p-ISSN : 2788-497X | e-ISSN : 2788-4678
DOI(Journal): 10.31703/grr
DOI(Volume): 10.31703/grr/.2024(IX)
DOI(Issue): 10.31703/grr.2024(IX.I)

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GLOBAL REGIONAL REVIEW

VOL. IX, ISSUE I, WINTER (MARCH-2024)

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Double-blind Peer-review Research Journal
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Humanity Publications (HumaPub)
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Doi:https://dx.doi.org/10.31703

Article title

Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions

Global Regional Review

p-ISSN: 2788-497X **e-ISSN:** 2788-4678
DOI(journal): 10.31703/grr
Volume: IX (2024)
DOI (volume): 10.31703/grr.2024(IX)
Issue: I (Winter-March 2024)
DOI(Issue): 10.31703/grr.2024(IX-I)

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https://www.grrjournal.com/Current-issues

Issue: I-Winter (March-2024)
https://www.grrjournal.com/Current-issues/9/1/2024

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Abstract

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Key Words: E-learning, Inclusive Education, Pakistan, Technology-mediated Instruction, Accessibility, Educational Equity, Personalised Learning

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Pages: 53-63

DOI:10.31703/gssr.2024(IX-I).05

DOI link: https://dx.doi.org/10.31703/grr.2024(IX-I).05

Article link: http://www.grrjournal.com/article/A-b-c

Full-text Link: https://grrjournal.com/fulltext/

Pdf link: https://www.grrjournal.com/jadmin/Auther/31rvIolA2.pdf

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Doi:https://dx.doi.org/10.31703

Citing Article

05		Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions					
		Author	Yaar Muhammad Yasira Waqar Faisal Anis	DOI	10.31703/grr.2024(IX-I).05		
Pages		53-63	Year 2024	Volume	IX	Issue	I
Referencing & Citing Styles	APA	Muhammad, Y., Waqar, Y., & Anis, F. (2024). Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions. *Global Regional Review*, *IX*(I), 53-63. https://doi.org/10.31703/grr.2024(IX-I).05					
	CHICAGO	Muhammad, Yaar, Yasira Waqar, and Faisal Anis. 2024. "Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions." *Global Regional Review* IX (I):53-63. doi: 10.31703/grr.2024(IX-I).05.					
	HARVARD	MUHAMMAD, Y., WAQAR, Y. & ANIS, F. 2024. Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions. *Global Regional Review,* IX**,** 53-63.					
	MHRA	Muhammad, Yaar, Yasira Waqar, and Faisal Anis. 2024. 'Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions', *Global Regional Review*, IX: 53-63.					
	MLA	Muhammad, Yaar, Yasira Waqar, and Faisal Anis. "Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions." *Global Regional Review* IX.I (2024): 53-63. Print.					
	OXFORD	Muhammad, Yaar, Waqar, Yasira, and Anis, Faisal (2024), 'Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions', *Global Regional Review,* IX (I), 53-63.					
	TURABIAN	Muhammad, Yaar, Yasira Waqar, and Faisal Anis. "Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions." *Global Regional Review* IX, no. I (2024): 53-63. https://dx.doi.org/10.31703/grr.2024(IX-I).05.					

e-ISSN: 2788-4678 **Volume:** IX (2024) **Issue:** I-Winter (March-2024) **p-ISSN:** 2788-497X

Global Regional Review
www.grrjournal.com
DOI: http://dx.doi.org/10.31703/grr

Pages: 53-63 **URL:** https://doi.org/10.31703/grr.2024(IX-I).05 **Doi:** 10.31703/grr.2024(IX-I).05

Title

Enhancing Inclusive Education in Pakistan through E-Learning: A Review of Current Practices, Challenges, and Future Directions

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Contents

Abstract

This discussion paper examines the potential of e-learning for promoting inclusive education in Pakistani schools, providing equal opportunities for all stakeholders to enhance their capacity. However, there are issues and implications of technology-mediated and technology-delivered instruction for school education in rural areas, given their limited knowledge about technology use. The study reviews literature, investigating the influence of technology use and e-learning on the physical and organisational environment of multi-grade schools. It provides an overview of how e-learning in Pakistan could promote inclusion by comparing the technological changes that have taken place worldwide and in Pakistan recently. The paper considers technical, organisational, and pedagogical issues and developments likely to shape the future use of technology in inclusive education and training, and the extent to which this vision might be realised. It also examines the influence of other sectors' development on the shape of e-learning in inclusive education.

