayes Classification is the best algorithm in performance, and in Clustering Technique, the K-Mean clustering algorithm is the best algorithm. In Association Rule Technique, the Apriori algorithm is the best and most accurate compared to other algorithms.

To see if improved classification performance could be attained, three decision strategies were employed to integrate the findings of the machine learning algorithms in different ways. Testing and training are the two steps of the experiment. These phases are carried out in three stages, each corresponding to a different semester stage. The number of attributes in the dataset was raised at each step until all attributes were added at the final stage. The dataset's most notable feature was that it exclusively included time-varying attributes rather than time-invariant ones like gender or age. This dataset type has helped researchers determine how much time-invariant data affects prediction accuracy. The accuracy and sensitivity of the experiment outcomes were assessed. The use of instance-based learning Classifier, Decision Tree, and Naïve Bayes in predicting at-risk students is discussed in (Er, 2012).

CLASSIFICATION OF ALGORITHMS

Classification is the process of creating a class model from a set of records containing class labels. The goal of the Decision Tree Algorithm is to figure out how the attributes vector behaves in various situations. Based on the training instances, the classes for the newly generated instances are also found. This algorithm generates the rules for predicting the target variable. Using the tree classification algorithm, the crucial distribution of the data may be clearly understood.

J48: J48 is a type of ID3 that has been extended. Accounting for missing values, decision tree pruning, continuous attribute value ranges, rule derivation and so on are some of the extra characteristics of J48. J48 is an open-source Java implementation of the C4.5 algorithm in the Weka data mining tool. The Weka tool offers several tree-pruning choices. Pruning can pinpoint probable overfitting situations (Kaur, 2014). Other methods perform recursive classification until every leaf is pure, implying that the data categorisation should be flawless and feasible. This method generates the rules from which the data's unique identity is generated. The goal is gradually generalising a decision tree until it balances flexibility and accuracy.

Naive Bayes: A supervised learning algorithm based on the Bayes theorem used to solve classification problems. Naive Bayes was applied to the educational dataset to predict student performance. It is a

probabilistic classifier which predicts based on an object's probability. The classification rules data mining technology was used to predict student performance. Based on senior high school academic records, admission exam results, and student's personal, socioeconomic, and demographic data, the Naive Bayes classifier (NBC) was used to predict the performance of first-year BSIT students. The NBC algorithm is a probabilistic classifier that uses the Bayes theorem, which predicts future events based on previous ones. Each quality is interdependent on the others and will contribute equally to the decision-making process (Alejandrino, 2020).

Random Forest: Random Forest is a generic principle of classifier combination, proposed by Beriman in 2001, which employs L tree-structured base classifiers $h(X, n)$, $N=1, 2, 3, \dots, L$, where X is the input data and n is a family of identical and dependent distributed random vectors. Every Decision Tree is created by randomly picking data from the given data. For each Decision Tree, for example, a Random Forest (as in Random Subspaces) can be constructed by randomly picking a feature subset and randomly sampling a training data subset (the idea of Bagging). In a Random Forest, the features are randomly selected in each decision split. The correlation between trees is reduced by randomly selecting the features which improve the prediction power and result in higher efficiency.

Bayes Net: The BN model is a probabilistic inference framework for modelling interactions between latent and observable variables. BN is a directed acyclic graph (DAG), which displays a complicated system of joint probability distributions among nodes connected by edges. The latent nodes represent cognitive traits like math ability or critical thinking. In contrast, the observed nodes represent students' activities, such as a response to a multiple-choice question or an activity in a computer game. As a result, edges denote conditional connections between latent traits and observed behaviour. Furthermore, edges could reflect conditional dependencies between students' traits or behaviours. (Uglanova, 2021)

Multilayer Perceptron: MLPs are neural network models that work as universal approximations, i.e., can approximate any continuous function. MLPs are composed of neurons called perceptions. It consists of three types of layers—the input layer, output layer, and hidden layer. The output layer performs the required tasks, such as prediction and classification. An arbitrary number of hidden layers placed between the input and output layers are the accurate computational engine of the MLP. (Kayri, 2015)

SVM: SVM or Support Vector Machine is a linear model for classification and regression problems. It can solve linear and non-linear problems and work well for many practical problems. By extracting meaningful knowledge from the student dataset, SVM is utilised to analyse performance. The method proved useful in interpreting correlations between variables and determining factors that influence student performance in mathematics, reading, and writing in the second dataset used in this paper. The idea of SVM is simple: The algorithm creates a line or a hyperplane which separates the data into classes. (Adeliyi, 2020).

METHODOLOGY

Data Description

The xAPI-Edu-Data dataset is taken from the University of Jordan's learning management system, Kalboard-360. It consists of 480 student records and 16 features (Table 1). Another dataset is students'

exam performance, which can be accessed from Kaggle. It has eight attributes/features listed in Table 2. The table below gives a sample description of the data's attributes.

Table 1: Attribute list of the dataset (xAPI-Edu-Data)

Attribute	Description	Values
Gender	Student's gender	{M, F}
Nationality	Student's nationality	List of nationality
Place of birth	Student's Place of birth	List of places
Educational Stages	Educational level student belongs	{‘Lower level’, ‘Middle School’, ‘High School’}
Grade Levels	Grade student belongs	‘G-01’, ‘G-02’, ‘G-03’, ‘G-04’, ‘G-05’, ‘G-06’, ‘G-07’, ‘G-08’, ‘G-09’, ‘G-10’, ‘G-11’, ‘G-12
Section ID	Classroom student belongs	{A,B, C}
Topic	Course topic	List of topics
Semester	School year semester	‘First’, ‘Second’
Parent Responsible	Parent responsible for student	‘mom’, ‘father’
Raise Hand	How many times the student raises his/her hand in the classroom	0-100
Visited Resources	How many times does the student visit a course content	0-100
Viewing Announcements	How many times does the student check the new announcements	0-100
Discussion Groups	How many times does the student participate in discussion groups	0-100
Parent Answering Survey	Parents answered the surveys which are provided by the school or not	Yes, No
Parent School Satisfaction	The Degree of parent satisfaction from school	Yes, No
Student Absent Days	The number of absence days for each student	above -7, Under-7

Table 2: Attribute list of the dataset (students' performance in the exam)

Attribute	Description	Value
Gender	Student Gender	Male/Female
Race/ethnicity	Group	Group A, B, C, D
Parental Level of Education	Education level of parents	Some college, associate's degrees, high school, bachelor's degree
Lunch	lunch	Standard, Free/Reduce
Test preparation course	Preparation for test	None, completed
Math Score	Marks	0-100
Reading Score	Marks	0-100
Writing Score	Marks	0-100

EXPERIMENT

The Datasets with default features were considered and prepared using 10 cross-fold validation and percentage splits. The data are transformed into train and test data. The classification algorithms will then analyse the two datasets. This will efficiently analyse student prediction accuracy and help compare them individually. The model's results were taken and compared. The results are obtained and tabulated in Tables 3 and 4.

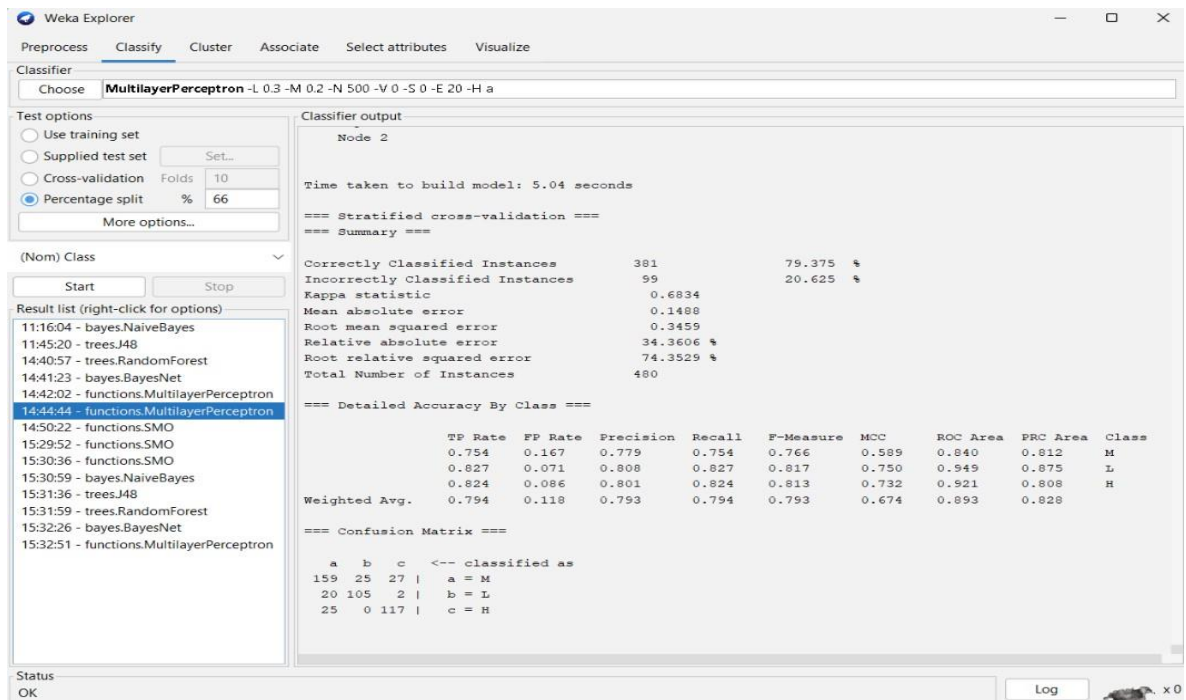


Figure 1. Results Received by implementing MLP with the highest accuracy

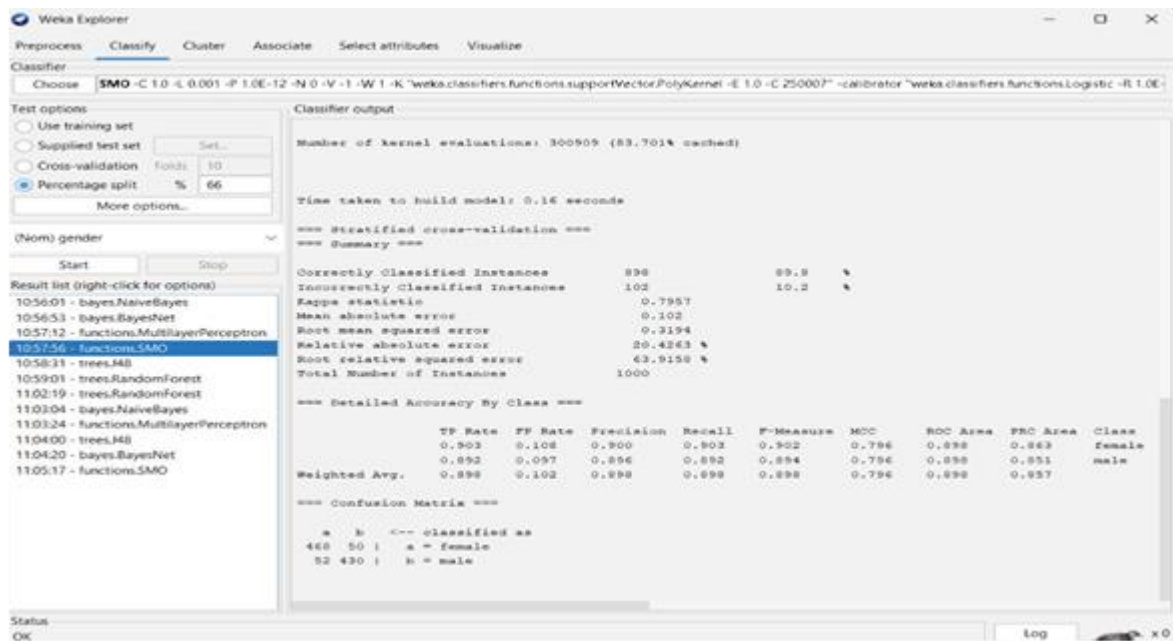


Figure 2: Results Received by implementing SVM with the highest accuracy

MEASURES OF EVALUATION

A confusion matrix is a table that visualises and summarises the performance of a classification algorithm. It is shown in Table 6.

Table 6 : Basic Confusion Matrix

		Predicted	
Actual		Negative	Positive
	Negative	TN(True Negative)	FP(False Positive)
	Positive	FN(False Negative)	TP(True Positive)

Confusion matrices represent counts from predicted and actual values. The output “TN” stands for True Negative, which shows the number of negative examples that are classified accurately. Similarly, “TP” stands for True Positive, indicating the number of positive examples classified accurately. The term “FP” shows a False Positive value, i.e., the number of actual negative examples classified as positive, and “FN” means a False Negative value, which is the number of actual positive examples classified as negative. One of the most commonly used metrics while performing classification is accuracy. The accuracy of a model (through a confusion matrix) is calculated using the given formula below (Kulkarni, 2020).

Accuracy represents the number of correctly classified data instances over the total number of data instances.

$$Accuracy = \frac{TN + TP}{TN + FP + TP + FN}$$

Precision is the ratio of correctly classified positive instances (True Positive) to a total number of classified positive instances (correctly or incorrectly).

$$Precision = \frac{TP}{TP + FP}$$

The Recall is calculated as the ratio between the number of Positive samples correctly classified as Positive to the total number of Positive samples. The recall measures the model's ability to detect positive samples. The higher the recall, the more positive samples detected.

$$Recall = \frac{TP}{TP + FN}$$

F1 Score is defined as the harmonic mean of precision and recall.

$$F1\ Score = 2 * \frac{Precision * Recall}{Precision + Recall}$$

PERFORMANCE RESULT

The following tables depict the experiment's findings. Both datasets were processed for ten cross-fold and percentage split. The result shows that MLP acquired the highest accuracy, 78.75%, for the dataset (xAPI-Edu-Data). SVM gave the highest accuracy, of 89.8% for the dataset (students' exam performance).

Table 3 : Result of Classification Algorithms on both datasets

Dataset	Specification	J48	Naïve Bayes	Random Forest	Bayes Net	MLP	SVM
xAPI-Edu-Data(Kaggle)	Default 10 Cross Fold	75.83%	67.70%	6.66%	70%.20	79.375%	78.75%
xAPI-Edu-Data(Kaggle)	Default % Split	73.61%	64.41%	69.93%	70.55%	76.07%	75.46%
Student Performance in the Exam (Kaggle)	Default 10 Cross Fold	83.6%	67.7%	85%	63.9%	87.2%	89.8%

Student Performance in exam (Kaggle)	Default Split	%	80.29%	66.47%	82.94%	62.05%	81.76%	89.41%
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Table 4: Recall, F1 and Precision of Classification Algorithms for dataset xAPI-Edu Data

Criteria	Classification Algorithms(Dataset : xAPI-Edu-Data)					
	J48	Naïve Bayes	Random Forest	Bayes Net	MLP	SVM
F1 Score	75.9	67.1	76.6	70.1	79.3	78.7
Recall	75.8	67.7	76.7	70.2	79.4	78.8
Precision	76.0	67.5	76.6	70.2	79.3	78.8

Table 5 : Recall, F1 and Precision of Classification Algorithms for Exam Data

Criteria	Classification Algorithms(Dataset: Student performance in the exam from Kaggle)					
	J48	Naïve Bayes	Random Forest	Bayes Net	MLP	SVM
F1 Score	83.6%	67.7%	85%	63.9%	87.2%	89.8%
Recall	83.6%	67.7%	85%	63.9%	87.2%	89.8%
Precision	83.6%	67.7%	85%	63.9%	87.2%	89.8%

CONCLUSION

The study discussed the classification algorithms (J48, Naive Bayes, Random Forest, Bayes Net, Multilayer Perceptron and SVM) on two datasets. Both datasets have features, as described in Table 1 and Table 2. The experiment is performed with the help of the tool Weka. The results of the considered algorithms are discussed in Table 3. Through the experiment, this study found that MLP and SVM perform well compared to other algorithms with the given features. It yields 79.37% and 89.8% accuracy respectively. In the future, such a mechanism can be developed which predicts and analyses student performance in the online learning environment.

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CHAPTER 26

ONLINE TEACHING AND ASSESSMENT DURING COVID-19 PANDEMIC: CHALLENGES AND EFFECTIVE PRACTICES

Sufyan Anjum Sheikh

ABSTRACT

India is not rich in education system to date, and after the pandemic hit the whole world, the Indian education system suffered a lot. The entire system ran online, and most students needed help connecting with their respective institutions. While the pandemic was at its peak, the education of the students, whether primary or higher, did not stop. It continued in the form of online education. On the one hand, there was not much facility, and no one was ready to adopt the online education system, but on the other hand, it was seen that the teachers and students handled it very well. After the online education system started, the problem was to evaluate students' performance, and due to the COVID-19 lockdown, the evaluation of students was done online. There are so many flaws in online teaching and assessment. This paper focuses on the challenges of online education and assessment. This paper specifically focuses on the problems faced by students living in far-flung areas regarding online teaching and assessment.

Keywords: Online Teaching, Online Assessment, Challenges, Covid-19 and Rural Education.

INTRODUCTION

“Assessment performances are regular activities that may even be authentic and fascinating demonstrations of students’ skills to grapple with the central challenges of a discipline in real-world contexts” (Kulieke, Bakker, Collins, Fennimore, Fine, Herman, Jones, Raack, & Tinzmann, 1990, p.2). Assessment is one of the crucial elements of instruction. Folks inside the academic community, i.e., policymakers, educators, students, parents, and administrators, have different ideas concerning implementing assessment (Dietel, Herman, and Knuth, 1991). While some believe ancient assessment

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methods are very effective, others assume that different assessment tools are superior. This text is written to tell folks the significance of distance education concerning assessment practices at a distance. However, the assessment content needs to be field-specific, and it will be applied to varied educational settings (Simonson, Smaldino, Albright, & Zvacek, 2000). Therefore, anyone directly or indirectly involved in education –distance or face-to-face may realise the knowledge bestowed upon them by this article.

Definition of Online Assessment

For this guide's aim, we consider online assessments to be any suggestions for evaluating student achievement, providing feedback, or moving scholars forward in their learning method in online credit courses. These assessments will be online (like online exams) or need online submission (like essays). Assessments will be either formative, designed to observe students' progress in an exceedingly low or no-stakes environment, or summative, designed to judge students against typical criteria (Dixon & Worrell, 2016).

Benefits of Online Assessment

The look and implementation of assessments have a greater impact on student performance than the strategy of assessment delivery (online vs. face-to-face). Various studies have found no distinction in student accomplishment and grades on well-designed online and face-to-face course assessments (Hewson, 2012; Page & Cherry, 2018; Spivey & McMillan, 2014; Tsai, 2016). Additionally, students' performance on online assessments isn't affected by their preferences or how they rate their comfort with technology (Hewson, 2012).

1. Accessibility & Flexibility

Students and instructors conjointly appreciate the accessibility of online assessments (Lei & Gupta, 2010; Rolim & Isaias, 2018). Students have a lot of flexibility in how they approach their coursework, as they can select once and wherever they are doing it instead of having to suit inside the constraints of a room (Lei & Gupta, 2010). For example, rather than having to be gifted in school for a gaggle discussion or quiz, students can augment an asynchronous discussion board or complete an internet quiz on the days and locations that are most convenient to them. This could put vast pressure on students with jobs, family commitments, or different factors that will prohibit their ability to be gifted on campus (Lei & Gupta, 2010). Considerations concerning room distractions and interruptions throughout the period are mitigated once victimisation is assessed online (Lei & Gupta, 2010). There are fewer concerns about distractions and interruptions during assessments. However, this flexibility needs students to be self-reliant and self-motivated (Beebe et al., 2010; Kebritchi et al., 2017). Some students thrive when given a lot of management over their learning; however, others, particularly first-year students, need more time to be ready for such responsibility (Hung et al., 2010). Further support, love time management plans or activities to acquaint students with online communication may have to be placed to confirm students are prepared to self-regulate and adorned. Conjointly notes the importance of a transparent course definition that explains the expectations and role of scholars within the course and encourages them to be self-regulated learners from the first day of class.

2. Assessment and Testing

Assessment and testing significantly differ from each other. Whereas testing is formal and sometimes standardised, assessment relies on a group recognising ledge concerning what students know and can do. In other words, students are given the precise procedures for administering and marking in testing. On the other hand, assessment has multiple ways of aggregating information at totally different times and contexts (Law and Eckes, 1995, p.29). Dietel, Herman, and Knuth (1991) outline assessment as “any technique won’t understand higher this information that a student possesses” (online document). In step with Mitchell (1992, in Law and Eckes, 1995, p. 29), testing will be outlined as “single-occasion, uni-dimensional, regular exercise, sometimes in multiple selection or short-answer form.” Student learning was measured solely by testing in ancient college settings for a protracted time. Currently, it’s accomplished that there’s not just one manner of gathering data concerning student learning. Furthermore, testing is seen as only one part of the assessment, and a broader evaluation construct is widely used (Kulieke, Bakker, Collins, Fennimore, Fine, Herman, Jones, Raack, & Tinzman, 1990).

Methods of Online Assessment

1. Ancient Assessment Tools

The foremost widely used traditional assessment tools are multiple-choice tests, true/false tests, short answers, and essays. True/false: look at True/false things. Students must create a choice and ascertain that two potential responses are true. Since they’re straightforward to score, it’s easy to administer true/false tests. However, the estimate may increase the prospect of success by 50%. Especially once the test item is false, it is laborious to determine whether the student is aware of the correct response. One doable resolution is to raise the students to produce evidence for the wrong item or rewrite the statement correctly. However, this negatively affects the convenience of marking (Simonson et al., 2000). Multiple-choice take a look at multiple-choice tests are usually used by teachers, schools, and assessment organisations for the following reasons (Bailey, 1998, p. 130):

1. They’re fast, easy, and economical to score. They are machine storable.
2. They will be scored objectively, which may make them appear fairer and/or more reliable than subjectively scored tests.
3. They “look like” tests and should thus appear acceptable by convention.
4. They scale back the possibilities of learners estimating the right things compared to true-false items.

Simonson mentioned the disadvantages of multiple selections. They claimed that depending on the extent of psychological feature effort, they become harder and longer intense to create. In other words, multiple choice items will be used effectively to test things that demand a low level of cognitive effort, such as recalling antecedent memorised knowledge. Nonetheless, items that need students to use higher-order thinking skills, such as analysing and synthesising, are more complex (2000). Similarly, Hughes (in Bailey, 1998) criticises multiple-choice tests for the subsequent aspects:

“1. The technique tests solely recognition knowledge; 2. If you look at scores, guessing could have a substantial, however unknown, result. 3. The technique severely restricts what will be tested; 4. It is tough to jot down victorious items; 5. Backwash perhaps harmful, 6. Cheating could also be expedited “(p.131).

Essays: Essays are practical assessment tools since the queries are versatile and assess the upper order learning skills. However, they could be more sensible because completing the essays is challenging and time-intensive. Moreover, judgment may be a problem when scoring. Making a rubric might be helpful to grade the essays (Simonson et al., 2000). A rubric will be “a criteria-rating scale, which provides the academics with a tool that permits them to trace student performance” (Abrenica, online document). Instructors have an associate degree choice to create, adapt, or adopt rubrics based on their educational needs. The templates provided online may help them regulate the generic rubrics in their instruction (Simonson et al., 2000).

Short-answer tests: In short-answer tests, “items are written either as an immediate question requiring the learner fill in an exceeding word or phrase or as statements during which an area has been left blank for a quick written answer” (Simonson et al., 2000 p. 270). Furthermore, the queries ought to be precise. Otherwise, the things that are receptive interpretations enable learners to fill in the blanks with any doable data (Simonson et al., 2000).

2. Alternative Assessment Tools

Along with Simonson and others, there are three approaches to alternative assessment: authentic assessment, performance-based assessment, and artist assessment. Similarly, Reeves (2000) suggests three main ways to integrate alternative assessment into online learning settings: 1. psychological feature assessment, 2. performance assessment, and 3. portfolio assessment. Researchers and educators interchange the terms performance-based, different, and authentic assessment. As Wangsatorntanakhun (1997) states, performance-based assessment embraces each alternative and authentic assessment. Therefore, this article employs performance assessment to check with alternative assessment. Two significant ideas describe performance assessment:

- a. **Performance:** A student’s active generation of a response that's discernible either directly or indirectly via a permanent product,
- b. **Authentic:** the character of the task and context during which the assessment happens has relevancy and represents “real world” issues or issues” (Elliott, 1995). Authentic assessment aims to relate the instruction to the real-world expertise of the learners (Simonson et al.). Winking (1997) points out the role of credibility and states that different assessments need higher-order thinking skills so students will solve real-life connected problems. Finally, Bailey (1998) relates the facility of the performance tests not solely to their authenticity but also their direct and extremely contextualised nature.

