

## Digital Divide & Inclusive Education: Examining How Unequal Access to Technology Affects Educational Inclusivity in Urban Versus Rural Pakistan

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*This paper analyses the concept of the digital divide and its implications for the issue of inclusive education in both urban and rural Pakistan. This paper looks at the impact of technology on the inclusion of learners in education when technology is distributed concentrically and categorizes the study between urban and rural areas. This looks at the status of technological infrastructure and current access to the Internet in both environments, as well as perceived computer literacy. The positions discussed in the paper focus on the main problems related to the management of students' and educators' access to digital resources in the learning process. Regarding the aspect of equity, it also explores the government policy and strategies implemented towards closing the digital divide in education. It is thus evident that urban and rural areas are poles apart in terms of access and education by and with these devices. This paper's conclusions present possible ways of handling these inequalities: increasing formal infrastructure in these regions, training teachers, and changes in policy. This is followed by a recap of the concerns put forward in the preceding arguments about the necessity for concerted efforts towards the mobilization of equitable resources with a view to enhancing the educational resource mix at the base of the hill country's geography in Pakistan.*

## I. Introduction

The social justice issue of computing today is at the heart of educational technology, with the availability of technological instruments constituting the most important factor in 21st-century society. However, there is always the issue of technological disparity and digital illiteracy, a problem known as the Digital divide, which countries of global south and particularly Pakistan's inclusive education struggle with (Khan et al., 2020). This is a very sharp gender disparity and is also reflected between urban and rural areas and, thus, the resultant inequalities in the availabilities and quality of education.

Pakistan as a country has a diverse society and geographical location which makes it an ideal place to research on the impact of digital divide on the education inclusion. In recent decades the country has moved into the technological development process, but the change is uneven and is more conspicuous in the urban than in the rural areas. This inequality is of great significance in the field of education, critical in which technology plays a major role in the enhancement of teaching and learning environment as well as learners' performance.

Inclusive education, irrespective of their learning disabilities, has, over time, become a global approach fortified as a strategy for the elimination of social injustices and the achievement of sustainable development (Muhammad et al., 2024; Pirzada et al., 2024; UNESCO, 2020). In the digital age, the concept of inclusivity in education has expanded the notion of inclusion in education from the physical access of students to the schools to the access to technologies, as well as to adequate skills to use it. Thus, it becomes very apparent that the unequal distribution of technology or the 'Digital divide' is a major challenge that hinders the achievement of inclusive education objectives in Pakistan.

The purpose of this current paper is to explore the challenges associated with the inequalities in the technological resources in relation to the education needs and rights of students in urban and rural factions of Pakistan. This seeks to map the young learners' learning environment and as a result understand the political, technological, economic and social realities around the context of the digital divide as it is realized in inclusive education settings, in both rural and urban areas.

To guide this investigation, the following research questions have been formulated:

1. What are the key differences in technological access and digital literacy between urban and rural areas in Pakistan?
2. How does the digital divide impact educational inclusivity in urban and rural Pakistani schools?
3. What strategies and policies can be implemented to bridge the digital divide and promote inclusive education across Pakistan?

The importance of this research can be found in the framework of improving nationwide and global policies and practices of educating and nurturing children in developing nations such as Pakistan, based on the findings of the analysis. Thus, this research may support the mitigation of the gap in the literature by identifying the details of these barriers and the suggested strategies

that may help to reduce them and make educational institutions more effective when it comes to the enhancement of learning opportunities through technology.

In order to fill these gaps, this paper intends to share knowledge about digital divide and its implications for the issue of inclusive education in both urban and rural Pakistan. In addition, it intends to offer practical recommendations for educators, policymakers, and various stakeholders involved in the process of implementing digital Inclusion and inequality in Pakistani education.

## **2. Literature Review**

The term digital divide has, since the time it was used in the 1990s, evolved in terms of its application. First of all, it was primarily a binary division between the 'haves' and the 'have nots,' in particular the access to ICT (Selwyn, 2004). However, modern literature describes the Digital divide in a broad sense that does not exclusively involve the technology infrastructure but enlists such elements of use as skill, motivation, and practice (van Dijk, 2020).

