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Effectiveness of Digital Technology in Educational Institutions: Review for a Sustainable Model

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Abstract

Digital technology has become a powerful tool in many areas like medicine, business, finance, communication, engineering, entertainment, and education. Today, schools and universities use digital tools extensively for teaching, testing, giving feedback, administration, supervision, and research. However, experts are increasingly worried about relying too much on digital technology in education. They question whether it will completely replace traditional teaching methods, be abandoned due to issues like lack of technical skills, energy shortages, financial limitations, cybersecurity threats, or damage to infrastructure from wars or natural disasters, or if combining digital and traditional methods is the best solution. Studies show mixed opinions: some support digital technology, others prefer traditional methods, and some suggest a blend of both. This study examines the heavy use of digital technology in schools, explores potential risks of depending solely on it, and proposes a sustainable model that combines digital and traditional tools for balanced, lifelong learning. The research is descriptive, using surveys of teaching faculty from selected educational institutions. Focus group discussions were also held with digital technology experts, educators, and leaders of prominent educational institutions. The collected data were analyzed statistically. The findings indicate that while digital technology offers many benefits, relying entirely on it carries risks to its sustainability. Therefore, it is recommended to develop a model that integrates both modern digital technology and traditional educational resources. A blended approach is suggested as the most suitable / sustainable for both developed and developing countries, especially for underprivileged communities. Future research should explore additional areas related to this issue.

Keywords Effectiveness, Digital Technology, Sustainable Model, Blended Model, Education System

Introduction

Digital technology plays a crucial role in all spheres of life, driving innovation, efficiency, and accessibility. In education, it has revolutionized teaching and learning through e-learning platforms, interactive tools, and virtual classrooms that enhance flexibility and engagement (Moore et al., 2011; Ally, 2008). Similarly, medical sciences have benefited from advancements such as telemedicine, electronic health records, and wearable devices, improving accessibility and personalized care (Mair & May 2015; Puri et al., 2018). Businesses have leveraged digital tools like e-commerce platforms,