To extend the effectiveness of performance assessment, instructors ought to listen to the subsequent points (Elliott, 1995):

1. Choosing assessment tasks aligned or connected to what has been taught.
2. Sharing the marking criteria for the assessment task with students before engaging.

3. Providing students with clear standards and many models of acceptable performances before they try a task.
4. Encouraging students to complete self-assessments of their performances.
5. Decoding students' performances by examining them to developmentally appropriate standards, additionally on different students' performances (online document).

Different assessment methods embrace open-ended questions, exhibits, demonstrations, active experiment execution, laptop simulations, and portfolios (Dietel et al., 1991). Below are two common assessment techniques: portfolios and projects.

- c. **Portfolios:** Portfolios encompass student work that displays mastery of the ability of the task (Kulieke et al., 1990). Paulson, Paulson, and Meyer (in Bailey, 1998) outline portfolios as “a purposeful collection of student work that exhibits the student’s efforts, progress, and achievements in one or a lot of areas. The gathering should include student participation in choosing contents, the factors for judgement merit, and proof of student self-reflection” (p. 216). As a result of their additive nature, portfolios require plenty of input and responsibility from the student. Moreover, they demand a lot of time commitment from the teachers, yielding a utility drawback in assessment (Bailey, 1998).

The advantages of portfolios are shown by Arter (1995). Students will:

- a. Get a broader, in-depth exploration of what students apprehend and might do.
- b. Base assessment on a more ‘authentic’ work.
- c. Have a supplement or something different for report cards and standardised tests.
- d. [Have a much better thanks to](#) communicating with older students (online document). One application of portfolio use at a distance is electronic portfolios. Associate degree electronic portfolio is “a technology-based style of authentic student-based assessment” (Abrenica, online document). It functions the same as a conventional portfolio. The sole distinction is that the further is technology-based. Not like traditional portfolios, electronic portfolios will take up a minimal area since information will be kept in an exceeding laptop laborious drive, a floppy disc, or a CD ROM. The e-portfolio is very useful for instructors’ and learners’ information on computer technology. The range of data that would be enclosed in e-portfolios is infinite. It is helpful to use rubrics to assess the standard of the work (Abrenica, online document).

d. Projects: Projects will be created several times or as a group. They will possess authenticity, real-world connected ideas, additionally, and previous expertise of the learners. Any technique that shows what students fathom about a particular topic, i.e., development of plans, artwork, analysis proposals, multimedia system presentations, is taken into account as a project. Problem-based learning needs learners to use their drawback-finding skills to reply to a given situation. For instance, they can be bestowed a state of affairs and asked to produce ways or solutions. The task could be assigned to either people or groups. They gift the findings available in varied forms, love multimedia system presentation, role-play, and study (Simonson et al., 2000).

TRADITIONAL ASSESSMENTS VS ALTERNATIVE ASSESSMENTS

There has been a movement from traditional assessments toward alternative assessments. Assessment of student learning is an elementary side of instruction. Challenges and affordances exist in assessing student learning in online environments. This two-phase study investigated how assessment methods are used in online courses and how the net environment facilitates or constrains explicit techniques. Section One reviewed syllabi from twenty-four online courses to get the {categories} of methods used to assess student learning and contribute to the general course grade. Five categories emerged: (1) written assignments; (2) online discussion; (3) fieldwork; (4) quizzes and exams; and (5) presentations. Section 2 consisted of a spotlight cluster and interviews with eight online instructors to debate challenges and effective practices in online assessment.

Challenges arose thanks to the impact of physical distance between the trainers and students, diversifications ensuing from the necessity of victimisation technology for human activity with students, employment and time management issues, and the in-progress ought to collect a spread of assessment information and supply feedback. Phase Two interviewees offered ways and suggestions to counteract the challenges they identified. The paper concludes with recommendations synthesising the results of this study with those found within the literature.

ASSESSMENT WAYS IN ONLINE LEARNING

Only a few studies have been conducted on the kinds and distribution of assessments instructors use to contribute to students' overall grades in an Internet course. Among those who exist, Swan (2001) examined seventy-three online courses and identified ways that embrace discussion, papers, different written assignments, projects, quizzes and tests, and group work- in her study, virtually 3 quarters of the courses used online discussion as a stratified activity. Half the courses used written assignments and tests or quizzes. Arend (2007) created similar findings in an exceeding study that examined sixty courses. She knows methods that include online discussions, exams, written assignments, experimental assignments, drawback assignments, quizzes, journals, projects, and presentations. Like Swan, she found an outsized share of the courses were victimisation online discussion as a graded activity. Quizzes and tests were utilised in 83% of the courses, and written assignments in 63%.

Gaytan and McEwen (2007) asked online instructors to spot assessment ways they found to be significantly effective within the online environment. These included projects, portfolios, self-assessments, peer evaluations, peer evaluations with feedback, regular tests and quizzes, and asynchronous discussions. Supported the information they collected, they counselled, administering a giant style of frequently paced assignments and providing timely feedback. They highlighted the worth of examining the record of student discussion postings and e-mails to stay for evolving student understanding.

PROBLEMS FACED BY RURAL AREAS DURING PANDEMIC

Due to the closure of schools due to the national blockade in March 2020, children were long-term separated from formal education. The resulting education discussion revealed the digital divide in India, with only 24 per cent of households having internet access. According to a recent survey, children studying in public schools have been particularly hit, with more than 80% of public school students (Odisha, Bihar,

Jharkhand, Chhattisgarh, Uttar Pradesh) being locked down. I did not receive the teaching materials. With this in mind, the Pratham Education Foundation surveyed the 2020 Education Status Report (ASER). With the release of the first round of the report (called Wave 1), Prasam is trying to close the gap in national data on the status of local education during the blockade. Please find out about distance learning (teaching materials) offerings, how accessible these offerings were in the countryside of India, and how often they were used. Prasam was surveyed in late September 2020 to write the report. Based on a random sample of respondents from the ASER 2018 database, 52,227 households and 8,963 teachers from 16,974 villages in 26 states and four Union territories participated in the survey. Data was collected for each child between the ages of 5 and 16 in each household, at school, and at the grade level where teachers could provide the most information. The highlights of the report are:

CHILDREN'S SCHOOL ENROLMENT

The report shows a significant increase in the number of children enrolled in government and independent schools in 2020.

- Compared to 2018, public schools have about 3-4 percent more children than private schools. This applies to all school levels, both boys and girls.
- The number of unregistered children is increasing rapidly (1.8% to 5.3%) among children aged 6 to 10. The school's closure can explain this: the suspension of admission for first graders.

HOUSEHOLD RESOURCES

A family's resources can influence the support they provide towards their children's learning in various ways. The report attempted to capture these varying support mechanisms:

Parental education level: Only 31.3% and 16.6% of the surveyed mothers and fathers were not in school. In contrast, 53.1 per cent of mothers and 70.8 per cent of fathers graduated from a school for more than five years. • Access to smartphones: 22.5% of children with "low" parents' education level are 45.1% likely to have a family member with a smartphone and 84% likely to have state-owned children attending school bottom. 27.6% of children whose parents had a "high" level of education were 61% more likely to have a smartphone at home, while 69.5% were more likely to enrol in public school. • Textbooks: Keeping relevant textbooks at home is essential for your child's learning. The report shows that schools are doing pretty well in this regard, with 84.1% of public school children and 72.2% of private school children having class-related textbooks. • Learning Assistance: When all children of different grades were taken together, almost three-quarters of all school children received school assistance from their families. This is more pronounced in younger children, with 81.5 per cent of 1st and 2nd-grade children receiving family support compared to 68.3 per cent of children in 9th grade and above. As expected, well-educated parents were well-equipped to help their children. When parents completed grade 9 and above, about 45% of their children were helped by their mother. Access and availability of learning materials and activities. Only 35.6% of all enrolled children received certain learning materials and activities from their teachers. • The percentage of children in the upper grades (9th grade and above) who received the teaching materials was 37.3%, while the percentage of children in the lower grades (12th grade) was 30.8%. The number of

children in private schools was consistently high compared to public schools at all grade levels. • Of those who received the material, 67.3% of public school students and 87.2% of private school students received the material through WhatsApp. Public schools used telephone and personal visits more often than private schools. • Of the enrolled children who did not receive the materials, 68.1% of parents said they did not send the materials from the school, and 24.3% of households did not own a smartphone. The number was almost 5 per cent higher in public schools than private schools. Children's involvement in distance learning Of the 35.6% of households who received materials during the survey week, most reported that their children participated in some educational activity that week. • Of all school children, 59.7 per cent reported using textbooks. • Older students were likelier to engage in online courses and video recordings than younger students. Of the 9th grade and above, 27.5% accessed video or recorded lessons and 16.3% accessed live online lessons. The number of 1st and 2nd-grade students was 16.6% and 7.3%. • Recorded video lessons, and online classes were more accessible to individual students.

RECOMMENDATIONS

Based on the findings and perception received from the review, the subsequent guidelines are proposed for online educators:

1) **Divide the undertaking into levels** and feature college students put up intermediate deliverables for assessment for complicated written assignments that contain a synthesis of fabric from some point in the semester. A structure evaluation document, for example, can be divided into three sections: context description, trouble evaluation, and alternate recommendation. This technique was turned into hiring by some teachers with an inside look to scaffold college students through a challenging job. Feedback is crucial; however, making ready is miles time-consuming. Create rubrics in advance of time for college students to utilise as standards for his or her paintings to relieve a number of the pressure. Make beyond-pupil paintings to be had as samples. Allow college students to present different remarks on their paintings.

2) **Use rubrics to direct pupil involvement** on the dialogue board and in written assignments. A rubric may be as easy as a tick list that specifies goal overall performance standards for an undertaking. Developing the rubric beforehand will let you clarify your goals for the undertaking. When college students use it as they craft their undertaking, it could assist them in recognising your expectancies and quality song their overall performance accordingly. Once you've evolved the rubric, it could simplify your grading process. A traditional set of standards that can be utilised in a rubric for online dialogue may consist of specs for the way often college students must submit, the number of preliminary and follow-up posts college students are required to make and the way wherein college students are predicted to narrate postings to path content. Regarding pupil perceptions of the price of rubrics, one teacher stated, "Students virtually like rubrics."

3) For publications that train dense, **technical fabric, self-test quizzes** may be very powerful in ensuring college students finish the specified study and assisting them (and teachers) gauge their expertise in the fabric. Most computer-generated systems comprise a mechanism for deploying such quizzes; teachers can test peers on the required capabilities. Many systems provide a couple of alternatives for producing automatic remarks, both right now after a pupil completes the quiz or at a later time/date.

4) **Make use of synchronous technology**, which is suitable. Many of the demanding situations teachers face while coaching online result from the distant, asynchronous nature of maximum online learning. Web and phone conferencing can assist "near the gap" that asynchronous communication introduces. This stated it might be now no longer sensible to anticipate that each college student in a web elegance could be capable of attending a digital convention consultation at the same time every week, for the reason that one of the predominant Motive's college students enrol in online publications is the benefit and versatility of the asynchronous format. Moreover, college students can unfold throughout a couple of time zones. If weekly synchronous periods are to be held, strive to schedule them at one-of-a-kind times. For example, a consultation can be held at midday one week and 5:00 p.m. the subsequent. Record the consultation for the gain of college students who can't attend. Student displays can be accomplished through internet conferencing at the end of the semester. Several periods may be organised, every at a one-of-a-kind time, and college students may be authorised to select a time that works for them. Leveraging synchronous technology like this can provide upward thrust to a number of those "incidental possibilities" for communication that teachers say they miss.

5) Explore using **peer-evaluation techniques** to foster network improvement and allow college students to do research by analysing and critiquing the paintings of others. Rubrics are needed for this type of activity. Their specific specification of goal overall performance standards and deconstruction of a massive challenge into smaller subtasks offer beneficial scaffolding to amateur evaluators. Peer evaluation works nicely for writing assignments that have deliverables in the meantime. For venture assignments in graduate publications that require college students to carry out a few types of genuine evaluations inside their personal expert setting, college students recognise the possibility of researching their peers' painting settings. For this and different motives, one teacher stressed, "Graduate college students want to interact with one another."

6) **Look for suitable possibilities** to cope with the elegance to lessen the time spent giving equal remarks to a couple of college students. After a significant undertaking, submit an assertion summarising some of the tendencies inside the submissions in conjunction with guidelines for subsequent steps.

7) **Rural education must be taken into consideration**, and proper network connectivity should be provided in rural areas. During the pandemic, students in rural areas struggled a lot because of online education and evaluation. There should be a proper network in the rural areas so that the students can get their education smoothly if the pandemic hits the world again.

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CHAPTER 27

TEACHER PROFESSIONAL DEVELOPMENT DURING COVID-19

Suman Devi

ABSTRACT

In unprecedented times today, brought about by the global outbreak of the COVID-19 pandemic, the education sector has been affected, just like the other industries. Many educational institutes have shut down and suspended traditional physical classroom activities. There has been a shift to the online mode of teaching-learning or 'e-learning,' This includes the academic world that consists of millions of enrolled learners and active teachers who previously had regular classes in their institutions and, due to the pandemic, got stuck at home. Several institutions and organisations in India, motivated by the successful conduction of online teaching-learning activities, started offering teachers professional development activities via the online medium during the COVID-19 pandemic. In a way, they provided an alternative route to offer professional development programs for teachers during the pandemic period. This paper attempts to critically analyse India's teacher professional development offerings during the Covid-19 pandemic. The analysis reveals that, in general, the pandemic period has witnessed a surge in online teacher professional development activities in India, and most teachers attended such programs while confined to their workplaces or homes.

Keywords: Teachers, E-Learning, Online Teaching, Online Learning Activities, Teacher Professional Development, Covid-19

INTRODUCTION:

Coronavirus disease is an infectious disease caused by a newly detected coronavirus. The 2019–20 coronavirus epidemic is an ongoing coronavirus disease 2019 (COVID-19) caused by severe

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acute respiratory syndrome coronavirus2 (SARS-CoV-2). The outbreak was first found in Wuhan, Hubei, China, in December 2019 and was declared a pandemic by the World Health Organization (WHO) on 11th March 2020. WHO depicted countries to take immediate actions and scale up responses to treat, detect and reduce transmission to save people's lives. As of month March 2020, more than 7,50,000 cases of COVID-19 have been found in over 200 countries and territories, resulting in around 45,000 deaths and over 1,00,000 recoveries. The Indian government has announced several defensive measures to reduce the entry and spread of the coronavirus in the country. Prime Minister Narendra Modi continuously reviews India's readiness to battle the COVID-19 epidemic. At the same time, both the state and central governments continue to announce new measures and responses to deal with the current situation.

For most schools and colleges in Maharashtra, the academic year is almost over in March and April. Also, it is seen that many colleges and schools have practically completed their academic syllabus and were able to concentrate on scheduling their final exams. However, due to the decisions taken by our Governments to close down educational institutions, schools and Colleges all over India have announced either cancellation or rescheduling their Exam dates, Keeping in mind the measures taken to bring down the pandemic. Considering this, the study is conducted to analyse the impact of COVID-19 on Educational institutions and related stakeholders.

The global COVID-19 pandemic has changed our lives in countless ways. In March 2020, the coronavirus disease (COVID-19) pandemic disrupted education delivery worldwide. Since the worldwide institutionalisation of modern education systems, there has yet to be an event with such a disruptive global capacity. The education system is constantly changing and is evolving with time. In this context of the changeability of the education system, we can see that technology has penetrated the entire education system. During the first stage of the crisis, governments tried to create emergency policy responses to the pandemic related to continuing students' education during the lockdown and later reopening schools with safety. Numerous international organisations (IOs) and policy entrepreneurs were quick to acknowledge the health crisis as a political opportunity to gain international legitimacy and influence public policy agendas (Debre & Dijkstra, 2021). More recently, countries have started articulating longer-term education policy strategies and responses.

Nonetheless, the focus, scale, and nature of these responses still need to be analysed. To what extent can national reactions to the COVID-19 crisis trigger substantive and durable policy changes in the educational domain? The pandemic has generated the conditions of a natural experiment (Capano et al., 2020) that can be explored from a policy change and comparative education perspective. This paper aims to address this challenge by analysing the policy effects that the pandemic has brought about in the education sector.

There is no denying that, like other sections of society, Covid-19 has also impacted 'teachers' lives. The tremors of the COVID-19 pandemic have been felt in teachers' social, psychological, professional, and economic spheres. However, the discussions about teachers and the pandemic, if any, mainly revolve around teachers' roles and competencies to carry out online teaching or whether the pandemic made teachers jobless or presented new job opportunities before them.

However, discussions and reflection on the equally significant aspect of ‘how teachers' engage in professional learning activities via online mode during the pandemic’ have not been reported sufficiently. To fill this void, the present paper effects upon the emergence of online teacher professional development activities during the COVID-19 pandemic and subsequent lessons for policymakers.

IMPACT OF COVID-19 ON EDUCATIONAL INSTITUTIONS

The coronavirus outbreak-mediated pandemic impacted most of the sectors globally. This includes the academic world of millions of enrolled learners and active teachers who previously had regular classes in their institutions and got stuck at home due to the pandemic. Online classes were introduced in most countries, including India, to continue the education process. In this mode, teaching and learning happen through electronic devices, which are relatively new to the entire teaching-learning community. This study aimed to understand how online classes had fared for teachers and students in India. Besides, it tried to understand the users’ experience and the unique set of challenges that this mode of education brings.

The impact of two online teaching methods, recorded video versus live broadcasting, on student performance and teachers' role in online teaching. The COVID-19 pandemic has affected human lives in many ways. It has slowed the economy, disrupted businesses, limited movements, and closed educational institutions. However, unlike the negative impact of Covid-19 on the economy and businesses, its impact on the academic sector is disputed. The pandemic is responsible for keeping students away, for several months, from educational institutions. However, this adverse situation also motivated educational institutions to continue teaching-learning activities online. And now, researchers across the globe are busy contemplating the impact of Covid-19 on the education sector. In the quest to assess the effect of COVID-19 on the education sector, the prime focus is on student learning, student suffering, student mental health, and student losses vs. gains. Unfortunately, the impact of the COVID-19 pandemic on teaching teachers has not been significant in such discourses and research (George, 2020.)

There is no denying that, like other sections of society, Covid-19 has also impacted ‘teachers’ lives. The tremors of the COVID-19 pandemic have been felt in teachers' social, psychological, professional, and economic spheres. However, the discussions about teachers and the pandemic, if any, mainly revolve around teachers' roles and competencies to carry out online teaching or whether the pandemic made teachers jobless or presented new job opportunities before them. However, discussions and reflection on the equally significant aspect of ‘how teachers' engage in professional learning activities via online mode during the pandemic’ have not been reported sufficiently. To fill this void, the present paper reflects upon the emergence of online teacher professional development activities during the COVID-19 pandemic and subsequent lessons for policymakers. The present research results from the researcher's observations of online teacher professional development programs planned and organised during the COVID-19 pandemic in India and abroad. The researcher engaged in these programs in various capacities (e.g., participant, subject expert, and organiser). Besides, the researcher gained further insights into

online teacher professional development programs as a member of several online social media groups of teachers and having discussions with colleagues who attended such programs. Although this research is based on the trends and experiences emancipated from India, it has a broader appeal for promoting online teacher professional development programs and activities in countries worldwide.

PROFESSIONAL DEVELOPMENT OF TEACHERS

Educational researchers, policy analysts, and politicians across the globe often argue and suggest that meaningful and relevant enhancement of teachers' professional capabilities and commitment to education is essential to improving education as a whole (Misra, 2018). Emphasising the need for the meaningful and relevant professional development of teachers, a review of teacher education in Scotland suggests, “Long-term and sustained improvement which has a real impact on the quality of children’s learning will be better achieved through determined efforts to build the capacity of teachers themselves to take responsibility for their professional development, building their pedagogical expertise, engaging with the need for change, undertaking well-thought through development and always evaluating impact about improvement in the quality of children’s learning” (Donaldson, 2011, p. 84). Teachers engage in professional development activities to “develop, implement, and share practices, knowledge, and values that address the needs of all students” (Schlager, Fusco, Barab, Kling & Gray, 2004), or, to get better as teachers. Teacher professional development can be considered as an ongoing process of education, training, learning, and support activities that take place in either external or work-based settings, engaged in by qualified, educational professionals, aimed mainly at promoting learning and development of their professional knowledge, skills and values; to help decide and implement valued changes in their teaching and learning behaviour so that they can educate their students more effectively thus achieving an agreed balance between individual, school and national needs (Earley & Bubb, 2004,).

Highlighting the importance of professional development for teachers, a report from the OECD (2009) suggests, “No matter how good pre-service training for teachers is, it cannot be expected to prepare teachers for all the challenges they will face throughout their careers. Therefore, education systems seek to provide teachers with opportunities for in-service professional development to maintain a high standard of teaching and retain a high-quality teacher workforce”. The teachers must also complete professional development activities to move to leadership positions. Respective governments and educational institutions mainly frame the rules and regulations of such activities. Teachers teaching at various levels of education get engaged in professional development activities either due to professional compulsions, intrinsic motivations or both. However, engaging in such activities is not an easy task for teachers. There are many issues and challenges to it.

- Availability of spare time
- The feeling of isolation and loneliness
- Desire to utilise the available time in a meaningful way

- Desire to connect to peers and the outer world
- Follow-up of a new work schedule in place of routine activities
- The desire for meaningful utilisation of available time• Fear of losing the job
- Spare time to self-reflect on their success and failures as a teacher
- Desire to become a global teacher by using online social media platforms

Such a mindset helped teachers introspect, reflect, and find new ways to better their professional practices or learn new ones.

ONLINE MEDIUMS AND PLATFORMS FOR PROFESSIONAL DEVELOPMENT PURPOSES

- Nowadays, the majority of teachers in India have access to smartphones, the Internet, and experience using online social media platforms.
- Buoyed by their success and newfound interest in using online mediums and platforms for teaching purposes, teachers at different levels of education (e.g., primary, secondary, and higher) started using online mediums and platforms for professional development.
- Social situations, psychological conditions, and existing realities compelled them to take a new path: engaging in professional development activities online.

ONLINE PROFESSIONAL DEVELOPMENT ACTIVITIES BY TEACHERS DURING COVID-19 PANDEMIC: EMERGING PRACTICES

Extended lockdowns during the Covid-19 pandemic resulted in the closure of educational institutions in India. Although this closure of educational institutions does not result in the stoppage of teaching activities, instead of face-to-face, teachers were asked to switch over to the online mode of teaching (Misra & Chauhan, 2020). As discussed above, teachers across the country have immediately realised that online media and platforms can also be used for organising and participating in professional development activities:

- During the COVID-19 pandemic, India saw an upsurge in the offerings of and attendance at online teacher professional development activities.
- Online Seminars and Conferences Seminars and conferences are one of the most popular and widespread professional development activities among teachers in India.
- The seminars and conferences help teachers listen to experts, ask questions, present their research and views, and discuss matters of mutual interest with fellow participants.
- With more than 9 million teachers at the school level and 1.5 million teachers in higher education, seminars and conferences are of utmost importance for offering professional development opportunities for the majority of the teaching workforce in India.

- During lockdowns, educational institutions nationwide have realised that they can easily organise seminars or conferences by using different online video conferencing programs.
- The paid and free versions of apps like Google Meet, Zoom, Cisco Webex, Microsoft Teams, etc., have presented an opportunity for educational institutions to plan and organise seminars or conferences at a minimal cost.
- The brochures were designed and circulated online via social media platforms, and the experts were invited and requested to deliver resource lectures online.
- Most teachers from all over India could attend such programs without spending much money on registration fees or leaving their places.
- The only cost was the cost of the Internet. During the lockdowns, there were so many online seminars and conferences that teachers attended more than one program in a day.
- Fortunately, online teaching has also helped many Indian teachers attend international seminars and conferences. The reason was that most of the global events organised during this period were either non-paid or had a low fee for program attendance. The
- Online social media platforms have become a doable way to spread information about these programs.

As a result, many teachers in India could attend International seminars and conferences. On an exciting note, during the pandemic period, they helped Indian teachers attend national workshops and meetings easily, at their will, and without much expenditure.