The dimensions of the digital divide can be broadly categorized into three levels: : access, skills, and outcomes (Scheerder et al., 2017). The access divide relates to the differences that exist among users in regard to physical access to computers and the Internet. The skills gap includes a digital competency factor, which considers the users' ability to adequately utilize digital resources. The above-said outcomes divide is related to the differences that exist in the utilization of technology in terms of education, economy, and social benefits.

Regarding the topic called the digital divide, research studies have focused on the issue at the global level, analyzing the differences between developed and developing countries. At the same time, it is stated that typically, during the last several years, the gap in access to information has narrowed in many territories thanks to the widespread use of portable devices and the increasing degree of Internet connections; however, the disparities still persist in terms of the communication and digital skills, as well as efficiency (International Telecommunication Union, 2021). Most of these inequalities can be regarded as enhancing and mirroring other aspects of inequality in society, and this is why digital division has become a crucial issue for governments and schools throughout the world.

Inclusive education is based on the idea that every child, with physical, intellectual, social, emotional, linguistic or other impairment should have a right to education and be able to function effectively in a classroom (Iqbal & Muhammad, 2020; Muhammad & Bokhari, 2024; UNESCO, 1994). It can be described as a shift from the conventional education systems that were commonly known for placement of learners with disabilities in different and/or separate institutions.

Thus, the requirement for integration of all diverse characteristics in the current learning atmosphere is rather vast. This aspect is especially vital because, for the students, diversity will be embraced, enhancing social relations. Furthermore, inclusive education ensures that all students get to access other people's experiences; further, it enhances learning since it fosters various methods of teaching and learning as well as leaning toward student-oriented strategies (Mitchell & Sutherland, 2020). In addition, it categorizes human rights

structures as well as international responsibilities, such as the United Nations' sustainable development goals concerning quality education all across the world (United Nations, 2015).

The technological aspect has thus come out strongly in support of the inclusion of children with disabilities in school. With regard to the web facility, it is found that students with physical and learning disabilities can easily be supported in their learning process as well as can join the students in the classroom practices successfully due to the support of assistive technologies (Passey, 2020). Further, it can make learning process more personalized and mean that the teacher can adapt the lesson to particular child's learning style.

However, the question of the digital divide poses significant challenges to the attainment of the uses of technology in teaching and learning for all. Such arrangements lead to the emergence of new gaps in students' achievements due to the fact that while some are receptive to such technology, others are not; this will only open up new divides among students (Reich & Ito, 2017). However, barriers that are related to the availability of technology tools or infrastructure and students' and teachers' digital skills to use them for effective teaching-learning processes imply that technology tools may not be put into effective use in the learning environments even when the environments are physically accessible.

Pakistan's education is a blend of both public and private schools, colleges and universities, however the quality and access to education considerably differ between provinces and across the strata of society (Naviwala, 2016). Lately, the country has recorded measurable progress in expanding enrolment in education. However, these challenges persist, as well as issues of quality, quantity, and equity in education.

Teaching-learning with information technology in Pakistan has begun comparatively late, and the differences between the uses of this technology in urban and rural schools are particularly pronounced. As mentioned earlier, there are provisional indications of the implementation of digital tools and resources in teaching-learning, particularly in urban private schools. However, in Pakistan's rural schools, for instance, the majority of them do not possess even the minimum ICT amenities. This relationship between these two provinces with regard to technological capital, therefore, reflects other discrepancies between the provinces in reference to developmental indicators, infrastructural facilities as well and the delivery of basic civil amenities in Pakistan, where the urban areas are far much developed than the rural ones.

The broad categorization of the digital divide between the developed and the developing world goes unchallenged, but the carving of the racial and urban-rural divide is at the cutting edge in the context of Pakistan. It is hypothesized that more openness to Internet use and availability of ICT gadgets, along with the willingness of the students and faculty of the identified urban cities. On the other hand, the difficulties that persons in rural areas are concerned with are restricted or easily inaccessible internet connection, scanty digital tools or equipment, and low-standard education on computers or any form of digital media. These disparities that have been discussed above have very significant consequences regarding educational equality since there is a probability of widening the existing gaps in terms of access to education and learning outcomes of the students in the areas in question, both the urban and the rural ones in the case of Pakistan.

