Challenges and opportunities for online education in Pakistan
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Abstract

Even though online learning guarantees that students will continue their education, it also presents a number of difficulties for parents, students, and educational institutions. In underdeveloped or Third World countries, the implications of online learning are considerably more severe. The author points out that poverty, unemployment, illiteracy, and a lack of digital infrastructure have made life more difficult for the people living in these areas. He argues that 930,000 students in Pakistan are expected to drop out as a result of these issues, and women's education would suffer greatly. Online learning can transform education in developing nations by offering flexible access to learning resources. Yet, the shift to digital learning is fraught with a chain of challenges that undermine its efficiency. This article examines both the challenges and opportunities that online learning offers in developing countries. The barriers include limited access to the internet and digital tools, recurrent power outages, poorly skilled teachers, and cultural impediments to student engagement, especially for girls. Furthermore, the absence of suitable infrastructure and credible technical assistance compounds these problems, limiting the ability of students to fully enjoy online learning. In addition, the lack of quality monitoring systems and individualized learning aids degrades the quality of education, while lack of gender equity and emotional support systems contributes to the aggravation of learning gaps. In spite of these major challenges, online learning has much to offer as well. It can increase access to education for marginalized groups, deliver individualized learning experiences, and fill gaps created by overcrowded classrooms. The adaptability of online learning platforms makes it possible to give customized pacing and access to a wide range of materials, such as foreign curriculums and interactive resources. Further, with an appropriate framework of policies, information and communication technology facilities, and teacher development, online learning can boost learning outcomes, promote skill acquisition, and offer learners avenues for further learning and employment. This piece finally meets the call for solutions that address the obstacles to online learning in low-income nations while acknowledging the transformative power digital learning holds for world education equality.
Keywords: Online Education, Developing Countries, Digital Divide, Educational Inequality, E-Learning Challenges

Introduction:

Negative Impacts of Online Education First and foremost, there is no substitute for in-person instruction. Students are denied the opportunity to engage with their peers, which is crucial for the development of their personalities and communication skills. Social skills are essential for boosting young children's confidence because they facilitate meeting new people, forming friendships, and having constructive conversations. As a result, digital education has an impact on students' social skills in addition to their psychological and mental health. The COVID-19 pandemic has already made life challenging for many, and online education has made matters worse.

"83 percent of students have complained about mental health," according to the Healthy Minds Study (HMS), a national survey carried out in the United States. Since their prior group conversations aided them, students find it difficult to complete all of the exercises on their own. These days, the one communication method that cannot replace in-person interactions is virtual contact. Furthermore, the lack of digital infrastructure necessary for online education is causing COVID-19 to wreak havoc in many developing countries. Afghanistan, Pakistan, Syria, Lebanon, and several African nations, for example, do not have access to digital equipment and know-how.

It also claims that "there are more than 770 million people around the world who cannot read or write," according to a study conducted by the United Nations Educational, Scientific, and Cultural Organisation (UNESCO). As a result, the move to online learning is expected to result in higher rates of unemployment and illiteracy. Additionally, parents now have more work to do because of online programs. Parents now have more responsibilities because young children require parental supervision and help when taking online courses. Since children now spend all of their time at home, working mothers were forced to quit their employment. In a similar vein, women's unemployment has greatly increased. As a result, parents find it difficult to maintain work-life balance in the face of rising expenses. The global adoption of online education is beset with several obstacles. First and foremost, infrastructure availability is a huge undertaking, particularly at a time when even the most industrialised and sophisticated countries are struggling with the issue of online education. Online education has made matters worse for underdeveloped nations, who were already trailing behind in the field of education. In a nation like Pakistan, barely 18% of the population has a smartphone, and the state's expenditure for education is a pitiful 2% of its GDP. Furthermore, according to data from the Pew Research Centre, in 2018, just 24% of Indians had a smartphone. This figure has gone up by 7% since then.