TRAINING PROGRAMS AND WORKSHOPS ATTENDED BY THE TEACHERS IN ONLINE MODE

Online training programs and workshops emerged as other beneficial professional development activities for teachers in India during the pandemic. Compared to online seminars and conferences organised for a smaller duration and with every willing participant, the workshops and training programs were of longer duration. They organised for a specific group of participants. These programs were usually paid and offered to a particular group of teachers compared to seminars and conferences. Irrespective of the provision of fees, many teachers attended these longer-duration training programs and workshops to gain further expertise or new skills. Online Study and Resource Surfing Online study and resource surfing emerged as other prevalent professional development activities among teachers during the pandemic. Usually, teachers teaching at different levels of education in India are burdened with teaching, examination, and administrative tasks. They need more time to read or reflect on their professional activities and competencies during the face-to-face teaching mode. Fortunately, the pandemic allowed them to search online and read the literature of their choice to enhance their professional competencies.

Besides, teachers could also search for various valuable resources related to their professional development needs: online Discussions, Advice, and Interactions. The pandemic also helped the teachers connect with peers and discuss several professional aspects online. Texting, massaging,

sharing resources, and audio and video calling helped teachers connect, share and learn with peers. The teachers formed several groups to delve into various professional and academic issues. The loneliness of lockdowns compelled teachers to pick up their phones and connect to those having expertise in a particular area. Similarly, teachers also played the role of counsellors and advisers for their fellow teachers on various professional issues, such as online publishing. During the pandemic lockdowns, free time helped teachers write and publish online on various teacher professional development issues. The teachers put their ideas and opinions on such matters through online platforms. Besides, teachers also produce teaching-learning resources that include class notes, presentations, and audio and video lectures. The resources created by teachers were published on institutional websites and social media platforms. The pandemic allowed teachers to showcase their expertise to the outside world online. In a way, online publishing helped local teachers to become global teachers. In a nutshell, it can be said that irrespective of working in different education sectors (higher, secondary, primary), teaching in various types of institutions (public, private), living in other places (rural, urban, semi-urban), and speaking in different languages (Hindi, English, regional languages), teachers across India tried to utilise the pandemic time to learn something valuable and meaningful via online mode. Here, it will be safe to claim that not every teacher was engaged, but the majority has tried to use available opportunities. Most importantly, the pandemic period has shown alternate and cost-effective online ways for teachers to organise and attend professional development activities.

UTILISING PANDEMIC EXPERIENCES FOR PROMOTING ONLINE PROFESSIONAL DEVELOPMENT ACTIVITIES AMONG TEACHERS

As discussed earlier, the pandemic period has witnessed a surge in online teacher professional development activities in India. The offerings made by several institutions, including online seminars and training programs, and the responses and enthusiasm of teachers across the country to accept these offerings may be termed a bright spot during the gloomy period of the pandemic. This sudden success has presented many lessons before policymakers regarding the organisation and promotion of online teacher professional development practices. Some of the lessons are as follows. Varied Online Teacher Professional Development Activities Usually, any teacher willing to pursue any professional development activity (except self-study) has to visit the place of the activity organiser or provider. This was the norm till the pandemic occurred. However, the success of online professional development activities confirmed that instead of asking the teacher to leave the place, professional development activities may be brought to their doors. The experiences confirmed that teachers could successfully participate in and learn from several professional development activities. Most importantly, teachers could attend the activities organised by institutions across different parts of India. Also, teachers participated in international professional development programs without applying for a visa and taking a flight.

India is a big country, and to attend any seminar or conference organised in any other state, teachers must take leave from the institution, pay the registration fee, and take care of their accommodation and living expenses to attend the event. As a result, most teachers hardly attend seminars or conferences organised at faraway places. This is equally true regarding the attendance

of events organised in other countries. Only a few privileged ones can participate in such events. Fortunately, the pandemic period taught that seminars, conferences, and long-duration training programs may be organised online with minimal cost for organisers and almost no cost for attendees. This is a boon for those teachers in India complaining about lack of financial support and non-grant leave to attend such programs. Now, it will be easy for any willing teacher to attend any professional development program of his/her choice via online mode. The only requirements for this will be information about the event, an internet-enabled smartphone or laptop, and a few bucks to spend on the registration fee.

Give Opportunities to Teachers to Suggest and Share Teacher Professional Development Resources Online. The pandemic also witnessed a surge in self-help and peer-supported professional development activities among teachers. Reading professional development-related books and articles, watching professionally helpful videos, and discussing with colleagues from the same and different institutions emerged as a newfound interest among the teaching community. During lockdowns, the teachers realised the importance of peer support in developing and excelling professionally. At the same time, many teachers started sharing their expertise, skills, and resources online to benefit other teachers. Taking a clue from this success, the policymakers may develop a portal where teachers will be allowed to either upload or provide the link to the resources they produced for the professional development of fellow teachers. The teachers may also be asked to share valuable resources from other teachers or organisations or selected readings related to teacher professional development activities via this online portal. Recognise Online Teacher Professional Development Activities for Promotion and Other Benefits During the pandemic, many teachers across India attended several online professional development programs.

CONCLUSION

The success of online teaching-learning is hailed as a positive impact of the COVID-19 pandemic on the education sector. Unfortunately, the use of online mediums for teachers' professional development activities has not been given proper attention in these discourses. To fill this void, this paper has attempted to discuss the teacher professional development offerings in India during the Covid-19 pandemic. The analysis reveals that, in general, the pandemic period has witnessed a surge in online teacher professional development activities in India, and most teachers attended such programs while confined to their workplaces or homes. In a way, it can be said that the pandemic period positively impacted the teachers' professional development program offerings and attendance via online mode. These observations offer some lessons for policymakers regarding popularising and taking the benefit of online teacher professional development activities. We hope that policymakers in India and other countries will learn and act upon these lessons.

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CHAPTER 28

USE OF GOOGLE CLASSROOM TO SUPPORT BLENDED LEARNING DURING THE PANDEMIC COVID-19

Suman Gupta

ABSTRACT

The COVID-19 pandemic has made all educational institutions worldwide adopt teaching online. Courses were conducted online, examinations were conducted online, and assignments were submitted through email. This was an excellent opportunity for countries like India to strengthen internet connectivity across rural India. Blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. Implementing a blended learning strategy in higher education requires a learning management system (LMS) that is stable, well-proven, and accessible to teachers and students. Google Classroom is a learning management system that meets the criteria mentioned above, and it has a steadily growing acceptance because of its cross-platform presence, stability, and ease of use. During the Pandemic, the human-to-human transmission of the coronavirus compelled nations to lock down and schools to close; students and teachers are hopping onto virtual platforms to continue their studies. Both academic and vocational training made the shift online. Many people have used Zoom, which has become the default video collaboration tool since the COVID-19 outbreak. However, most educators and schools have also turned to Google Classroom, a dark horse in the Google stable. In this paper, an attempt has been made to reflect on the importance of Google Classroom in supporting blended learning in teacher education programmes. Also, the author's experience as a teacher educator and student teacher has been reflected regarding the impact of Google Classroom on teaching and learning. An interview of 25 students was conducted to collect their expertise on the teaching-learning process through Google Meet during Pandemic-19. At last, it was concluded that Google Classroom is a satisfying LMS for blended learning because of its features, user-friendliness, and appropriateness in higher education programmes. Virtual classrooms had become the new norm in a pandemic-inflicted world.

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Keywords: Blended Learning, Google Classroom, Teacher Educators and Student-Teachers

INTRODUCTION

The COVID-19 pandemic has made all educational schools worldwide adopt teaching online. Courses are conducted online, examinations are conducted online, and assignments are submitted through email. This is an excellent opportunity for countries like India to strengthen internet connectivity across rural India. Every village and town in India should be digitally connected for better student and teacher interaction. Institutes like IITs have “a sort” of infrastructure to connect students, but the experience shows that not all students have good interaction for various reasons. Some of the students are quick to adapt to this system, and some take a little longer time to acquaint themselves with this system. Like some advanced countries, India should establish a good online education infrastructure. The most significant advantage of such a system is that education can become international. Advanced institutes like IITs and NITs can globalise online education, while Universities initially nationalise online education. Fundamental structural changes should be made in the curriculum/syllabi, and programmes should be popularised to attract students across the countries. Skill development should be part of the curriculum of the Engineering and Science programmes. This will create future entrepreneurs. Hence, blended learning is essential.

“Blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or place.”

However, when it comes to eLearning, the “place-based classroom methods” can be replaced by webinars, making learning even more accessible and convenient. Here at Learn Upon, blended learning encourages personalisation of the eLearning experience by combining the best aspects of in-person teaching with technology-based eLearning methods. It broadens the learner experience by supporting learning anytime and anywhere and reshaping the role of the instructor. When applied to eLearning, blended learning is again circumstance-dependent but usually involves:

- A portion of the learning occurs online, with the students being able to manage the pace at which they learn.
- Another portion of the learning is instructor-led, usually conducted through webinars, allowing remote learners to engage more quickly.
- Through blended learning, online and instructor-led training is complementary and creates an integrated learning environment.

BENEFITS OF BLENDED LEARNING

A blended learning model is undoubtedly a great way to augment the learner’s experience, but its advantages go beyond that. Whether you’re training employees, partners, or customers or planning compliance training, organisations using blended learning will reap many rewards. Some of the benefits for learners and organisations:

BENEFITS FOR LEARNERS

- Blended learning offers the learner convenience and flexibility. The learner can control their learning pace and learn remotely.
- Academic research suggests blended learning gives learners a more comprehensive understanding of the course content.
- Because blended learning allows learners to interact with instructors and fellow learners, social learning is supported.

BENEFITS FOR ORGANIZATIONS

- Blended learning reduces face-to-face training costs, such as travel, accommodation, and printed materials.
- Companies can use various eLearning methods, such as webinars, gamification, etc., to improve learner engagement.
- Because blended learning is a more efficient and cost-effective training method, you'll see a quicker and greater return on investment.
- It's also easier to track who has or hasn't completed training.

Blended learning is an approach to education that combines online educational materials and opportunities for online interaction with traditional place-based classroom methods. Implementing a blended learning strategy in higher education requires a learning management system (LMS) that is stable, well-proven, and accessible to teachers and students. Google Classroom is a learning management system that meets the criteria mentioned above, and it has a steadily growing acceptance because of its cross-platform presence, stability, and ease of use. In this Pandemic, the human-to-human transmission of the coronavirus compels nations to lock down and schools to close; students and teachers are hopping onto virtual platforms to continue their studies. Both academic and vocational training have made the shift online. Many people have used Zoom, which has become the default video collaboration tool since the COVID-19 outbreak. However, most educators and schools are also turning to Google Classroom, a dark horse in the Google stable.

GOOGLE CLASSROOM

Google Classroom does precisely that. It is Google's ambitious addition to online education and the Learning Management System industry, and it aims to make classrooms worldwide paperless and more effective. Google Classroom is currently available through Google Apps for Education, and it is aimed at academic institutions only, not corporate training.

BENEFITS FOR TEACHERS

ONLINE ASSIGNMENT AND ASSESSMENT:

The only way to measure the effectiveness of a lesson is to measure students' learning outcomes at the end of the class. For this reason, the provision for online assignments and assessments in Classroom is the most helpful feature of the Classroom app, as it allows the teacher to measure and track learners' progress and modify their teaching strategy as needed. This feature enables teachers to design worksheets and assessments specific to learners' needs. The platform also differentiated evaluation and support, allowing the teacher to design learner-specific worksheets. The type of questions the teacher can create include short answers, paragraphs, multiple choice, checkboxes, dropdowns, multiple choice grids, etc. The app also comes with a built-in auto-grader. Moreover, it allows the teacher to provide learners with feedback on a learner's response to individual questions.

Sharing and managing resources

The platform allows teachers to share resources in various file formats with learners. Perhaps the most helpful feature is the ability to schedule the release of materials and assessments at specific times in the future.

Incorporating YouTube videos

The classroom allows teachers to incorporate YouTube videos into assignments, quizzes, and design questions. The video can be played as the learner completes the assignment or the quiz.

Managing grades

Much grade management is automatic, but the teacher controls changing grades.

Managing people in class

The app gives the teacher complete authority to remove anyone from the class. This is necessary because it allows teachers to remove suspicious accounts that may compromise learners' online safety and privacy.

Online collaborative learning

The Classroom is compatible with other Google products, including Google Docs, Google Sheets, Google Slides, etc., which can be used to design assignments that require collaborative work. It is one of the best free online classwork management systems, enabling teachers to streamline classroom activities and implement various teaching strategies consistent with modern pedagogical methods. Snapshots of exemplar worksheets and quizzes are attached to the document.

GOOGLE CLASSROOM ADVANTAGES

1. Easy to utilise and available from all gadgets

Regardless of whether you are not a Google client, utilising Google Classroom is easy. Aside from being conveyed through the Chrome program, which makes it available from all PCs, cell phones, and tablets, it makes it extremely simple for you to include the same number of students as you like, make Google records to oversee assignments and declarations, post-YouTube recordings, include interfaces, or connect

documents from Google Drive. Students will discover signing in as they get and turn in assignments is similarly straightforward.

2. Effective correspondence and sharing

One of the most significant benefits of Google Classroom is Google Docs; these reports are spared on the web and imparted to a boundless number of individuals, so when you make a declaration or task utilising a Google Doc, the students can get to it quickly through their Google Drive, as long as you have imparted it to them. Moreover, Google Docs are effectively sorted and customised in Google Drive envelopes. You no longer need messages to share data; you make a record and share it with the same number of students you need.

3. Speeds up the task procedure

What about making a task/ assignment and conveying it with only a button tick? What's more, what about students quickly turning in the finished task? The task process has never been faster and progressively more powerful, as in Google Classroom, you can undoubtedly check who has presented their task and who is as yet chipping away at it, just as they offer your feedback right away.

4. Effective input

Regarding input, Google Classroom offers you the chance to provide your online help to your students immediately; this implies criticism turns out to be increasingly successful, as new remarks and comments significantly affect students' brains.

5. No requirement for paper

There may be a day that evaluating documents would be challenging to envision; Google Classroom is keen on arriving as quickly as time permits. By bringing together eLearning materials in a single cloud-based area, you can go paperless and quit stressing overprinting, distributing, or, in any event, losing your students' work!

6. Clean and easy-to-understand interface

Remaining faithful to clean Google format principles, Google Classroom welcomes you to a domain where every plan detail is essential, natural, and easy to use. Google clients will feel right comfortable.

7. Great remarking framework

Students can remark on explicit areas inside pictures for an assortment of online courses. Moreover, you can make URLs for fascinating remarks and utilise them for additional online conversation.

8. Useful for everybody

Instructors can likewise join Google Classroom as students, which implies that you can make a Google Classroom for you and your associates and use it for staff gatherings, data sharing, or expert turn of events.

The quality lies in the workforce and foundation support. The workforce needs to change their everyday showing techniques and adjust to advancing innovation-centred instruction. The personnel should be "skilful" people who can convey what the understudies anticipate. To set up, defects should be dynamic in research and research distributions and additional experience/aptitudes in web-based education. As it

were, the learning organisations become virtual foundations. Each understudy's home turns into his establishment. This will lessen the interest in the establishment framework. Be that as it may, investigating labs should work as usual to help inquire about. Research cooperation can go on the web and can be internationalised.

Higher education in India must be more international, flexible (curriculum), innovative, and open to collaboration. It should be adaptable, more creative, and more international but more locally connected and socially responsible, more collaborative, and less risk averse. Innovative models should be introduced. Universities/institutes could be online- providing internet-based flexible offerings (open universities), traditional learning with hands-on work, and collaboration with other schools. Of course, one must face challenges at the initial stages, e.g., leveraging technology to deliver better and more inclusive education, contributing to the digital economy and society and responding to global demand but shifting demographics. Faculty play the most crucial role in such a system. According to Dr Francisco, authentic international engagement comes with curriculum integration and active participation by the faculty. Faculty need to be motivated and actively involved in curriculum integration.

Post Covid-19 is an opportunity to transform the higher education system. Institutes/ universities should utilise this opportunity to transform themselves. Curriculum design, collaborations, skill development and faculty involvement should focus on internationalising higher education.

The paper likewise talks about the Classroom highlights that instructors may discover helpful: Online tasks and appraisal, Sharing and overseeing assets, Incorporating YouTube recordings, Managing grades, Managing individuals in class, Online community learning and so forth. In light of qualitative investigation, the paper features the benefits of Google Classroom, such as being easy to use, paperless, fast auditing and info, timely input to students, etc.

AUTHOR'S EXPERIENCES

The vital pillar of online teaching is the teacher. Educators enter another universe of virtual talks during the lockdown during the Pandemic Covid 19. E-learning represents a test to educators and students over innovation and access, yet it keeps everybody occupied with worksheets, video talks and assignments. Teachers enter a new world of virtual lectures during lockdown during the Pandemic Covid 19. E-learning challenges teachers and students with regard to technology and access, but it keeps everyone busy with worksheets, video lectures, and assignments. For the effectiveness of an online class through Google Meet, most teachers did hard work and set guidelines for communication and interaction so that no student misuses the online platform.

The author would like to share her experiences as a teacher educator regarding the impact of Google Classroom on students' learning. Google Classroom provides an online platform for teachers. The teachers can conduct regular classes through Google Classroom using Google Hangout Meet before taking virtual classes through Google Hangout Meet; the college Technology team-oriented and trained the teachers on how to carry out online classes through Google Meet by conducting online workshops. The workshop helped the teachers make Google Classrooms and take courses through Google Meet. Teachers worked hard and heartily to complete the whole syllabus. According to her, Google Classroom is the perfect

apparatus for occupying instructors. Google Classroom has many features that specifically impact the teacher. Here are just a few:

- Easy to utilise: It gives clear orders and many assistance choices if necessary.
- Accessible from numerous gadgets: Not only can Google Classroom be accessed through a PC, but it can likewise be utilised on a tablet or cell phone.
- Paperless: There is no need to hurry to the copier any longer. All the assignments and records required can be transferred directly to Google Classroom.
- Fast reviewing and input: Checking who has submitted work or who is as yet chipping away at a task is straightforward. An educator can likewise give moment input.
- An association apparatus: Instead of having heaps of papers in a work area or file organisers loaded with worksheets, Google Classroom keeps everything spared in one space that does not occupy any particular room.
- While observing students, I found that students enjoyed a lot of their learning through Google Classroom. It was a fantastic way to extend the online learning experience.
- Students can learn more from Google Classroom, submit their assignments timely, and get feedback.
- It was the best platform for students to practice their teaching. They use Google Classroom as a Virtual classroom for their teaching practice.

EXPERIENCES OF STUDENTS:

Due to the pandemic of Coronavirus, the study of students is suffering a lot. So, Google Classroom took a step forward to avoid all the hindrances that were coming in the way of their research. The College technology team taught students about Google Classroom and Google Meet through online workshops. The experience of students about Google Classroom was collected through different academic What's App groups, and Interviews with 25 students were conducted to gather their expertise on the teaching-learning process through Google Meet during the Pandemic-19

- Students were comfortable using Google Meet as an online learning tool.
- Google Classroom is a better mode of communication between teachers and students.
- Through Google Meet, the students regularly attend classes and complete their syllabus.
- Through Google Meet, the students receive enough support and resources from their teacher.
- Google Meet helped the students to submit their assignments through Google Classrooms.
- According to their experience, teachers have worked so hard and heartily that they have completed the syllabus.
- Google Classroom is very effective as it gives up-to-date information on what the teacher is teaching.
- Google Classroom helped the students to get timely feedback.
- Google Meet helped the students give their presentations and revise topics.
- Students from rural areas need help concentrating longer for online classes through Google Meet.

- They needed clarification and more support with the content delivered in Google Classrooms.

However, due to the 2G network in Jammu and Kashmir, most students and teachers need help with network issues. Many students had gone to their hometowns where there was no network. So they were not able to connect with the online classes. Uploading pdf as assignments in Google Classroom took time, and due to network issues, they sometimes failed. Due to the 2G network in Jammu and Kashmir, most teachers also face many problems taking classes online and sharing materials with students. The obligation of online courses would also escalate the stress as specific instructors and students were unhappy with using electronic gadgets and online resources. Most importantly, some students were not serious about Internet education as the educators had no command over students in web-based instruction. Furthermore, the educators dwelling in the remote regions were increasingly disappointed and discouraged because of inaccessibility or poor web association/ network; they couldn't finish and upload their assignments on time.

CONCLUSION

This paper reflects on the significance of Google Classroom for online teaching and learning. It also discusses the Classroom features that teachers may find helpful, such as Online assignments and assessments, Sharing and managing resources, Incorporating YouTube videos, Managing grades, Managing people in class, and Online collaborative learning. Based on a Qualitative study, the paper also highlights the advantages of Google Classroom, such as its Ease of utilisation, Paperless nature, Fast reviewing and input, association apparatus, timely feedback to students, etc.

During the pandemic Covid 19, it was not just the students and parents but the teachers who had to learn and relearn how to teach students. Teachers also learnt a lot from the technology since a traditional blackboard method may not work for E-classes. Network connectivity & adequate smart devices were a challenge for teachers and students. It was very tough to prepare and deliver quality lectures to the students. The situation got worse when the teaching was online as most of the teachers had not been trained to use web resources for teaching effectively. Additionally, the teachers who specialised in conventional teaching found it more challenging to cope with online methods.

At last, teachers entered a new world of virtual lectures during lockdown in Pandemic Covid 19. E-learning poses a challenge to both teachers and students in terms of technology and access. Still, it kept everyone busy with worksheets, PowerPoint presentations, video lectures, and assignments, making online learning more productive during the pandemic.

So, all teachers of private and Government institutions should be given proper training about how to operate Google Classroom and its features to tackle any future pandemic situation.

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CHAPTER 29

INFORMATION SEEKING BEHAVIOUR OF TEACHER TRAINEES DURING COVID-19

Suneel K. Bhat & Sangita Gupta

ABSTRACT

Information-seeking Behaviour (ISB) is a personal way through which people search and utilise information. Wilson (1994) explains that ISB is a deliberate process of seeking information to satisfy some goal. It is viewed as a fact that COVID-19 has resulted in vast changes throughout the world. This outbreak has also brought many disturbances in the educational sector. This pandemic entirely changed the information-seeking process of users around the globe. The COVID-19 pandemic has allowed us to pave the way for introducing digital learning. The Internet ubiquity in education has overflowed the instruction and learning process with digital tools and profoundly changed numerous perspectives and facets of academic life, including the information-seeking behaviour of teacher trainees globally. Institutions moved from physical to electronic resources to fulfil their needs. In this context, the present study was conducted to get an idea about ISB from teacher trainees during the COVID-19 pandemic. A descriptive survey method has been employed. For data collection, a well-constructed questionnaire was framed and distributed among 300 teacher trainees of three randomly selected colleges of education in the Jammu district. Out of 300 questionnaires, 264 were received back. Percentage has been used as the statistical technique. The study results revealed that most teacher trainees (66.67%) are fully aware of ICT, and 69.70 % of teacher trainees used mobile phones as gadgets for the teaching-learning process during the COVID-19 pandemic. Results also revealed that (87.12 %) are satisfied with the 24×7 accessibility of e-resources, but most teacher trainees (91.67%) strongly agree that they need the training to access e-resources.

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Keywords: Teacher Trainees, e-resources, ISB, Satisfaction Level, ICT.

INTRODUCTION

Information plays a vital role in any development. So, it becomes necessary to seek information. According to Ingwersen & Jarvelin (2006), “Information seeking is a form of human behaviour that involves seeking for information through the active examination of information sources or information retrieval system to satisfy the information need or to solve a problem”. We can say that need of information gives birth to information search or information seeking. According to Wilson (1977), “Individual’s information gathering behaviour is a function of the information discovered to be available, the ability to use information based on effort and the usefulness of information based on experience. Information seeking is the natural and necessary mechanism of human existence. They seek means searching for something they want to utilise to solve the need. This is the process of getting information from the resources with the help of the sources. The user actively undergoes the information-seeking process (ISP) to fulfil the required information. The attempt of the user to obtain the needed information is described as the Information Seeking Behaviour” (ISB). People need accessible access to information to solve their problems in everyday life. It became possible with the advent of information and communication technology. With the introduction of ICT in libraries, the ISB of users has changed to a great extent. The library users prefer to acquire the information through various electronic modes.

Information and Communication Technology (ICT) integrates the world and changes the global economic, social, political, and educational scenario. Nowadays, all types of libraries, especially college of education libraries, provide many electronic resources for users (Teacher trainees). Colleges of education are meant for imparting education to B.Ed. Students (Teacher trainees, also known as future teachers). Electronic resources are becoming more popular among library users than printed resources. Teacher trainees of a college also use electronic resources and feel more comfortable in the ICT environment. Teacher trainees are more concerned with the latest knowledge and research in their area of interest. During COVID-19, libraries have become more concerned with electronic resources as they provide accurate information with the latest data to fulfil their needs. The teacher trainees consult the electronic resources for their teaching-learning process (Bhat and Gupta, 2021).

