

Digital Kranti in India: A Survey of Digital Education in Rural India

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Sub-Theme Equity in Digital Education

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Abstract: The digital revolution has significantly impacted education, making it more inclusive and participatory. In India, digital and live virtual classrooms have become more common. The innovative audio-video features in digital education boost cognitive elements in children, making learning fun and effective. The INFO-TAINMENT combination makes it practical and relatable. With technological advancements like the cloud, virtual data centres, and virtualization, there is potential for technology integration in the education industry. Digital education is a campaign initiated by the Indian Government to move towards a new direction and ensure that education services are made accessible electronically to a student through enhanced online infrastructure. However, the accessibility of digital education in rural India has many hurdles some of which are discussed in detail.

➤ **Methodology :**

This paper is focused largely on both primary and secondary data. Primary data is collected primarily from the education sector by lectures and students (N=125) about how much they like emerging technologies. For secondary data, a review of the literature is implicated.

➤ **Result and Conclusion:**

Since changes are happening anyway, the best thing is to know more about them, so we can lay hold of them and turn them in the direction of our wishes. Overall, the paper highlights the paradigm shift in the Indian education Industry towards digital education, the challenges related to accessibility, affordability, and quality, as well as the potential benefits such as increased access to quality education and personalised learning experiences and the results of the survey are discussed.

Keywords: Digital Revolution, Inclusive Education, Digital Classrooms, Information and Entertainment (INFO-TAINMENT), Indian Government Initiative, Accessibility Challenges, Rural India

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I. INTRODUCTION

➤ **Digitalkranti in India**

The literature collectively presents an extensive overview of the landscape of digital education in India. Gupta (2023) delves into the dynamic shifts in the digital education systems of the country, elucidating the principal driving forces, obstacles, and potential advantages. Gavinolla (2021) conducts a thorough examination of the research trajectory in Indian digital education, scrutinizing publication output, research focal points, and contributing scholars. Saxena (2017) concentrates on the pervasive influence of digital literacy in the higher education domain of India, underscoring its ramifications on pedagogy and learning methodologies. Hebbar (2020) explores the ramifications of the Digital India

initiative on the education framework, striving to establish electronic accessibility through bolstered online infrastructure. Gavinolla et al. (2022) observe that while the government's integration of information and communication technology (ICT) in education has augmented knowledge dissemination and mitigated access barriers, persisting challenges such as deficient internet connectivity, inadequate digital infrastructure, and suboptimal study environments endure. The study identifies a limitation in the output of research in high-impact journals. Saxena (2017) contends that digitization in education, particularly in India, has revolutionized the quality of higher education. Agarwal, P. (2020) Digital education is making its way into the education system of India. The widespread adoption of digital technology, including cloud-based learning, in over 100,000

schools is assessed, with a focus on identifying potential opportunities and obstacles in India's digital education landscape. Hebbar (2020) employs the metaphor of the Product Life Cycle to assert that, akin to any product or service, the education system undergoes a life cycle necessitating enhancement for future generations and global competitiveness. While acknowledging the transformative potential of Digital India, the author cautions against viewing it as the sole panacea for education system improvement, advocating its integration as an auxiliary tool alongside fundamental learning instruments and technologies. (Bhatnagar et al., 2021). Artificial intelligence-powered digital platforms will flourish in Indian education system. The concept of digital education is defined as a form of learning supported by digital technology, encompassing all learning domains. This modality is portrayed as mutually beneficial for schools and students, enabling flexible study schedules for learners and facilitating streamlined teaching planning for educators. The evolving landscape of digital education in India is described as reshaping the traditional chalk-and-talk methodology, substituting interactive teaching techniques facilitated by the widespread familiarity of students with devices such as laptops, iPads, and smartphones. The comprehensive examination presented herein underscores a notable shift within the Indian education sector towards digital education, encapsulating the attendant challenges of accessibility, affordability, and quality, alongside potential benefits such as heightened access to quality education and personalized learning experiences (Gupta et al., 2023). The rapid integration of digital technology in the Indian educational landscape has instigated a paradigmatic transformation, as elucidated in the review. The discourse encompasses a thorough analysis of digital education in India, elucidating the evolving terrain, primary driving factors, encountered challenges, and foreseeable advantages. A focal point is the scrutiny of the Indian government's integration of information and communication technology (ICT) into the education domain, resulting in enhanced knowledge dissemination and diminished access barriers. However, persistent challenges, including inadequate internet connectivity, a dearth of digital infrastructure, and unfavourable study environments, are acknowledged. Notably, a substantial number of schools, exceeding 100,000, have embraced digital technology, incorporating cloud-based learning. Private entities, exemplified by Educomp, Tata Class Edge, Pearson, and TeachNext, actively contribute to this digital shift by continually developing interactive software for classroom teaching.