The transition to online education has been revolutionary, particularly in developing nations where the conventional classroom systems tend to encounter serious resource constraints. With the speedy evolution of technology and the

world's experience of events such as the COVID-19 pandemic, online learning has become a possible solution to close the gap in education. Nevertheless, the process is by no means simple. While online learning holds the promise of greater access, flexible learning, and democratization of knowledge, it also comes with many challenges that disproportionately burden students and teachers in low-income areas. These challenges, including limited access to the internet, poor digital infrastructure, and socio-cultural obstacles, form a rich web of problems that undermine the effectiveness and sustainability of digital learning.

Education systems in most developing countries are still struggling with fundamental issues like full classrooms, untrained teachers, and insufficient learning materials. The pandemic also revealed the vulnerability of current structures, with millions of students abruptly removed from the physical classroom and forced into the digital space. In contrast to promises of transcending geographical barriers, the actual experience for most students is characterized by inequalities in terms of technology, electricity, and even the availability of basic learning materials.

However, with these immense challenges comes also the potential to transform education in developing nations. With increased flexibility, access to more types of learning material, and the possibility of individualized learning, online education has the power to enable its students like never before, something that conventional systems are not always able to do. In this paper, we are going to consider the challenges as well as opportunities the use of online education opens in developing nations and shed some light on how they can exploit the potential of virtual learning but face the impediments hindering it from fulfilling its potential.

1. Limited Internet Access

In most developing nations, reliable internet connection is still a luxury and not a standard. Particularly in rural and remote communities, students tend to use slow mobile networks with unstable signals that make it virtually impossible to connect to a live class or download learning materials. Picture a child sitting under a tree in a village, trying to get a signal on their phone—this is not a rare sight in much of South Asia and Sub-Saharan Africa. These constraints not only result in lost lessons but also create frustration and demotivation. Based on the World Bank (2023), more than 60% of low-income country students do not have a stable internet connection at home, posing a root cause to inclusive learning. The issue exacerbates education inequality and highlights the critical necessity for the development of infrastructure in disadvantaged areas.(World Bank, 2023; UNESCO, 2020).

2. Digital Device Unavailability

Device access is yet another quiet crisis in the world of online learning. While urban students might have a smartphone or laptop, rural or marginalized students

have no basic phone, much less a computer or tablet. In most households, one smartphone is shared among several children—or between children and working parents—creating scheduling conflicts and lost learning opportunities. For instance, in Pakistan and Nigeria, research indicates that over 40% of school children lack direct ownership of a digital device. This leaves them hugely disadvantaged in the age of globalization where learning keeps shifting to digital platforms. Besides, even if devices exist, their sub-standard condition, antiquated software, or low capacity to hold any files render them practically unusable for full educational immersion.(UNICEF, 2020; ITU, 2021).

3. Electricity Shortages

The ability to learn is frequently severed—literally. Regular and unpredictable power outages are a significant barrier to regular online learning in developing countries. In Nepal, Pakistan, and parts of East Africa, electricity is only available for a few hours a day. For students using digital tools, this translates into lost lectures, dead batteries, and interrupted routines. The scenario becomes even more worrisome during exam or real-time sessions when connectivity and power need to be reliable. In addition to the technical disruption, electricity outages are also a source of psychological strain—causing anxiety, feelings of helplessness, and even guilt in the students who wish to study but cannot control their surroundings. This test points to the intersection of core infrastructure and education, and how solving the puzzle of e-learning needs more than digital solutions—it needs systemic support.(World Bank, 2021; UNESCO, 2020).

4. Expensive Data

For most families in developing nations, internet data is just too expensive to be able to access online classes on a regular basis. As opposed to developed countries where unlimited Wi-Fi is standard, students in poorer areas usually rely on prepaid mobile data, which is exhausted fast and needs to be bought over and over. A school child in a rural village might have to make a choice between purchasing internet credit or paying household bills. Such a cost can be daunting, particularly for those families where several children are in school. Consequently, many students attend only parts of their online courses, miss video lessons, or use low-bandwidth materials, sacrificing the integrity of education. The digital divide is no longer merely an issue of access—it's also an issue of affordability. In the absence of subsidies or government intervention, the cost of connectivity is a major educational hurdle.(Broadband Commission for Sustainable Development, 2019; ADB, 2021).