The COVID-19 pandemic has posed extraordinary challenges, requiring teachers to adapt to online teaching. Until March 2020, the typical teaching situation at school was characterised by students who convened in classrooms according to their timetables based on curriculum and teachers who frequently covered their subjects’ content through formal lecturing. Students were required to listen to their teachers, work individually or in groups, and predominantly reproduce knowledge in assessments (Lipowsky, 2015).

The school lockdown confronted teachers, students, and parents with a new situation (Huber & Helm 2020). Continued teaching and learning were only possible through alternative means of schooling. Teachers had to change to online education, requiring them to use various digital tools and resources to solve problems and implement new approaches to teaching and learning (Eickelmann & Gerick, 2020). Colleges of education are primarily meant to impart education to B.Ed. Students (teacher trainees) are also confronted with various challenges during Covid-19. The major challenge was the transition of

information and change from physical to online delivery of information services. Lack of technological knowledge and remote access to subscribed resources, digital/online information, and institutional repositories make them exceptional cases to study in this pandemic.

REVIEW OF LITERATURE

A literature review is vital as it shows the originality and relevance of any research problem. Every research topic must have a sound review of the literature related to the research topic. The studies which are related to the present study are as follows:

Kadli and Hanchinal (2015) examined students in law colleges. They found that students use books mostly as compared to offline and online legal databases. The study revealed that information overload on the internet and lack of skill in searching for information were significant hurdles in the information-seeking of law students. Joshi and Agarwal (2015) investigated the information needs and ISB of postgraduate students and research scholars. The authors found that students visited the library to update their knowledge, to write assignments, and to prepare for examinations. Researchers were seeking information for project and research work. Shah and Waghchoure (2017) investigated the ISB of engineering students. The study identified the need for advanced training and library awareness programmes for engineering students regarding using and accessing e-resources.

Wilson (1999) reported an analysis of the literature on ISB to support the proposed general model of ISB. He noted that at the root of the problem of ISB is the concept of information need. Wilson found that need is a subjective experience that occurs only in the mind of an individual in need and, consequently, is inaccessible to an observer. The expertise of need can only be discovered by deduction from behaviour or through the reports of an individual in need. The study focused on other psychological theories that can be put in force to research ISB. For instance, Wilson noted that motivation theory and stress/stress-coping theory need to apply information science to determine ISB.

Ferede (2016) studied the ISB of information science students and faculty of engineering and technology. The findings revealed that the primary purposes of seeking information science students were knowledge updating, project work, examination, note preparation, and entertainment. Factors like poor internet connections, a shortage of textbooks or reference books in the library, a lack of computer hardware and software, and a lack of awareness of selecting sources were the obstacles to information seeking for science students.

The Internet connects the world; it is the only source that provides any information that individuals desire to know, and this has transformed the way of information collection and distribution. Students tend to access digital texts online instead of visiting the library. The internet provides information for students and encourages tools for discussing class materials and sharing academic issues through various and different social media (Salas & Alexander, as cited in Gok, 2016).

Liu (as cited in Harafsheh & Pandian, 2016) found that "with the development of digital society, most individuals, especially youth, are committing much more time to peruse electronic resources. They spend their time skimming, downloading, and browsing information on the internet".

The advent of new technology and its implementation in libraries has opened up new horizons for

holdings. The arrangement of services ought to meet the prerequisites of current trends, respecting, identifying, and changing requests of more challenging users. Library staff must realise the significance and understanding of modern technologies such as YouTube, blogs, and wikis to attract young users and allow libraries to revamp services (Patil and Pradhan, 2014).

Amritpal Kaur (2006) conducted a study about using e-resources at Guru Nanak Dev University, Amritsar. The survey results revealed that the respondents use e-resources primarily for their research/project work. The problem faced by most of the respondents is the slow speed of the internet when accessing e-resources. The survey shows that e-resources are preferred due to various parameters like 'time-saving', 'easy to use', 'more informative', and 'more useful'.

A survey was conducted by Khan and Ahmad (2009) at the Aligarh Muslim University (AMU) and the Banaras Hindu University (BHU); they examined the level of awareness and use of e-journals by the researchers. The survey revealed that most of the research scholars know the availability of e-journals and primarily use them for reference purposes in their research work. The respondents fully agree that with the use of e-journals, the quality of research work improved to a large extent. Researchers also found that lack of training hinders the proper and optimum utilisation of e-journals.

Gupta (2010) conducted an e-survey on the use pattern of print and electronic journals at Kurukshetra University. The e-survey revealed that the respondents are more attracted to e-journals than printed journals. However, they depend more on open-source materials than those available through UGC-Infonet. Respondents also identify the need for training in using e-resources and retrieving information from them occasionally.

Ansari (2010) found that most users use electronic and printed resources or only printed resources, but electronic resources are used for research and the preparation of lectures. Nearly all respondents were satisfied or quite satisfied with the available resources. Still, they consider them less reliable due to a lack of knowledge and training facilities for using electronic resources.

In their study, Salahudheen, Shibu, and Anas (2011) stated that most respondents know about e-journals for different purposes, such as studying, updating knowledge, and doing thesis and dissertation work. The medical college library in AMU subscribes to many e-journals and provides access facilities to their users. Respondents' awareness of e-journals is quite impressive, but their awareness regarding e-journals/consortia in the medical field is comparatively not up to the mark.

Bhatia (2011) revealed in his study that the internet has attracted users' attention as an easy source for accessing information and e-resources, as is evident from her research. However, she also verified that only a sizeable number of users could frequently seek information from e-resources. Most users access e-resources to update their knowledge of their respective subjects and for academic assignments. He suggested that the college library should organise awareness-cum-training programmes to educate the users on seeking information from e-resources and to maximise the use of library resources and services.

A user survey was conducted by Gill (2012) at the Indian Council of Medical Research (ICMR) libraries in Delhi. The survey reveals that e-journals play a significant role in the information dissemination. The survey showed that almost all the users of ICMR libraries are well aware of the available e-journals at their institutional library and are using e-journals for their research needs.

Habiba and Chowdhury (2012) confirmed in their study that many e-resources are available in the Dhaka University Library (DUL) but lack infrastructure facilities and trained professionals. Therefore, DUL should arrange more training programmes for users, appoint trained professionals with ICT skills, and accommodate users' opinions on subscribing to new e-journals.

Adeniran, P. (2013) reveals that the use of electronic resources greatly impacted the academic performance of the undergraduate students of Redeemer's University. However, users needed to acquire more computer-based skills in using electronic resources.

Parveen (2014) conducted a study at the University of Lucknow. The study shows that the UGC INFONET Consortium has a positive impact. The study enabled the respondents to express their satisfaction level and their aspirations for further improvements. The findings revealed that the authorities of the University of Lucknow need to ensure that user awareness and training programmes at the departmental level are conducted at regular intervals.

Padma (2014) conducted a study to determine the awareness and use of various social networking sites among teacher trainees and postgraduate students at Madurai Kamaraj University, Madurai. The study revealed that 86% of the students are aware of Facebook, followed by Twitter. Most of the respondents use Internet browsing centres to access social networking sites.

Okite-Amugghoro, Makgahlela and Bopape (2014) conducted a study, and they mentioned in their research that despite the availability of electronic information resources (EIR), the postgraduate (PG) students at Delta State University, Araka, lacked training on how to use EIR efficiently and effectively for their research. Furthermore, the authors stated that user Education programmes, orientation and training on the use of Information Communication Technology (ICT) and how to access the various e-resources/databases should be extended to newly-registered students (as cited in Imsong and Kharbudon, 2016)

Ravinder (2015) conducted a study at the Sri Krishnadevaraya University library. The study highlights the problems research scholars encounter when accessing the UGC-Infonet e-journals consortium. It reveals that the major problems users face in accessing the e-consortium are lack of training and proper orientation. The investigator suggested that the university conduct orientation programmes from time to time to provide training in the use of e-journals and enhance the infrastructure facilities to best utilize UGC-Infonet e-journals.

Lallaisangzuali (2015) conducted a study at Mizoram University, Aizawal. The study aims to explore the status of information literacy among postgraduate students and teacher trainees, their information-seeking skills, and their ability to acquire and use information effectively. The findings reveal that most doctoral students and teacher trainees used library catalogue materials. All the respondents preferred to obtain their information in print and electronic form.

A study conducted by Akussah, Asante and Adu-Sarkodee (2015) reveals that all four constructs (satisfaction level, preferred database, time & frequency, and level of awareness) of the electronic resources indicated a significant positive relationship with usage among the users. The authors recommended that the institution adopt more dynamic marketing strategies to inform and create awareness

of existing electronic resources, including fresh student orientation, faculty seminars, mailing lists to users, circulars, and selective dissemination of information (SDI) services for their users.

Phuapan et al. (2016) conducted a study on information literacy skills among University Seniors. The researchers sought to determine which digital skills were most important for using digital technology, communications tools, and networks to access, control, merge, assess, generate, and communicate. They determined that the ability to evaluate was the most important skill indicator in the development of information literacy.

Adeleke and Emeahara (2016) conducted a study at the University of Ibadan. The study revealed that the low level of usage of e-resources among postgraduate (PG) students need to be more competent in using communication technologies, including computers and associated skills such as desktop publishing, database management, programming, and web page design to navigate in an electronic environment. A significant relationship between information literacy skills and the use of electronic information resources was established from the findings. PG students need to acquire information literacy skills and improve the quality of their academic and research work.

OBJECTIVES OF THE STUDY

The study aims to achieve the following objectives with respect to the teacher trainees:

- To know the ICT awareness among teacher trainees
- To know ICT gadgets used by teacher trainees to acquire information during Covid- 19.
- To know about the types of resources preferred by teacher trainees for seeking. Information.
- To find out the difficulties faced by teacher trainees during information retrieval.
- To know about online assistance offered by libraries during the Covid-19 pandemic.
- To find out the satisfaction level of teacher trainees regarding e-resources subscribed by the library.

RESEARCH METHODOLOGY

In this study, the questionnaire method was used for data collection. The study covers different aspects of the teacher trainees using electronic resources provided by the college library during the COVID-19 pandemic. A self-constructed questionnaire was prepared and distributed among 300 teacher trainees. Out of 300 questionnaires, 264 were received back for evaluation. Percentage was used as the statistical technique. The response is visible in the table mentioned below.

Table 1: Showing Distribution of Questionnaire

User Status	Questionnaire Distribution among Teacher Trainees	Questionnaires Received back from Teacher Trainees	Questionnaires Unreturned from Teacher Trainees
Number of Teacher Trainees	300	264	36

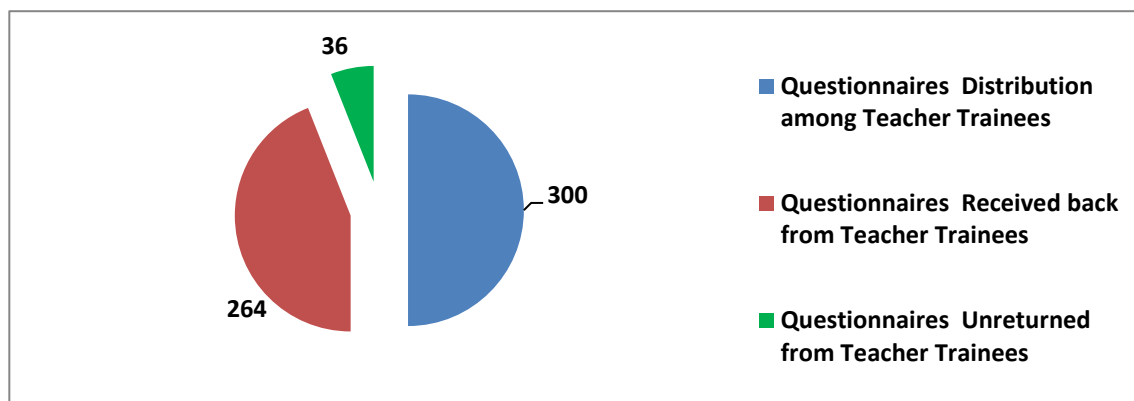


Figure 1: Showing Distribution of Questionnaire

Source: Field Survey

DATA ANALYSIS AND INTERPRETATION

Data analysis is one of the most important ways to find out the results of any research activity. The researcher organised the data collected from teacher trainees and reached logical findings and conclusions. Data collection can be done in appropriate ways depending on the research problem. In this study, a self-constructed questionnaire was taken as a research tool, and the percentage was used as the statistical technique. Data analysis is presented in tables as under:

ICT AWARENESS

ICT awareness is necessary for 21st-century teacher trainees since conventional teaching-learning methods will not serve the purpose, especially given the current situation of COVID-19.

Table 2: Showing ICT Awareness among Teacher Trainees

Awareness	Teacher Trainees	Percentage
Fully Aware	176	66.67 %
Aware	74	28.03 %
Partially Aware	14	05.30 %
Not Aware	0	0 %
Total	264	100 %

Table 2 revealed that 66.67% of teacher trainees are fully aware of ICT, 28.03% are aware of ICT, 5.30 % of teacher trainees are partially aware, and no members are unaware of ICT.

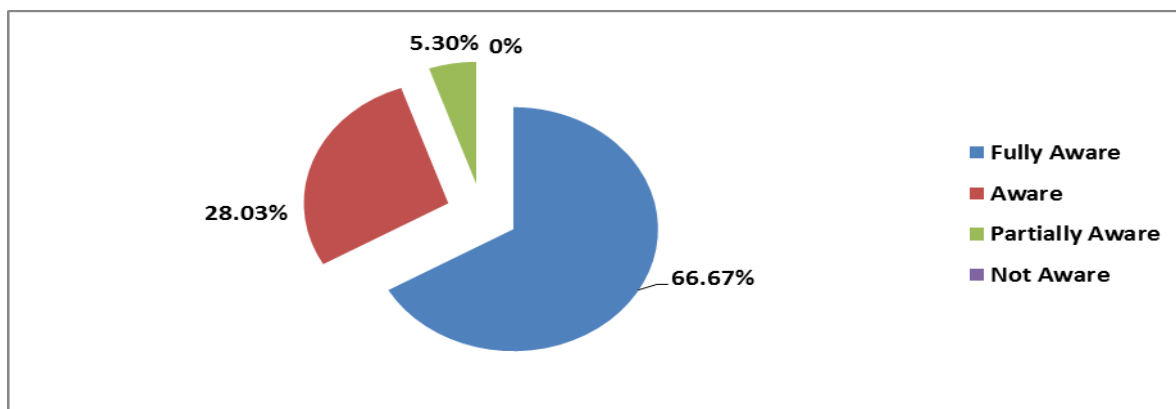


Figure 2: Showing ICT Awareness among Teacher Trainees

ICT GADGET USED BY TEACHER TRAINEES TO ACQUIRE INFORMATION DURING COVID-19.

Small technological devices or appliances that perform certain functions are known as ICT gadgets. During the COVID-19 pandemic, teacher trainees used these gadgets for educational purposes.

Table 3: Showing ICT Gadget used by Teacher Trainees to Acquire Information during COVID-19

ICT Gadget	Teacher Trainees	Percentage
Mobile Phone	184	69.70 %
Laptop	56	21.21 %
Desktop	16	06.06 %
Tablets	08	03.03 %
Total	264	100 %

Table 3 revealed that 69.70 % of teacher trainees used mobile phones as a gadget for the teaching-learning process. 21.21 % used laptops, while 6.06 % used desktops, and only 3.03 % of teacher trainees used tablets for the teaching-learning process during the Covid-19 pandemic.

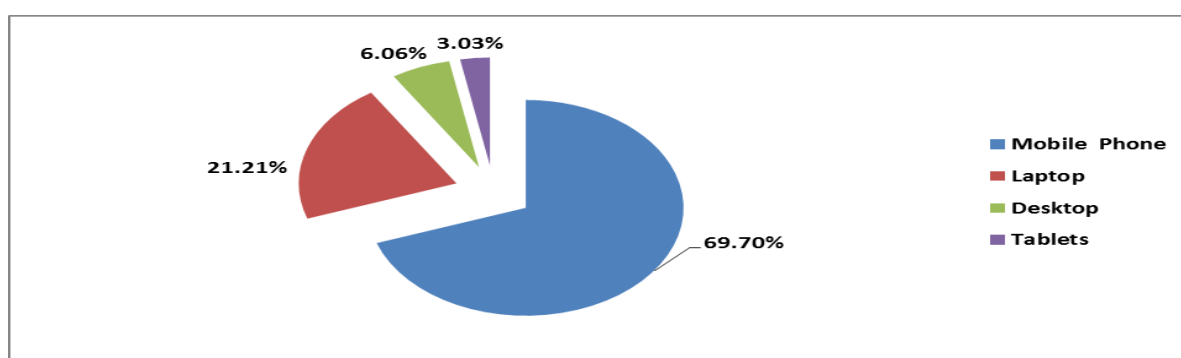


Figure 3: ICT Gadgets used by Teacher trainees to acquire information during COVID-19.

TYPES OF RESOURCES USED BY TEACHER TRAINEES FOR INFORMATION SEEKING DURING COVID-19.

Information-seeking behaviour refers to the way people search and utilise information. Information seeking is a term used to describe the ways individuals seek, evaluate, select and use information.

Table 4: Showing Types of Resources used by Teacher Trainees for Information Seeking during Covid-19

Type of Resources	Teacher Trainees	Percentage
E-books	49	18.56 %
E-journals	6	2.28 %
website	61	23.11 %
Databases	22	8.33 %
Blogs	8	3.03 %
Social Media	42	15.91 %
Discussion with Colleagues	18	6.82 %
Teachers	46	17.42 %
Librarians	12	4.54 %
Total	264	100%

Table 4 shows that 23.11% of teacher trainees consulted websites as a resource for information seeking during COVID-19. E-books were in great demand during the Pandemic; it is evident from the above table that 18.56% of the teacher trainees referred to e-books for information seeking during COVID-19, and it is seen that only 2.8% of teacher trainees referred to e-journals. Since the database is a collection of organised information that can be easily accessed, results showed that 8.33% of teacher trainees consulted databases for information. Results revealed that 3.03% of teacher trainees consulted blogs, 15.91% took help on social media, and 6.82% discussed with colleagues to seek information during a pandemic.

The above table shows that 17.42% of teacher trainees consider teachers, and 4.54% consider librarians sources of information during the COVID-19 pandemic.

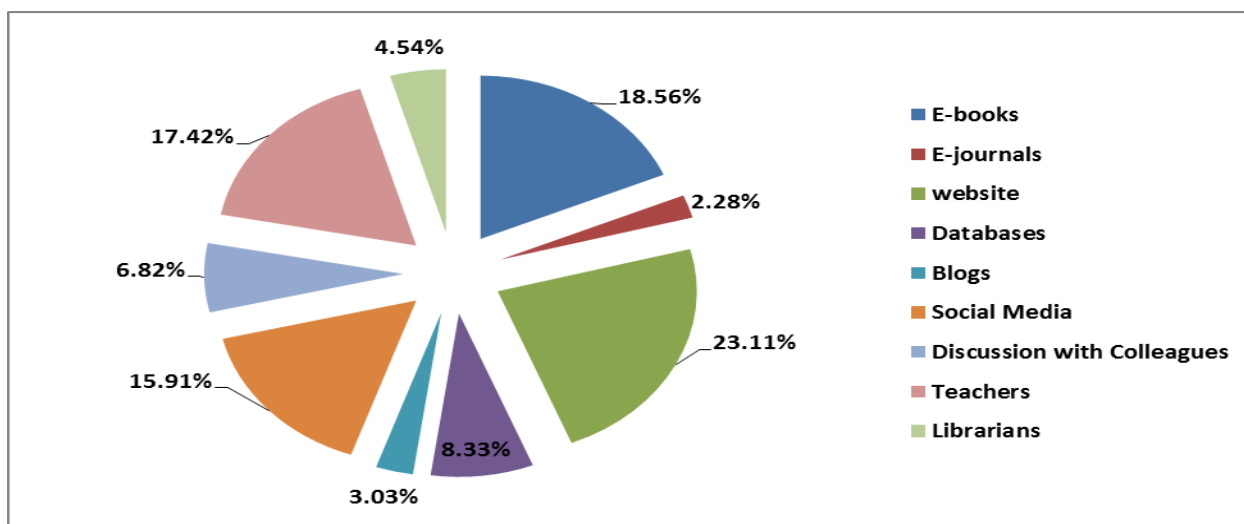


Figure 4: Showing Types of resources used by teacher trainees for information seeking during COVID-19.

ACCESSIBILITY OF E-RESOURCES (24X7).

Table 5: Showing Accessibility of E-Resources

Accessibility	Teacher Trainees	Percentage
Yes	230	87.12 %
No	34	12.88 %
Total	264	100%

Table 5 shows that 87.12% of teacher trainees enjoy 24/7 accessibility to e-resources, while 12.88 % do not agree.

IMPORTANCE OF E-RESOURCES

Table 6: Importance of E-Resources

Importance	Teacher Trainees	Percentage
Very Important	102	38.64 %
Important	122	46.21 %
Not Important	28	10.61 %
Can't say	12	4.54 %
Total	264	100%

Table 6 shows that 38.64% of teacher trainees consider e-resources an essential part of their learning process, 46.21% admit that it is important, 10.61% consider e-resources not important, and 4.54% can't say anything.

DIFFICULTIES FACED BY TEACHER TRAINEES DURING INFORMATION RETRIEVAL

Table 7: Showing Difficulties faced by Teacher Trainees during Information Retrieval

Difficulties faced	Teacher Trainees	Percentage
Network and bandwidth problem	110	41.67 %
Communication gap with teachers	62	23.48 %
Lack of Awareness about online resources	22	8.33 %
Insufficient e-resources related to the course	70	26.52 %
Total	264	100%

Table 7 shows that 41.67% of teacher trainees faced network and bandwidth problems during information retrieval. 23.48 % of teacher trainees agreed that they have a communication gap with teachers while retrieving information and 26.52 % of teacher trainees believed insufficient e-resources related to the course. Only 8.33% of respondents possess a lack of awareness about online resources.

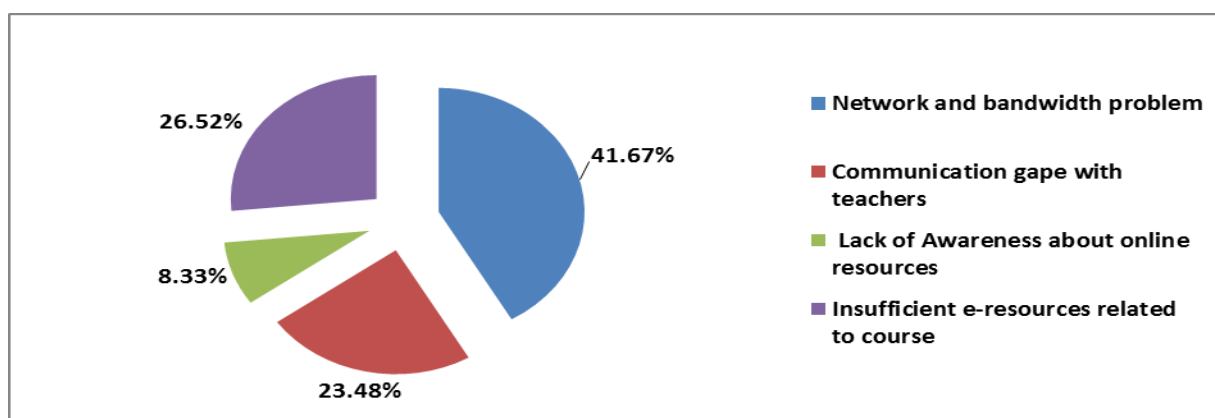


Figure 5: Showing difficulties faced by teacher trainees during information retrieval

ONLINE ASSISTANCE OFFERED BY THE LIBRARY DURING COVID-19

Table 8: Showing Online assistance offered by the library during Covid-19

Media of Assistance	Teacher Trainees	Percentage N=264
WattsApp Group	210	79.55 %
Online orientation programmes	250	94.70 %
Free online resources	152	57.57 %
Google Classroom	164	62.12 %
Webinars	20	7.58 %

Table 8 reveals that 79.55 % of teacher trainees agreed that the library provided online assistance through WattsApp groups during the COVID-19 pandemic. 94.70% of teacher trainees agreed that the library

offered assistance through online orientation programmes during the Covid-19 pandemic, 57.57% agreed that the library offered assistance through free online resources, 62.12 % through Google Classroom and 7.58% through webinars during the Covid-19 pandemic.