## 2.1. Current State of Digital Access in Urban and Rural Pakistan

The analysis of the contemporary state of digital connectivity in Pakistan, urban and rural, unveils the discrepancies related to technology and digital literacy. Such disparities have significant implications for educational initiatives of inclusion and the possibilities of technology to address those in the different regions of the country.

Concerning the technological infrastructure, Pakistani urban space is found to be comparatively more conducive and stable in terms of internet connectivity than the rural areas. The Pakistan Telecommunication Authority report suggests that 48% of the urban population has a broadband Internet connection; however, only 23% of the rural population has the same privilege. This is due to situations where telecommunication facilities are expressed mainly in urban centers; hence, many of our rural regions remain connected to the Internet.

The possession of digital devices also paints a picture of urbanization and rural areas. The urban areas have a high proliferation of smartphones standing at 96% (Gallup Pakistan, 2021). The rural residents own smartphones on a scale of only 91%. Computers and tablets have a much bigger disparity, with 19% of urban households having at least one computer or a tablet as compared to only 7% of rural ones (Pakistan Bureau of Statistics, 2021).

Students and educators' digital literacy also differs, which signifies the existing inequalities in terms of technological resources. In the urban region, students' mean score was higher, 3.08 out of 4, signifying high digital literacy; 68% of the students from urban areas expressed that they are comfortable with basic computer skills and internet usage. Rural students, though, perform poorly, with a mean of 34% who indicated the same level of confidence. This is mainly due to the relatively low availability and usage of digital technologies in the context of some rural schools and home education.

They also have a similar digital literacy gap as other groups of people, particularly teachers and educators. 79% of urban teachers indicated they integrate digital enablers in their teaching activities, compared to 21% of rural teachers (Hamid et al., 2022). This difference cannot be attributed solely to the differences in access to the technology but also to how and where training for the use of technology and the institution's support for the integration of that technology into the teaching and learning is given.

This pattern could also be attributed to the dynamics of Pakistan's digital divide, where the impact of the urban/rural split is not only simplistic but complex due to other factors. Moreover, education institutions in urban areas are able to provide their students with computer lab facilities, Internet-enabled classrooms, and state-of-the-art technological-based learning tools. This means there exists infrastructure disparity when it comes to technology integration in teaching and learning activities.

Also, internet connection is not equal in all regions, where urban areas enjoy faster and quality internet connection than the rural areas. It's now common to find cities with 4G, which means that one can have a fast and reliable internet connection. On the other hand, several rural areas are in the range of 2G and 3G networks, which have several incongruities in their connection that hamper the proper utilization of online educational tools (Salam et al., 2017).

The consequence of, therefore, gaps in inclusive education is profound. Urban students have increased chances of developing skills in ICT, access to online learning resources, and the opportunity of their learning and membership in a global knowledge community. On the other hand, rural students are most likely to lag behind in education systems that are rapidly going digital. This digital divide tends to widen the education disparity between urban and rural areas of Pakistan.

However, it is imperative that one realizes that the digital divide is not uniform across the urban and the rural areas. Another factor that is important is the availability of resources whereby there are those areas in the rural income bracket that offer better digital access than the poor urban areas. This is a slightly more complicated case which calls for more concrete actions to be taken with regard to the division into the urban and rural populations, as well as the disparities within these two groups.

## **2.2 Impact of Digital divide on Educational Inclusivity**

Literature reveals that the consequences of digital divides limit educational inclusiveness in Pakistan and impact all areas of the learners' experience and achievement in both urban and rural areas. This section focuses on the ways in which the information divide affects access to learning materials, learner outcomes, educational standards, skills acquisition, and learners' performance.

