Online education revolution
in the age of technology

La Rivoluzione dell'istruzione online
nell'era tecnologica

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Abstract

Over the past two decades, online and virtual education have become a core component of educational systems worldwide. This transformation has presented both opportunities and challenges, particularly in developing nations. This paper examines the evolution and current state of online and digital education in Afghanistan, and Developing Countries over the past four years, with a focus on its implications for the national education systems of this country. Key challenges explored include digital inequality, inadequate technological infrastructure, and socio-economic disparities. The discussion also highlights policy gaps and the broader societal consequences of restricting Afghan female access to education in Afghanistan. The paper concludes that while online and virtual education can serve as a vital supplement to traditional classroom-based learning, it cannot wholly replace in-person education. Strategic policy interventions and investments in infrastructure are crucial for harnessing the full potential of digital learning in developing contexts.

Keywords: distance learning; digital inequalities; girls' education; Afghanistan; Taliban

Riassunto

Negli ultimi vent'anni, l'istruzione online e virtuale ha assunto un ruolo centrale nei sistemi educativi a livello globale, generando opportunità e sfide, in particolare nei paesi in via di sviluppo. Il presente studio analizza l'evoluzione e lo stato attuale dell'istruzione digitale in Afghanistan e in altri paesi in via di sviluppo negli ultimi quattro anni, con particolare attenzione alle implicazioni per i sistemi educativi nazionali. Le principali sfide identificate includono disuguaglianze digitali, infrastrutture tecnologiche inadeguate e disparità socio-economiche. Viene inoltre evidenziata la mancanza di politiche adeguate e le conseguenze sociali derivanti dalla limitazione dell'accesso delle ragazze afghane all'istruzione. Lo studio conclude che, sebbene l'istruzione online e virtuale possa costituire un complemento essenziale all'apprendimento tradizionale in aula, non può sostituire completamente l'istruzione in presenza. Interventi politici mirati e investimenti infrastrutturali risultano cruciali per valorizzare pienamente il potenziale dell'apprendimento digitale nei contesti in via di sviluppo.

Parole chiave: apprendimento a distanza; disuguaglianze digitali; istruzione femminile; Afghanistan; Taliban

1. Introduction

Over the past two decades, with the rapid advancements in information and communication technologies, online education has become one of the core pillars of educational systems worldwide. These transformations have introduced new challenges and opportunities, particularly in developing countries. This paper examines the current state of online and digital education in countries such as Iran, Afghanistan, Pakistan, and India over the past four years. It analyzes its impact on the educational systems of these nations. Educational systems worldwide have faced significant disruptions over the past few years, particularly during the COVID-19 pandemic. This global crisis led to a rapid transition from traditional, in-person education to online and virtual learning platforms. While this shift was necessary to maintain educational continuity, it introduced a series of challenges, particularly for students in developing countries like Afghanistan and Bangladesh. These nations were often ill-equipped with the necessary resources and technical infrastructure to support effective online education (Rajeb et al., 2023).

2.Discussion

Several studies have explored the challenges faced by students in these regions, with a particular emphasis on their resistance to online and virtual learning. Rajeb et al. (2023) developed the Online Learning Acceptance Scale to identify the factors influencing students' willingness to adopt digital learning tools. Their study highlighted several key barriers, such as a lack of access to reliable internet and limited technological readiness among students and educators. The research indicates that many students in developing countries have faced difficulties adapting to this new learning mode due to these infrastructural limitations.

Additionally, the transition to remote learning during the pandemic brought to the forefront underlying issues of digital inequality. Ndibalema (2022) conducted a systematic review and found that the lack of access to stable internet connections, technological preparedness, and digital solutions was among the primary challenges students and faculty members encountered. Furthermore, many students experienced emotional and social difficulties related to the abrupt shift to online learning, further exacerbating the challenges of adapting to virtual education. These findings underscore the importance of addressing the digital divide in developing countries, which has hindered the effectiveness of online education even before the pandemic. The absence of a digital culture, inadequate infrastructure, and insufficient training for students and instructors have been significant barriers to the successful integration of online learning in these regions.