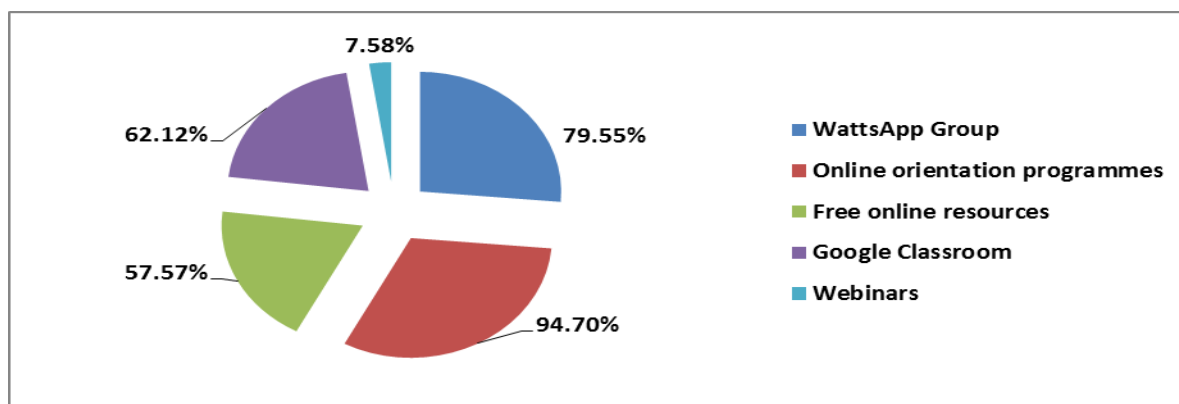


Figure 6: Showing Online assistance offered by the library during Covid-19

SATISFACTION LEVEL OF TEACHER TRAINEES REGARDING E-RESOURCES SUBSCRIBED BY THE LIBRARY

Table 9: Showing Satisfaction Level of Teacher Trainees regarding E-Resources Subscribed by the Library

Quantity	Teacher Trainees	Percentage
Very Highly Satisfied	32	12.12 %
Highly Satisfied	44	16.67 %
Satisfied	68	25.76 %
Low	96	36.36 %
Dissatisfied	24	9.09 %
Total	264	100%

Table 9 shows that 12.12% of teacher trainees are very highly satisfied with e-resources subscribed by the college library, 16.67% are delighted, 25.26% are happy with e-resources subscribed by the college library. In comparison, 36.36 % are low satisfied, and 9.09 % are dissatisfied with e-resources subscribed by college library.

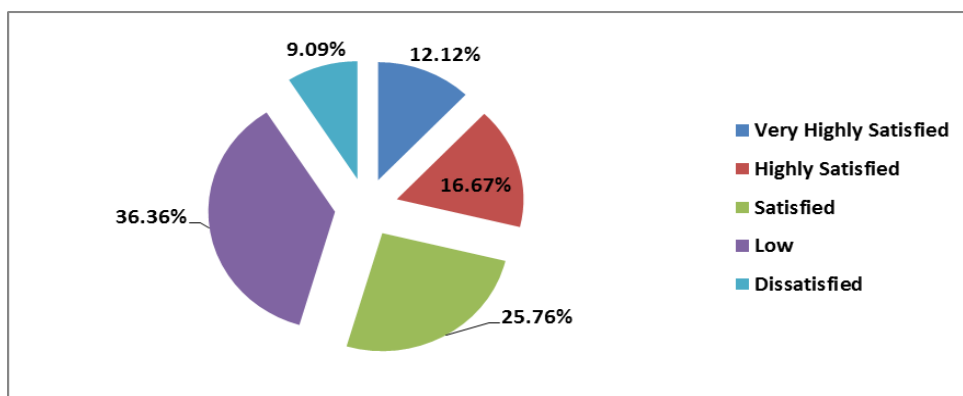


Figure 7: Showing Satisfaction Level of teacher trainees regarding e-resources subscribed by the library

REQUIRED TRAINING TO USE E-RESOURCES BY TEACHER TRAINEES.

Table 10: Showing Teacher Trainees Required Training to Use E-Resources

Training Required	is	Teacher Trainees	Percentage
Strongly Agree		242	91.67 %
Agree		22	8.33 %
Undecided		0	0 %
Disagree		0	0 %
Strongly disagree		0	0 %
Total		264	100%

Table 10 reveals that 91.67% of teacher trainees strongly agree that training is required to use e-resources, while 8.33% agree with this requirement. Therefore, the majority of teacher trainees strongly agree that they need training to use e-resources.

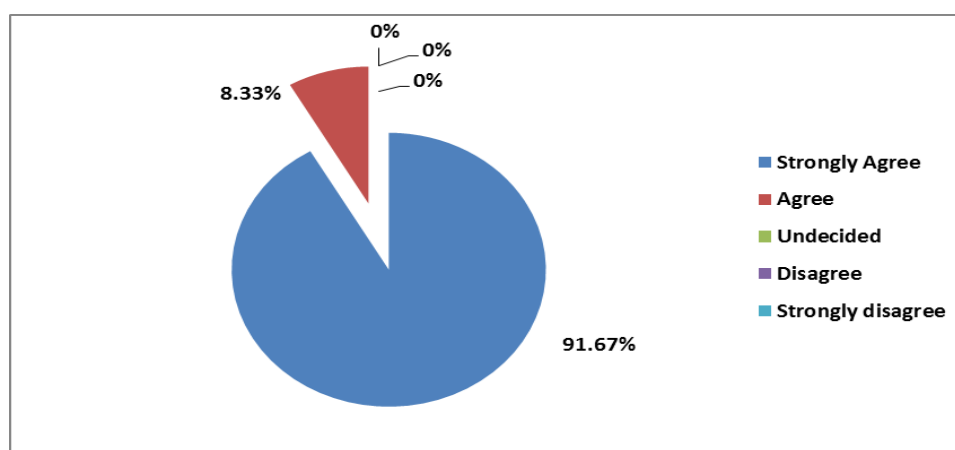


Figure 8: Showing teacher trainees required training to use e-resources

FINDINGS OF THE STUDY

- This study shows that the majority of teacher trainees are aware of ICT.
- Results revealed that most teacher trainees use mobile phones as gadgets for information seeking during COVID-19.
- The majority of teacher trainees prefer both online & print resources for their teaching-learning process.
- Results showed that most teacher trainees faced network and bandwidth problems during information retrieval.
- Teacher trainees are satisfied with 24×7 accessibility to e-resources.
- Results revealed that many teacher trainees are satisfied with e-resources subscribed by the library.
- Most teacher trainees are satisfied with the online assistance librarians provide through online orientation programmes & WhatsApp groups.
- Teacher trainees want to get proper guidance or training to use e-resources frequently.

RECOMMENDATIONS

- To arrange training programs for users to make them fully aware of ICT.
- Distribution of gadgets (mobiles/laptops) to users who are in great need of them and can't afford them due to some financial reasons.
- Training programs for library professionals to create e-resources/services and use social media.
- Arrangements should be made to review the internet speed problem and enhance the bandwidth regularly.
- To procure and subscribe more e-resources to meet the needs of users.
- Assigning the work of assistance to the library professionals who are sober and have much tolerance so /they can endure the diverse types of users.
- To provide full technical support to users where they feel any difficulty for utilizing e-resources and services.

CONCLUSION

In the present era, e-resources play an essential role; now, Libraries provide many e-resources for teacher trainees, which are very important for their teaching and learning process. Teacher trainees feel that e-resources are beneficial for their teaching-learning process, and they get relevant quality material from various e-resources. Teacher trainees need proper training to use e-resources adequately. Therefore, libraries should ensure their demands are put before the authorities so that fruitful results will come out and students can easily access e-resources 24X7 at any geographical location in future.

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CHAPTER 30

ONLINE ASSESSMENT AND EVALUATION

Swati Mahajan

ABSTRACT

On 25th March 2020, the government imposed a nationwide lockdown in India due to COVID-19, which led to the unspecified closure of all academic institutions. According to a survey by the United Nations, this situation affected around 99% of students in developing countries. Under these circumstances, educational institutions switched to virtual platforms from physical platforms. Learning is only possible with assessment. The collection of assessment data poses a challenge. Teachers used various technologies to assess the students to avoid these hurdles, i.e., online quizzes, polls, Google Forms, etc. The online assessment provides computer-rich, comprehensive, formative feedback that can scaffold the learning process and help the learner to self-evaluate and enhance their learning outcome while preparing for the summative evaluation. It is ecological, reduces the administrative burden, receives instantaneous feedback, and facilitates the supremacy of feedback. This is a general observation that the online assessment is suitable for online learning and provides rich feedback. This paper will focus on different online assessment techniques. It further throws light on the advantages and challenges faced in online assessment. It also provides recommendations regarding the challenges of the online evaluation.

Keywords: Online assessment, COVID-19, Feedback, Techniques of Online Assessment

INTRODUCTION

The Indian government's decision to impose a total lockdown in the country to restrain the spread of the infectious virus, COVID-19, adversely impacted all sectors of the economy (Joshi et al., 2020b; Gupta et al., 20). This shocking news impacted the education sector. All schools and colleges change their mode of study; they switch to virtual platforms over physical platforms.

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According to a report by UNESCO, over 1.5 billion students in 195 countries were affected by the closure of COVID-19. (UNESCO, 2020b). The Ministry of Human Resource Development promoted online education through various platforms to restrain the pernicious influence on education. Online learning is a type of education provided via the Internet using digital apparatuses like tablets, Macs, Smartphones, etc. Online education offers flexibility to students. Those who cannot engage through offline mode in classrooms can also approach in their comfort zone. There are no boundaries to online classes for learning students.

India has successfully adopted online learning in the West region, allowing students and teachers to learn and accommodate the target of making education accessible in the whole country. India will transform the education system into a digital empowerment knowledge society. In this direction, a handful of initiatives have been taken to integrate ICT (Information and Communication Technology) from the school curriculum into the higher education curriculum (Kundu,2018b). Even with higher educational institutions constantly striving to develop, the number of students enrolling in universities is 37.4 million, with a GER of 26.3(Nanda,2019). GER in higher education in the US is the highest at 88.2%, Germany (70.3%), France (65.5%), UK (60.6%), Brazil (51.3%), China (49.1%), Indonesia (36.4%) and India (25.8% in 2017-18) and the country aims to raise it to 50% by 2035 through the national education policy 2020(Sharma,2020,15th June). The curriculum of National Education Policy 2020 includes competencies like problem-solving, critical thinking, creativity, and communication, as well as subject knowledge and skills (Kundu et al.,2020). Mandatorily, online education that has been getting traction across the country will follow online assessment. COVID-19 has brought online education and assessment to vast popularity. At that time, most schools, colleges, and other educational institutes were in touch with students through virtual modes like WhatsApp or email, conducted classes through Google Meet, Zoom, etc., and planned to take exams online. Several studies assessed the student's opinions about online assessment. According to Donovan et al. (2007), 88.4% of students prefer online assessment as a motivational technique. 92% of students approved that online assessment enhances learning (Gilbert et al.2011).

Learning without assessment is scrappy. Assessment is an integral part of learning. It is the most essential and robust component of an educational experience, as it provides observable evidence of learning, determines student progress, and reveals an understanding of the academic programs. Assessment in the student-centred paradigm is used to diagnose learning problems, promote further learning, and evaluate learning outcomes. In the changing world of education, online learning is assessed digitally. Online assessment customised the students' learning and evaluated their performance via Google Forms, online quizzes, polls, etc. The words similar to online assessment are e-assessment, digital assessment, electronic assessment, and computer-based assessment. Online assessment can assist as a potential catalyst to translate conventional assessment practices in response to emerging assessment challenges such as distance learning, high student-faculty ratio, and objective and high-quality feedback. Online assessment is a distinctive mode of recording students' responses and providing feedback. Feedback can perform several functions depending on the purpose of the assessment.

According to Drummond (2003), Mason (1998), and Sun (2002), online assessment and measurement are timely and essential in terms of discussing continuous improvement in the quality of learning as various institutions grapple with how best to implement the assessment processes for online learning. Furthermore, the central point of multifarious assessment research has been on felicitousness, efficacy, and adequacy of

a program instead of assessing the learner's knowledge. Reeves (2000) defines online assessment as an "alternative assessment done in e-format. He proffered three approaches: 1) cognitive assessment, 2) performance assessment, and 3) portfolio assessment. Cognitive assessment enhances the ability of expository knowledge and the more highly ordered processing of information. Performance assessment is the "measure of learning in the ontogeny domain". The third approach is portfolio assessment. A portfolio is a snippet of work that grows with innovative products and learning activities added as the learner becomes more proficient at the increasingly more difficult electronic task.

In the views of O'Reilly & Morgan (1999), Online assessment can be classified as withal summative (assessment of learning for grading purposes) or formative (assessment for learning to give rich feedback to aid the learning process). Diagnostic assessment is an assessment used by an instructor to judge prior knowledge, and self-assessment is where learners reflect on their understanding.

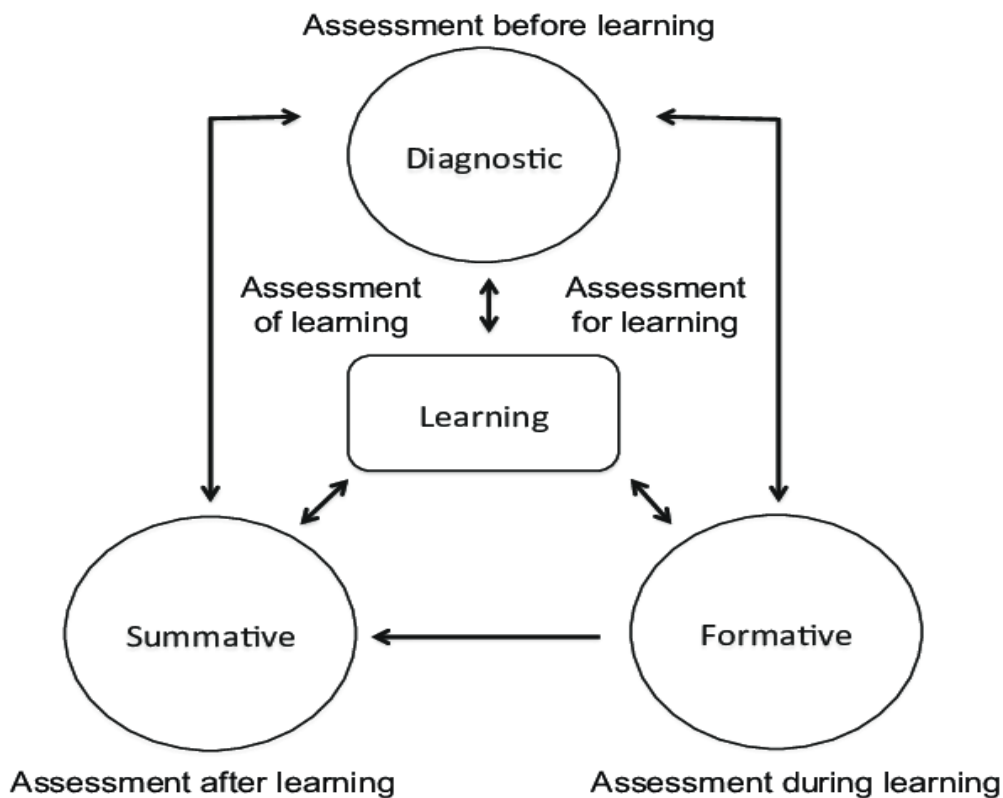
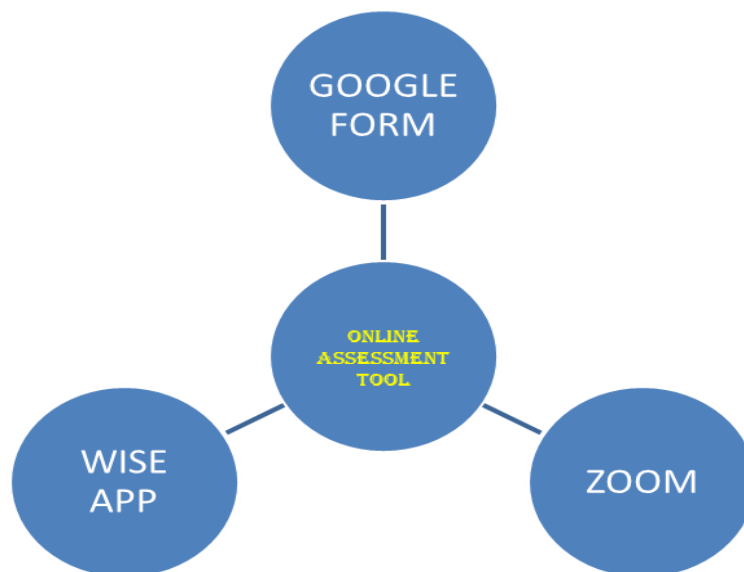


Figure.1: Types of Assessment

ONLINE ASSESSMENT TOOLS

With a wide range of ICT(Information and Communication Technology) tools and pervading information, an immense capacity exists that fruitfully utilises various assessment approaches that promote and evaluate student learning in higher education. Considering the crucial role that online assessment plays in COVID-19 situations, the following tools are efficiently utilised for e-assessment in India:



GOOGLE FORM

In October 2014, Google launched an add-on for Google Forms that enables third-party developers to add new features to surveys, while in July 2017, Google updated forms to add several new features. Google Forms is an internet-based app that creates forms for data collection. Instructors and learners can use it to make surveys, quizzes, or event registration sheets. Google Forms has abundant options like short answers, paragraph answers, MCQS, checkboxes, etc. Google Form access on 171,895 websites by Google Form customers.

ZOOM

ZOOM was established in 2011 by Eric Yuan, and its headquarters is in San Jose, California. It is a cloud-based video conferencing tool that equips instructors and students to meet online via a personal PC/laptop or Smartphone with or without using videos. Instructors can set up Zoom meetings to conduct online classes, record them for later student access, and use a breakout room for group activities. Zoom is an unpaid online learning platform where 100 participants can join the meeting at a time with a limit of 40 minutes. Students also actively participate in classroom discussions or give proper feedback. During COVID-19, exam invigilation was done through Zoom. Zoom had more than 300 million participants during the pandemic.

WISE APP

The Wise app is an educational app. It works even on essential and low-configuration smartphones and slow internet bandwidth. The wise app was developed in 2020 during a pandemic by two friends from IIT-Bombay, Mubeen Masudi from Kashmir and Bilal Abidi from Lucknow. It is a network-friendly mobile app used via a 2G network that allows students and teachers to cut through scheduling problems, makes teaching and assessments over the Internet more accessible, and makes the experience as close to an actual classroom as possible. This application features an interactive live session with automatic attendance, collection of fees, and an MCQ test with quick evaluation.

Further, some additional assessment tools assess the students through online mode as follows:

FILL IN THE GAP (CLOZE) AND TEXT/NUMBER ENTRY

The word "cloze" is derived from the closure prescribed in Gestalt Theory. Cloze tests require the potential to recognise the context and vocabulary to find the correct language or part of speech in the deleted passages. This exercise is commonly administered to assess native and second language learning and instruction. According to Jonz (1990), the Cloze test measures language proficiency or comprehension by requiring examinees to restore words removed from otherwise standard text. Furthermore, Richards, Platt, and Weber State in the Longman Dictionary of Applied Linguistics (1985) that the cloze test is a technique for measuring reading comprehension.

IMAGE HOTSPOTS

Image hotspots are ethical for evaluating visual knowledge that would be difficult to achieve through an MCQ or other textual question type. These questions gathered feedback on images. The benefit is that there are no visual cues from which students judge the correct answer, no discrete distracters to choose from, and each pixel is potentially correct or incorrect.

SIMULATIONS

Simulation tests allow for evaluating students' problem-solving skills in real-life structures. They are held in a virtual environment where students experience risk-free stress. The instructor evaluates the student's skill by creating a situation. The test assists in assessing learners' capability by applying various theories, e.g., case studies.

BRANCHING SCENARIOS

Branching scenarios is a connected learning approach that focuses on content and evaluates learners' understanding power by engaging them in the situation and observing their reactions. It provides a means to assess students' decision-making. Branching scenarios suggest solving a challenge with several points where a learner has to make decisions. Each option leads to a particular consequence and gives a student immediate feedback. This method is particularly effective in soft skill assessment.

SOCRATIVE

Socrative is one of the top-rated formative assessment tools for evaluating student learning. It provides fun and practical tools for computing student knowledge in real-time. Socrative is a cloud-based student feedback system developed in 2010 by Boston-based graduate school students. It enables an instructor to construct quizzes such as MCQs, true /false, graded short answers, etc. Recently, Socrative has 3 million users and is available in 14 languages.

MENTIMETER

In 2012, Mentimeter was founded by Johnny Warstrom, Niklas Ingvar, Henrik Frasen And Kristoffer Renholm. Mentimeter is an assessment tool for online education. It comes pre-filled with classroom education templates, such as listening skill assessments, icebreakers, formative assessments, post-lecture surveys, and polls. Through this application, a teacher can conduct teacher training workshops, create quizzes and tests, and more.

POLL EVERYWHERE

In April 2007, Poll Everywhere was founded by Jeff Vyduna, San Francisco, USA. Poll Everywhere allows the instructor to put questions to their students. It integrates with Google apps like Google Slides or MS PowerPoint. Teachers can get original feedback in their questions slides without calling the individual student to roll out assessments as an integrated part of more extensive lectures. This is a resourceful way to deliver a voice lecture during the live session. This application is used by 75% of all Fortune 500 companies and by more than 300,000 educators worldwide.

KAHOOT – GAME-BASED ASSESSMENT TOOL

Kahoot was launched in March 2013 by Kahoot. It is a game-based learning platform used by educational institutions in schools and other educational institutes. The learners can play the assessment games independently, and the instructor can add optional questions. The instructor sets the in-game time and score bases. The learning encouragement is enhanced through Kahoot! Around 50 million monthly active users and over 1 billion cumulative players used Kahoot.

PROS OF ONLINE ASSESSMENT

Online assessment is mandatory because learning without assessment is not viable. Compared to the conventional assessment method, online assessment techniques are more unerring and faster methods to evaluate the student's knowledge. Following the study of Glamorgan University and Leeds Metropolitan University, 88.4% of students favour online assessment. Furthermore, research from Jorden University (JU) and Zayed University (ZU) concluded that 59% of JU and 50% of ZU liked the virtual method. In comparison, 21% of JU and 43% of ZU liked the conventional method. This section presents the pros of the online process in different estates: Instructors, Learners, and educational institutions.

Learner's	➤ Instantaneous judgment ➤ Improves learning skills ➤ Brisk and easy to operate ➤ Provides more control and friendly interference Inspire students to enhance their performance
Instructor	➤ Saves time ➤ Flexible to use and access ➤ Improves the standard of responses ➤ Reduce the amount of work ➤ Easy to evaluate ➤ More flexible and imaginative assessments are possible, with greater relevance for students, for example, by using simulations, audio and video clips ➤ Make valuable learning

	➤ Automatic evaluation ➤ Provide immediate feedback
Educational Institution	➤ Reduction in installation cost ➤ Accurate and fast result

CHALLENGES AND RECOMMENDATIONS

However, even with its advantages, there are also diverse challenges that can be faced during the implementation of an online assessment. Recommendations help in resolving issues. Different studies have investigated these challenges and suggested some recommendations:

- Online assessment depends upon ICT technology. However, most of the learners, as well as instructors, are not amicable with technology. Proper training should be provided to them through well-trained staff.
- Computer potency deficiencies cause learners and instructors to lack credibility. To address this problem, educational institutes should provide well-trained staff and proper computer labs.
- However, Online assessment is done through ICT technology. The demand for servers, software licenses, number of PCs causes a high cost of the evaluation. It is debatable whether using high-end online assessment strategies is cost-effective or not.
- The risk of hackers and viruses is involved in the ICT world. Investing in good licensed anti-viral software and an anti-hacking system will overcome this risk. A firewall (either hardware or software) is a system that controls requests and protocols accepted and transmitted by a server. Most assessment systems will require HTTP or, ideally, HTTPS (encrypted) protocols, so a firewall can be used to deny access to other protocols such as FTP and e-mail.
- Stealing copyrighted content, such as videos, images, journals, sculptures, databases, etc., is also challenging for an authoritative person. Copyright holders routinely invoke legal and technological measures to prevent and penalise copyright infringement.
- Online cheating and plagiarism are the biggest challenges faced by instructors, especially in summative assessments. In online assessments, there is no face-to-face interaction between students and teachers, which increases the chances of fraud. Computer software can take necessary steps to ensure students' identities, such as creating an authentic login ID with face and eye recognition or proctoring through videos. Another idea can be generated for special students.
- Teachers must be familiar with some difficulties in assessing group work. It isn't easy to evaluate the group work or assess each member of the whole group with the computer. SPARK (Self Peer Assessment Resource Kit), an academic open-source project, is designed to evaluate group work.