Keywords: E-learning, Inclusive Education, Pakistan, Technology-mediated Instruction, Accessibility, Educational Equity, Personalised Learning

Introduction

Inclusive education is a concept that strives to create an educational environment where all students, regardless of their diverse needs and backgrounds, can learn and thrive together (Ainscow et al., 2006; UNESCO, 2017). It is a right that every child is entitled to a quality education, and schools are expected to respond to learners equally rather than expecting learners to fit into the rigid system of education (Booth & Ainscow, 2011). Inclusive education acknowledges the strengths and weaknesses of all children in learning, takes into account differences in learning styles, and gives flexibility to the education system (David & Dean, 2020; Hodkinson & Vickerman, 2016).

Inclusive education is vital in Pakistan because of the country's diversified population and the large number of children with barriers to education. According to the Pakistan Education Statistics 2016-17, 22.8 million of the total 50.8 million children between 5-16 years of age are out of school (AEPAM, 2018). Many of these children belong to

various marginalised groups, such as children with disabilities, girls, and children from poor families (AEPAM, 2018). This inclusive education is necessary for the assurance of access to quality education for all children and makes them unable to reach the maximum possible level (Rieser, 2012)

Moreover, inclusive education is important for establishing a society that is fairer and more just (Ainscow et al., 2019a). It takes away all the barriers and promotes togetherness in a society at large by delivering equal opportunities to all to get an education. Inclusive education enhances understanding, respect, and appreciation of diverse individuals, which is necessary for a country like Pakistan, where multiple ethnic, linguistic, and religious groups are citizens (Prerna, 2023). In addition to this, inclusive education contributes toward the economic development of the country by guaranteeing skills and knowledge to all individuals to get them involved in economic activities (David & Dean, 2020).

However, there are various challenges to the implementation of inclusive education in Pakistan. the first major challenge to inclusive education practice in Pakistan is the limited resources available for education (Anjum& Amjad, 2016). Many of the schools in Pakistan especially those in the rural areas do not have properly constructed buildings, and they do not have the basic necessities to run the classroom teaching, teaching materials as well as qualified teachers who can implement inclusive education. These resource-related problems in the schools create difficulties for the school to address the differentiated needs of the students and to make school inclusive.

Another problem is teachers are inadequately prepared or trained for inclusive education practices. (Sharma et al., 2013). Many teachers in Pakistan do not have the knowledge and skills to deal with learners with different needs in an inclusive classroom. They do not know the different needs and learning styles of the children, their disabilities, and the related methods of differentiation and accommodation. This lack of teacher preparedness can result in learners with different needs being left out of the classroom, which can be very disadvantageous for inclusive education (Rouse & Florian, 2012).

Finally, children with disabilities and other diversity face stigma from society, and negative attitudes toward inclusiveness have led to the failure of inclusive education in Pakistan (Yousafzai et al., 2011). In Pakistan, people have different perceptions of children with disability, and when perceived negatively by society, they cannot perform well in school and in the whole community (Croot et al., 2008; Qayyum et al., 2013). This negative attitude that people have toward people with disabilities acts as a factor that can contribute to the failure of inclusive education in Pakistan, where most disabled children are not included in the regular education program but in special education schools(Qayyum et al., 2013). A lot of sensitisation from different people is needed to have a positive attitude towards inclusion, and understanding the concept on the part of society is crucial in having inclusion work in Pakistan.