Economic and social factors have significantly influenced the experience of online and virtual distance learning in developing countries. Hossein (2021) analyzes data from four developing nations and finds that students from wealthy families residing in urban areas with internet access have benefited more from online and virtual education than their peers. These inequalities were evident not only in access to technology but also in the ability to utilize alternative educational methods. Interestingly, apart from compliance-related differences, no significant gender disparity was observed in the online learning experience; however, female students faced additional pressure due to their greater household responsibilities.

One of the significant challenges in the development of online, distance, and virtual education is the issue of financing digital infrastructure in education. Chimbunde (2023), through case studies including Zimbabwe, found that universities in the country are grappling with a shortage of skilled professionals, weak infrastructure, and cybersecurity concerns. These issues are primarily rooted in budget constraints and reliance on traditional aid. The study suggests that governments can reduce the costs of developing digital infrastructure in education by liberalizing the Internet market and reducing monopolies in digital services. Such strategies can be crucial in facilitating the digital transformation of local and national education systems.

During the pandemic, the digital divide between online and virtual education took on complex dimensions, particularly in South Asian countries. By developing an analytical framework, Mathrani et al. (2022) demonstrated that unequal access to technology, gender-based discrimination, and the increased burden of household responsibilities on female students were key factors in reducing the effectiveness of

online and distance learning. The study highlights the urgent need to develop more equitable policies that narrow the digital divide in online and distance education, thereby supporting marginalized groups.

Based on the findings of these studies, it becomes evident that the revolution in online and virtual education in developing countries faces numerous obstacles. From the lack of technological infrastructure to social and economic inequalities, all have significantly impacted the quality and accessibility of online and virtual learning. Nevertheless, the crisis has also created an opportunity to reassess online and distance education policies and invest in digital development. Future efforts and research can mitigate these challenges by focusing on localized and national solutions, as well as informed policy-making.

3. The Online Education Revolution in the Age of Technology

In the twenty-first century, the rapid advancement of digital and communication technologies has profoundly transformed educational methods and learning practices. Initially regarded as a complementary tool to traditional classroom instruction, online and virtual education has evolved into a standalone educational system, expanding steadily globally. This educational revolution has transcended geographical, cultural, linguistic, and economic boundaries, providing new learning opportunities to individuals in developing and developed nations.

By offering the flexibility to learn anytime and anywhere, online education has significantly enhanced access to learning for marginalized and underserved populations—particularly those residing in remote areas, as well as women and migrants. Furthermore, the integration of multimedia content, interactive learning strategies, and the use of Open Educational Resources (OER) has, in many cases, led to notable improvements in the quality of education.

Nevertheless, several challenges continue to impede the full realization of the potential of online and virtual learning. These include inadequate internet and digital infrastructure, limited access to digital devices, disparities in technological accessibility, and a lack of sufficient training for educators and learners. In many developing contexts, traditional perceptions of education and the limited recognition of online and virtual course credentials have further slowed the adoption of these new learning models.

Comprehensive planning, investment in technological infrastructure, professional development for educators, and formal accreditation frameworks are essential to ensuring the successful implementation of online education in developing countries. Only under such conditions can online education serve as an effective tool for advancing sustainable development and promoting educational equity.

4. The State of Online Education in Developing Countries

During the COVID-19 pandemic, online education emerged as a vital solution for maintaining educational continuity in developing countries. However, significant disparities in access, quality, and acceptance of this educational approach have been observed across countries such as Iran, Afghanistan, Pakistan, and India. Studies indicate that various factors—including inadequate technological infrastructure, socio-economic inequalities, and a lack of digital skills in education—have posed significant challenges to the effective implementation of online and virtual learning systems. For instance, the research conducted by Rajeb et al. (2023) highlights the importance of institutional factors, such as technological adequacy and instructor proficiency, in the acceptance of online learning. Meanwhile, Ndibalema (2022) highlights the digital divide in education and the lack of preparedness among both students and instructors.

Each of the countries under examination faces distinct circumstances. Despite relative progress in online and virtual education infrastructure, Iran still struggles with challenges such as an excessive focus on transmitting knowledge rather than generating and practically applying scientific knowledge within society. Afghanistan, on the other hand, grapples with more severe structural issues, including a shortage of educational resources, limited internet access, and gender-based inequalities in online and distance learning education. Although efforts have been made in Pakistan and India to expand online and distance learning, poverty and lack of resources in rural areas remain significant obstacles to achieving educational equity.