CONCLUSION

COVID-19 plays an essential role in attracting students and teachers to online assessment. During the pandemic situation, online learning has become a primary instruction method. It also impacts the education system. It is difficult for students and teachers to opt for this change, but through training, all of them can cope with this module. Online assessment tools generate engaging tasks for online evaluation. Different

online assessment techniques lend a helping hand to evaluation in various situations. According to studies by other researchers, Google Forms is mainly used in India as an assessment tool. Feedback plays a vital role in motivating students to learn.

The advantages of online assessment are that it creates confidence among learners, instructors, and institutions, is easy to operate, saves time, provides immediate feedback necessary to enhance student learning, and provides accurate and fast results. Although online assessment creates a problem for untrained learners and instructors and involves the threat of cheating and plagiarism, problems can be resolved according to recommendations. Hence, this paper proves that online assessment is a better option than the conventional method in some cases. Every learner can opt for this according to their comfort zone.

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CHAPTER 31

TEACHING-LEARNING OF ENGLISH LANGUAGE PROFICIENCY THROUGH BLENDED LEARNING MODE DURING COVID TIME: EXPLORING TEACHERS' AND STUDENTS' PERSPECTIVE

Tejinder Kaur and Chandan Shrivastava

ABSTRACT

English Language Proficiency has emerged as one of the vital skills for acquiring education and employment at the global level in the 21st century. The education system worldwide has witnessed a revolutionary change due to Covid-19. It has compelled teachers and students to opt for blended learning for the teaching and learning process. NEP – 2020 also discusses identifying effective blended learning models and appropriate approaches for their implication in different education disciplines. Thus, this study aims to explore the perceptions of teachers and students regarding the use of blended learning mechanisms to enhance the English language proficiency of the students. It also brought to light various issues and challenges of using blended learning for teaching English language skills. Self-prepared questionnaires have been taken as data collection tools for the study to explore the participants' perceptions of using blended learning to enhance English language proficiency. The study is in Bihar, with participants as teachers (10) and students (60). By incorporating convenience sampling, the researcher collected data, which was further analysed descriptively. Finally, based on the responses of the samples, the researcher provided some suggestions for overcoming the barriers to enhancing English Language Proficiency by using blended learning. This may benefit the effective implementation of Blended learning in various education disciplines.

Keywords: Blended Learning, English Language Proficiency, Teachers' & Students' Perception, Covid-19.

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INTRODUCTION:

In educational institutions, the emergence of digital learning platforms has had a tremendous impact and has eventually pushed the traditional approaches to the sidelines. Nevertheless, both conventional learning methods and technology are in high demand. This demand gave birth to “Blended Learning”, which is considered the art of mixing digital learning tools with traditional learning face-to-face teaching methods. The world is ever-evolving, and the different domains have not remained untouched by this evolution. The global economy is projected to be negatively impacted by the Covid-19 pandemic in the long run (World Bank, 2020). It also had an impact on higher education and the student experience, as a result of which Face-to-face (F2F) learning has been chiefly superseded by blended learning and online learning at most educational institutions (Mali & Lim, 2021). Given the abrupt change in the academic environment, it's vital and critical to keep track of students' and teachers' perspectives and preferences to report on how they viewed different teaching methods during COVID-19. One of the positive things about the new average era or post-COVID period is that the various sectors of humanity are progressively opened by adhering to the restricted COVID-19 protocols. The government also permits the educational sector to open schools without exception; the educational sector also allows the government to open schools in the green zone. This gives birth to the need to use blended learning strategy at various levels as an essential educational tool to support the post-COVID-19 era (Wijaya, 2022).

Blended Learning (BL) is an approach to education that integrates online instructional content with online interactive opportunities and conventional classroom methods. It is sometimes called Hybrid Learning and can be used interchangeably with Blended Learning. Various researchers have defined blended learning (BL) in different ways. The precise definition of the term has been the subject of continuous debate (Driscoll, 2002; Graham et al., 2003; Jones, 2006; Laster, 2004; Masie, 2006; Oliver and Trigwell, 2005; Osguthorpe and Graham, 2003). However, face-to-face instruction with technology-mediated instruction in the blended learning environment is similar among all the definitions (Graham, 2006; Graham et al., 2003).

The critical difference between Traditional face-to-face and technology-mediated instruction is that Traditional face-to-face instruction incorporates interactions between the learners and the instructor present in the same place. In contrast, technology-mediated instruction utilises ICT (information and communication technologies) to arbitrate the interaction and learning experience without the need for the physical presence of the learner and the instructor. Because of the advent of digital technologies and the growing significance of utilising digital technology for teaching-learning at all levels of education, blended models of learning are encouraged by the NEP 2020. While the NEP 2020 promotes digital learning and teaching, it also recognises the value of face-to-face, in-person learning. Some of the essential characteristics of a Blended Learning (BL) environment include it provides a more adaptable teaching and learning environment, enhanced student learning outcomes, more scope for experiential learning, flexibility and time management in teaching and learning, a rise in student engagement in learning, boost student and teacher interaction, more persuadable for continuous and self-learning. Blended learning's proponents argue that it can be viewed as a way to improve the students' learning experience (Bernard et al., 2014; Connolly et al., 2006; Hall, 2006; Kirkpatrick, 2005; Liu et al., 2016; Marriott * et al., 2004; Spanjers et al., 2015).

REVIEW OF LITERATURE:

The concept of blended learning was first introduced at the turn of the twenty-first century, and since then, the terminology has been used (Banditvilai, 2016). It is considered the proper amalgamation of face-to-face and online learning instruction, which has become one of the most vital skills of the 21st century in higher education (Bolandifar, 2017). At first, it originated in English language teaching and learning. Eventually, it became prevalent in that domain (Whittaker 1976). Blended learning is observed as enhancing collaboration, shortening the evaluation process, giving references, and boosting students; engagement to improve their language learning skills. Blended Learning (BL) is the method of teaching and learning in which the traditional place-based mode of instruction is integrated with online teaching and learning. The environment of BL or online mode is not mere synchronous interactions between the learners and the teachers through video conferencing and or audio, cloud-based online meeting apps; instead, it also incorporates the asynchronous web-enhanced method of delivery of content (Siddiq & Hussain, 2022).

According to Banditvilai (2016). BL refers to a learning environment in which computers and the internet are readily available in many parts of the world, and it blends essential face-to-face interaction with the teacher and self-study. Spanjers et al. (2015) define BL as an amalgamation of online and face-to-face learning and as something that boosts education. They disclosed that, on average, traditional learning is less successful than BL. Students found it equally appealing, but they seemed to find it more difficult. BL, if carefully designed (for instance, incorporating frequent quiz activities), gains the potential to improve education. The blended learning (BL) strategy is considered a novel pedagogical approach that includes both online and offline systems to nurture and promote more organised, purposeful, and meaningful learners' learning dynamics (Wijaya, 2022). A study highlighted that e-learning strategies for online teaching and learning practice in English for Specific Purposes (ESP) classes directly enhance learner motivation and autonomous learning (Banditvilai, 2016). The results of a study stipulate that the practical application of the blended learning (BL) strategy has fruitfully advocated more meaningful language learning enterprises, raised proactive learning behaviours of EFL learners, and uplifted their learning motivation (Wijaya, 2022).

Another study exploring ESL learners' perceptions of BL unveiled that most students found BL beneficial in English Language learning and have a positive attitude towards it. (Siddiq & Hussain, 2022). The findings of a study on the EFL teachers' perceptions of Indonesian blended learning practices from the perspective of their gender and teaching levels state that the teacher has a positive perspective toward BL. Still, there was no statistically significant difference between the male and female teachers, and it further discloses that the university teachers' perceptions concerning skill and experience statistically differed from those of upper-secondary school teachers (Mulyono, 2021). In their scholarly study, Aji et al. (2020) stated that the teachers' perception reported some merits of BL, such as ease of use, practical learning, and autonomous learning. In addition, the students' perceptions also delineate some other merits of BL, which involve motivation, interaction, improved ICT skills, and flexible learning. The result of a qualitative case study aimed to understand teachers' view of blended learning and its influence on their teaching practices divulges that the teachers feel that BL fosters collaboration, engagement, collaboration, student-centred learning, individualisation, and real-world relevance. (5) A study reported that each of the integrated skills of the English language is affected by blended learning (BL), and it also suggested that employing BL

should be considered one of the 21st-century competencies for teaching and studying the English language (Alsalihi et al., 2019).

The results of a study advocate that during the COVID-19 pandemic, blended learning (BL) was perceived more positively. But Post-Covid Face-to-face (F2F) was preferred over BL because students felt limitations in BL with regards to class involvement, peer and teacher interaction, group work, doubts regarding technical information related to BL, and lack of the social element of F2F setting, which cannot be encoded into netiquette frameworks (Mali & Lim, 2021). Mulyono (2021) stated that the teachers were hampered by the lack of blended learning training and assistance, which prevented them from planning and managing blended learning activities and thus prevented them from addressing and implementing various issues. Another study highlighted that in blended learning, some key issues that impede the teaching process are time-consuming, less experience, unstable internet connectivity, and incomprehensible materials (Aji et al., 2020). The findings of a study suggested that while teachers regarded blended learning to be beneficial, they also do not deny its drawbacks, which include high cost for maintenance, poor internet connectivity, challenge for teachers as it is time-consuming with regards to teaching preparation, some students feel comfortable in face-to-face mode, for some students the learning process becomes doubtful (Wahid et al., 2022). Wijaya's (2022) study stressed that more contextualised language learning approaches and a strong internet connection are urgently required to make the blended learning approach more effective.

OBJECTIVES OF THE STUDY:

The objectives of the study are as follows:

- To explore the perspectives of the teachers and students towards using blended learning for teaching and learning English Language Proficiency.
- To investigate different aspects of blended learning for teaching and learning of English Language Proficiency.
- To identify various problems the students and teachers face in implementing blended learning for teaching and learning English Language Proficiency.
- To provide possible solutions and recommendations for effective teaching and learning of English Language Proficiency through blended learning.

RESEARCH METHODOLOGY:

The research was carried out in three stages. In the first stage, a literature review was done, and based on this, the strengths and weaknesses of using blended learning for teaching and learning English Language Proficiency were established. In the second stage, the data was collected by incorporating convenience sampling from 60 students and ten teachers (Educators) of English Language Proficiency across Bihar through self-prepared questionnaires. In the third stage, the collected data was analysed descriptively, and the researcher provided some suggestions for overcoming the barriers to enhancing English Language Proficiency by using blended learning.

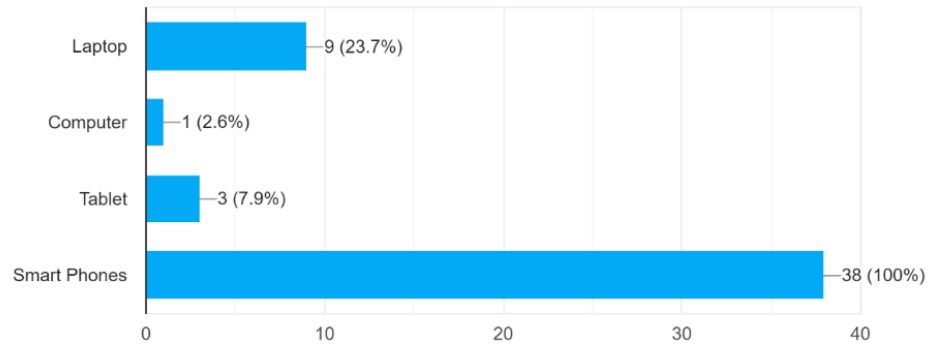
ANALYSIS AND DISCUSSION OF RESULTS:

The data collected from the students reveal the following information:

- **Devices used for learning English communication skills online**

1. What device/devices do you use for learning English communication skills online?

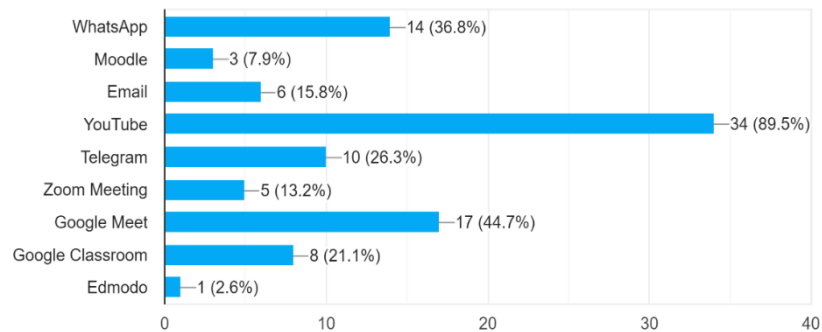
38 responses



The collected data showed that most students preferred smartphones as their first preference (100%) for learning English communication skills online. The laptop was observed as the second preference (23.7%), the third came to the use of a table (7.9%), and few opted for a computer (2.6%). This indicates that during the post-COVID-19 period, smartphones were the students' first choice for learning online communication skills.

2. What platform/platforms do you use for learning English communication skills online?

38 responses



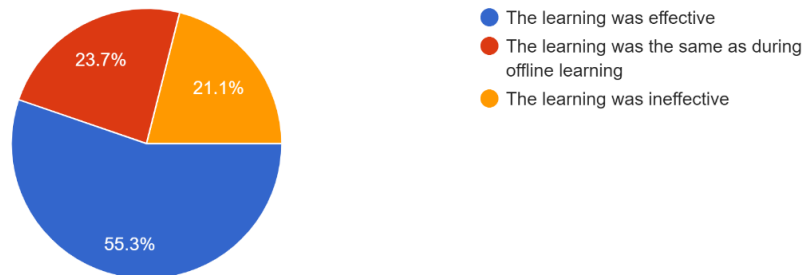
- **Platform/platforms used for learning English communication skills in online mode**

- When it comes to platform preference for online learning of English communication skills, most students used YouTube (89.5%). Google Meet (44.7%) also acted as the best aid, while the students last used Edmode.

▪ **Effectiveness of learning English communication skills through online mode**

3. What is your opinion regarding learning of English communication skills through online mode?

38 responses

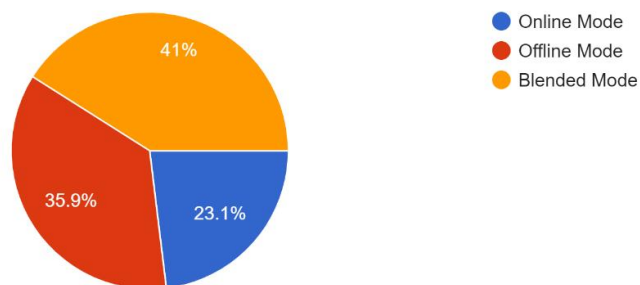


- 55.3% of students agreed that learning English Communication skills were practical through online mode.

▪ **Preference of mode of learning English communication skills**

4. In which mode would you like to learn English Communication skills?

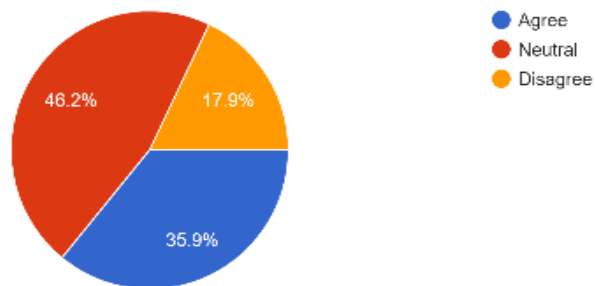
39 responses



The majority of the students preferred the Blended Mode for learning English communicative skills (ECS), as they believe that it is much more effective than online and offline modes.

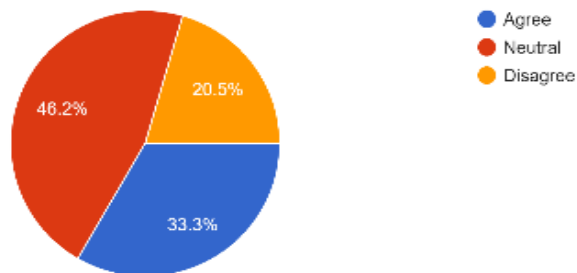
5. Online learning of English communication skills creates stress among the students?

39 responses



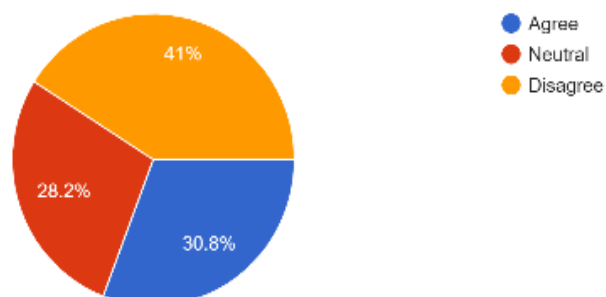
6. Online learning of English communication skills makes learning more interesting and effective.

39 responses



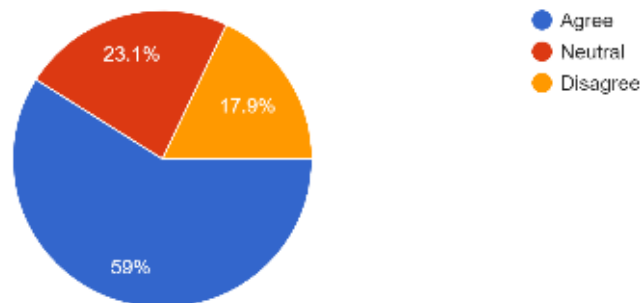
7. Learning English communication skills through online mode helps in boosting confidence and it becomes easy to clear doubts which were difficult in offline mode.

39 responses



8. Online learning of English communication skills provides ample opportunities for self-assessing of one's English communication skills.

39 responses



The above pie charts show that :

- 46.2% agreed that online teaching (ECS) creates stress among students.
- Online learning of ECS does not make learning more exciting and compelling.
- The online learning of ECS was not effective, and it was not successful in clearing doubts and boosting confidence among students; only 30.8% of students responded that they agreed.
- A maximum no. of students (59%) agreed that the online learning of ECS provides ample opportunities for self-assessment of one's ECS.

The following key barriers to learning English communication skills through online mode are concluded from the collected data:

- Poor internet/ network issue.
- Students prefer offline mode over online mode.
- There is less opportunity for interaction with the teacher and peer online than in offline mode, which offers ample opportunity for interaction with the teacher and the peer.
- Hesitation for raising doubts in online mode.
- Online mode lacks the opportunity for experiencing real-life situations/ experiential learning.
- There needs to be more scope for monitoring students online as it provides them with the scope of misconduct like cheating.
- Lack of concentration.
- Lack of technologically skilled trainers.
- Provide less scope for doubt clarification due to certain limitations (time-bound, hesitation, or network issues) in online mode.

The positive impact of online teaching on students' English communication skills through online mode are:

- Some students feel confident answering and raising doubts/questions online as they are not physically present in the class. Students can use the chat box to raise their doubts, which will help them gradually gain confidence and clarify their doubts without hesitation.
- Flexible access and learning
- Learning flexibility
- Use of several resources at the same time for learning effective ECS
- Online mode helps in improving all four skills
- Flexibility concerning learning time
- Easy sharing of ideas and knowledge
- It provides the opportunity to Connect the classroom from any corner of the world.
- Listening to native speakers online helps improve pronunciation.

Suggestions provided by the students for making learning English communication skills through online mode more effective:

- Proper strategies should be designed so that every student gets an equal opportunity for learning through online mode.
- Providing ample opportunity for online discussion and interaction can make learning ECS more effective and exciting.
- Using PPT and other e-learning materials will help enhance ECS among the students.
- By providing more opportunities for activities to engage students in the learning process.
- By providing separate online doubt-clearing sessions.
- Use of various online aids to make learning more exciting and compelling.

The data collected from the teachers reveals the following information:

Their responses to the questionnaire would be categorised and then built into the following themes:

Perceptions of Teachers on Blended Learning

After analysing the teachers' responses through the questionnaire, it was found that the reactions had common points about blended learning, which can be described in two categories: benefits of blended learning (BL) and drawbacks of BL.

Benefits of BL:

- ❖ **Effective teaching and learning through BL:** Teachers' responses clearly show that they considered BL more effective during the COVID-19 pandemic. During COVID-19, it served as an effective tool for teaching and learning, keeping in mind all the restrictions necessary for mankind. Even in the post-COVID era, it remains one of the essential approaches to teaching and learning. Teachers can add

assignments and create discussion forums in a Learning Management System (LMS). They also consider BL effective because it provides learning flexibility concerning time and space.

- ❖ **BL is convenient to use:** The teachers agreed that BL is convenient and easy to use because most of them have either trained themselves or participated in special training/ workshops to overcome the teaching-learning challenges caused by the COVID-19 pandemic.
- ❖ **BL provides scope for autonomous learning:** Most teachers agree that BL offers ample opportunity for students to learn autonomously. The main reason is that in online mode, the teachers only direct the learners. For instance, the students were asked to download and listen to audio or watch educational videos without supervision. In case of any query, they could repeat and go through the e-learning materials as often as they wanted and raise their questions for further clarification. This gives rise to the scope for autonomous learning on the part of the students.

Drawbacks of BL:

Various drawbacks concluded from the teachers' responses are as follows:

- ❖ **Poor network/internet connection:** This was not only based on the teachers' responses but also on the literature review, which identified poor network/internet connection as one of the critical challenges of BL. They also mentioned that many students face the issue of lousy network/ internet connectivity during online teaching and learning.
- ❖ **Lack of experience in BL:** Although many teachers agreed that they went through training to operate and effectively teach using the BL approach, they also admit that they lack experience, which is essential for the successful implementation and operation of the BL approach.
- ❖ **BL is time-consuming:**

All the teachers stated that BL requires a lot of time to prepare and arrange the teaching and learning materials. They added that BL takes more time than offline teaching and learning.

RECOMMENDATIONS

For making teaching-learning of English Language Proficiency effective through BL, the following recommendations are suggested:

- Teachers can provide scope for boosting interaction among the students.
- Student-centred learning for making blended learning effective.
- Teachers can deliberately combine face-to-face mode with virtual learning mode.
- Teachers may provide tools and opportunities for collaboration to make BL effective.
- Teachers may use various techniques for assessing their students, such as assessing based on using digital resources to create vlogs, blogs, podcasts, videos, or even e-books/ e-materials.

CONCLUSION

Based on the data and the above discussion, it can be concluded that the teachers and students both have positive perceptions towards Blended Learning. Although it also brought to the table some challenges of blended learning, keeping in mind the shift in educational paradigm, we must acknowledge the aptness of blended learning for the current academic scenario. The challenges of the BL can be overcome by incorporating proper planning, integrating advanced technology, and providing adequate training to the teachers for the effective and successful implementation of blended learning in teaching the English language both during and after the COVID era.

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CHAPTER 32

PERCEPTIONS OF TEACHER TRAINEES TOWARDS ONLINE ASSESSMENT DURING COVID-19 PANDEMIC

Upasana Sharma, Anita Sharma, Agar Chander Pushap &
Deepika Rani

ABSTRACT

The outbreak of Covid-19 impacted every sector. The education sector was also hit hard. Most educational institutes switched to online learning platforms to keep academic activities alive. However, problems with e-readiness, learning design, effectiveness, and assessment remain unanswered, particularly in developing countries such as India, where technical constraints such as device appropriateness and bandwidth availability represent a significant obstacle. During the Coronavirus pandemic, education and assessment also changed significantly. Online assessment became the most common method of evaluating the learners during this period. COVID-19 has impacted assessment at all levels, from elementary to higher education, but the loss of teacher education is incalculable. Teacher trainees who are future teachers also underwent the same online education and assessment process. The teacher education system shifted completely towards online mode, where many courses are practically oriented, like teaching practice and internship. The methodology adopted for online assessment remained an issue during the pandemic, whether the methodology adopted for assessment assessed the learning realistically. The perception of teachers and learners matters significantly in knowing the assessment methodology's pros and cons.