Digital education is delineated as a multifaceted construct encompassing content, technological platforms, and delivery infrastructure. Prominent entities like BYJU exemplify digital education's diversification, catering to school, college, and competitive exam domains, and providing an engaging multimedia experience through slides and online demonstrations. The expansive educational landscape in India, comprising over 1.4 million schools and an enrollment exceeding 227 million students, is acknowledged. Strategic investments and initiatives, such as the Digital India Policy and Digital India Act, underscore the government's commitment to advancing digital education. Despite these efforts, the multifaceted challenges facing

digital education in India include rural internet connectivity limitations, insufficiently trained educators, language barriers, inadequate maintenance and upgrading of digital equipment in rural areas, and financial constraints.

Governmental initiatives, notably illustrated in the Union Budget 2016-17, allocate substantial resources, exemplified by Rs 1,700 crore for multi-skill development centres and the establishment of new Jawahar Navodaya Vidyalayas. Such endeavours seek to provide quality digital education. The surge in online education, particularly spurred by the COVID-19 pandemic, is recognized, with platforms like Zoom and Google Hangouts gaining prominence. Nevertheless, cautionary measures and lessons learned, such as judicious video use, establishment of online etiquette, pre-sharing of session plans, and attention to security concerns, are highlighted as integral components in the effective implementation of online learning strategies. The enduring impact of the pandemic on screen sharing remains a subject of ongoing scrutiny within the educational landscape.

➤ *Objectives of the Study*

- To understand and create awareness about the impact of Digital India on the education system.
- To create awareness about digital technologies in education.
- To educate people about digital India.
- To know the benefits of Digital technologies in education.
- To know the disadvantages of digital education.

II. DATA AND METHOD

➤ *Subjects*

This is an online survey-based study of the 125 school students, undergraduate, and postgraduate students and teachers studying in various schools, colleges and universities of Haryana.

➤ *Data collection and procedure*

An online survey was conducted from 31 Oct 2023 to 8 Nov 2023 to collect the information. A structural questionnaire link using 'Google Forms' was sent to the participants through WhatsApp and E-mail. Participants were provided full consent before participation in the online survey. A total of 125 participants provided complete information regarding the survey. The secondary data is collected from websites related to digital technologies, journals, newspapers, etc. And data are related to rural Haryana.

➤ *Data analysis*

Descriptive statistics were carried out to understand the distribution of study participants. Simple percentage distribution was estimated to assess the learning status, mode of learning, and opinion on educational decisions, and problems related to study due to the digitalization of education.

III. RESULTS

➤ *Participant’s characteristics*

Table 1 displays the profile of the study participants. Of 125 participants. The number of participants belonging to the

private institute was n=24 (19.2%) and participants from government institutes were n=103(82.4%) out of 125 participants n=44 were males and n=82 were females who participated and filled their responses all participants were from the rural locality of Haryana.

Table 1 Displays the Profile of the Study Participants

Number of participants	Number (n)	Percentage (%)
125(N)		
Private education institute	24	19.2%
Government institute	103	82.4%
Male	44	35.2%
Female	82	65.6%

The level of engagement between teachers and students in digital education is notably different, with students being more active. This could be due to a lack of interest or familiarity with digital education tools and methods. Factors contributing to this include inadequate training, perceived

relevance, technological barriers, and inadequate institutional support. To address this issue, professional development programs, clear communication of benefits, addressing concerns, fostering a supportive environment, and encouraging.