cloud computing, and collaboration software to streamline operations and foster productivity (Armbrust et al., 2010; Baker, 2013). In entertainment, streaming services, video games, and virtual reality technologies have reshaped how audiences consume and interact with media (Dube, 2016; Vorderer et al., 2017). Communication technologies, including social media and video conferencing, have redefined global connectivity and collaboration (Kaplan & Haenlein, 2010; Zhao, 2020). Additionally, digital innovations in finance, manufacturing, transportation, smart homes, agriculture, public safety, and environmental sustainability demonstrate the widespread impact of technology in improving processes, enhancing decision-making, and addressing societal challenges (Brynjolfsson & McAfee, 2014; Porter & Heppelmann, 2014; Schroeder et al., 2015). These advancements highlight the critical role of digital technology in shaping a more connected and efficient future. Among the various modern tools used in educational technology, the emergence of computers and mobile devices has significantly enhanced teaching and learning. These technologies play a crucial role in our daily lives, offering numerous benefits to students, particularly in fostering social integration within a broader social framework. Social competence enables individuals to engage in appropriate behavior, build interpersonal connections, and interact with others in a socially acceptable manner. (Khan et al., 2024). Although digital technology has revolutionized various sectors, offering significant advancements, it also presents numerous challenges that require critical attention. Privacy and security concerns arise from the vulnerability of sensitive data to cyberattacks and unauthorized access, exacerbated by the unintentional sharing of personal information (Soghoian, 2014). The digital divide remains a pressing issue, particularly in underprivileged communities where limited access to digital tools hinders education and employment opportunities (Van Dijk, 2017). Over-dependence on technology has raised concerns about declining problem-solving and cognitive skills, as individuals increasingly rely on digital tools for basic tasks (Carr, 2011). Furthermore, the rise of automation and artificial intelligence has contributed to job displacement, especially in traditional industries, leading to economic disparities (Frey & Osborne, 2017; Brynjolfsson & McAfee, 2014). Social isolation, fuelled by excessive digital engagement, impacts mental health and interpersonal relationships (Primack et al., 2017), while the proliferation of misinformation online threatens societal stability (Friggeri et al., 2014). Additionally, prolonged screen time poses physical and mental health risks (Twenge et al., 2018), and the environmental impact of e-waste further underscores the ecological cost of digital advancements (Baldé et al., 2017). Ethical concerns regarding AI and data usage highlight the need for transparency and accountability (O'Neil, 2016). These challenges necessitate balanced approaches to maximize the benefits of digital technology while mitigating its adverse effects. On the other hand, traditional teaching methods, encompassing structured classroom environments, teacher-centered approaches, and face-to-face interactions, have long been recognized for their role in fostering effective learning experiences. Research highlights their ability to create organized learning settings that enhance focus and facilitate systematic content delivery (Jones, 2012; Ravitch, 2010). By positioning the teacher as a central figure, traditional methods ensure subject expertise and pedagogical guidance, fostering deeper understanding among students (Gage, 2013). Immediate feedback and personalized attention further enhance learning outcomes, enabling students to address challenges effectively (Hattie & Timperley, 2007). Moreover, traditional approaches cultivate discipline, time management, and active engagement through structured schedules, in-class discussions, and problem-solving activities (Stevenson, 2011; Freeman et al., 2014). Additionally, these methods promote social and communication skills, support cultural awareness, and provide accessible education without dependence on advanced technologies (Johnson & Johnson, 1999; Delors, 1996; Bates, 2005). Despite the rise of digital innovations, the simplicity and inclusivity of traditional methods remain indispensable in building foundational 21st century skills and fostering holistic development. It is important to note that the integration of digital technology in education has brought significant advancements, but its sustainability as a standalone approach remains questionable due to various challenges. Research highlights that the blended model, which combines digital tools with traditional teaching methods, offers a more sustainable alternative by addressing the limitations of digital-only education (Garrison & Kanuka, 2004). Sole reliance on digital technology requires significant expertise, infrastructure, and financial resources, which are often unavailable in underprivileged or resource-constrained regions (McKinsey & Company, 2021; Ertmer & Ottenbreit-Leftwich, 2010). Moreover, energy crises and cybersecurity threats further hinder their long-term viability, as digital platforms depend on reliable electricity, internet access, and robust security

measures (UNESCO, 2020; Anderson & Rainie, 2012). Additionally, digital exclusivity risks diminishing traditional teaching practices, such as face-to-face interactions and collaborative learning, which are essential for fostering critical thinking and interpersonal skills (Johnson & Johnson, 1999; Mayer, 2005). The blended model, with its adaptability and inclusiveness, mitigates these issues by incorporating both traditional and digital methods, ensuring educational continuity even in the face of infrastructural destruction caused by wars or natural disasters (Bonk et al., 2006; World Bank, 2018). Consequently, the blended model emerges as a more effective and resilient approach to sustainable education.

Problem Statement

The increasing reliance on digital technology in educational institutions for teaching, learning, assessments, evaluations, administration, supervision and research raises critical concerns about its long-term sustainability. Despite its undeniable benefits, experts have expressed apprehension about the potential consequences of complete dependency on digital tools. Challenges such as technical expertise, energy crises, financial limitations, threats to cyber security, and infrastructural destruction caused by wars or natural disasters, have been highlighted. Additionally, there is uncertainty about whether digital technology will fully replace traditional methods, be abandoned totally, or whether a blended approach will prove to be the most effective model in the educational process. Given the mixed findings in existing literature, there is a pressing need to assess the feasibility of adopting a blended model including both digital and traditional tools for sustainable lifelong learning.

Contribution of the Paper to the Existing Literature

This study makes a significant contribution to existing literature by addressing the growing concerns and debates surrounding the long-term reliance solely on digital technology in education. While digital technology has become integral to various aspects of modern education. This study adds to the literature by analyzing the extensive use of digital technology in educational institutions and highlighting the potential threats to its continued usage. By exploring these concerns, the study proposes a sustainable blended model that incorporates both digital and traditional methods, offering a practical solution to balance the benefits of technological advancement with the reliability of traditional educational resources. This contribution helps to bridge the gap in literature by offering a comprehensive framework for the future of education in both developed and developing countries, particularly in underprivileged regions, where a blended approach could ensure the sustainability and effectiveness of educational systems.