These differences underscore the urgent need for localized and national solutions, as well as intelligent

policy-making. As Hossein (2021) demonstrates, students from wealthier families living in urban areas have benefited more from online and virtual learning opportunities. Furthermore, studies such as Chimbunde (2023) stress the importance of sustainable funding and reducing the cost of access to technology. The following sections will provide a detailed examination of each country's situation.

5. Afghanistan

Following the collapse of the Afghanistan government at the hands of the Taliban in 2021, the education system—particularly for women and girls—was drastically affected, pushing the landscape from in-person learning toward online alternatives. The Taliban officially banned education for women and girls, severely limiting access to formal, in-person education for half of the country's population. This restriction has not only had a profoundly negative impact on the overall quality of education but has also exacerbated existing educational inequalities in Afghanistan.

Based on the Taliban's religious and ideological beliefs, Afghan women and girls have been stripped of their rights to education, learning, and employment. The group has prohibited girls from attending school beyond the sixth grade, meaning they are no longer allowed to continue their studies at the middle and high school levels. Furthermore, in both schools and universities, numerous academic disciplines and courses have been abolished and replaced with religious subjects aligned with the Taliban's preferences. However, these mandatory religious curricula, shaped by the Taliban's extremist ideology, are fundamentally incompatible with the modern sciences and academic knowledge that are essential for meeting the contemporary needs of Afghan society.

Afghanistan has been one of the most vulnerable countries in the world to educational disruptions and challenges brought on by the pandemic. Monib (2024), in a study on Afghan students, found that while online education was accepted as a helpful solution, high costs and the need for technological skills remained significant barriers—particularly for Afghan women and girls. In addition, the lack of access to reliable internet and the absence of adequate devices, such as smartphones, laptops, computers, and tablets, have excluded many students in Afghanistan from participating in online and virtual learning, leaving them deprived of education.

Research by Azam et al. (2014) also indicates that even before the pandemic, Afghanistan's education system struggled with structural issues, including a shortage of trained teachers and insufficient resources. These problems intensified during the shift to virtual and online learning, leaving many students—especially in rural areas—without access to education. Moreover, the study by Ndibalema (2022) highlights the emotional and social challenges faced by Afghan students, notably the isolation they experience in online and virtual education.

6. Online Education in Afghanistan After 2021: A Ray of Hope

Following the fall of the Afghan government in August 2021 and the return of the Taliban to power, the country's educational system—especially for women and girls—faced serious challenges. The closure of secondary and higher education institutions for girls, combined with security pressures and educational and cultural restrictions, has deprived millions of Afghanistani girls of their fundamental right to education. In such circumstances, online and distance learning emerged as one of the most effective alternative solutions, offering a spark and a glimmer of hope for a better future. However, even this ray of hope faces numerous challenges and obstacles.

After the fall of the Islamic Republic of Afghanistan to the Taliban, and during this ongoing crisis that has now lasted nearly four years, dozens of educational institutions at the school and university levels—whether in-person, online, or virtual—have been established by teachers, education activists, and Afghan migrants and refugees both inside and outside the country.

Institutions such as Woman Online University (WOU), Afghanistan Girls Online University, Roshan Afghanistan Online University (RAOU), American University of Afghanistan (AUAF), Revolutionary Association of the Women of Afghanistan (RAWA), Learn Afghan, Daricha School, Banoo Online School,

Rawan Online School, Kaaj Girl's Online School, Sahar, Sola, Herat Online School, Afghan Online School, Binavis, Begum Academy, Anar Academy, Afghan Academy, Mohajir Academy (MA), and others have voluntarily organized classes in academic sciences, school curricula, English language, digital literacy, life skills, basic literacy, and more—all with minimal resources.

Among these, Mohajir Academy (MA) is a non-profit online and virtual educational institution started to provide high-quality online and virtual learning and skills development opportunities for migrants, refugees, children, and particularly Afghan women and girls who have been deprived of education due to war, forced migration, or structural barriers. This academy was launched in 2023 as a response to the Taliban's ban on girls' education in Afghanistan, and it also focuses on the educational needs of Afghan migrants and refugees in Iran—especially those who, due to a lack of legal identification or financial hardship, are unable to attend public schools.