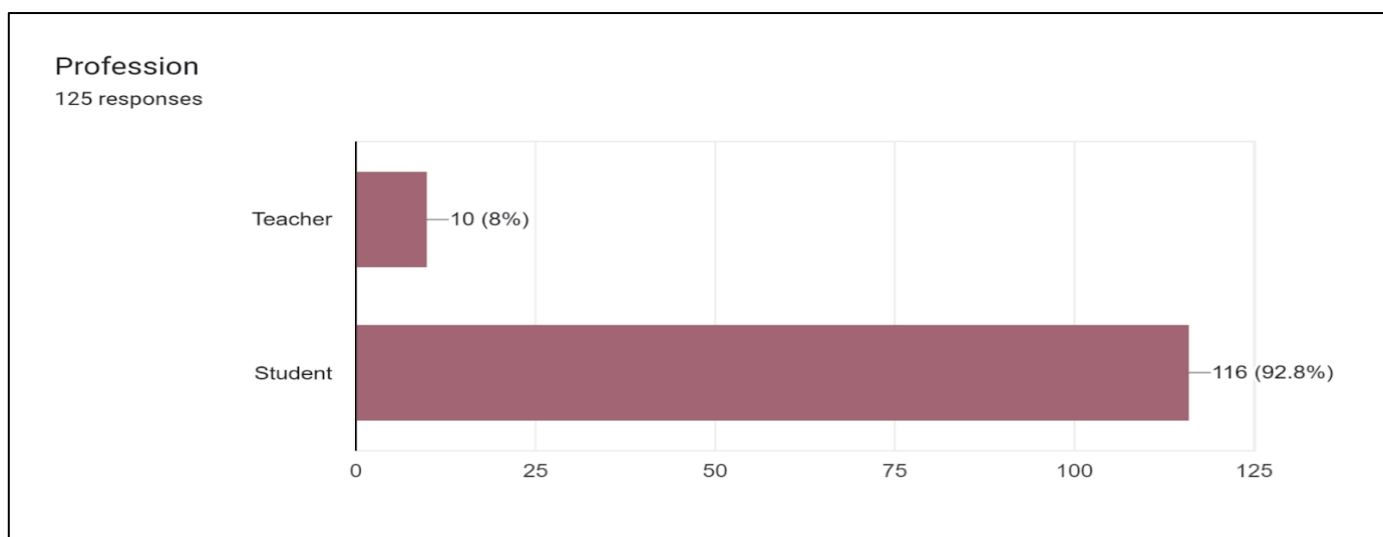


Fig 1 Profession

Collaboration among teachers are recommended. Understanding these factors is crucial for developing targeted

strategies to improve teachers' engagement with digital education.

➤ *Mode of learning preferred*

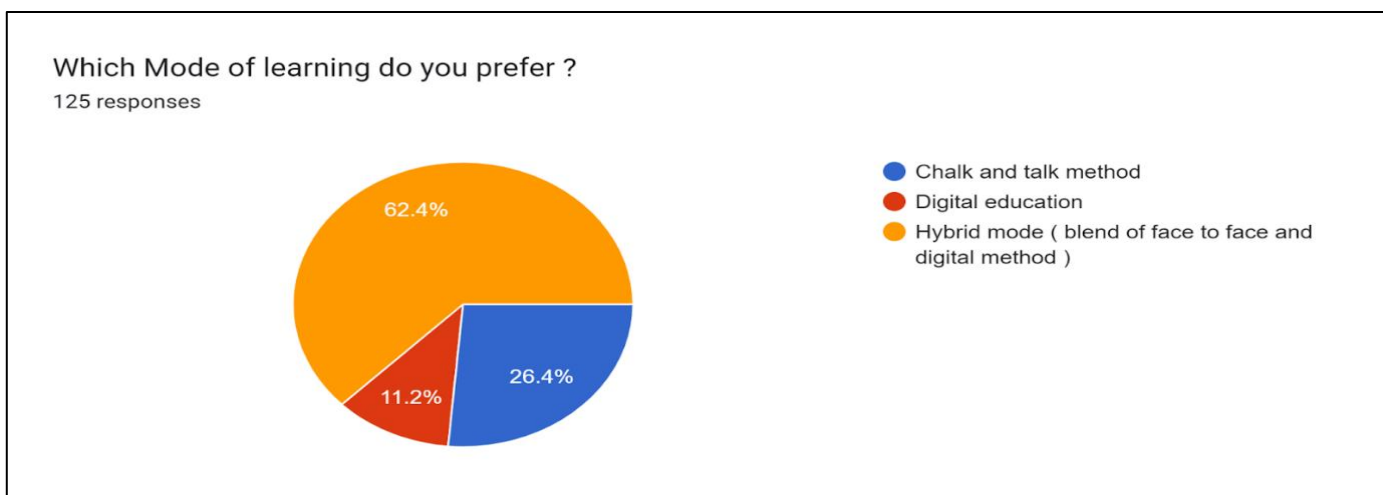


Fig 2 Which Made of Learning Do You Prefer

The survey revealed that 62.4% of participants preferred hybrid learning, 11.2% preferred digital education, and 26.4% preferred traditional "chalk and talk" methods. However, a higher proportion of participants preferred the traditional approach, indicating a preference for conventional

instructional methodologies. The study found that 54.4% of participants found comfort with digital education, while 24.8% experienced discomfort. However, 20.8% expressed uncertainty, indicating a lack of contemplation or ambiguity regarding digital education.

