Research Article

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Role of teachers in imparting education to higher secondary students through e-learning during COVID-19: A survey

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ABSTRACT

The rapid growth of Information and Communication Technology (ICT) has changed how we live and work. In education, ICT has become essential, especially through e-learning. This study examines the role of e-learning in higher secondary education during the COVID-19 pandemic, focusing on teachers' perceptions, experiences, and practices. A survey was conducted with 250 teachers, achieving an 86% response rate. Key findings highlight that 94.9% of respondents utilized e-learning platforms, primarily through Google Classroom and WhatsApp. While a substantial proportion of students participated in online classes, significant gaps in attendance were noted. Challenges such as slow internet speeds and difficulties in accessing information were prevalent. The findings underscore the need for improved infrastructure and training to enhance the effectiveness of e-learning.

Introduction

The COVID-19 pandemic has led to the unprecedented closure of educational institutions worldwide, impacting millions of students. According to UNESCO (2020), approximately 1.5 billion learners were affected globally due to school closures. This situation necessitated the rapid adoption of e-learning platforms to ensure that education continued despite physical distancing measures.

E-learning, or electronic learning, refers to education that uses electronic resources. It includes online learning materials such as e-books, e-journals, and digital libraries accessed through devices like computers and smartphones connected to the internet. Advancements in technology and the internet have transformed education. E-learning provides access to education for people worldwide. In India, initiatives by the Ministry of Human Resource Development (MHRD) include platforms like DIKSHA, SWAYAM, and the National Digital Library. The Jammu & Kashmir government has also launched programs to support students, such as the Jammu and Kashmir Knowledge Network Portal and various online resources for career guidance. Additionally, the Directorate of School Education, Jammu (DSEJ) has organized online activities and competitions for students aged 3-15.

The COVID-19 pandemic has greatly affected education

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worldwide, leading to the temporary closure of schools in many countries. This has impacted about 70% of students globally. As of May 25, 2020, around 1.186 billion learners were affected by school closures in response to the pandemic. UNESCO recommended using e-learning and online platforms to help students continue their education. E-learning creates a learning environment that combines knowledge with ICT, allowing students to study anytime and anywhere.

Literature Review

According to a report by UNESCO (2021), integrating artificial intelligence and adaptive learning technologies can further personalize the learning experience, catering to individual student needs and preferences.A study by Almarzooq et al. (2020) highlighted that teachers' adaptability and proficiency with digital tools significantly impact students' engagement and learning outcomes. Despite the advantages of e-learning, teachers face numerous challenges, including inadequate training in digital tools, lack of resources, and difficulties in maintaining student engagement. A study by Dhawan (2020) emphasized that many educators felt unprepared for the sudden transition to online teaching. Research by Hwang and Chen (2017) emphasizes the importance of interactive content and active learning strategies to keep students motivated. In their study, they found that incorporating multimedia elements and collaborative tools significantly enhances student participation and interest in e-learning experiences. E-learning provides flexibility and accessibility, allowing learners to engage with educational content at their own pace. Moore and Kearsley (2012) highlight that effective e-learning environments can lead to improved learning outcomes due to the personalized nature of online education.

Objectives

The primary objective of this research paper is to investigate the role of teachers in imparting education to higher secondary students through e-learning during the COVID-19 pandemic. Specifically, the study aims to:

1.To evaluate the extent to which teachers adopted various e-learning platforms and tools for instructional purposes.
2.To explore the common challenges encountered by both teachers and students in the e-learning environment, particularly related to technology access and engagement.
3.To measure the levels of student participation and engagement in online classes, identifying any significant gaps in attendance.
4.To examine the teaching methods and materials employed by educators, focusing on how they adapt to meet diverse learning needs in a digital format.
5.To suggest strategies for enhancing the effectiveness of e-learning in higher secondary education, based on the findings of the survey.

Research Methodology

This study used a quantitative research design using survey methodology to collect data from teachers involved in higher secondary education in Patna, Bihar region. A total of 250 teachers from various government and private higher secondary schools in Patna, Bihar region were surveyed. Participants were selected using a stratified random sampling technique to ensure diverse representation.
A structured questionnaire was developed, which included both closed and open-ended questions. The questionnaire was distributed via email and online platforms. The data collected was analyzed using descriptive statistics.

Data Analysis and Interpretation

Response and Demographic Details

A total of 250 surveys were distributed among teachers involved in higher secondary education, resulting in 215 completed responses. This yields a commendable response rate of 86%. The demographic distribution of the respondents is outlined below:

Table 1: Gender Distribution:

Gender	Percentage
Female	55%
Male	45%

This indicates a slight predominance of female respondents, reflecting the gender dynamics within the teaching profession in the surveyed region.

Table 2: Experience of Respondents:

Experience	Percentage
1-5 years	32%
6-10 years	41%
10+ years	27%

The data reveals a balanced distribution of teaching experience among the respondents, with a majority (41%) having 6-10 years of experience. This suggests a fairly experienced cohort that can provide valuable insights into the challenges and practices of e-learning.

Use of E-Learning During COVID-19 Pandemic

The survey asked respondents whether they utilized e-learning during the COVID-19 pandemic. The responses are summarized as follows:

Table 3: Use of E-Learning

Response	Percentage
Yes	94.9%
No	5.1%

The overwhelming majority (94.9%) of teaching faculty reported using e-learning in their instruction during the pandemic, highlighting the critical role of digital platforms in maintaining educational continuity.