5. Digital Illiteracy

Technology is accessible, but the know-how to use it effectively is lacking. Digital illiteracy is a significant obstacle in the way of online education in

developing countries. Most students—and more teachers—have never had formal training on how to use educational platforms, set up accounts, or turn in assignments online. A teacher might be an expert at delivering a great face-to-face lecture but flustered trying to share a screen or work in a virtual classroom. Likewise, a student who is proficient in physical classrooms might be confused or left behind in virtual classrooms. This digital illiteracy creates frustration, poor academic achievement, and a growing disconnect between those who learn quickly and those who struggle. Closing the gap takes more than tools, however—it takes thorough digital literacy programs that feature hands-on experience, continuous support, and reinforcement at all levels.(OECD, 2020; Gakuu & Kidombo, 2016).

6. Inadequate Teacher Training

Teachers form the backbone of any education system, but in the shift to online education, most of them have been left to their own devices. In developing nations, teacher training hardly ever involves digital pedagogy. Teachers are usually left to figure out new platforms, create digital content, and handle online classrooms with no or minimal training. This sudden change has burdened even the most seasoned professionals. Some get stuck on posting lessons, some on getting students to keep cameras on or randomly joining and exiting because of poor connectivity. This results in an inactive, unidirectional teaching style that can't capture the interactive essence of classroom learning. Without formal training programs, even the most supportive teachers might find themselves ill-prepared and short-handed—setting back the very effectiveness of online education overall.(Dhawan, 2020; UNESCO, 2020).

7. Language Barriers

Web-based learning sites tend to be English- or other international languages-dominated, and the native students are left behind. In countries with more than one language spoken, such as India, Nigeria, and Kenya, this is a significant barrier for millions of students. A student who can't learn from English-based directions may not catch key lessons or won't turn in homework appropriately—not because he is dumb, but language barrier. Even where there are materials, the content might not be of high quality or the appropriate curriculum alignment. Language issue isn't just an issue of comprehension—it's confidence and inclusion. Students who are unable to learn in their language of choice can become alienated, embarrassed, or discouraged. To close this gap, educational materials need to be culturally and linguistically accessible, enabling all students to learn in the language they know best.(UNESCO, 2020; UNICEF, 2020).

8. Low Student Engagement

One of the most obvious negatives of online education is the dramatic reduction in student engagement. In traditional classrooms, instructors can make eye contact, employ body language, and have a dynamic space to engage students. But in virtual classrooms, it's simple for students to be passive—particularly when they leave their cameras off, sit in distracting environments, or multitask while taking classes. Numerous students confess to showing up to class simply for attendance purposes, without actually comprehending the material. For younger children particularly, attention is more fleeting on-line, and the lack of peer interaction takes away an essential social incentive. Educators also find it difficult to identify confusion, boredom, or emotional upset via a screen. This affective disconnection from learning translates to disengagement, low academic achievement, and increasing isolation. In the long run, low engagement can turn education into a chore instead of a journey of curiosity and growth.(Bond, 2020; Martin & Bolliger, 2018).

9. Inadequate Infrastructure

The key to effective online learning is the presence of basic infrastructure—electricity, internet towers, computers, and classrooms. Unfortunately, in most developing countries, these basics are either absent or unstable. Computer labs are missing in some schools; desks, quiet rooms, and even light bulbs strong enough for nighttime studying are lacking in many homes. Underinvestment in digital infrastructure means that even when educational programs are rolled out, they fail to reach the very students who need them most. Without access to electricity or network towers in their area, a student can't watch a video lecture no matter how much they want to learn. This infrastructure deficit isn't merely a technical one—it's a social one. It encourages inequality, thereby limiting the future opportunities of millions of young learners who are equally deserving of the same opportunities as their urban peers.
(UNESCO, 2020; World Bank, 2020).

10. Technical Support Shortage

In conventional schools, when a projector fails or a system crashes, someone from staff is typically there to resolve the issue. But on the web, when a student's app won't load or a teacher's computer crashes during a class, nobody is around to assist. Technical support is reduced to an every-day irritation and a top source of hindrance to routine. Numerous learners drop out mid-project because they don't have the ability to debug themselves. Teachers also may reschedule or curtail classes as a result of unsolved problems. In more affluent countries, schools spend on help desks and IT staff—but in developing nations, technical support is a luxury, not an expectation. This lack of on-the-spot help makes small

problems into huge obstacles, stealing time and confidence from those who cannot afford to lose either.
(Dhawan, 2020; World Bank, 2021).