Education has become digitalized, and this has placed access to educational material on the basics of technology. With the advancement of information technology, online learning platforms have also gained much emphasis in the delivery of opportunities for education, especially with the rise of the COVID-19 pandemic. However, levels of access to the platforms have been dramatically skewed and determined by factors of the Digital divide. Students from urban areas who are more privileged to have access to decent internet connections and proper devices have benefited much more from online learning tools than students from rural areas.

Interactive and multimedia web-based book content in digital tablets and other forms can make learning more fun and enjoyable, assuming that it can be utilized equitably. Schools in urban areas tend to adopt the use of ICT in that they use digital textbooks and multimedia resources in their curricular delivery, thus offering the students a variety of learning resources. On the other hand, there is evidence of rural school students using printed books and few images; hence, the students are unable to access multimedia and other related learning resources, such as computer-based instruction (Salam et al., 2017).

When it comes to delivery methods of education and learners' engagement, the criterion of the digital divide makes a large difference. It is, therefore, expected that more teachers within urban schools practice technology-integrated instructions like flipped classrooms, blended learning, and other multimedia-assisted teaching and learning instructional models. This means that the above approaches can result in increased content acquisition as well as the overall interest of the learner. Because of their working conditions, rurally appointed teachers have very little access to and knowledge of ICT, and thus, they rarely use other forms of instructional delivery than lecturing methods, though they can be less than exciting for the students of the modern world.



The overall level of the student's participation is also an essential component influenced by the digital divide. Using their knowledge of information technologies, students from urban areas interact more actively with fellow learners and instructors and participate more in collaborative learning activities. They can search for more details about this or that topic, make use of online discussions and discussion boards, and make use of such elements of training as interactive ones. Students in rural areas do not have the same resources as urban students, which can make them more involved in the whole process of learning. Therefore, motivation and engagement rates may be lower.

An additional social need that reflects the existence of the digital divide is skills development. New digital competencies required in the contemporary world of work can be seen to be more effectively learned by students who frequently use ICT. Most of the students in urban areas undergo more practice in computer skills both in school and at home. Due to a lack of exposure to computer technologies and the dominance of traditional technologies, these sets of skills may be difficult for rural students to attain, hence affecting their career-related prospects in the future.

Technology is also a factor in the acquisition of competencies of the 21st century, including critical thinking, collaboration, and creativity. Educational applications of technology can involve learning approaches such as problem-solving and collaborative and creative learning that can be communicated virtually. Digital divide means that rural students might lag behind in developing these skills since they lack exposure to the technology-enriched pedagogy experiences that build and enhance such skills (Naviwala, 2016).

It is for this reason that the digital divide profoundly influences educational outcomes, including one's performance and success in acquiring a career. The literature has revealed that there is an improvement in performance when technology is used in learning. Students in urban areas have superior technological devices and get more involved in using various technological tools; hence, they have a higher level of performance on national and international tests and assessments compared to the students in rural areas (Khan et al., 2020). Such a situation of the difference in academic results may negatively influence students' further educational process and occupational activity.

Employability is tied to the skills that include information technology competence in today's job market. On the side of preparing students for careers, the above-mentioned digital divide might disadvantage rural students since they cannot spend much time learning digital competence as required in the current world job market. Such a lack of career development can further entrench and widen the existing organization's socioeconomic differences between the urban and rural communities in Pakistan (Salam et al., 2017).

### **2.3 Challenges and Barriers**

The transmission and continuation of the digital divide in Pakistan's schooling system cannot solely be attributed to the lack of access to digital technologies; each of the determinants has diverse problems and barriers that prevent them from being used effectively and fairly in educational settings. These barriers cut across the infrastructure, economic, sociocultural, and education system friction.

Physical constraints regarding the construction of firm and stable structures offer a major hindrance to the attainment of e-learning in rural schooling systems. This leads to the inability of schools to make use of technologically integrated devices that are brought about by unreliable electricity supplies. In many rural districts in Pakistan, the electricity supply is unreliable; often, the electricity power goes off for several hours a day, restricting the use of electronics, including internet-based learning resources. This erratic power supply not only affects classroom learning but also discourages schools from investing in ICT facilities.