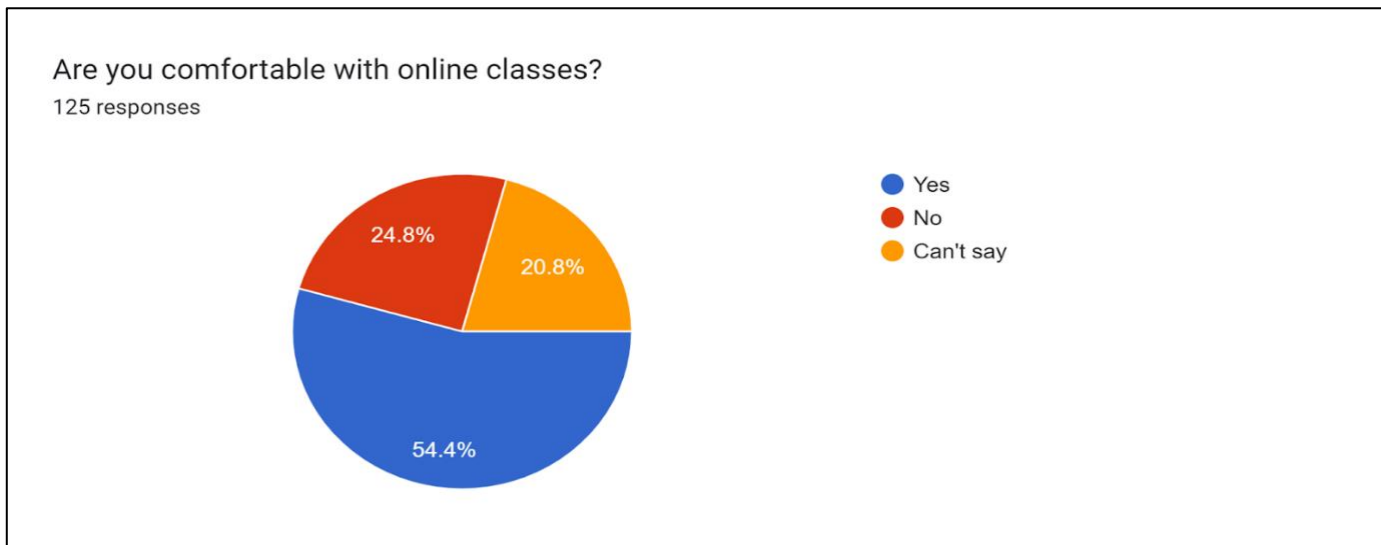


Fig 3 Are you Comfortable with On Classes

The survey reveals a significant disparity in the distribution of educational gadgets for digital learning among students. 95.2% of participants reported not receiving any gadgets, while only 4.8% acknowledged receipt from educational institutions or government sources. This highlights the need for proactive measures by governmental

and educational bodies to ensure wider access to educational gadgets, thereby mitigating financial burdens on parents and students and promoting a more equitable educational environment. The survey highlights the need for a more inclusive approach to digital education.