11. Unreliable Government Policies

Government policies are instrumental in framing national education systems, yet digital education in most developing nations has no well-defined, long-term strategy. In emergencies such as the COVID-19 pandemic, most governments introduced temporary online platforms without a stable framework or financial plan to maintain them. Digital learning policies usually switch hands from one government to another, and infrastructure support, teacher training, or the development of e-contents is sporadic. This unpredictability does not allow schools to make long-term plans or invest in online systems. Additionally, policies tend to be urban-focused, neglecting the specific needs of rural or marginalized communities. This leads to a patchwork of initiatives with no national coherence. In the absence of robust, stable, and inclusive policy frameworks, online education is likely to remain weak and fragmented, not in a position to properly serve learners nationwide.(UNESCO, 2020; Trucano, 2016).

12. Cultural Barriers

In most developing nations, cultural values and traditions have the potential to greatly impact access to education, especially for girls and children from conservative families. Online learning, while appearing to be inclusive, can at times be restricted by societal norms. For example, girls can be discouraged or even prohibited from accessing smartphones or the internet, especially in rural or patriarchal societies. There is also a lingering distrust of technology—too often regarded as a diversion or a cause of inappropriate material—that results in limits on computer-based learning. Parents who themselves never had access to formal schooling may also underappreciate or misinterpret the value of online education, believing it is without discipline or credibility. Such attitudes create intangible but effective barriers. Even if the technology exists, it requires a cultural change to make it routine to learn from home, boys and girls alike, without fear, judgment, or resistance.(UNICEF, 2020; Gakuu & Kidombo, 2016).

13. Lack of Monitoring Mechanisms

In physical classrooms, teachers can immediately identify when a student is distracted, struggling, or absent. In the online world, this kind of monitoring is a problem. Without systems to monitor attendance accurately, guarantee active participation, or gauge understanding in real time, students fall through the cracks. Some enter class and forget the screen; others fill out assignments lifted from other students or AI software, and no one sees the difference. Teachers, swamped by class size or technical constraints, may not have the equipment to follow up. This absence of monitoring isn't only affecting academic

achievement—it's impacting discipline, responsibility, and learning. Without digital mechanisms such as learning analytics, behavior monitors, or individualized feedback systems, it's difficult to know if online learning is succeeding for every individual student.(Borup et al., 2014; Kizilcec et al., 2017).

14. Learning Environment at Home

The home environment of a student is crucial to the success of online learning, but many homes in developing nations are anything but conducive to learning. Congested living spaces, ambient noise, household duties, and a general lack of square footage make it hard to focus on online classes. In more impoverished communities, kids will be sharing a bedroom—or even a bed—with brothers and sisters, and the concept of a "study space" is non-existent. Mothers might request assistance with tasks, younger siblings might stop by, and there might not be anyone available to facilitate scholarly habits. For most students, home is not a learning sanctuary; it's a distraction battlefield. This bitter truth makes online learning a frustrating experience, where students are perpetually caught between domestic responsibilities and their academic success desires.(UNESCO, 2020; Andrew et al., 2020).

15. Overloaded Platforms

Online platforms are the cornerstone of digital education, but most of the time these platforms are not designed to support the abrupt influx of users amid mass school closures or enrollment increases. Government-initiated portals tend to crash, private platforms freeze or lag, and applications may not be compatible with low-end devices. When platforms fail to remain reliable, it shatters the trust of both students and educators. Imagine a student who was only able to access the internet after a long wait, only to discover that their learning portal is frozen or inaccessible. Such repeated failures discourage further use. Additionally, the platforms can be non-localized for various languages or learning styles and therefore more difficult to utilize for a diverse student base. Rather than being an assistance, technology is a barrier when it's not well planned or sized appropriately for mass utilization in environments that have limited resources.(OECD, 2020; World Bank, 2021).