Internet coverage in rural areas is still poor, thus widening the gap between the online and offline populations. While most cities have a relatively stable connection to the Internet, many villages still do not have access to broadband, even at a minimum. The Pakistan Telecommunication Authority, in its report for 2022, reveals that 3G/4G mobile broadband coverage is much less in rural areas compared to urban ones. This aspect drastically affects the feasibility of incorporating the necessary online content and the availability of online learning tools in rural schools.

Another factor that has also been identified to influence the occurrence of the digital divide is the economic challenge. The cost of the devices and connection to the Internet is still unaffordable to many households, much less in the rural areas where the levels of income prevail. The cost of a basic smartphone and one month of the Internet is higher for the rural peoples' monthly income as compared to the urban people. This is a tough economic implication that makes families look for other necessities rather than digital devices and internet connectivity for learning.

Household priorities and resource allocations are also another determinant of the Digital divide. Several poor families, particularly those in rural areas, the acquisition of educational gadgets such as tablets and computers might be considered as something that is out of luxury rather than need. Lack of funds implies that basic requirements, such as food, health care, and traditional teaching and learning resources, are given priority, hence minimal investment in the technical front for learning (Naviwala, 2016).

It is agreed that sociocultural factors play a very important role in causing the split in the use of technology, especially in terms of gender differences. Presumably, in most of the rural areas in Pakistan, especially those with traditional culture, girls could be limited from owning gadgets and accessing the Internet. Such differences in the usage of technologies by gender have negative effects on girls' education achievements and other future prospects. Of course, the cultural beliefs of the people regarding the use of technology in education also contribute to the digital divide. As in most conservative communities, there may be negative attitudes or perceptions concerning the use of ICTs in learning since the children may be exposed to some lethal influences or distractions. These attitudes can help delay the use of digital learning tools and resources even when they are available.

These challenges add to the educational system, making it even harder to narrow down the digital divide. The problem of staff development for technology integration, particularly the lack of trained teachers in teaching with technology, is a real challenge in the use of technology in schools. In many cases, due to the teachers' concern and their insufficiency in digital literacy,



especially the teachers who are in rural areas, they are not ready to apply the use of technology tools to facilitate resource use in teaching.

Another systematic issue is the lack of integration of technology in the formulation and implementation of curricula. In Pakistan, a large number of educational policies and curricula are still he ago behind the practices of modernity in digital technologies. Therefore, there is a gap between math and science, for example, taught in school, and the emergent job market, which is rapidly becoming digital. This has been found to be more especially so in rural areas where traditional modes of teaching and out-of-date syllabi are in use (Salam et al., 2017).

As such, these complex issues and barriers cannot be solved by single sole solutions but with a synergy of endeavors of policymakers, educators, technological implementers, and societies collectively. The digital divide means that to address the gap, attempts to provide access have to promote the provision of technology devices and the provision of infrastructure and appropriate digital skills for people, adaption of curriculum, and positive changes in the culture related to the use of technology in education.

#### **2.4. Government Policies and Initiatives**

Under the policy guidelines of the Government of Pakistan, several government institutions have taken into consideration the bridging of the digital divide and making technology a tool for providing education to one and all. Administrative measures and reforms over the years aim to target these challenges, though the efficiency of these measures is questionable.

The National Education Policy 2009, amended in 2017, has recognized the place of information technology in education and stressed fairness (Ministry of Federal Education and Professional Training, 2017). This policy framework laid the basis for introducing technology in the education system but has not been well practiced, particularly in rural areas.

The Digital Pakistan Policy, launched in late 2018, entails the development of a digital ecosystem consisting of infrastructure and institutional means for the fast delivery of digital services and applications as well as content (Ministry of Information Technology and Telecommunication, 2018). Although this policy has general repercussions on the electronic media scenario in Pakistan, it remains largely untouched by the educational sector mainly because of the problems associated with its implementation.

A particular program for the implementation of inclusion in education for children through information and technology is E-Learn Punjab, which is a digital content dissemination program aimed at students and teachers in the Punjab province of Pakistan. Likewise, the Sindh Education and Literacy Department has launched its Digital Learning Platform, which is favorable for online classes, especially amid the COVID-19 situation.