E-learning, also known as technology, used to facilitate learning, carries the potential to address some of the challenges present in the implementation of inclusive education in Pakistan. There is an opportunity to deliver education to those students who may have been excluded from the education system based on location, cost, or social status. E-learning also gives a barge over the constraints of distance and sets every individual in an equal place to undertake the vitally important task of being a teacher. Also, because inclusion necessitates differentiated instruction, e-learning aids teachers in providing that kind of instruction to each child under their teaching due to the help provided by technology. Teaching and learning depend not only on the availability of the materials but also on the availability of materials in different forms, which are specifically interpreted to suit the different needs of the learners in the classroom. E-learning provides an opportunity to create an education environment that is conducive to multiple means of representation, engagement, and expression, which are important educational principles for every teacher as they work towards the creation of a conducive learning atmosphere for all students, including those with different needs (CAST, 2018).

Nevertheless, it should be noted that not everything can be achieved through e-learning for inclusive education. To implement e-learning for inclusive education, there is a need for planning, human capacity building, and resources for implementation (Bozkurt, 2019). There is a need to ensure that learners have access to physical technology and internet connectivity as students

may be limited in their access to the e-learning materials for use in the school partly because of the theories about accessibility in the digital era. Teachers also need to be trained in the use of e-learning tools to ensure that they know how to use them and to provide practical, hands-on e-learning technologies for use in the classroom. There is also a need to implement e-learning alongside other inclusive education practices like differentiation, cooperative learning, and formative assessment (Smith & Throne, 2007).

Using technology to support instruction is a complex process that requires planning, resources, and ongoing support (Daniela, 2023). Moreover, it is only one piece of the puzzle in the quest for inclusive education. To realise the goals of inclusive education in Pakistan, it is essential to address the broader challenges and barriers that exist. By combining e-learning with other strategies and interventions and by engaging all stakeholders in the process, Pakistan can strive towards a more inclusive and equitable education system for all children.

Current State of E-Learning in Pakistan

In the past few years, e-learning has emerged as a new hope for the education system in Pakistan (Nayazi et al., 2023). The government of Pakistan not only realises the importance of implementing e-learning to reach the unreached while improving the quality of learning and teaching as well. The Ministry launched the National Education Policy (2017-2025) in 2017, in which technology integration and e-learning are promoted in the education section (Government of Pakistan, 2017).

Despite the many challenges, e-learning at the school level in Pakistan is superficial and experimental. One survey has revealed that only 37% of public schools have electricity, and only 14% have access to the Internet and e-mail; the rest of the facilities are out of the question. Lack of basic infrastructure and connectivity is the major hurdle in implementing e-learning at the school level. On the other hand, teachers who know very little about e-learning tools and e-learning platforms are always opposed to integrating technology (Khalid et al., 2015; Tariq et al., 2019). A lack of training, technophobia, and the belief that teachers will remove technology when it is in the classroom may be more causes of resistance toward technology.

Despite challenges, there are some commendable initiatives to promote e-learning in Pakistan schools. Punjab Information Technology Board runs a project called e-Learn Punjab, in which free online learning materials and courses are available for all (Ali et al., 2023). TeleTaleem's e-learn project runs the e-educational content program through interactive voice response technology for students in remote areas.

Whereas, when we talk about the implementation and adoption of e-learning in the education systems of the countries, Pakistan is far behind in the implementation and adoption of e-learning; Pakistan ranks 110 out of 141 in ICT adoption (Web Desk, 2019). This ranking reflects the performance based on limited infrastructure, low digital literacy in the population, and lack of government support.

However, other countries have well-organised and well-implemented e-learning systems and practices. Developed countries have large infrastructures, teacher training opportunities, and digital content development (Means et al., 2009). Likewise, developing countries like India and Sri Lanka are improving and achieving many e-learning outcomes (Liyanagunawardena et al., 2013).

The E-learning approach provides accessibility to all, but at the same time, there are still some issues that need to be addressed for fully e-learning inclusive education. A digital divide can be observed for marginalised and poor students who just do not have access to technology. In the same way, no access to digital content has been shown to be a barrier to long-term disabilities. Therefore, implementation should be carefully planned, teacher training should be given, and a holistic approach needs to be observed (Ainscow et al., 2019a; UNESCO, 2017).

From the above discussion, it is concluded that e-learning in Pakistan is facing many challenges, but some commendable initiatives are still being practised. To make e-learning inclusive education, the digital divide and content access need to be addressed carefully. Meanwhile, the holistic approach and collaboration in education should be promoted in Pakistan.