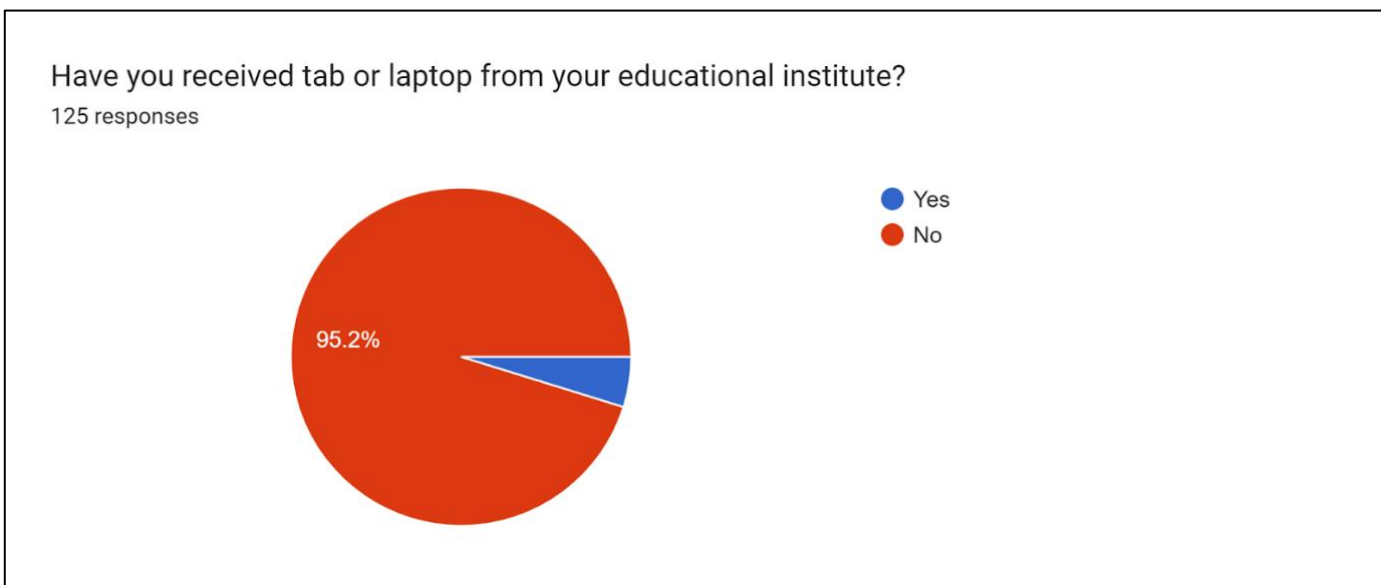


Fig 4 Have You Received from Tab or Laptop from Your Educational Institute

In the survey querying participant perspectives on the provision of free laptops, 75.2% expressed affirmative support, 11.2% held a contrary opinion, and 13.6% remained undecided, indicative of potential ambiguity or lack of clarity regarding the merits of digital education. The findings suggest that for effective promotion of digital education, governmental initiatives should include the provision of laptops. Notably, certain states, such as Haryana, have

instituted programs offering free tablets to students and teachers in government schools. However, recent incidents, such as a reported student suicide after being reprimanded for inappropriate laptop use during class, underscore the existence of challenges and drawbacks associated with such initiatives. These complexities warrant careful consideration and strategic planning in the implementation of technology-driven educational initiatives

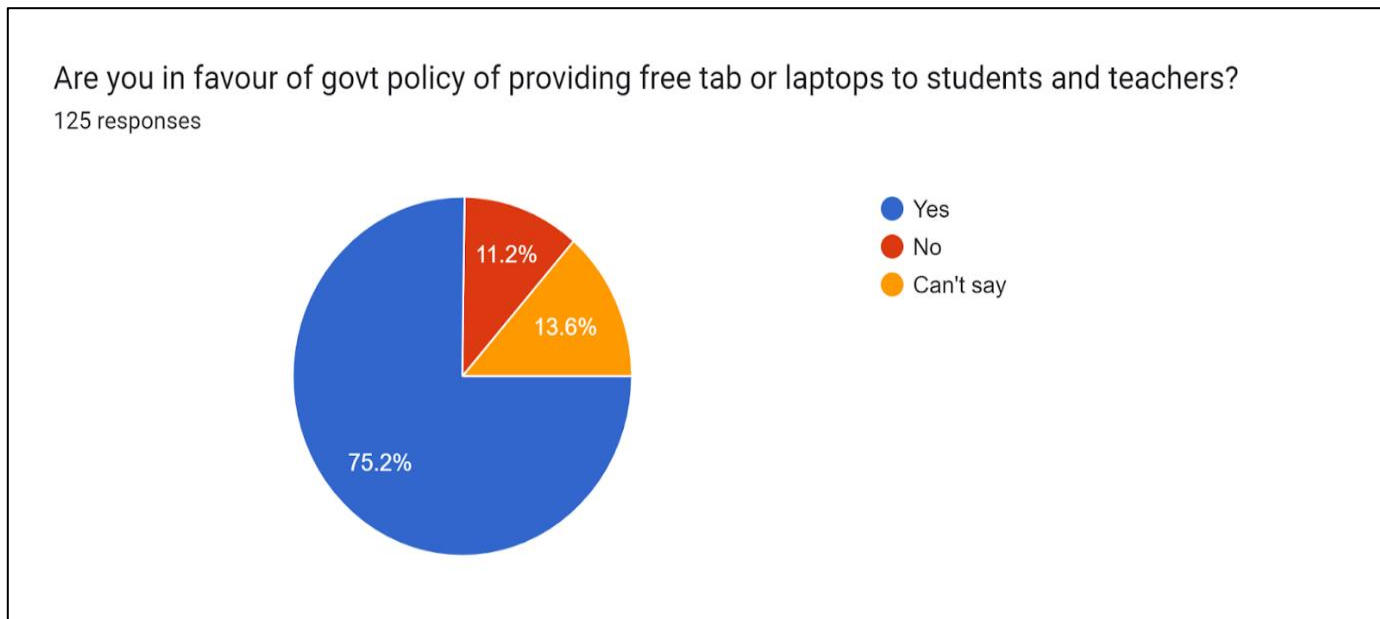


Fig 5 Are You In Favor of Policy of providing Free Tab or Laptops to Students and Teachers

➤ *The Monetary Burden Due to Online Classes*

In response to the survey query concerning whether students encounter financial burdens attributable to online classes, 60.8% of participants negated such difficulties, indicating an absence of monetary challenges associated with the digitization of education. In contrast, 39.2% of respondents affirmed facing financial constraints, signalling a noteworthy concern, particularly in the context of India. This issue is particularly pronounced in rural areas where

some households lack access to smartphones, thereby impeding children's participation in online classes. The imperative of inclusive education is underscored, necessitating measures to address the needs of the 39.2% of participants facing financial constraints due to the digitalization of educational processes. Efforts should be directed towards ensuring equitable access to education, acknowledging the diverse socio-economic realities of the student population.