Assessing the effectiveness of these policies and initiatives makes it possible to establish that the results are rather ambiguous. While there is the enhancement of provision in urban centers and some advancement in extension of provision, the general effect in the rural sectors is still dismal.

A comparative analysis with successful models from other developing countries identifies the weaknesses of the model adopted by Pakistan. For example, India's Digital India campaign has shown the development of digital hardware and software solutions in the rural hinterland through society, business, and government collective initiatives. Likewise, Rwanda's One Laptop per Child program has encompassed technology in learning with the help of structures, training, and alteration of curriculum in education right from the rural areas (Fajebe et al., 2013; Munyengabe et al., 2017).

## **2.5 Strategies for Bridging the Digital divide and Promoting Inclusive Education**

The digital divide, as well as inclusive education issues in Pakistan, can only be solved through complex solutions, which ought to include the provision of physical infrastructure, human development, policymaking, development of new solutions, and overcoming cultural barriers.

There is a need for the improvement of physical structures to enable the growth of information communication technology, especially in rural areas. Extending internet access to rural areas should be given emphasis, as this may require the use of fiber-optic infrastructure and/or satellite Internet and/or mobile broadband solutions. The Universal Service Fund (USF) operating in Pakistan has tried to move in this direction, but efforts must be stepped up and spread out (USF, 2024). By establishing community technology centers in rural areas, communities will be provided with a central place where they can access digital products at a one-stop shop, hence implying that despite the lack of individual access, the community will be in a position to access the products in one way or another (Salam et al., 2017).

Capacity building is a critical component when it comes to the use of digital technologies in education. There should be programs for training teachers in the use of ICT in the classroom, and these programs should be put into practice all across the country, especially in rural areas, where the teachers are most likely to have little knowledge of computers. Such programs should include not only the fundamentals of using technology in instruction but also plans on how to incorporate technology into the curricular areas and teaching-learning methodologies. It is proposed that specific programs aimed at improving the students' and communities' digital literacy can contribute to overcoming the existing skills gap and extend the usage of digital tools for educational purposes.

Recommendations for future policies are to better incorporate technology into curriculum implementation at all levels of education. This integration should not be confined to digitizing the contents but focuses on using technology to provide more engaging, personalized, and collaborative learning. To address the funding constraints and introduce new and efficient solutions in the sphere of education, it is possible to promote the formation of public-private partnerships resources. Educational technology vendors, telecommunication companies, and educational content developers have a major role to play in determining how fast such a strategy can be implemented.

It is possible to find ways to tackle some of the causes and consequences of limited infrastructural development and resources by employing innovative solutions. Hence, in light of the above-detailed discussion, exploring the mobile learning initiatives, which can, in fact,

offer students in remote areas educational content and opportunities through the facility available in the form of mobile phones, may well be worthy of consideration. To address the problem of irregular connectivity, digital content could be preloaded into devices or uploaded periodically to community centers to foster access to content such as educational materials.

Overcoming sociocultural factors is significant to the achievement of equal chances in information technology for learning. Bringing more girls into technology also needs solutions like girl-only computer classes, female role models in technology, and campaigns against cultural disbelief in girls in technology. Therefore, educational awareness should be promoted that will change people's perception of the use of technology in education and address unfavorable impacts, if any.

The application of these strategies needs the collective participation of government departments, educational centers, technical and software developers, and non-government organizations. In this regard, it presents both the technical or the digital aspect of the divide and the social aspect, which needs to be tackled to ensure that Pakistan has the best education system that can benefit all students as per their needs, whether they are in a rural area or urban and whether they can afford a smartphone or not.

### **3. Case Studies**

As the study of the implementation of digital education in Pakistan has suggested and explored certain strategies at work, it also marked the identification of certain persistent issues. These case studies exemplify the application of the solutions that can address the issue of the digital divide and contribute to the development of inclusive education at the national and international levels.