Research Objectives

1. To analyze the merits of digital technology in educational institutions.
2. To explore potential threats and challenges to be faced due to sole reliance on digital technology in education.
3. To propose a sustainable model for balanced and lifelong learning in the education system.

Research Questions

1. What are the merits of digital technology being used in educational institutions?
2. What are the key challenges and potential threats to the long-term use of digital technology in education?
3. What sustainable model can be proposed for continuity of educational practices in the best possible ways in developed and developing countries?

Literature Review

The integration of digital technology has revolutionized various sectors, with education being one of the most impacted domains. From teaching and learning to assessments, administration, supervision, and research, digital tools have significantly transformed traditional practices (Selwyn, 2016). The rapid shift toward digital platforms in educational institutions has provided immense opportunities for improving access, efficiency, and the overall quality of education (Anderson, 2008). However, this increased reliance on digital technology raises critical questions about its long-term sustainability. The digitalization of education is accompanied by several challenges. First, a lack of technical expertise among educators and administrators often hampers the effective use of technology (Kirkwood & Price, 2014). Second, global energy crises, financial limitations, and infrastructural destruction caused by wars or natural disasters pose significant threats to the uninterrupted use of digital tools in education (Zawacki-Richter & Latchem, 2018). Third, cyber security issues continue to undermine confidence in the safe use of technology for sensitive academic and administrative activities (Reddy et

al., 2020). Finally, the widespread adoption of digital tools raises concerns about their impact on traditional teaching methods, potentially overshadowing the pedagogical value of face-to-face interactions (Strauss, 2017). Digital media has greatly enhanced classroom teaching, leading to improved student performance. Instructional technology promotes connectivity, allowing learners to access information and educational resources. It supports skill development, ensures credibility and confidentiality through the quality assessment of digital educational materials, and enables learners to absorb relevant information from the vast online space (Rahmat et al., 2024). Recently, the shift from digital learning back to textbooks, as seen in Sweden, highlights the challenges of a digital-first approach in education. In 2009, government of Sweden started total reliance on digital technology in educational institutions. However, the same government, after 15 years of digital education, found a decline in students' foundational skills such as reading and writing, prompting a €104 million investment in reintroducing textbooks alongside traditional teaching methods (Edholm, 2024). Sweden's significant policy shift to reintroduce printed textbooks into classrooms, driven by growing concerns over the cognitive and social impacts of an all-digital approach to education. While the country's transition to digital learning in 2009 aimed to equip students with skills for a technology-driven world, research has highlighted drawbacks, including eye strain, reduced focus, poorer comprehension, and distractions from digital devices. In response, Sweden has allocated €104 million (2022–2025) to provide paper textbooks for every subject, aiming to restore balance by blending traditional and digital methods. The article emphasizes that this shift is not a rejection of technology but rather an effort to integrate it more thoughtfully alongside foundational learning strategies. Sweden's approach offers valuable insights for global education systems, highlighting the importance of maintaining equilibrium between innovation and proven teaching practices to optimize long-term student outcomes. Similar challenges are evident in other developed and underdeveloped countries, where the digital divide exacerbates disparities in education. While urban schools adopt digital tools, rural areas face limited access, making textbooks a primary learning resource (Mungali, 2024). Additionally, the increasing dominance of visual media and excessive screen time among Indian students, influenced by platforms like Netflix and OTT services, has further reduced engagement with reading (Wadhawan, 2024). Experts emphasize that promoting school libraries, family reading habits, and gamified reading experiences can counteract declining readership. The Swedish experience suggests that a balanced approach combining analogue and digital tools may be essential for fostering cognitive and literacy skills (Sengupta, 2024). Prolonged use of digital technologies, particularly screens, can have negative effects on physical and mental health. For instance, excessive screen time has been linked to eye strain, headaches, and disrupted sleep patterns due to blue light exposure. Furthermore, there are concerns about the impact of technology addiction on mental health, with conditions such as digital addiction, anxiety, and depression being increasingly common, particularly among younger generations (Twenge et al., 2018). On the other hand, e-learning resources manage online interactions to maximize learning opportunities, create cohesive learning communities and encourages active learning (R. Khan, Inam & Irshad, 2018). Moreover, the debate over whether digital technology will completely replace traditional methods, be abandoned, or be integrated into a blended model remains unresolved. While some researchers advocate for the complete transition to digital education, citing its accessibility and scalability (Hodges et al., 2020), others emphasize the importance of retaining traditional approaches to foster deeper engagement and interpersonal connections (Tondeur et al., 2017). This uncertainty underscores the need to explore a hybrid or blended approach that incorporates the strengths of both digital and traditional methods. Existing literature presents mixed findings on the adoption of blended models in education. For instance, studies indicate that while digital tools offer convenience and flexibility, they often lack the depth and personal connection inherent in traditional methods (Garrison & Vaughan, 2008). On the other hand, evidence suggests that a well-designed blended learning model can enhance both teaching and learning outcomes, making it a promising approach for lifelong learning (Bernard et al., 2014). While literature highlights the benefits and challenges of digital technology and blended learning, gaps remain in understanding their long-term sustainability. Few studies have comprehensively analyzed the feasibility of a blended approach in diverse educational contexts, particularly in regions affected by financial, infrastructural, or security challenges. Moreover, there is a need for empirical research to explore how blended learning can be tailored to meet the needs of various stakeholders, including educators, students, and policymakers. Integrating computerized and traditional methods in education