Integration of Literature Review

The use of technology in the education sector has become a significant area of focus in both research

and practice, as this medium has seen considerable development in recent times. With improvements and accessibility to technology, online or e-learning has become a widely acknowledged skill for educational advancement (Bozkurt, 2020).

E-learning integration practices vary widely across countries and regions, indicating great differences among the different parts of the world. Also, there is still significant discussion on the future trajectory of e-learning which is articulated in the next theme (Palvia et al., 2018).

Developed countries have embraced e-learning with whole-heartedness and have invested heavily in technology infrastructure, teacher training, and digital content creation (Means et al., 2009). For example, in the USA, Barack Obama's Every Student Succeeds Act (ESSA) provides funds and support to integrate technology into education. Also, the e-learning pedagogies have given a special emphasis on 21st-century skills like problem-solving, critical thinking and digital literacy through personalised and adaptive learning approaches using data analysis, artificial intelligence etc.

On the other hand, in Pakistan, e-learning is still in its infancy and there are very limited initiatives and numerous problems associated with it like very low technological infrastructure, low digital literacy and lack of supportive formal and infrastructural regimes (Qureshi et al., 2012). However, people are increasingly acknowledging that e-learning has the potential to address the issues of access, equity, equality, and quality in education.

However, there is a nascent recognition that e-learning holds promise to address some of the quests for access, equity, equality, and quality. Emerging trends in eLearning may contribute to this transformation, such as the increasing use of mobile learning and open educational resources (OER) (Bozkurt, 2020). Mobile learning can provide on-the-go access to educational resources (Ally & Prieto-Blázquez, 2014), while OER can help lower costs and increase access to quality resources. However, OER use is associated with quality assurance and intellectual property rights challenges.

Integration of e-learning in inclusive schools in Pakistan has implications for both policy and practice. It requires a holistic and integrated approach that considers resources, support, pedagogy, and ethics and involves all stakeholders. Further, it assumes basic knowledge of terminology and issues in the use of technology for teaching and learning but acknowledges the need for continued professional development and support to consolidate this work (Khalid et al., 2015). By drawing on these implications and overcoming these challenges, Pakistan may create a more equitable and inclusive education system for all its students.

Influence of Developments in Other Sectors

Technical advancements have revolutionised e-learning for inclusive education. The widespread availability of low-cost technology with the potential for use by everyone and platforms that enable easy accessibility to online learning opportunities with its applications of assistive technologies have contributed immensely to the use of technology in e-learning Platforms (Bozkurt, 2019).

The use of accessible hardware also created means of access to e-learning for E.P. students in low-income countries and rural areas; emerging open-source programs replaced more expensive proprietary software, which reduced cost barriers to e-learning with technological advancements. An intuitive design and easy navigability of the e-learning platforms allowed flexibility, convenience, and anytime and anywhere access, leading to the increased usage of e-learning in e-learning platforms (Ally & Prieto-Blázquez, 2014). The use of assistive technologies in e-learning also promoted inclusivity with respect to the e-Learning Platform (Burgstahler, 2015).

Changes have been influenced by Organisational and Pedagogical Developments in e-learning of inclusive education and training. E-Learning is guided by the principles of UDL to make e-Learning inclusive. Also, it is guided by theories like personalised and adaptive learning, with emphasis on 21st-century skills, which promotes e-learning in inclusive education (Bozkurt, 2020; Meyer et al., 2014). UDL principles influence the e-learning approaches to make it inclusive. There is yet another theory revolving around personalised and adaptive learning to engage students, thus increasing learner motivation and achievements. Taking forward e-learning is quite advantageous. Also, there is an emphasis on 21st-century skills that enable the students to think critically, collaborate,

communicate, and create while using the e-learning process accordingly.

The effective integration of technological, organisational, and pedagogical developments in e-learning for e-learning Platforms requires a favourable and collaborative organisational culture, pedagogy teaching and learning methods, developmental resources, and a support and training program. These even address the challenges faced in e-learning with respect to special and inclusive learning and ensure equal access to e-learning for all students.