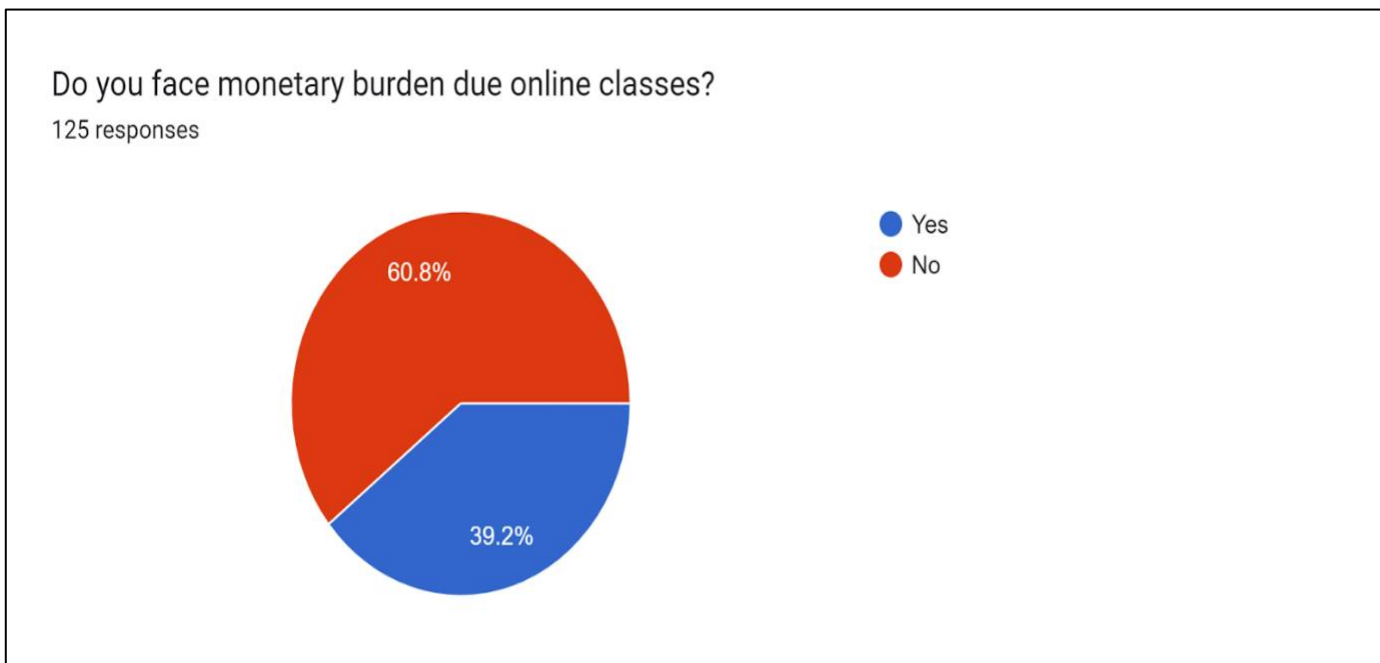


Fig 6 Do You Face Monetary Burden Due Online Classes

➤ *Free Wi-Fi Facilities In Educational Institutes*

In the survey pertaining to the provision of complimentary amenities within educational institutions, 67.2% of respondents affirmed their inclination towards such provisions, while 32.8% expressed dissent. To foster the advancement of digital education, it is imperative for

educational institutions to proactively undertake measures such as affording students unrestricted access to complimentary Wi-Fi services. This strategic initiative aims to alleviate the financial constraints borne by students, thereby promoting a conducive environment for the widespread adoption of digital educational resources.