can offer a balanced approach, capitalizing on the advantages of both to enhance learning outcomes. Hybrid lesson plans that use digital tools, such as simulations or videos, alongside traditional methods, like whiteboard teaching or textbook reading, provide opportunities for reinforcement and active learning. Blended assessments, combining online quizzes for instant feedback with handwritten essays or in-class problem-solving, allow for comprehensive skill evaluation. Collaborative projects utilizing digital tools like shared documents, paired with physical group discussions and presentations, foster teamwork and creativity. Moreover, offering flexible note-taking options and a mix of digital and physical reading resources supports diverse learning preferences and contexts. Practical activities, such as virtual simulations combined with hands-on experiments, deepen conceptual understanding while ensuring safety and cost-effectiveness. Additionally, interactive classrooms, creative projects using both digital and traditional mediums, and balanced homework assignments help engage students and develop multiple competencies. Educating teachers and students on effectively balancing these methods ensures their optimal use for efficiency, depth, and focus, ultimately promoting a holistic learning experience. Blended learning, which combines digital and traditional methods, has emerged as a promising approach for sustainable education. Garrison and Vaughan (2008) argue that blended models capitalize on the strengths of both paradigms, offering flexibility through digital tools while retaining the interpersonal benefits of traditional methods. Literature reveals that blended approaches need expertise infrastructure and resources, which is expensive in nature but is the only solution to cope with future challenges in the best possible way. Studies have shown that blended learning can enhance student engagement, improve learning outcomes, and support lifelong learning (Bernard et al., 2014). However, the successful implementation of blended learning requires careful planning, appropriate teacher training, and access to resources (Hodges et al., 2020).

Research Design

The research employed a mixed-method approach, integrating both quantitative and qualitative data collection and analysis to ensure a comprehensive understanding of the study objectives. A descriptive research design was utilized, which is particularly suitable for systematically exploring and documenting the status, usage, and challenges associated with digital technology in educational institutions. This design allowed the researchers to analyze and describe the existing practices and perceptions surrounding digital technology, providing a clear picture of its role and impact in the education sector. Furthermore, the descriptive nature of the study facilitated the exploration of challenges faced by digital technology experts, psychologists, educators, and educational administrators, as well as the evaluation of the proposed model for integrating digital technology in teaching-learning processes and the whole education sector.