Driving Forces for E-Learning in Inclusive Education

Multiple factors, including technology, society, and education, are shaping the development of e-learning in inclusive education. From a historical perspective, e-learning originated from mail correspondence courses that were used to learn at a distance in the late 19th century. Subsequently, radio and television during the 20th century broadened the scope of learning resources however, in the late 20th century, personal computers and the Internet drove the information age in education for the first time (Harasim, 2017). As part of the development of new technologies, Tim Berners-Lee has developed the World Wide Web, allowing content creators and consumers easy access to digital educational resources (Berners-Lee, 2000). In turn, the 1990s was the time when learning management systems (LMS), like Blackboard and Moodle, emerged. Many LMSs are still widely used today to deliver online courses and track student progress.

On their part, the early 2000s came with Web 2.0 technologies that rearranged our ways of socialising, communicating, and helping each other. Consequently, Web 2.0 allowed users to create content and share it in their own digital spaces or become part of multiple learning communities, among other things. Therefore, these technologies are key factors in the inclusiveness of e-learning (Dabbagh & Kitsantas, 2012). Years later, massive open online courses (MOOCs) and open educational resources (OER) marked the trends that expanded access to education and challenged the traditional teaching and learning of new social learning communities.

When it comes to inclusive education, e-learning is found to increase access and equity for all students with various needs. Through assistive technology, for instance, a visually impaired student can use screen readers and speech-to-text to read and learn materials (Burgstahler, 2015). The design of e-learning with respect to universal design for learning (UDL) has also promoted its usability and inclusion (Meyer et al., 2014).

Nevertheless, the integration of e-learning in inclusive learning environments is fraught with challenges, such as the digital divide, which means the gap between tech-haves and have-nots. Furthermore, the lack of digital literacy or skills of teachers and learners obstructs the reliable inclusion of e-learning in inclusive education.

Some factors promote the adoption of e-learning in inclusive education. Crucially, the recognition of the potential benefits of e-learning for students with various needs is imperative. E-learning brings flexibility and adaptability—for instance, it permits the students to study at their own pace and interests. Another factor is that e-learning is responsible for increased student engagement and motivation, especially those students who might have been failing in traditional schools.

Moreover, another reason to integrate e-learning into inclusive education has to do with the trend of personalised and adaptive learning approaches. Personalised learning entails the shifting of educational control from the teacher to the learning and applies digital technologies to accommodate individual student needs, preferences, and interests (Cheung et al., 2023). Connected to personalised learning, there is adaptive learning, which employs data analytics and artificial intelligence (Sharma & Bozkurt, 2024). The two paradigms of personalised and adaptive learning united in e-learning could help to address a broader range of individual needs of the learner and diminish the achievement gaps for students with diversified requirements.

Additionally, e-learning in inclusive education is driven also by the development of inclusive and accessible platforms and resources. It is possible to access the digital instruction materials, devices, and connections that have made learning and communication in inclusive settings fairer for those with disabilities (Burgstahler, 2015). Besides, other resources, such as live captioning, transcripts, audio

descriptions, and other types of description and narration of events and graphics, increasingly make the learning environment accessible or inclusive for all.

Finally, the trend is driven by the worth of 21st-century abilities in the same e-learning facets. Students, especially those who are using the e-learning approaches, are encouraged to develop the specific ability or knowledge relevant to the current age of information growth and speedy communication processes (Bozkurt, 2020). For instance, since the e-learning approaches embrace digital content development, student collaboration using online communication and production has become uncommon. Another advantage of e-learning in inclusive education is the potential increase in the exposure of students to cultural competence, global citizenship, and related aspects due to the diverse experiences or portfolios of different students (Ainscow et al., 2019b). Therefore, in the meantime, many students from different areas are involved in the same learning experiences in virtual spaces, storing and sharing ideas, knowledge, and artefacts. The researcher explains the situation to show and illustrate how and why the real world is multicultural and made by relationships.

Vision for the Future

As Pakistan moves forward toward a more inclusive and equitable education system, the usage of e-learning could become a potential tool for increasing access and quality of education for all students, particularly those from diverse backgrounds and those with diverse needs. However, to benefit from e-learning for inclusive education, there is a need to develop models or frameworks, which adopt convergent ways to deal with all challenges and opportunities generally caused by e-learning for inclusive education.