In urban Pakistan, a promising initiative whose practices may be emulated regarding inclusive DE is the Karachi School for Business and Leadership (KSBL). KSBL has incorporated a full-fledged digital learning system supported by Web 2.0 tools, digital classrooms, and learning metrics. This has enhanced students' interaction and effectiveness in class and enhanced academic performance, as indicated by the one-quarter increase in grade point averages since the adoption of the digital system. This has been possible through the enhancement of the sectors needed for KSBL's successful model, such as outstanding infrastructure, intensive teacher training, and accurate technological support.

Several issues are present in digitally evolving rural Pakistani Schools, but the following schools have certain approaches. Concerning these challenges and innovations, the case of the Rural Education and Development (READ) Foundation in Azad Jammu and Kashmir can be portrayed. Despite poor schools' resources and access to the Internet, READ Foundation schools have adopted a model of blended learning, using digital content with rare attendance at online sessions (Arif, 2017). They have also put in computer labs that are solar generated to counter electricity challenges. Due to such innovations, students' attendance rate has risen, while standardized test scores also rose.

Numerous lessons and recommended strategies are apparent from these case studies. First, it has been established that effective digital solutions in the context of education must be a multiple-bundled strategy, which means that the infrastructure, human resources, and content

must be improved at the same time. Second, sustainability in local practices is equally important, as evidenced by the Asian philanthropy of the READ Foundation, which employs offline content and sources of electricity. Third, the consistencies of the support and professional development for the teachers involved in the integration of technologies in learning need to be provided.

#### 4. Conclusion

This paper has examined how the digital divide has affected inclusive education for students in the urban and rural areas of Pakistan and found some of the implications based on the difference in the availability of technology, digital skills, and educational attainment. The results reveal the complex nature of the digital divide, which is discussed as a problem that involves not just access to technology but also the abilities and assets that would enable the proper use of technological opportunities in educational contexts.

The quality and nature of the early year's workforce have significant policy and practice consequences. The government needs to make the use of those new technologies and infrastructure development opportunities available and easily accessible to the people in rural and urban areas alike. This calls for a multi-sectoral open crescent framework integrating physical, human, financial, technological, and social capital. Schools and other higher learning institutions must incorporate technology into the curriculum and the teaching and learning process so that students in remote areas and students of low-income backgrounds can also be exposed to new technology.

Further research and investigations need to look into the effectiveness of digital education initiatives by looking into their impact on student outcomes and social mobility. Also, there is a need for further research into appropriate strategies that would help accommodate the gulf that separates the 'haves' from the 'have-nots' within the developing world. Exploring the possibilities of integrating new technologies like artificial intelligence and virtual reality to enhance inclusive education in different facets of Pakistan could also reveal important findings.

Addressing the digital divide is critical for improving the chances of enrollment in Pakistan's educational sector. It is important to remember that as technology advances in the world economy and society as a whole, ensuring equitable access to digital resources and skills is not only education justice but social and economic justice as well. Using the pointers highlighted in this study on the challenges and focusing more on the success models, Pakistan needs to enhance its education policies in order to create equity and ensure students' preparedness for a digital age. The process of achieving digital inclusion in education is certainly arduous and even often portrayed as painful, which is why it is important for social emancipation, economic growth, and the development of nations in the context of the twenty-first century.

#### 5. References

Arif, N. (2017). *A phenomenological investigation of the experiences of women with blended learning in rural areas of Pakistan* [PhD Thesis, Ohio University]. [https://rave.ohiolink.edu/etdc/view?acc\\_num=ohiou1486462114875603](https://rave.ohiolink.edu/etdc/view?acc_num=ohiou1486462114875603)