16. No Emotional Support and Counseling

Online learning tends to take away one of the most important aspects of learning: emotional support. Students in regular schools have the ability to discuss their academic and personal problems with teachers, counselors, or friends. But in cyberspace, emotional well-being is often neglected. Students from developing countries already suffer from poverty, family stress, and instability—and when online learning does not offer a comfortable environment in which they can freely express themselves or seek help, that stress multiplies. The lack of trained counselors or even check-in systems results in burnout, anxiety, and emotional detachment. Emotional health is closely connected with academic performance

for most young students, particularly adolescents. Without comprehensive care that encompasses mental health support, education is a process, not a journey—and students can fall behind, not only in grades, but in life.(Aguilera-Hermida, 2020; Wang et al., 2021).

17. Cheating and Academic Dishonesty

In the online classroom, maintaining academic honesty is a challenging task. Students in developing nations, who are not familiar with proper citation techniques or who feel pressured to succeed, turn to cheating or copying assignments. Online examinations usually lack strict supervision, and with minimal chances of being detected, students can employ dishonest methods to pass exams or do assignments. This undervalues the learning process and gives students a false sense of accomplishment. It also has long-term implications, as students graduate without really knowing the material. Furthermore, teachers themselves may feel powerless or uncertain about stopping dishonesty, particularly when they do not have resources such as plagiarism detectors or safe exam systems. Encouraging academic integrity takes more than regulations—it requires a culture of learning for knowledge, not only for passing.(Lancaster & Cotarlan, 2021; Holden et al., 2021).

18. Disability Accessibility Issues

Online learning is supposed to cater to all learners equally, yet the physically challenged, hearing impaired, and visually impaired are commonly left out. In many developing countries, online platforms are deprived of the most fundamental features necessary to assist students with special needs—screen readers, sign language support, captioned videos, or keyboard navigation tools, for example. Even where such tools are present, they are likely to be on costly or foreign platforms, beyond reach for the majority. For a hearing-impaired student, an unsubtitled video lesson becomes insurmountable. For a visually impaired student, a picture-oriented site with no descriptions renders education a nightmare. Such exclusion intensifies educational deprivation and excludes from learning those already confronted by multiple barriers. Being an afterthought is not adequate for accessibility—rather, accessibility has to become the top agenda for every e-learning effort. (UNESCO, 2020; Al-Azawei et al., 2016).

19. Gender Inequality

Gender continues to affect educational access in large portions of the developing world, particularly with respect to technology. Girls tend to be denied limited access to phones or computers either because of societal norms or concerns regarding the misuse of the internet. Some parents may focus more on their sons' education, believing daughters will one day depart for marriage. This digital gender gap is particularly evident in virtual classrooms where there are fewer female students, they are silent, or they are simply absent. In other instances, if girls do get enrolled, they're dissuaded from participating freely or flashing their

faces on camera because of cultural prohibitions. Gender inequality not just restricts individual potential—it undermines whole communities by marginalizing half their potential. Providing equal access to electronic learning tools and support mechanisms to girls is critical for an education system that is truly inclusive (UNICEF, 2020; Broadband Commission for Sustainable Development, 2019).

20. Absence of Feedback and Personalized Learning

In a classroom, a teacher can observe when a student is lagging behind and provide individualized help or encouragement. In an online environment, this degree of individualized attention is usually lacking. Most platforms provide one-size-fits-all content without adjusting to learning speeds or learning styles. Students who lag behind seldom get timely feedback, and those who are ahead might not be sufficiently challenged. Without ongoing assessment and direction, students may become lost and overlooked. This disconnection affects not just academic achievement but also self-confidence. Developing nations, with few digital resources and overburdened teachers, are unable to deploy personalized learning systems that can monitor progress, adapt difficulty, and provide actionable feedback. But without personalization, education can become inflexible and ineffective, failing to motivate the very students it seeks to elevate Realistic and Workable Ways to Handle the Serious and Difficult Issues of Online Learning Going forward, practical and achievable solutions are required to close the gaps in online education and get over the difficulties it poses. The function of international organisations is crucial for it. For example, the United Nations and the World Bank should keep promoting education in underdeveloped nations. UN agencies like UNICEF and UNESCO must be more watchful and aggressively fulfil their duty in preventing children from dropping out of school because of poverty.(Panigrahi et al., 2018; Holmes & Prieto-Rodriguez, 2018).