Research Instruments

To collect data for the study, multiple research instruments were employed to ensure a comprehensive analysis of the topic. Questionnaires were utilized to gather numerical data from teachers working in renowned educational institutions. These questionnaires focused on exploring the merits and challenges associated with digital technology in education. The close-ended questions within the Survey method for the quantification of various aspects, including the extent of digital technology usage, the challenges encountered, and the perceptions regarding blended learning approaches. Additionally, focus group discussions were conducted to delve deeper into the perspectives and experiences of experts and decision-makers in the field. These discussions included digital technology experts, psychologists, educationists, and heads of prominent educational institutions, providing a diverse range of viewpoints. To guide these discussions, a semi-structured guide was developed, enabling a structured yet flexible exploration of key topics. The discussions focused on critical areas such as the sustainability of digital technology in the education sector and the feasibility of adopting blended learning approaches.

Study Population/Sampling Technique

The study population comprised teaching faculty, digital technology experts, educationists, psychologists and heads of prominent educational institutions from renowned educational institutions in the provinces of Punjab and Khyber Pakhtunkhwa (KPK). Due to limitations in resources, both financial and time-related, a representative sample of 100 teaching faculty was included. In addition, focus group discussions were conducted to gather qualitative data. These discussions included a diverse group of 10 participants, consisting of 02 digital technology experts, 02 psychologists, 03 educationists, and 03 heads of prominent educational institutions. A convenient sampling technique

was employed to select the sample, considering the constraints and feasibility of reaching the participants.

Data Analysis

In this study, data analysis was conducted using a combination of descriptive statistics and thematic analysis to provide a comprehensive understanding of the findings. Descriptive statistics were employed to analyze the survey responses, with the total number of responses from participants calculated along with their respective percentages. Additionally, thematic analysis was applied to examine qualitative data obtained from focus group discussions to gain deeper insights into the perspectives and experiences shared by the participants.

Findings of the Study (Teaching Faculty)

Effectiveness of Digital Technology Based Model in Education (Teaching Faculty)

72% of teachers agreed (with 40% agreeing and 32% strongly agreeing) that digital technology-based model plays an effective role in educational system. However, 20% remain neutral, while a small percentage 3% strongly disagree and 5% disagree with its effectiveness in the educational system.

Potential threats/Challenges Associated with Digital Technology Based Model in the Education System (Teaching Faculty)

A significant majority of teachers perceive the lack of expertise as a challenge in using digital tools, (with 40% agreeing and 38% strongly agreeing). Only 15% are neutral, while a small minority, 2%, strongly disagree and 5% disagree with the potential threats and challenges in education. Financial constraints also present a barrier, with 68% agreeing that they hinder adoption of digital technology (36% agree and 32% strongly agree). However, 20% are neutral, and 12% (4% strongly disagree and 8% disagree) do not see financial limitations as a problem. Energy crises are another significant challenge, with 82% agreeing (40% agree and 42% strongly agree) that they disrupt the use of digital tools. Only 10% are neutral, and a minority of 8% (3% strongly disagree and 5% disagree) disagree. 66% of teachers agree that cybersecurity threats hinder the use of digital tools, with 36% agreeing and 30% strongly agreeing. On the other hand, 18% remain neutral, and 16% (6% strongly disagree and 10% disagree) do not find cybersecurity a major concern. Furthermore, 85% of teachers feel that digital tools are ineffective in areas affected by wars or natural disasters, with 40% agreeing and 45% strongly agreeing. Only 10% are neutral, while 5% (2% strongly disagree and 3% disagree) do not share this view.