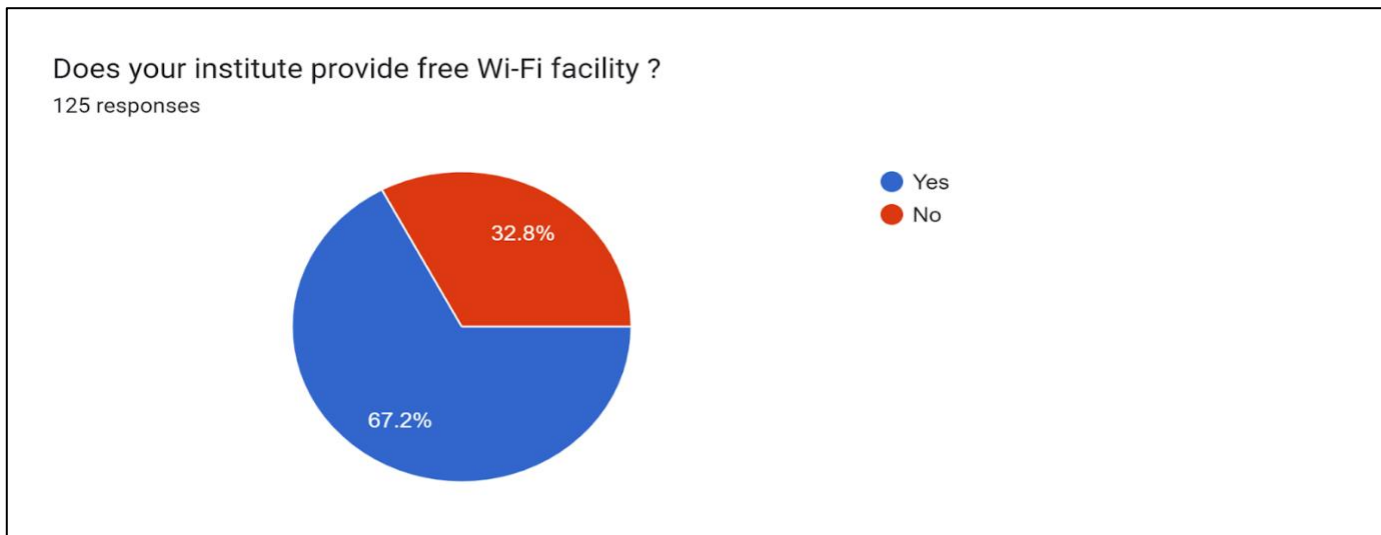


Fig 7 Does Your Institute Provide free Wi-Fi Facility

➤ *Challenges Encountered in Online Learning: A Comprehensive Investigation and Analysis*

Online learning offers both benefits and challenges for students, including difficulties in understanding statistics, boredom, one-way communication, and a perceived lack of teacher connection. In Jammu and Kashmir, students find online learning less monotonous but face challenges in classroom management and internet instability, impacting concentration and confidence. Network disruptions and diminished student-teacher connections pose concerns, particularly in Haryana. Interaction quality between students and teachers is suboptimal, lacking meaningful relationships. Online learning can be distracting due to limited interaction,

social media diversions, and network issues, affecting attention during classes. In physical education, online classes may lack interactivity and emotional connection and may pose challenges related to prolonged screen time. Despite providing knowledge, online learning may not consistently offer exposure and motivation. Addressing challenges is crucial for a positive learning experience. The advent of digital education has introduced online examinations, with a survey showing reluctance (54.4%) and endorsement (45.6%). Educational institutions offering online degree programs raise concerns about potential deficiencies in practical knowledge acquisition.