- Fajebe, A. A., Best, M. L., & Smyth, T. N. (2013). Is the one laptop per child enough? Viewpoints from classroom teachers in Rwanda. *Information Technologies & International Development*, 9(3), 29-38. <http://itidjournal.org/index.php/itid/article/view/1088.html>
- Hamid, S., Aftab, M. J., & Rehman, N.-. (2022). Situation analysis of digital literacy of public-school teachers in Punjab. *Global Digital & Print Media Review*, V(I), 50–62. [https://doi.org/10.31703/gdpmr.2022\(V-I\).06](https://doi.org/10.31703/gdpmr.2022(V-I).06)
- International Telecommunication Union. (2021). *Measuring digital development: Facts and figures 2021*. ITU Publications.
- Iqbal, T., & Muhammad, Y. (2020). Using differentiated instruction in inclusive schools: A qualitative analysis of prospective teachers' self-efficacy. *Journal of Inclusive Education*, 4(1), 229–257.
- Khan, M. A., Nabi, M. K., Khojah, M., & Tahir, M. (2020). Students' perception towards e-learning during COVID-19 pandemic in India: An empirical study. *Sustainability*, 13(1), 57. <https://doi.org/10.3390/su13010057>
- Ministry of Federal Education and Professional Training. (2017). *National education policy 2009 (revised 2017)*. Government of Pakistan.
- Ministry of Information Technology and Telecommunication. (2018). *Digital Pakistan policy*. Government of Pakistan.
- Mitchell, D., & Sutherland, D. (2020). *What really works in special and inclusive education: Using evidence-based teaching strategies*. Routledge. <https://www.taylorfrancis.com/books/mono/10.4324/9780429401923/really-works-special-inclusive-education-david-mitchell-dean-sutherland>
- Muhammad, Y., & Bokhari, T. B. A. F. (2024). Inclusive education in Pakistani schools: Theoretical perspectives, challenges and opportunities. *Pakistan Journal of Law, Analysis and Wisdom*, 3(3), 135-145.
- 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*, 9(1), 53--63. [https://doi.org/10.31703/grr.2024\(IX-I\).05](https://doi.org/10.31703/grr.2024(IX-I).05)
- Munyengabe, S., Yiyi, Z., Haiyan, H., & Hitimana, S. (2017). Primary teachers' perceptions on ICT integration for enhancing teaching and learning through the implementation of one laptop per child program in primary schools of Rwanda. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(11), 7193–7204. <https://www.ejmste.com/article/primary-teachers-perceptions-on-ict-integration-for-enhancing-teaching-and-learning-through-the-5108>
- Nawiwala, N. (2016). *Pakistan's education crisis: The real story*. Wilson Center.
- Pakistan Bureau of Statistics. (2021). *Pakistan social and living standards measurement survey (2019-20)*. Government of Pakistan.

- Passey, D. (2020). Theories, theoretical and conceptual frameworks, models and constructs: Limiting research outcomes through misconceptions and misunderstandings. *Studies in Technology Enhanced Learning*, 1(1). <https://doi.org/10.21428/8c225f6e.56810a1a>
- Pirzada, G., Muhammad, Y., & Anis, F. (2024). Pursuing inclusive vocational education amidst discrimination: The plight and hopes of Christian youth in Pakistan. *Qlantic Journal of Social Sciences*, 5(2), 98--108. <https://doi.org/10.55737/qjss.971355383>
- Reich, J., & Ito, M. (2017). *From good intentions to real outcomes: Equity by design in learning technologies*. Digital Media and Learning Research Hub.
- Salam, S., Jianqiu, Z., Pathan, Z. H., & Lei, W. (2017). Strategic Barriers in the Effective Integration of ICT in the Public Schools of Pakistan. *Proceedings of the 2017 International Conference on Computer Science and Artificial Intelligence*, 169–172. <https://doi.org/10.1145/3168390.3168422>
- Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide. *Telematics and Informatics*, 34(8), 1607–1624. <https://doi.org/10.1016/j.tele.2017.07.007>
- Selwyn, N. (2004). Reconsidering Political and Popular Understandings of the Digital Divide. *New Media & Society*, 6(3), 341–362. <https://doi.org/10.1177/1461444804042519>
- UNESCO. (1994). *The salamanca statement and framework for action on special needs education*. UNESCO.
- UNESCO. (2020). *Global education monitoring report 2020: Inclusion and education: All means all*. UNESCO.
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.
- USF. (2024). *Universal service fund*. Ministry of Information Technology and Telecommunication. <https://www.usf.org.pk/>
- van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.