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Due to the fear of another wave of the COVID-19 pandemic, institutions must think about shifting from offline to online and adopting a hybrid mode to facilitate learning. The methodology of online assessment needs to be improved. A study was conducted to understand the perception of teacher trainees towards the online assessment through an online survey of 100 teacher trainees' of Kathua district to explore the perception of teacher trainees for various aspects of online assessment. Teacher trainees studying in private colleges of education in J&K UT of India were included in the study. The tool used for the study was a self-made inventory, and data was collected online (Google Forms). The study's primary objectives were: 1. To assess the perception of teacher trainees towards online assessment of teaching programs, especially how it was put into practice; 2. To find out the problems the teacher trainees face in the online assessment process due to COVID-19, 3. Suggestions to incorporate certain aspects to improve online assessment. Quantitative analysis revealed that 70% of teacher trainees' perception of online assessment was positive, but they did find specific difficulties in the online assessment. Most teacher trainees preferred the online assessment system over the offline one. 70% B.Ed. Trainees found online assessment easy and comfortable; 60% depicted it as more helpful than offline, and 77.80% found it was time-saving. The teacher trainees opined that the flexibility and convenience of online assessment make it an attractive option. In contrast, broadband connectivity issues in several areas make it challenging for teacher trainees to give their final teaching practice and viva voce examination. Some teacher trainees suggested that to make them learn in a real sense, questions should be asked in a divergent manner to enhance their critical and creative thinking.

Keywords- Teacher Trainees, Online Assessment, Perception, COVID-19 Pandemic

INTRODUCTION

Education underwent significant changes during the Coronavirus pandemic or COVID-19 as social distancing was crucial. Several schools, colleges and institutions were forced to close and discontinue face-to-face instruction (Dhawan, 2020). Various educational institutions have switched from traditional teaching to e-learning. Teachers took an active role in the classroom by taking appropriate steps to conduct successful online teaching-learning through e-lectures, e-tutorials, and e-case-based learning and to evaluate learners' performances. The online assessment allowed schools and universities to go paperless because all examination-related documents, printing, and transportation were eliminated and hurt education at all levels, from elementary to higher education level, but the loss of Professional Education (Teacher Education) is incalculable (Hoofman & Secord, 2021). The teacher training program's effectiveness entirely depends on the classroom teaching-learning environment and practical experiences. In colleges of education, teaching practice and internships virtually and simultaneously took other methods to benefit their teacher trainees' (Mohebi & Meda 2021). It is essential to understand how teacher trainees are evaluated during the current pandemic scenario, especially in assessment. Learners exhibited their critical thinking and problem-solving ability through online assessments. Online evaluation during this time had great educational significance and positively impacted students' and teachers' satisfaction, performance, achievement and improvement of technological educational skills (Elzainy et al., 2020).

The need of the time demands a hybrid learning mode that considers prevailing situations. Prime Minister Narendra Modi, in a meeting to review the implementation of the National Education Policy (NEP), also

recommended developing a hybrid online and offline learning system to avoid overexposure of school children to technology. To improve the quality of online assessment, it is necessary to know its flaws and remove them.

ONLINE ASSESSMENT

Assessment is the most significant part of the education system as it gives students an accurate picture of their current situation. It acts as a catalyst and positive reinforcement by encouraging learners to perform better. Therefore, quality assessment is very important as it focuses on a targeted area with complete precision.

An online assessment may evaluate a person's abilities, behaviours, and characteristics. Tests are conducted online using available technologies. Online assessment is a significant technological advancement that should be included in the education system. Testing should not be stressful nowadays, as technology has revolutionised the whole education system. Conducting assessments online has become more accessible today, as there is no requirement to use paper and pencil.

REVIEW OF RELATED LITERATURE

Mohebi and Meda (2021) investigated a study on Trainee Teachers' Perceptions of Online Teaching during Field Experience with Young Children in UAE. The purpose of this study was to examine the perceptions of trainee teachers and faculty supervisors about online field experiences with young children. The study was done using a qualitative case study within an interpretive paradigm. Twelve internship students and five supervisors were purposively selected to complete open-ended questionnaires about virtual field experiences. Three themes emerged from the data: (1) integrating technology into lesson planning, (2) meeting challenges to classroom management, and (3) expanding the repertoire of teaching strategies. It is concluded that the virtual field experience was a milestone of achievement for trainee teachers in terms of the preparation it provided to implement the country's plan of integrating technology into the curriculum.

Rueda et al. (2021) conducted a study on Assessment in Higher Education during the COVID-19 Pandemic: A Systematic Review. This study aims to present a systematic literature review on the impact of assessment in higher education during the pandemic. The study followed the methodology set out in the PRISMA statement and included 13 studies selected from 51. The results indicate that faculty and students have faced numerous challenges in moving to virtual environments; on the faculty side, the lack of training in online assessment techniques is the main problem, and on the students' side, there is dishonesty and misconduct. However, it is concluded that continuous assessment, not focused on exams but more qualitatively, is the best way to assess at a distance.

Reena, Ahmed & Godiya (2021) investigated a study on the Perception of Teacher Trainees on Online Teaching and Learning. A sample of 240 teacher trainees (B.Ed. 3rd semester students) was taken for the study. The data was collected through online mode and self-developed inventory. The main objectives of this study were to find the perception of teacher trainees in online teaching programs, to find out the level of awareness about online teaching and learning among teacher trainees, to find out the problems faced by the teacher trainees in the online teaching-learning process due to COVID-19 & to know the various issues

faced by the teacher trainees during online Teaching and Learning. The significant findings of the study were – 1. Most teacher trainees' (66) perception of online teaching was positive, but they did not feel easy access to the online class network. 2. Average no. (139 OR 58%) of teacher trainees said they got complete information about teacher training skills, T.L.M., and practical training of skills, 3. whereas (118) 49% felt stress and restlessness during online teaching.

Adanir et al. (2020) conducted a study on Learners' Perceptions of Online Exams: A Comparative Study in Turkey and Kyrgyzstan. The mixed study approach (quantitative and qualitative) was used to analyse the data. The survey's perception ratings were used to generate quantitative data, and learners' opinions about online tests were used to generate qualitative data. Three hundred seventy undergraduate students enrolled in online first-year courses participated in the study. According to the findings, learners' perceptions varied according to gender and prior online course experience characteristics. Turkish female students felt more stressed and concerned about technological issues during online tests than males, whereas Kyrgyz female students felt disadvantaged.

Hussain et al. (2020) studied students' perception of online assessment during the COVID-19 pandemic: The case of undergraduate students in the UAE. The survey was conducted during the second academic year of the 2019/2020 semester. A sample of about 302 students was collected using Likert scale survey questions and a free writing reflection question. A blend of quantitative and qualitative methods was used. Descriptive and inferential statistical techniques were used to find correlations between the variables. The findings revealed that Students with higher GPAs were less satisfied with the online exam and the pass/fail. This conclusion corresponds to some of the student's responses to the survey's open-ended questions. According to high-achieving students, online testing softens the competition by allowing great and less competent students to receive similar grades.

Ozden et al. (2004) investigated students' perception of online assessment: A case study. A descriptive method, paper-based surveys, and interviews were used for data collection. About 46 third-year students of the Department of Computer Education participated in the study. An examination Website was designed and implemented to determine students' opinions on online assessment. The website was built with Active Server Pages (ASP), a Microsoft Access database, and Cascading Style Sheets and was database-driven (CSS). The study predicted that familiarity with the computer and assessment technology are the most important aspects in the perception of online assessment, particularly for unfamiliar topics and low-achieving examinees (mainly an issue for students with reduced computer access, such as women and minorities). Higher-achieving students will adapt to any new assessment approach the fastest and create test-taking strategies that take advantage of the new approach.

SIGNIFICANCE OF THE STUDY

Due to the Pandemic, the entire educational system changed. Now, the time has come to think of a hybrid mode of learning, keeping in view the prevailing situations, making education accessible to all to meet future needs and keep oneself ready to meet uncertainties like COVID-19—teacher education system where many courses are practical-oriented like teaching practice and internship. The methodology adopted for online assessment remained an issue during the pandemic, and whether or not the methods adopted assessed the learning in an absolute sense. The teacher trainees' perception of the pros and cons of the

online assessment matters a lot. The methodology of online evaluation needs to be improved. Online learning and assessment raised specific problems due to network issues in their ongoing teaching practice and internship and at the time of submission of their evaluation. Students faced technical and network issues in their areas, so they struggled a lot to submit or could not submit their assessments timely. At the time of their viva voce examinations, teacher trainees also experience network connectivity issues, so they have to change their locations to give their viva voce examinations. This study highlights the problems the teacher trainees underwent during their online assessment during the COVID-19 pandemic and the flaws of online evaluations. It provides suggestions for improving the online assessment methodology in the present scenario.

OBJECTIVES OF THE STUDY

The main objectives of the study were:

1. To assess the perception of teacher trainees towards online assessment of teaching programs, especially how it was put into practice.
2. To find out the problems faced by the teacher trainees in the online assessment process due to COVID-19.
3. Suggestions to incorporate certain aspects to improve online assessment.

SCOPE OF THE STUDY

- The geographical scope of the study was confined to the district of Kathua only. It was based on a questionnaire to determine teacher trainees' perception of online assessment during the COVID-19 pandemic.
- To know the most preferred way of assessment.
- To know why people prefer online assessment over offline assessment.
- To know the future scope of online assessment.
- To know the advantages and disadvantages of online and offline assessment.

DELIMITATIONS OF THE STUDY

- The study was only applicable to the Kathua district only.
- The questionnaire was designed based on our research objectives.
- The study comprised 100 teacher trainees in private education colleges in the Kathua district of J&K UT of India.

METHODOLOGY

Population:

The sample for the study consisted of all the teacher trainees (session 2019-21 & 2020-22) studying in private colleges of education (B.Ed.) in Kathua district of J&K UT of India.

Sampling Method

The sample was collected using a simple random sampling technique from different private colleges in the Kathua district. The sample included 100 teacher trainees in private colleges of education (B.Ed.) in Kathua district of J&K UT of India.

Tool Used

The survey method was used for data collection; a questionnaire was prepared in Google form format and shared through WhatsApp with the participants to get information about the perception of the teacher trainees towards online assessment and their experiences related to online assessment during the COVID-19 pandemic. The questionnaire consists of 26 items. Each item on the scale possessed two alternative answers. Students had to either agree or disagree with their response to the question. They were also asked to share their suggestions for improving the online assessment program.

ANALYSIS AND INTERPRETATION OF DATA

The data were analysed according to each question mentioned in the Google form to know the teacher trainees' perception of online learning problems faced by the teacher trainees in the online assessment process due to COVID-19.

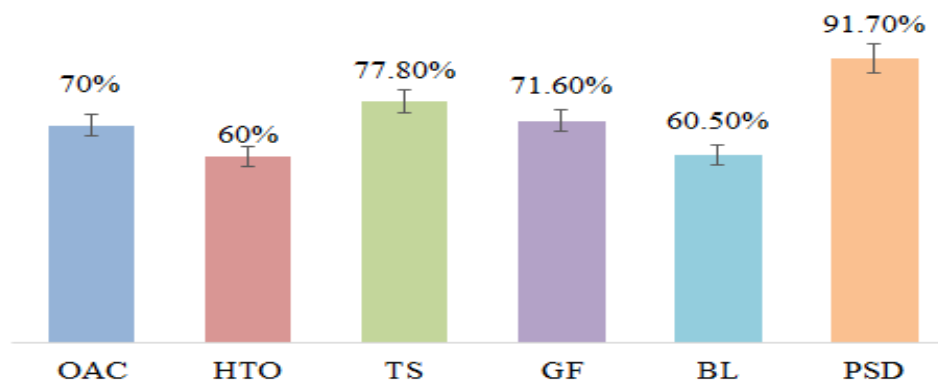


Figure 1: Column graphs depict the student's perception: Online assessment comfortable (OAC), Helpful than offline (HTO), Time-saving (TS), Good feedback (GF), Better learning (BL), and Promote Social distancing (PSD).

Interpretation: Most teacher trainees preferred the online assessment system over the offline one. 70% B.Ed. trainees found that online assessment was easy and comfortable, 60% felt it was more helpful than offline, 77.80% found it was time-saving, 71.6 % thought that it provides good feedback, 60.6 % found that real learning or better learning occurs in the online system and 91.7% viewed that online assessment promotes social distancing.

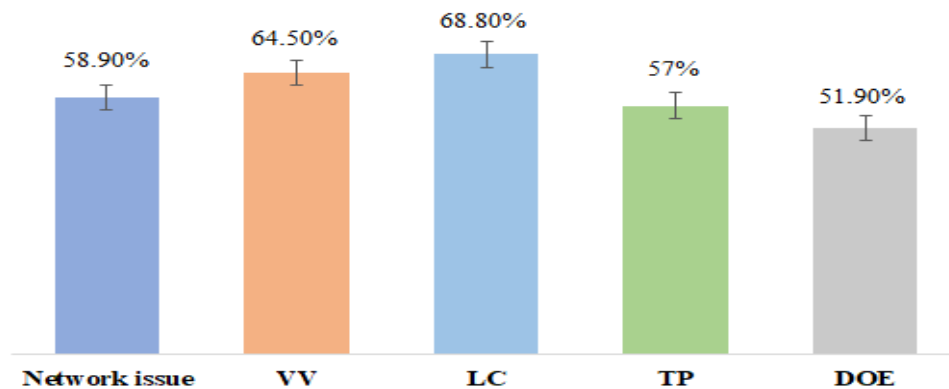


Figure 2: Column graphs depict the Network issues: viva voce (VV), LC (location change), TP (Teaching practices), and the Disagree online Examination (DOE).

Interpretation: About 58.90% of teacher trainees found network issues to be the major problem during the online assessment, due to which 64.5% faced difficulties during their viva-voice examination. 68.8% of teacher trainees had changed their location during their online viva-voice examination, and 67.6% had changed their place during their online examination for good connectivity. 51.90% of students viewed that due to the poor connectivity and network issues in their respective areas, there should be no more online assessment and teaching practice in the upcoming semester examinations. Hence, they disagree on online examinations.

FINDINGS OF THE STUDY

Assessment is an integral part of the educational system. Still, there is a need to bring certain reformatations in assessment methods, especially online assessment, to make it more relevant in the current hybrid learning mode.

It was found that B.Ed. Trainees found that online assessment was comfortable (70%), whereas also teacher trainees found it comfortable in finding all the required steps as per the instruction (72%), but they encountered one major problem i.e., the poor internet network (58.9%) and due to which their viva-voice was interrupted most of the time (64.5%) and most of students had changed their location during their online viva-voice examination due to network issue (68.8%). Most trainees had changed their place during their online examination due to the poor network (67.6%).

Network issue was a significant issue that negatively impacted the teaching practices (57%), where (51.9%) preferred the offline teaching practices to online mode.

Online submission was another stress initiator, with most students submitting their assignments on time (81.5%), but sending via email was a tough job for 58.3%. As the B.Ed. trainees are the future teachers, whatever skills they learned during the course time (63.9%) tried their teaching skills effectively during the online teaching practice, and the majority of them found it comfortable while using the virtual whiteboard in online teaching practice (61.5%). They also enjoyed virtual visits cum observations in an online internship in the B.Ed. Program (54.1%).

Students were found in favour of online education as they felt online examination procedures were more comfortable (70%) and helpful (60%) than offline, time-saving (77.8%), also they got good feedback on online assignments (71.6%), learned in real sense during online teaching (60.6%) and promotes social distancing (91.7%). It was revealed in the study that cheating was possible, and there was no check to control the menace of copying. To improve the quality and check the problem of copying in online assessment, it was suggested that divergent questions should be asked in the paper. The time for submission should be increased.

DISCUSSION OF THE STUDY

Majority of B.Ed. Trainees found that online assessment is more comfortable than offline evaluation because cheating is possible in online assessment, and answers to questions are readily available on the internet. Students encountered one major problem, i.e., the poor internet network, which caused their viva-voce to be interrupted most of the time, and most of the students had changed their location during their online viva-voce examination due to network issues. Most trainees changed their place during their online examination due to the poor network; some students in remote areas confronted more network issues. Due to connectivity issues, Adnair et al. revealed that female students are stressed more than male students. Students are unsatisfied with marks and grades in the online examination as high achievers also get the same grades as low achievers. Reena, Ahmed and Godiya's study also revealed that most students find online assessment comfortable, but they do find specific problems related to accessibility.

EDUCATIONAL IMPLICATIONS

The COVID-19 pandemic presented unprecedented challenges in teacher education institutions, and a lot can be learnt from the experiences related to this study. The shift from regular face-to-face field experience to online is a practice that caught the whole world by surprise. This has implications for teacher trainee institutions, as they are challenged to have an urgent curriculum renewal to embed online learning modalities in all programmes. There is a need for teacher trainees to be afforded opportunities to practice online teaching-learning and assessment and to perform virtual field experiences during their training. Learning is one of our essential life issues, and we can benefit from cutting-edge technologies. Information and communication technology is a valuable tool that efficiently improves the learning process. In online assessment, learners need help to submit their assessments on time and give their teaching practice and viva voce on time. Still, they can submit their assessments and give their viva voce from anywhere, anytime, and at their own pace. In addition, the required cost for earning degrees can be minimised if earned online. To make online education more qualitative, online assessment needs reformation. Online assessment is gaining momentum in higher education, and there needs to be more emphasis on what should be in place to support students and enhance student experience. Results revealed problems with internet connectivity to make online assessment more effective. Internet connectivity plays a vital role. The government must ensure good internet connectivity. To stop the menace of copying, questions that need an understanding of concepts to answer should be twisted. There is a need to equip education to face uncertainties like Covid 19.

CONCLUSION

The study concludes that although the COVID-19 situation can be seen as a big misfortune which negatively affected teaching-learning and assessment across the globe, it had an unexpected benefit in the field of teacher education institutions, as it provided a milestone of achievement towards attaining the country's goal of fully embedding technology in education. The COVID-19 situation accelerated technology integration into the curriculum, which was responsive to the global pandemic and the country's digital plan in education. Allowing teacher-trainees to complete the programme virtually and perform all the field activities virtually and virtual experiences benefited them as they graduated with knowledge and skills. Although virtual field experiences were unprecedented, they offered internship students an opportunity to be creative and apply critical thinking skills to solve problems. Students in this study had a positive perception of their virtual field experiences. Their main thoughts were primarily related to a technology integration plan, class management, and varying teaching strategies. Furthermore, these findings contribute to the body of online assessment knowledge and could inform online assessment practices. To stay relevant in the dynamic online teaching, learning and assessment environments, further research studies in online assessment are of the utmost importance.

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CHAPTER 33

COVID ERA AND MY TRANSITION FROM OFFLINE TEACHING AND LEARNING TO ONLINE AND BLENDED LEARNING

V. Malathi

ABSTRACT

Education worldwide is getting redesigned because of COVID-19. Blended learning, otherwise called Hybrid learning, is becoming the new normal. Thanks to the online learning education tools that enabled uninterrupted teaching & learning during the pandemic. The pandemic brought about a renaissance in the education system, helping teachers and learners to explore more innovative teaching-learning methodologies. In this paper, I would like to trace my experiences transitioning from offline teaching& learning during the pre-pandemic to Online teaching & learning during the pandemic and now adapting to the COVID era by blended learning. This journey of mine along the way with other teachers of our college started initially by sharing educational resources through WhatsApp subject groups, attending webinars related to the use of Learning Management Systems (LMS) and MOOC through various online meeting platforms like Google Meet, Zoom, Cisco Webex, Microsoft Teams etc., which were not more familiar to the Academia as with the corporates. We, teachers, were also advised to do an online course on SWAYAM-NPTEL to strengthen our subject knowledge and experience the MOOC learning method during the pandemic. Slowly, in the process of transition, teachers were introduced to the College online education portal and were trained by an expert LMS trainer who introduced us to Open educational resources (OER), how to use and repurpose the OERS, how to create interactive lectures using the Lumi app, how to create OERS etc., Today, with the pandemic restrictions relaxed, we are following a blended mode of learning to enable our students to cope up with any challenges that may occur in future.

Keywords: Online learning, Offline Learning, Blended Learning, LMS, OER, MOOC

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INTRODUCTION

Education is an important sector that contributes to the growth of an individual and that of the nation. The COVID-19 outbreak jeopardised the education sector across the globe due to the lockdowns and other restrictions. In March 2020, in India, a nationwide lockdown was imposed. The educational institutes were forced to abandon the usual classroom teaching and adopt innovations and technology for uninterrupted teaching and learning. Even parents from remote rural areas with less access to technology were keen to have continuous learning for their wards. This necessitated the digitalisation of the traditional educational system. Even before COVID, there was increased technology usage in education, and the world witnessed a significant surge in the usage of virtual tutoring, video conferencing, etc., during the pandemic.

ONLINE LEARNING: SYNCHRONOUS AND ASYNCHRONOUS

Synchronous learning involves the presence of the learner and the teacher simultaneously, either offline or online. Traditional classroom learning is an example of synchronous learning. Synchronous learning is done online, and it involves using teleconferencing tools such as Zoom or Google Meet. Classes can be scheduled like traditional classroom learning, and learners can join at a predetermined time.

In Asynchronous learning, students learn at their own pace. This mode of learning does not require the simultaneous presence of the teacher and learner. The teacher posts material, such as videos, ahead of time. The students can access the material at their convenience. The teacher can assign activities based on the material posted and can give deadlines for submitting the activities.

During the initial days of the pandemic, lockdown Whats App groups were created for each course, which served as a platform for sharing reading materials with learners. Slowly, the group progressed to exploring the Google Classroom, creating a classroom for each course. The suite of online tools enabled teachers to share reading materials, post videos, post announcements, set assignments, and grade / return them. Thus, the teachers and learners were introduced to asynchronous learning.

Our institution also subscribed to the G suite, and teachers started conducting their classes using Google Meet. An institutional e-mail address was created for both the teacher and learner, which was used to log in to Google Meet. Synchronous online classes were conducted with a prescribed timetable. The advent of smartphone usage before the pandemic enabled a smooth transition to online learning. Though this method of learning ensured continuity in teaching and learning, there were many challenges, such as network issues, uninterrupted power supply, signal strength, student engagement, etc.

MOOCS

MOOCs are Massive Open Online Courses. They are free online courses where learners can enrol freely. MOOCs are affordable and flexible. Thus, they serve as the best platform to upgrade skills,

experience the expertise of the best resources worldwide, and explore new methodologies in teaching and learning.

During the pandemic, the faculty and students were advised to do MOOC courses on Coursera and NPTEL. I also took two courses in NPTEL, one on Functional Genomics and another, namely, Interactomics -Basics & Applications. These MOOC courses not only helped us upgrade our subject skills but also enabled us to understand how best courses can be offered online, strategies adopted to deliver the subject content, evaluation methods, etc.

LEARNING MANAGEMENT SYSTEM -LMS

A Learning Management System (LMS) is an e-learning software application that enables the administration, tracking, reporting, automation, and delivery of educational courses online (Elis et al., 2009). Though the LMS was first introduced in the late 1990s (Davis et al., 2009), it experienced increased usage during the COVID-19 pandemic (Raza et al., 2021) due to its emphasis on remote learning.

To continue offering uninterrupted teaching and learning during the pandemic period as a next step, our college initiated the e-learning portal, namely <https://elearn.ethirajcollege.in/>. Training sessions were arranged for faculty in batches to understand, explore and prepare content to be posted in the e-learn portal. An expert LMS trainer taught us all the features, activities, and resources of the LMS. (Fig 1, 2)

THE OPEN EDUCATIONAL RESOURCES

Open educational resources (OERs) are the teaching, learning and research materials either in the Public domain or with a copyright called open license, that permit free access, re-use, re-purpose, adaptation and redistribution of the said materials by others. According to Jane-Frances Obiageli Agbu, Senior Lecturer, National Open University, Nigeria, ICDE Chair in OER, “The pandemic has triggered a consensus at governmental and institutional levels on a strong need to develop OER.”

To understand OER and how to develop them, the faculty was asked to take a short course on open educational resources (OER) from Common Wealth of Learning. The course provided an overview of concepts related to copyrights and creative commons licences and helped us better understand OER (Fig 3a, 3b).

PREPARATION OF OERS AND PARTICIPATION IN THE OE WEEK CELEBRATION 2022

After completing the course on OERs, the faculty was trained to prepare OERs using H5P in their subject of specialisation using the Lumi app. The prepared OERs were published in the H5P catalogue and showcased at the OE week events.

The Open Education Week celebration was a global education movement to raise awareness about Open education and its worldwide impact on teaching and Learning. Ethiraj College for Women,

Chennai, Tamil Nadu, was one of the only two institutions from India to participate in the event. I was one of the 25 faculty members who prepared the OERs. I prepared an H5P Interactive Book on Gene regulation and Chromatin remodelling.