Proposed Sustainable Model in Education System (Teaching Faculty)

Teachers overwhelmingly believe in the effectiveness of the blended model, with 88% agreeing that it effectively combines digital tools with traditional methods (40% agree and 48% strongly agree) in the education system. Only 8% remain neutral, while 4% (1% strongly disagree and 3% disagree) do not support this statement. Regarding its suitability in environments affected by energy crises, 83% of teachers agree (40% agree and 43% strongly agree) that the blended model is more adaptable. A smaller group of 10% is neutral, while 7% (2% strongly disagree and 5% disagree) disagree. Cost-effectiveness is a major concern, with 80% agreeing (40% agree and 40% strongly agree) that the blended model is more expensive than the soley dependency on digital- approaches or traditional approaches. However, 12% are neutral, and 8% (2% strongly disagree and 6% disagree) find it less expensive. The blended model is also seen as a safer option, with 74% agreeing (36% agree and 38% strongly agree) that it minimizes cybersecurity risks. In this regard, 18% remain neutral, while 8% (2% strongly disagree and 6% disagree) disagree. Finally, 89% of teachers agree (40% agree and 49% strongly agree) that the blended model is resilient to infrastructural destruction caused by wars or natural disasters. Only 7% are neutral, while a mere 4% (1% strongly disagree and 3% disagree) disagree with the statement. The blended model is widely preferred, with 84% of teachers agreeing (40% agree and 44% strongly agree) that it reduces the only reliance on digital technology system. Only 10% are neutral, while 6% (1% strongly disagree and 5% disagree) disagree. Its flexibility in addressing educational challenges is also acknowledged, with 87% agreeing (40% agree and 47% strongly agree). A small percentage (8%) remains neutral, and just 5% (1% strongly disagree and 4% disagree) disagree. Moreover, 90% of respondents believe (40% agree and 50% strongly agree) that the blended model ensures teaching continuity in uncertain conditions. Only 6% are neutral, and 4% (1% strongly disagree and 3% disagree) do not agree. Additionally, 85% of teachers feel (40% agree and 45% strongly agree) that the blended model better supports student engagement and is not easily

hampered by external threats. In contrast, 10% are neutral, and 5% (1% strongly disagree and 4% disagree) disagree.

Findings of the Study (Focus Group Discussions)

Effectiveness of the Digital Technology-Based Model in Education (Focus Group Discussions)

All participants of the focus group acknowledged the transformative impact of digital technology in education. IT experts emphasized its role in enhancing accessibility, engagement, efficiency, database management, examination, research repository particularly in facilitating remote learning and personalized instruction. Educationists highlighted its potential to improve instructional methods, allowing for innovative teaching strategies and multimedia integration. Psychologists pointed out that digital tools support diverse learning styles, making education more inclusive and very useful for training, personality development, judgement, mentoring and coaching etc. Moreover, Heads of educational institutions have the same opinion about the effectiveness of digital technology. Also, they added that digital technology is effective, but its success depends on proper implementation, infrastructure, and the digital readiness of all the stockholders of the education system.

Potential Threats/Challenges Associated with the Digital Technology-Based Model in Education (Focus Group Discussions)

A common concern among all groups was the lack of technical expertise among educators, which hinders the effective integration of digital tools. IT experts highlighted the need for continuous professional development to bridge this gap. Financial constraints were another major challenge, with heads of institutions stressing that maintaining and upgrading digital infrastructure requires substantial investment. Energy crises were recognized as a significant disruption, making the consistent use of digital tools difficult, especially in regions with unstable power supplies. Cybersecurity threats were also a major concern, with IT experts pointing out the risks of data breaches, online fraud, and cyberattacks in educational settings. Additionally, psychologists emphasized the potential psychological impact of excessive digital dependence, including screen fatigue and reduced interpersonal interactions. In regions affected by wars or natural disasters, educationists and heads of institutions agreed that digital tools become largely ineffective due to damaged infrastructure, disrupted internet access, and limited technical support and resources. They emphasized the need for alternative models that ensure educational continuity in crisis situations.