Developing comprehensive and coherent policies and strategies for e-learning inclusive education in Pakistan should be the first recommendation to be made. The policymakers of Pakistan need to realize the need for e-learning inclusive education in Pakistan and create inclusive education policies and strategies for e-learning which should be interrelated as well as all-inclusive. These policies should be based on the needs and goals of the National Education of Pakistan, it must also be based on international standards and goals of eLearning. It is also recommended that the policy should address the various needs of students in Pakistan so that the e-learning platforms and resources are accessible to the education systems and enable students of different situations (Bozkurt, 2020). An effective policy is based on the input of all the important stakeholders. A stakeholder involved in making a policy are the ones directly or indirectly effecting or affected by a policy. At the school level, important stakeholders are the students, parents, teachers and administrators while at the state level, it could include the business or corporate sector, the general citizen population and politicians (Ainscow et al., 2019b). A wide-ranging legislation is required to cover critical components like infrastructure, inclusion, access, resource sharing, and collaboration. The e-Learning initiative will therefore need to be supported by the necessary infrastructure defined by legislations. Detailed infrastructure requirements that need to guarantee the success of e-learning should therefore be defined including efficient ways of managing license fees, software upgrades, hardware, internet connectivity, and maintenance costs without overly burdening school budgets.

The framework suggests that teachers responsible for the implementation of e-learning in inclusive classroom settings need to be trained and there should be workshops to support them. The framework also covers technological and pedagogical elements in the recommendations to enable teachers to develop digital literacy, promote online communication, and cultivate 21st-century skills (Kowalski et al., 2018).

The provided framework's primary concern is to highlight the importance of every stakeholder such as state and district policymakers, school leaders, classroom teachers, students, parents, and community members all working together. This collaborative approach can provide an all-around strategy for solving various education challenges. Bringing many different stakeholders of education challenges together will give a wide range of perspectives, and many more minds to create many different strategies. The collaborative nature of this framework will hopefully result in initiatives proposed that are developed by all parties of the community and therefore have the support of all the parties necessary to see the initiative through. This collaboration will facilitate effective implementation and sustainable change. (Ainscow

et al., 2019b). The framework also recommends monitoring and evaluation of e-learning for inclusive education to get a return on the value of investment.

The potential benefits of using technology for inclusive education in Pakistan include wide accessibility to education, personalised and adaptive learning, combining the 21st century of learning, and new tools and strategies for inclusive teaching and learning. Not only but also making a more inclusive and equitable education system is not only a moral but also a social requirement, and economic requirement for Pakistani. Inclusive education contributes to decreasing social and economic disparity, social cohesion, and stability. Finally, sustainable competitiveness in the world (Ainscow et al., 2019b).

To make a more inclusive education system, there is a need for a coherent and shared strategy and shared approach to deal with set barriers and provide education for all. The implementation of these changes requires the joint support of stakeholders as well as impactful interventions like e-learning in order to improve access and quality in education (Ainscow et al., 2019b).

Conclusion

The paper discusses the potential of e-learning to support inclusive education in Pakistan by analysing the current state of e-learning in Pakistan and by evaluating the challenges and prospects of e-learning in Pakistan. This response explores the significance of the inclusive education system in Pakistan because of its multicultural population and a significant number of out-of-school children.

The paper's discussion also suggests for effective and successful e-learning implementations in inclusive education settings, there is a need for a comprehensive inclusion of e-learning into the education system. Planning for implementation, the importance of clear and evidence-based e-learning policy and strategy, importance of teachers' professional training and support at the core and at the heart of the e-learning implementations especially there are some other important key issues that need consideration in the inclusion of e-learning into the country's education system such as partnership and collaboration among all stakeholders including parents, improvement and evaluation of the universities' achievements in different aspect of teaching and learning and e-learning and focuses for the continuous changes to improve the current teaching and learning mechanisms.

The paper also states the positive sides of e-learning for inclusive education in Pakistan which are, increased accessibility to education, increase in personalisation and adaptivity of education, preparation of 21st-century skills, and availability of new tools and strategies for inclusive education. Also, it states that an inclusive and integrated education system in Pakistan which is equitable has become a not only moral but also a significant social and economic imperative (UNESCO, 2017).