BLENDED LEARNING

Blended learning is also known as Hybrid learning. It is an educational approach that combines online education and traditional classroom teaching. (Friesen Norm 2012; Staker, Horn, 2012). Blended learning combines face-to-face classroom practices with computer-mediated activities for educational content preparation and delivery (Strauss & Velerie, 2012)

Currently, with the pandemic restrictions relaxed, we are following a blended learning mode. We are having a face-to-face classroom session and posting our lecture presentations and course material in the LMS. i.e., we follow a blended mode of learning synchronously and asynchronously. This enables our students to deliver immediate feedback, engage in real-time classroom discussions, have structured classes and peer interactions, get an immersive learning experience, and experience coursework flexibility, enhanced accessibility, and student-paced learning. Feedback from students also suggests that they are comfortable with this learning mode.

SURVEY ON TEACHING-LEARNING METHODOLOGY CONDUCTED AMONG STUDENTS

To understand the student's opinions about the different modes of teaching-learning, I surveyed teaching & learning by offline, online and blended modes of learning. About 60 students participated in the survey and gave their responses. 72% of students felt that offline classes offer better student-teacher interaction. All the students who participated agreed that offline classes were interesting, and 93% preferred offline classes. 50 % of students felt that online classes are flexible. 88% of them thought that online classes were very supportive during the pandemic and preferred Synchronous mode of online classes. About 50 % of students felt that online classes have less student-teacher interaction and lack intensive learning. 62% of the students felt that online classes are less affordable than online classes. 65% of students preferred the blended learning mode and thought they could learn at their own pace in blended learning. From the survey, I understand that 55% of students preferred the offline learning mode, and 42% preferred the blended mode. (Annexure 1)

CONCLUSION

The survey suggests that the traditional classroom mode of offline learning supplements other learning modes. However, when offline classes are not possible at times of crisis, the students find synchronous online learning very useful. It is interesting to observe that many students now like a blended mode of learning wherein they can have a few offline classes and access e-learning portals to learn at their own pace using the materials, video links and activities posted by their teacher. If the online mode of teaching and learning made more student/teacher interaction affordable and provided an intensive learning environment, it would be more accepted by the

students. Thus, institutions should concentrate more on the criteria above while designing MOOC courses. This renaissance in education initiated by the pandemic can be explored and supplemented with more online tools that could provide uninterrupted teaching and learning and better enable teachers and learners to face any challenge in future.

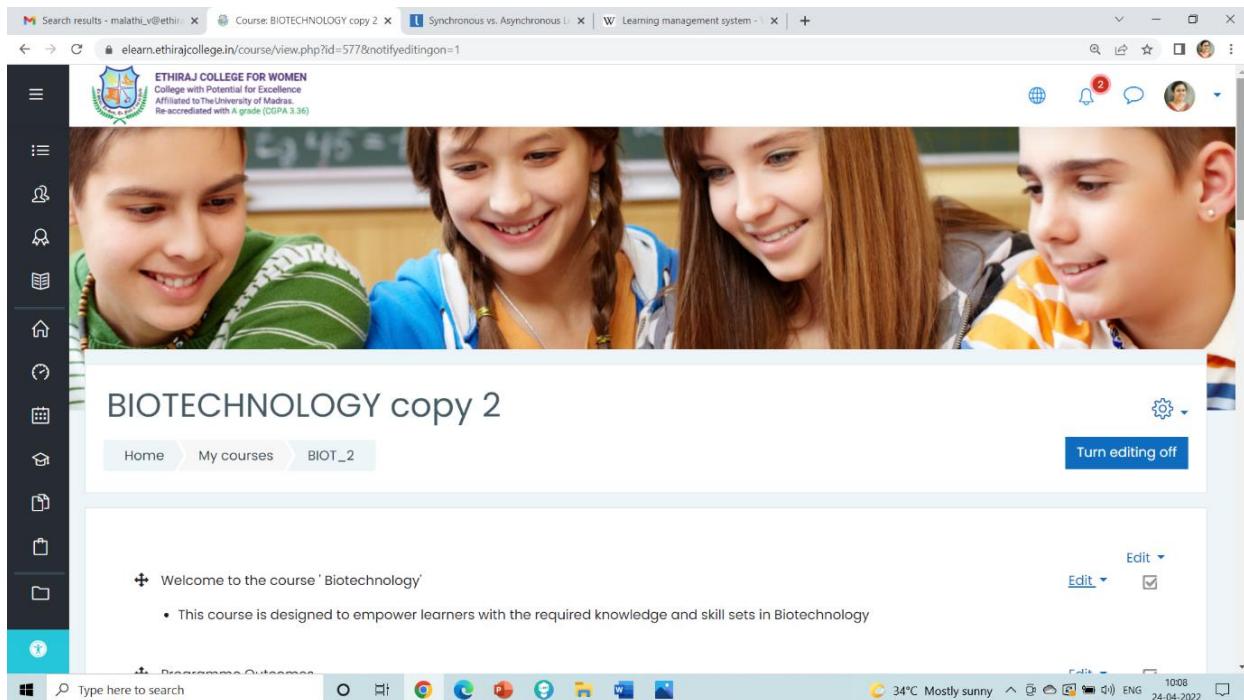


Fig 1 : Screenshot of the course offered by me currently in the college LMS

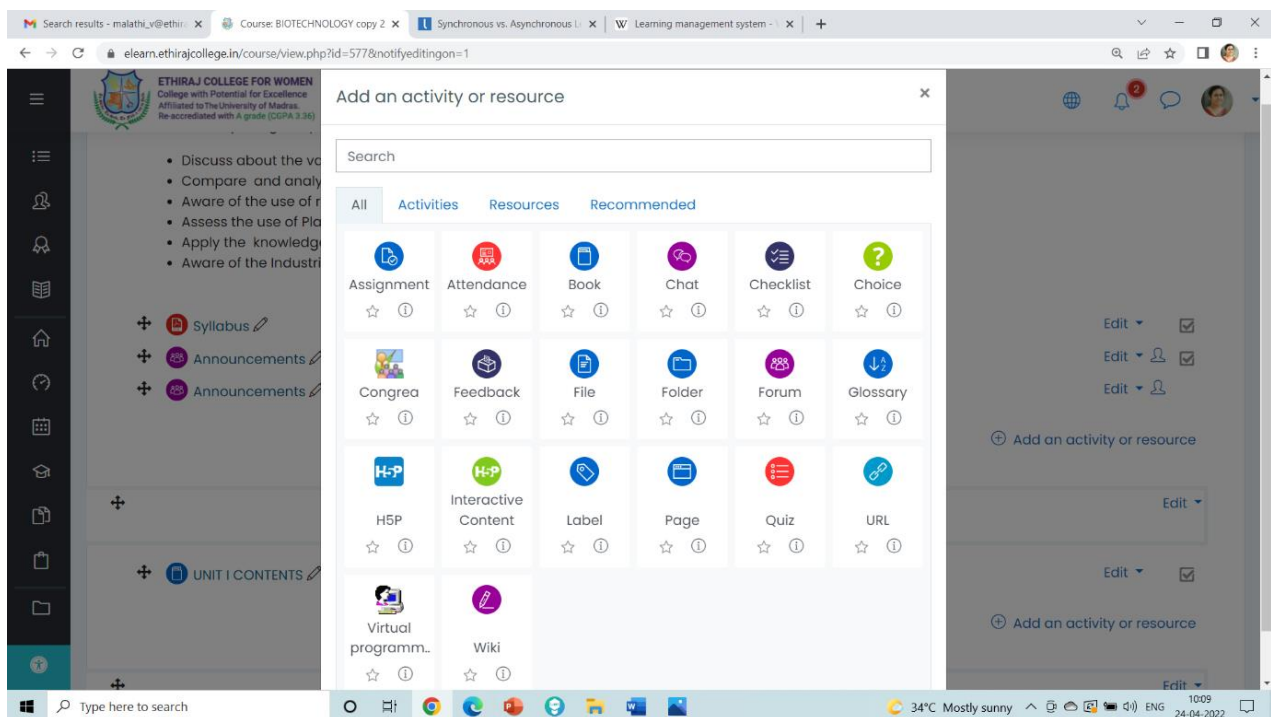


Fig 2 : Activities / Resources offered in the LMS .

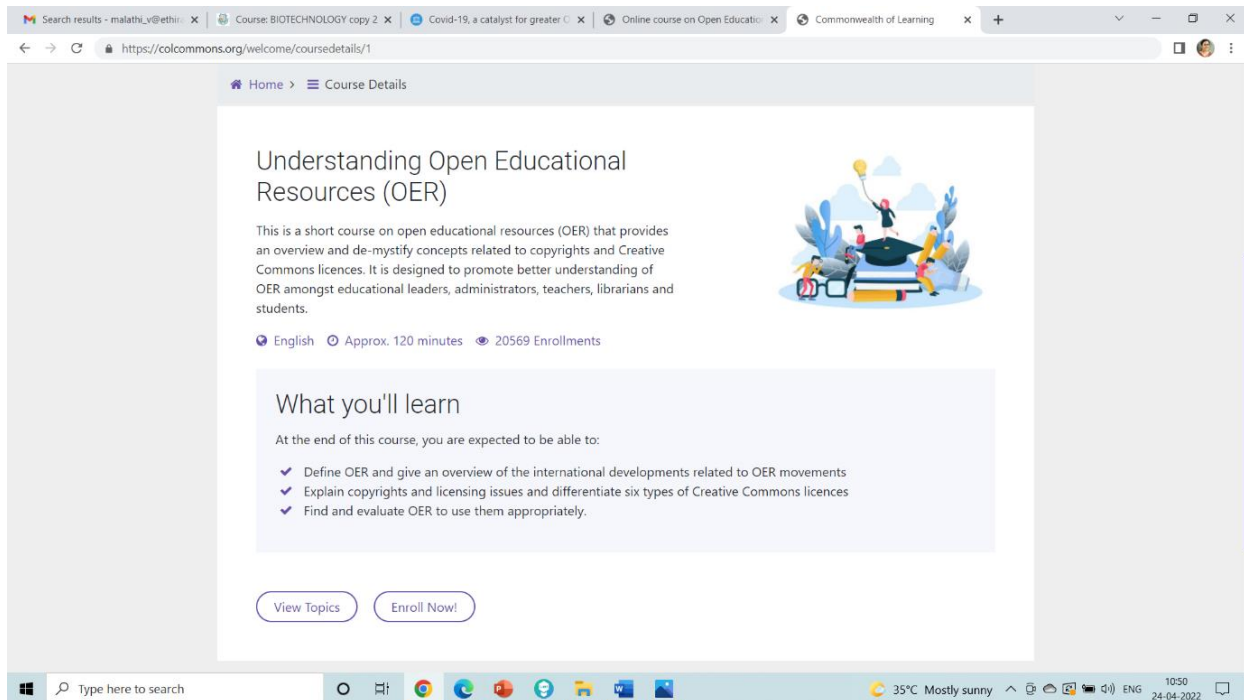


Fig 3 a: Course on OER from Common Wealth of Learning



Fig 3b: Course on OER from Common Wealth of Learning

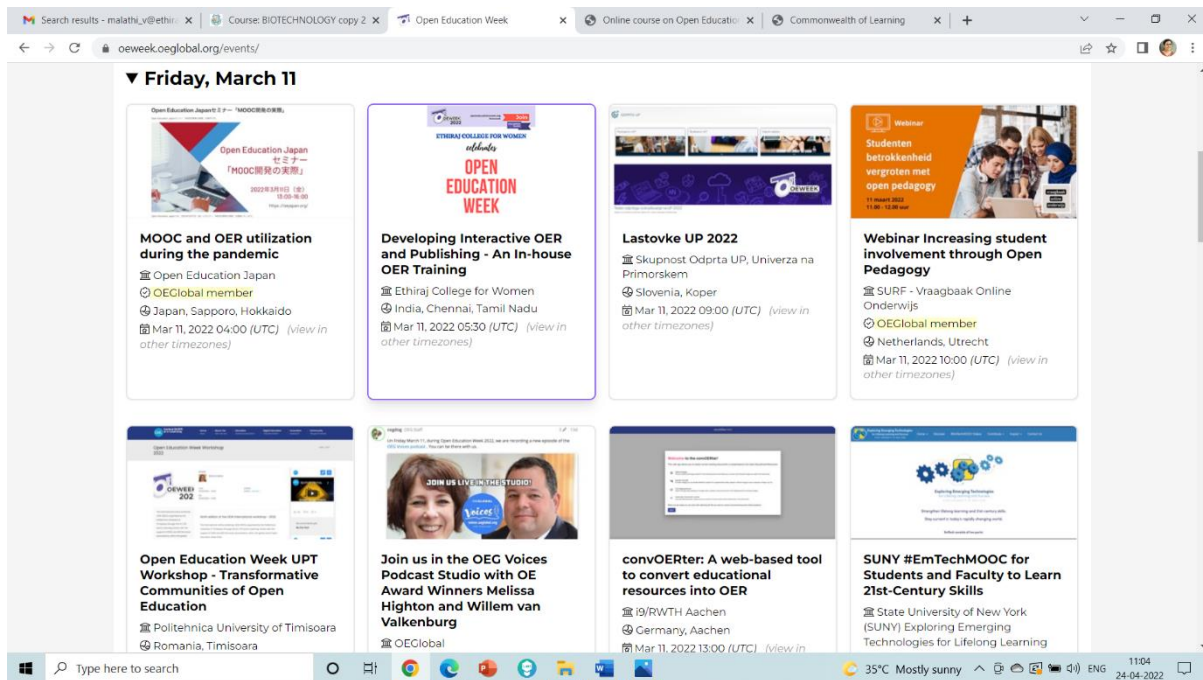


Fig 4 : Participation in OE Week Celebration -2022

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CHAPTER 34

PERCEIVED STRESS AND ACHIEVEMENT MOTIVATION AMONG STUDENTS DURING COVID-19

Vishal Dogra

ABSTRACT

During the pandemic period of COVID-19, several students have been affected by stress, anxiety and depression-like situations and have experienced a significant decrease in their achievement motivation level. Hence, this particular study is being undertaken to investigate the prevalence of depression, stress, and anxiety levels in relation to achievement motivation, specifically among intermediate students. Random sampling was used to collect the data. A total of 170 students of senior secondary classes from different schools in the Jammu region were taken to conduct this study. The age group of selected students was between 17 to 18 years. DASS Inventory was used, preferably, to evaluate stress, anxiety, and depression, and the Achievement Motivation Scale was used to study the levels of achievement motivation. The results reflect that, during the period of COVID-19, there were mild to extremely severe levels of stress, depression and anxiety among the students. Still, there was no significant correlation was found between achievement motivation and stress, depression and anxiety. Most students revealed high motivation for achievement despite various obstacles to their goals.

Keywords: Stress, Anxiety, Achievement Motivation, Depression, Pandemic.

INTRODUCTION:

COVID-19's global expansion has shaken the world, affecting people of all ages physically and psychologically. People's mental health has become a significant concern in current studies into the impacts of COVID-19. It found a higher incidence of moderate-to-severe self-reported depression and anxious symptomatology in the general population (Wang et al., 2020), indicating the pervasive consequences of uncertainty and health-related anxieties.

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Adolescents are the population's most vulnerable group since, even in normal conditions, changes and problems already torment this stage of life. After Board exams, choosing a vocation is one of the most significant milestones in the lives of teens, and it is both confusing and exciting. Students in class 12th began their CBSE examinations well in the year 2020, but owing to the COVID-19 lockdown, they could not complete their tests successfully, and some of them were still waiting for July to complete their remaining exams. They were surrounded by uneasiness and uncertainty. Students tried to explore new employment prospects during the COVID-19 lockdown pandemic, but they were agitated and demotivated due to delays in tests and, as a result, in college admissions; the final admission procedure was finished in October 2020. Students are also under a great deal of pressure from themselves and society, which causes great stress and worry.

People are afraid of becoming infected with the virus/disease due to the massive spread in the environment during a pandemic, especially when treatment is unavailable. Anxiety, stress, and depression are common side effects of many illnesses (Hall et al., 2008). Stress is not a factor that exists within an individual or in their environment; instead, it is part of a continuous process involving individuals interacting with their social and cultural surroundings. It is defined as a feeling of mental and physical tension that occurs when our homeostasis is threatened (Selye 1956).

With all of the obstacles and issues that arose during the epidemic, students at higher secondary schools suffered a period of demotivation due to the lack of clarity surrounding the situation; nobody had ever encountered anything like it before, and everything seemed dreary to them. It took a lot of work for parents and instructors to keep pupils motivated and bring them back into activity. Their need for achievement motivation was one crucial factor that kept them moving at this time. Achievement motivation is a subjective and internal psychological force that allows people to pursue work they value and motivates them to achieve their objectives.

Christian (1977) conducted a study on higher secondary school students in which various factors such as fear of failure, hope of success, achievement and anxiety were measured and concluded that achievement and performance both have a positive relation as the need for one increases the demand of other also increases. Students are curious about the selection of a new course and excited about beginning a new life with new aims and aspirations that lead to high achievement motivation in this phase. Achievement motivation is a prerequisite to achieve, succeed, and perform well in terms of a standard of excellence. Achievement motivation is not a single construct. It has various constructs like motivational beliefs, task values, goals, and achievement motives (Weigfield, 2016).

Accordino et.,al (2000). The study investigated the relationship between perfection and alternative assessments of academic achievement and achievement motivation in relation to depression and self-esteem in high school students. Results showed that the students' standards systematically predicted their academic achievement and achievement motivation.

Students have shown that they face a lot of traumatic and depressive signs and symptoms because of their standards (self-perfectionism), which in turn results in achievement motivation. According to the research, most students generally tend to fall someplace inside the middle of the achievement scale utilising Beena Shah, which suggests a mild level of motivation that allows them to sustain their interest in everyday activities. (Alschuler, 1973). Everyone has exceptional desires to gain with concerns, and those desires

and worries range from man or woman to scenario. Each pupil acts in step with the extent of motivation he/she has inside the precise undertaking, but a few students are predisposed to have little desire to perform specific duties (Atkinson, 1999).

The present study is an attempt to identify the effect of COVID-19 on higher secondary college students' mental health, especially those who have given their board tests during a pandemic. As the students had uncertainties and insecurities regarding their effects and admission for better research, the study focused on four regions, i.e., strain, depression, tension, and success motivation. The attempt is made to explore the superiority of despair, anxiety, stress and achievement motivation in some of the college students. Various research has been carried out globally to recognise the impact of COVID-19 on society's mental health so that the authorities can excellently guide human beings. This research will even contribute to growing more information about the stages of melancholy, anxiety and strain among senior secondary students. It may be beneficial in imparting a better help machine to the scholars for effectively constructing their careers and coping with the pandemic.

OBJECTIVES:

1. To assess the levels of depression, anxiety and stress among senior secondary students during the COVID-19 pandemic.
2. To investigate the levels of achievement motivation of senior secondary students.
3. To enquire about the effect of stress, anxiety and depression on the achievement motivation of senior secondary students.

SAMPLE:

A total of 170 students of class XII, aged 16 to 17, were selected through random sampling. All the students were from senior secondary private schools and had recently taken their board exams. An online study was conducted using Google Forms.

TOOLS:

In this study, two standardised tests were used to assess depression, anxiety, stress and achievement motivation:

Depression, Anxiety, and Stress Scale (DASS): Syd Lovibond and Peter Lovibond developed this scale at the University of New South Wales in 1995. It measures mental health by focusing on depression, anxiety, and stress. The DASS has 42 items that measure different traits. Every statement in the scale has four options to tick between 0 and 3.

Achievement Motivation Scale: Dr. Beena Shah developed this test, which consisted of 40 incomplete sentences. Each statement is followed by three possible alternatives: a, b, or c. The participant must select one option that is mainly associated with the statement.

Result Analysis:

Table 1: Level of Depression, Anxiety and Stress among Higher Secondary Students

Category	Depression (%)	Anxiety (%)	Stress (%)
Extremely severe	15.8	19.4	8.2
Severe	12.3	7.6	8.2
Moderate	14.1	22.9	11.1
Mild	20	14.1	19.4
Normal	37.6	35.8	52.3

Table- 1 represents the level of depression, anxiety and stress among senior secondary students. The first column depicts the depressive symptoms, which are derived from nearly 16% of the students who were in the category of highly severe depression. Under the severe category of depression, the percentage of students is 12.3; 14% of the students had shown that there is a moderate level of depression exists, 20% of the students showed that they suffer from mild depression, and 37.6% of the students lie in the normal category. The second column of the table shows that there are different levels of anxiety, where 19.4 % of the students faced extremely severe anxiety. 7.6% of the students in the sample were going through severe levels of anxiety. 22.9% of the students showed moderate levels of anxiety that showed occasional apprehensions. Mild anxiety level was demonstrated by 14.1 per cent of students, and 35.8 per cent of students experienced an average level of anxiety. The stress dimension is shown in the third column, and nearly 8.2% of the sample falls in both extraordinarily severe and severe categories. 11% of the sample had moderate stress. Almost 19.4% of the sample experienced mild stress levels, and the rest 50% showed normal stress levels.

Table 2: Level of Achievement Motivation in Higher Secondary Students.

Category	Achievement Motivation (%)
Very Low	0
Low	0
Average	39.4
High	60.6

Table- 2 reveals the levels of achievement motivation, in which more than 60% of the students sustained high motivation levels, and nearly 40% showed average levels of achievement motivation. It suggests that not a single student was found to have low levels of achievement motivation.

Table 3. Correlation Coefficient of Depression, Anxiety, Stress and Achievement Motivation

Variables	Depression	Anxiety	Stress	Achievement motivation
Depression	1	0.679 **	0.723 **	- 0.041
Anxiety		1	0.728 **	- 0.100
Stress			1	- 0.096
Achievement motivation				1

CORRELATION IS SIGNIFICANT AT THE 0.01 LEVEL (2-TAILED)

Table 3 reveals the correlation between stress, depression, anxiety and achievement motivation. A significant correlation has been shown between depression, anxiety and stress with the *r* value of .679, .723 and .728, respectively. Furthermore, there is no significant correlation coefficient exists between achievement motivation and depression, anxiety and stress.

DISCUSSION

The primary purpose of the present study was to understand the pandemic's psychological effects on students going through a significant transition phase in their lives. The further findings of the study depict that nearly 30% of the students were in the category of highly severe and severe depression. This particularly reveals the student's fear of uncertainty and other environmental conditions and that they might need professional help since the pandemic is causing them significant distress. 14 to 20% of the students showed moderate and mild levels of depressive tendencies, which intentionally reflects that most of the time, they felt hopeless and low, and they were not interested in talking about their prospective plans for the future.

Most of the students suffer from mood swings, negative thoughts, cognitive distortions, self-blaming attitudes, helplessness, and suicidal thoughts among students. Most of the families had been suffering from unmanageable debts and a decline in income, thus leaving the family members in a traumatised situation. (Fegert JM, Vitiello B, 2020).

The irrational experience of 'home quarantine' during the period of lockdown with the uncertainty of academic and professional careers has multifaceted impacts on the mental health of students, which was proven by a Canadian study which reflects that there is an association between longer duration of quarantine with a higher prevalence of anxiety and depression among people (Hawryluck, 2004).

Results reflected the category of stress, revealing that nearly 8.2% of the sample had extremely severe and severe levels of stress, respectively. This condition leads to total emotional and physical exhaustion among students. They often feel confused, forgetful, and pessimistic. Further, 30% of students had moderate and mild levels of stress. The reason may be the regular hassles of daily life and changes in lifestyles due to COVID-19.

Adolescents were more likely to experience pressure and mental distress (Mazza et al., 2020; Taylor et al., 2008). One possible reason is that they are inclined to have fewer lifestyle experiences and might also have problems coping with drastic societal changes during the lockdown period.

The exact results and the findings of the present study are different because it had intentionally shown that while facing a lot of stress, anxiety and depression in the pandemic situation, most students aimed at excellence of performance, being at above-average levels of achievement motivation. Students do not possess the personal standards and systematic ways of working by which they can be distracted easily. In addition, this study concluded that there was a negative relationship exists between positive perfectionism and depression, where the high school students higher on perfectionistic strivings reported less depression (Stoeber & Rambow, 2007). This provides some evidence that the adaptive form of perfectionism may be responsible for the further increase in achievement motivation and also buffering against mental health problems.

FURTHER SUGGESTIONS:

While focusing on the findings of this study, the following recommendations are made to ensure the students' mental health so that they can overcome the crisis and deal with the situation effectively.

- Online Counselling should be provided to these students through career counselling and emotions management as it will help them make better choices in the present situation.
- Parents should be advised to support their children in various ways and provide a platform for them to talk freely about any issues that arise in their minds.
- Universities can support these students by providing complete and transparent information about the further admission processes.
- Students should be encouraged to explore their interest areas and maintain positivity in the pandemic.

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