Proposed Sustainable Model in the Education System (Focus Group Discussions)

A strong consensus emerged in favor of the blended model, which combines digital technology tools with traditional resources in vogue. IT experts supported this model for its adaptability and reduced dependence on digital-only systems. They emphasized traditional ways for back up digital tools. IT experts also noted that the blended model mitigates cybersecurity risks by reducing over-reliance on fully digital platforms. Educationists viewed it as a balanced approach that retains the benefits of digital innovation while preserving the effectiveness of traditional educational resources in the education system. Psychologists highlighted its advantages in maintaining student engagement and minimizing the negative psychological effects of prolonged digital exposure. Heads of educational institutions emphasized the model's practicality, particularly in regions facing energy crises, financial constraints, or infrastructure instability. While they acknowledged that blended learning may require higher initial investment, they considered it a more sustainable and resilient approach in the long run. All groups agreed that the blended model ensures continuity in uncertain conditions, making education more accessible and adaptable. It was recognized as a flexible/possible and even sustainable solution that addresses diverse challenges, particularly in under-resourced areas. Additionally, the model was seen as an effective way to enhance the effectiveness of educational systems by integrating digital elements with traditional resources.

Discussion

The findings of this study highlight the evolving dynamics of educational methods, emphasizing the respective merits and challenges of digital technology and traditional methods each. Digital technology, with its potential to enhance engagement, efficiency, and resource access, has become a critical component of modern education. However, challenges such as inadequate training, cybersecurity threats, and infrastructure limitations restrict its widespread adoption, especially in underprivileged regions. These concerns echo the findings of prior studies that emphasize the need for adequate support and infrastructure for successful digital integration in education. On the other hand, traditional methods remain indispensable due to their reliability, cost-effectiveness, and applicability

in resource-limited settings. Teachers and other stakeholders highlighted their preference for traditional approaches in building core knowledge and fostering discipline, aligning with existing literature on the enduring relevance of face-to-face interactions and hands-on teaching practices. Although the blended model is expensive, needs expertise and resources, the blended model was widely endorsed by teachers and other stakeholders of education system as the optimal solution, combining the strengths of digital technology and traditional methods.

Conclusion

This study underscores the importance of effective use of digital technology in education system. On the other hand, there are a lot of potential threats and challenges which will hamper the effectiveness of digital technology. While digital technology offers numerous advantages, over-reliance on it poses potential risks, especially cyber security, infrastructures and digital technology equipment in resource-constrained or technologically vulnerable environments. Traditional methods, though effective and reliable, may not fully meet the demands of contemporary and modern education systems. It was concluded that a blended model emerges as the most promising solution, fostering engagement, and sustainability while ensuring continuity in the education system. This blended model and a balanced educational approach address the diverse challenges of modern educational systems for continued and everlasting lifelong learning. This approach is particularly vital for developing and underprivileged regions, where access to technology remains uneven.

Recommendations

Keeping in view the effectiveness and sustainability of the blended approach, the following recommendations were made:

Sufficient funds may be allocated for this blended model including digital and traditional resources. Educational institutions should prioritize training programs to equip teachers with the necessary skills to effectively use digital tools and implement blended models in education systems. Governments, institutions and stakeholders of society should invest in robust infrastructure, including reliable internet connection, modern classrooms, and cybersecurity measures, to support proposed blended model. National education policies should incorporate a blended model as a core component, with a focus on sustainable implementation in education systems. Educational curricula should be redesigned to align with the blended model, ensuring an effective balance between digital resources and traditional methods.

Future Work

This study provides an insight into the benefits and challenges associated with digital technology and traditional methods used in education. Moreover, a blended model was proposed. Future research may be conducted which should focus on: Conducting longitudinal studies to evaluate the long-term impact of blended models in the education system. Exploring region-specific challenges and solutions to implement blended learning in diverse socio-economic contexts. Investigating the role of emerging technologies, such as artificial intelligence and virtual reality, in enhancing blended education systems. Developing scalable frameworks for implementing blended models in underprivileged regions with minimal resources. Expanding the scope of research to include student perspectives and their adaptability to blended learning environments. Assessing the environmental impact of digital tools and how blended models can promote sustainable education practices. By addressing these areas, future studies can further refine and enhance the adoption of a sustainable and inclusive educational model that meets the demands of the modern world of the 21st century.

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