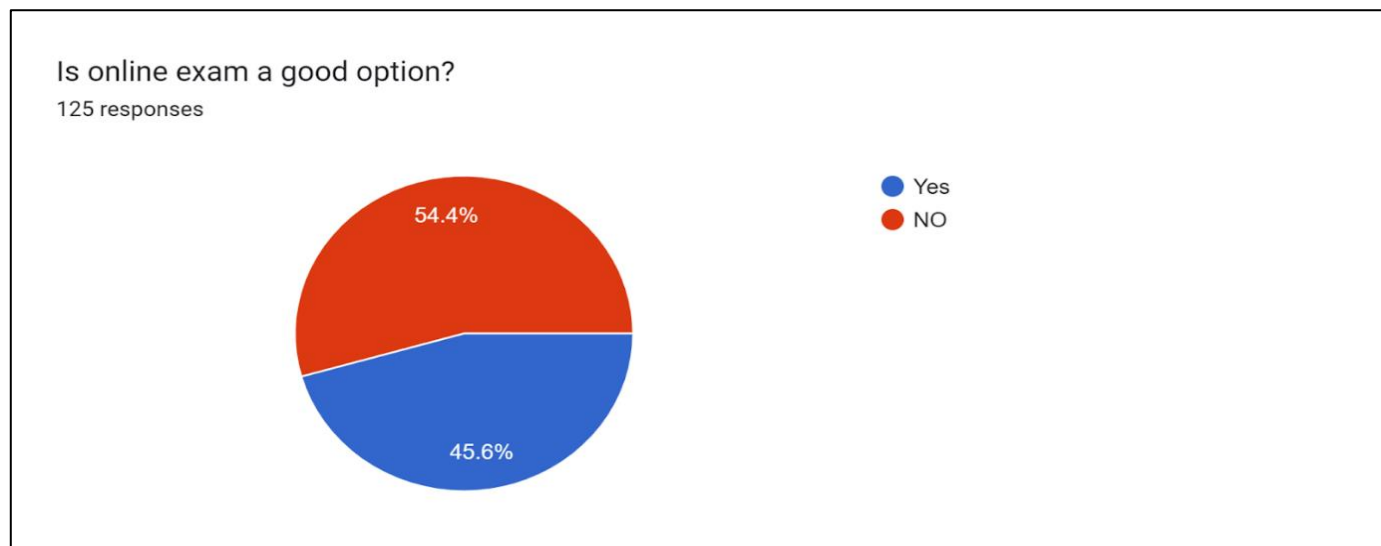


Fig 8 Is Online Exam A Good Option

➤ *Comprehensive Analysis of Assessment of Digital Education*

The research examines the transformative effects of digitizing education, focusing on traditional teaching structures, innovative modules, diverse assessment methods, and virtual classrooms. It acknowledges concerns about personality development, equitable access, and digital literacy. The study emphasizes careful implementation,

examining online education, digital libraries, and teacher-student relationships. However, universal suitability is questioned.

➤ *The Advantages of Digital Education Stated by the Participants*

Time Efficiency: Reduced time consumption in educational processes. **Increased Accessibility:** Facilitates

access to lectures from foreign universities. Provides easy access to a plethora of educational resources. Personalized Learning: Promotes personalized learning experiences. Utilizes interactive experiences and 3D images for enhanced engagement. Global Reach: Enables global access to educational opportunities. Pandemic Impact: Significantly beneficial during the COVID-19 pandemic. Reduces the need for travel, positively impacting mental health. Technological Awareness: Increases awareness of new tools and technologies. Lifelong Learning: Encourages lifelong learning opportunities. Particularly advantageous for students in remote areas. Environmental Conservation: Contributes to environmental conservation. Reduces the reliance on physical resources like paper. Cooperative Learning: Promotes cooperative learning environments. Game-Changer in Education: Revolutionizes traditional learning methods. Enhances educational affordability and accessibility.

➤ *Disadvantages of Digital Education Stated by the Participants*

Digitalization in education can lead to reduced information, distractions, social isolation, health issues, loss of social connectivity, expensive online education, lack of personal interaction, and an authentic classroom environment. It may also result in negative behavioural impacts like laziness, carelessness, and irregular attendance. Low confidence levels may not improve significantly in digital learning environments. High initial infrastructure costs may hinder widespread adoption. Insufficient personal interaction may contribute to digital toxicity. Despite its advantages, digitalization can have adverse effects on health, interpersonal relationships, and overall well-being, necessitating cautious consideration and adaptation in educational settings.

➤ *Challenges of Digital Education in Rural India*

Rural India faces challenges in digital education due to limited tech literacy, poor connectivity, authentic learning gaps, student resistance, financial constraints, infrastructure gaps, teacher training deficiencies, and the digital divide. To address these issues, targeted interventions, policy alignment, awareness enhancement, resource allocation, and digital infrastructure improvement are needed.

IV. DISCUSSION AND CONCLUSION

"Digitalization of Education: Opportunities, Challenges, and Implications for Learning in the Modern Era" The digitalization of education stands as a transformative force with the potential to revolutionize traditional pedagogical approaches. (Paul & Lal, 2018) The use of the latest technologies makes students more creative and improves their learning abilities coincides with the present study. This research paper delves into the multifaceted impact of digitalization, encompassing innovative modules, varied assessment methodologies, and the advent of virtual classrooms. While digital assessment tools offer flexibility, their implementation prompts considerations regarding their influence on personality development. The transition from physical to virtual classrooms presents a spectrum of advantages and challenges,

notably augmented resource accessibility, interactive learning tools, and adaptable teaching methodologies. The research underscores the imperative of meticulous implementation to optimize the benefits of digitalization in education. Examining critical facets like online education, digital libraries, literary resources, and virtual interactions offers insights into their dynamic influence on the teacher-student relationship. The exploration of formative and summative assessments illuminates the evolving landscape of education in the digital era. For Digital India, integration with traditional educational paradigms, the retention of writing as a potent creative tool, and vigilance in adapting to market competition are crucial considerations. Despite presenting challenges such as the scarcity of tech-savvy individuals, limited internet connectivity, and issues with authentic learning methods, the digitalization of education in India offers both challenges and opportunities. Addressing impediments like inadequate infrastructure, resource scarcity, and the imperative of teacher training emerges as a pivotal task for ensuring the success of digital education in India. In essence, digitalization is not a hindrance but a catalyst for enhancing human resource productivity and addressing challenges faced by lower socio-economic groups.

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