The potential of e-learning in promoting inclusive education in Pakistan is beyond any doubt. E-learning can be used as a tool to solve several challenges faced by the educational institutions of Pakistan, particularly in terms of access and quality of education. By allowing students to access education and be at their ease when and where they want, e-learning can break barriers like geography, socioeconomic status, and disabilities. E-learning can enable out-of-school children, dropouts, disabled, and working students to get an education of their choice. In a digital learning environment, data analytics, and artificial intelligence embedded into the technology will assist in determining the interests and learning capacity of each student. The information will then be used to tailor learning experiences for every student. In an inclusive education setup, where the level of readiness and learning is completely different for every student, the A.I. can analyse each student's content consumption and learning approach. This technology will maximise learning outcomes and minimise achievement gaps.

E-learning can also develop 21st-century skills such as critical thinking, collaboration, communication, and creativity (Siu Cheung et al., 2014) and online collaborative projects can develop these skills even faster than traditional classroom projects. In addition, e-learning can connect students with like-minded people from around the world with similar skills and interests, which can reinforce student engagement and interest in online discussions. For children with disabilities in regular classrooms, peer tutoring, even though e-learning and peer-assisted learning, can be effective in inclusive education.

E-learning can provide more tools and techniques to help teachers be inclusive (Rutkiene et al., 2021). Teachers can become accommodative by using e-learning and technology in mixed classrooms. Differentiation, multiple means of representation, expression, engagement, etc., can possibly be inculcated easily. Research has shown that the active involvement of students (in mixed classrooms) can be ensured through e-learning (Tikadar & Bhattacharya, 2019). This will not only improve the quality of the teaching but will also reduce the frustration and time of the teacher with students having issues either in studies or health; this really helps teachers who are becoming seriously stressed by having this kind of learning issues inside their normal classrooms.

Creating a more inclusive education system in Pakistan using technology requires a collective effort from all shareholders, which includes policymakers, school heads, teachers, students, parents, the community, etc. (Ainscow et al., 2019b). The mindset and culture around education need to be shifted from being something only for the "privileged few" to being the "basic right of all" (UNESCO, 2017). For this purpose, a clear/effective eLearning policy/strategy needs to be created for inclusive education (Bozkurt, 2020); it needs to be made in consultation with all the shareholders, according to national education goals/priorities and aligns with international standards/best practices for inclusive education (UNESCO, 2017).

Allocating proper resources and support is imperative for the implementation of e-learning, which includes infrastructure like electricity, internet connectivity and the development of accessible and inclusive e-learning platforms and resources. However, it requires a massive investment in education. The teachers need to be capacitated/skilled to effectively integrate e-learning in inclusive classrooms, which includes technical skills about how to use e-learning platforms & tools but also about designing, delivering, and engaging e-learning.

Collaboration/partnership between all shareholders involved in e-learning implementation is pivotal (Ainscow et al., 2019b). Examples include policymakers and school heads for alignment of e-learning initiatives with education goals and priorities, and teachers and students for co-design/co-creation of e-learning practices relevant and meaningful for students. Monitoring and evaluation should be an integral part of e-learning implementation to ensure its effectiveness and sustainability (Bozkurt, 2020), which includes clearly defined and measurable success indicators (student engagement, achievement, satisfaction, etc.) and data for improvement purposes.

To sum up, e-learning has a significant role in inclusive education in Pakistan (Bozkurt, 2020); however, creating a comprehensive/inclusive framework is critical to tapping into its potential. It includes the development of clear/effective policy/strategy, capacity building for teachers, collaboration/partnership among all stakeholders, and monitoring/evaluation for quality (Bozkurt, 2020). The potential benefits of e-learning for inclusive education in Pakistan are immense and far-reaching, including increased access, personalised and adaptive learning, 21st-century skill development, new tools, and strategies to include more students, etc. Investing in e-learning and other innovative strategies for inclusive education is not only Pakistan's moral obligation to provide education for all but also holds substantial social-economic benefits.

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