Communication Methods with Students

To understand how educators communicated with students during e-learning, the respondents identified their preferred communication methods:

Table 4: Communication Methods

Communication Medium	Percentage (Multiple response permitted)
Google Classroom / Meet / Zoom	80.9%
WhatsApp	41.9%
YouTube	32.1%
Video Call	18.1%

WhatsApp emerged as the most utilized communication tool (80.9%), followed by voice calls (41.9%). This indicates a preference for familiar and accessible technologies, essential for engaging students in a remote learning environment.

Percentage of Students Joining Online Classes

The survey also explored the extent of student participation in online classes:

Table 5: Joining Response

Response	Percentage
50-60%	30.7%
10-20%	21.9%
30-40%	20.5%
70-80%	19.1%
90-100%	7.9%

The data indicates that 30.7% of respondents observed that 50-60% of their students participated in online classes. This suggests that while e-learning facilitated education, significant gaps in attendance remain.

Forms of Study Material Provided

Respondents were asked to identify the types of study materials they provided to students:

Table 6: Material Type

Material Type	Percentage
Images	71.2%
PDF Documents	56.3%
Videos	54.4%
Audio	40.9%

A majority of teachers (71.2%) provided study materials in the form of images, indicating a preference for visual learning resources. This aligns with best practices in digital education, which emphasize varied content formats to cater to diverse learning styles.

Problems Faced in E-Learning

The survey probed the challenges encountered by educators in the e-learning landscape:

Table 7: Problems Faced in E-Learning

Problem	Percentage
Slow Access Speed	80.9%
Long Loading Times	40.9%
Difficulty Finding Information	14.0%
Too Much Information Retrieved	9.8%

A significant 80.9% of faculty members reported slow access speeds as a major hurdle, particularly due to the 4G network ban in Jammu and Kashmir. This highlights a critical infrastructure issue that needs addressing to improve e-learning effectiveness.

Activities to Engage Students

To maintain student engagement beyond traditional online classes, educators employed various activities:

Table 8: Activities to Engage Students

Activity Type	Percentage
Learning by Doing (Indoor Activities)	53.0%
General Knowledge Activities	35.3%
Other (Yoga, Drawing, etc.)	Not specified

More than half of the respondents (53%) engaged students through practical, hands-on activities, reflecting an understanding of the need for interactive learning experiences to foster engagement in a remote setting.

Accessing Student Performance in E-Learning

Educators were asked how they assessed student performance during e-learning:

Table 9: Accessing Student Performance

Assessment Method	Percentage
Assignments	91.2%
Quizzes	19.5%
Video Conferencing	5.6%

The data reveals that a substantial majority (91.2%) of teachers used assignments as their primary means of assessing student performance, indicating a reliance on traditional assessment methods even in a digital environment.

Major Findings

1. Demographics: Out of 215 respondents, 55% were female and 45% male, with 41% having 6-10 years of teaching experience.
2. E-Learning Usage: An overwhelming 94.9% of teachers reported using e-learning during the pandemic, indicating its critical importance in educational continuity.
3. Communication Methods: The most common communication method was Google Classroom/ Meet/Zoom (80.9%), followed by WhatsApp (41.9%). This preference reflects the need for accessible and familiar tools to engage students.
4. Student Participation: Approximately 30.7% of respondents reported that 50-60% of their students joined online classes, revealing significant gaps in overall attendance.
5. Study Materials: A majority of teachers provided study materials in various formats, with 71.2% using images, 56.3% PDFs, and 54.4% videos, catering to diverse learning preferences.
6. Challenges: Major challenges included slow access speeds (80.9%) and long loading times (40.9%), highlighting critical infrastructure issues that hinder effective e-learning.
7. Engagement Activities: Over half (53%) of the educators used hands-on activities to engage students, indicating a focus on interactive learning.
8. Performance Assessment: A significant 91.2% of teachers relied on assignments for assessing student performance, suggesting a continuation of traditional assessment practices in a digital format.

Suggestions

1.Infrastructure Improvement: Advocate for enhanced internet connectivity and technological infrastructure, particularly in regions with limited access, to facilitate smoother online learning experiences.
2.Training and Professional Development: Provide ongoing training programs for teachers to enhance their digital literacy and proficiency in using various e-learning platforms effectively.
3.Diverse Learning Materials: Encourage the creation and use of varied instructional materials (e.g., videos, interactive content) to cater to diverse learning preferences and maintain student engagement.
4.Engagement Strategies: Promote the use of interactive and hands-on activities to foster greater student participation and motivation in the online learning environment.
5.Monitoring and Assessment: Develop frameworks for monitoring student attendance and performance that are suited to the e-learning context, possibly integrating formative assessments to gauge understanding more effectively.
6.Feedback Mechanisms: Implement regular feedback channels for students and teachers to share their experiences and challenges, allowing for continuous improvement in e-learning practices.
7.Collaboration and Support Networks: Establish networks for teachers to collaborate and share best practices, resources, and experiences in using e-learning, fostering a community of practice.

Conclusion

The transition to e-learning during the COVID-19 pandemic has revealed both the potential and challenges of digital education in higher secondary schools. While the majority of teachers embraced e-learning, issues such as slow internet speeds and low student participation rates must be addressed to enhance the effectiveness of this educational approach. The findings emphasize the need for improved technological infrastructure, training for educators, and innovative engagement strategies to foster a more effective e-learning environment. As the educational landscape evolves, ongoing support and adaptation will be crucial in ensuring that e-learning meets the diverse needs of students and educators alike.

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