Conclusion

Students have enough opportunity to improve their knowledge, abilities, and information thanks to e-learning. It makes things easier by being economical, time-efficient, and self-paced. By simultaneously engaging a large audience, it fosters pluralism. Multimedia features aid in maintaining content interest. The content is individualized and empowers people by giving everyone access to educational possibilities. Additionally, it fosters a sense of self-reliance and dependability. Even when the other person is not physically there, it teaches people how to manage their time and deadlines. It facilitates the development of virtual world networks. It facilitates the development of an individual's online persona. Given the situation in Pakistan, internet penetration and electricity issues become major obstacles. There is a lack of in-person connection with the course teacher and peers. This decreased students' confidence in the system, made them less focused on the instructions, and occasionally made it difficult to

meet deadlines. Users are also disturbed by an excessive amount of information since it diverts their attention. Moreover, entertaining content makes it harder to focus. Peer-to-peer connection, a mentor, and a competitive classroom setting are all severely absent in this process. Specific knowledge of the internet is necessary for success. Without a doubt, the COVID-19 pandemic has reduced the globe to its knees and become the weak point for every country. As a result, it has also revealed weaknesses in the educational system. Online education has its drawbacks, while being the finest option for continuing education and the necessity of the hour.

Students' mental health has suffered as a result of the stress and worry brought on by COVID-19, not to mention online learning. Furthermore, the pupils' enjoyment of their life has been nearly snatched away by their extended absence from their peers. However, the high expense of digital infrastructure is making it difficult for educational institutions to afford it.

The transition to online education has made it difficult for Third World countries, who were already struggling with issues of poverty and literacy, as well as the leadership of the other states, to expand the online education network. However, if real and coordinated attempts are made, there is hope. Online education has advanced significantly and helped individuals appreciate the need of personal connection, despite significant impediments. The entire globe was forced to consider the brittle bones in their bodies. According to Antonio Guterres, "We are in this together, and we will get through this together," even if inequality characterises our time.

The growth of online learning represents a significant change in how information is gained and disseminated. Even if it comes with difficulties, they may be overcome with initiative, fortitude, and a dedication to personal development. With previously unheard-of access, flexibility, and control over their educational paths, online education gives students the tools they need to realise their greatest potential. Online education is a ray of hope as the digital era progresses, illuminating the way to a day where knowledge has no boundaries. Take advantage of the chances, overcome the obstacles, and set off on a life-changing exploration of the world of online learning.

This study concludes that e-learning becomes the great source of benefit for the students by providing them chance to

Learn whatever they are interested in at their own pace and time. Knowledge is thoroughly available on their desired subjects which can be utilized any time. But at the same time over-flow of information restricts them to move ahead with their particular range and increase their confusion. Multimedia factor in e-learning helps students in developing their interest and interaction throughout the process but again it involves too much technicalities which requires extra skills. Internet has variety of online material which distracts students from serious portals, discussion forums and their study. Students used the internet to

keep and maintain their identity on social media and to remain in touch with their friends, colleagues, relatives. They also keep themselves updated with latest entertaining stuff including music, films, videos, documentaries etc. While performing all these tasks they are also managing their learning process online, so the distraction is very obvious in this situation. Simultaneously lack of face to face interaction makes it virtually focused and creates the sense of being "alone" in the virtual world. Experiences of offline group studies, peers, teacher-student direct relation are also missed in this type of learning. It is also very demanding and dependent on students' side. Electricity problems, internet penetration in the country and internet speed also become hurdle in smooth process of e-learning. All these caused demotivation in the collective attitude of learners

Thoughts

The study's findings indicate that e-learning activities, course outlines, and curricula should be properly planned; they should be engaging and interactive at the same time to prevent user boredom and maybe help them stay focused on the subject matter. Eye-catching and attention-grabbing visuals are essential. The findings show that e-learning also need an active supervisor's role to monitor each participant; group projects and individual activities should be properly matched. The findings also imply that as the nation's technology capabilities increase, e-learning will evolve and become better.

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