The word "Mohajir" is derived from Persian-Arabic, meaning "refugee" or "migrant," and it reflects the academy's mission to serve migrant and refugee communities from diverse social backgrounds. Mohajir Academy strives to build an inclusive and empowered society where children and youth, especially girls, gain access to knowledge, critical thinking, academic skills, and cultural awareness. The academy aims to cultivate responsible, informed, and active global citizens in an interconnected world by promoting learning and digital literacy.

Since the Taliban's return to power on August 15, 2021, Afghan girls and women have been systematically barred from attending schools and universities across the country. According to the UNESCO report (2023), approximately 1.1 million girls and young women have been denied access to formal education due to this ban. The report also reveals that nearly 80 percent of school-aged girls in Afghanistan—equivalent to about 2.5 million individuals—are currently out of school. Even more concerning is the fact that almost 30 percent of girls in Afghanistan have never had access to primary education. These statistics highlight the deepening education crisis and underscore the urgent need to create alternative solutions to support the education of girls and women in Afghanistan.

Given these circumstances, it is recommended that organizations, governments, and international educational bodies invest in developing digital infrastructure for online, virtual, and distance learning, provide affordable educational devices and tools, and offer training programs in technological skills to help improve the state of online and virtual education in Afghanistan. Additionally, promoting blended learning can be a practical solution to reduce educational inequalities. The future of education in Afghanistan depends on global support, information technology, and the commitment of national and international institutions advocating for continued learning for girls and women who have been left behind or denied access to education. While numerous challenges persist, the emergence of online and virtual education represents a new pathway in the fight against the darkness of ignorance in a crisis-stricken country like Afghanistan.

7. Comparison of Online Education in Developed & Developing Countries

In developed countries and nations, online and virtual education is widely regarded as supplementary to traditional in-person instruction. With advanced infrastructure and greater access to digital technologies, these countries have successfully enhanced the quality of online, virtual, and distance learning. By contrast, developing countries encounter a range of structural and technological barriers that necessitate more effective strategies to elevate the standard of online education. During the COVID-19 pandemic, online, virtual, and distance education became a global imperative. However, significant disparities in quality and effectiveness emerged between developed and developing contexts. Advanced countries such as the United States, Canada, and European Union member states rapidly transitioned to online modalities by capitalizing on robust digital infrastructure and well-coordinated educational policies. These countries could transition relatively seamlessly from conventional teaching methods to online and virtual platforms.

Conversely, many developing countries faced profound challenges, including inadequate access to high-speed internet, shortages of electronic devices, limited availability of dedicated educational platforms, and insufficient digital literacy among both educators and learners. Empirical studies—such as that by Zarei and Mohammadi (2022)—underscore that the lack of technological preparedness in these regions has exacerbated educational inequalities. In contrast, developed countries had long invested in the infrastructure

necessary to support such an educational transformation, positioning them to respond more effectively to the demands of distance learning during the global crisis.

One of the most significant disparities between developed and developing countries lies in funding and investment in educational technology. Chimbunde (2023) highlights that in countries such as Zimbabwe, limited budgets and dependence on foreign aid have significantly hindered the development of digital infrastructure. In contrast, developed nations have made substantial investments in the Information and Communication Technology (ICT) sector, enabling the creation of dedicated, sustainable, and widely accessible educational platforms for most students. Moreover, Jiajia Li et al. (2022) emphasize that in many developing countries, even when online education was introduced, numerous students had to rely on television and radio for their studies due to a lack of access to digital devices—approaches that typically offered lower-quality educational experiences.

This comparison highlights the pressing need for targeted and coherent policy-making, as well as sustained long-term investment in educational technology, to bridge the educational divide between developed and developing nations. Addressing these disparities requires a multifaceted approach that not only improves digital infrastructure but also ensures equitable access to quality learning resources. In the following sections, this paper will examine strategies for enhancing the quality of online education, assess the impact of the prohibition on girls' and women's education in Afghanistan, and evaluate the future of online and virtual learning in comparison to traditional face-to-face instructional methods.

8. Strategies for Enhancing the Quality of Online and Virtual Education

First: To improve the quality of online education in developing countries, it is essential for educational, political, governmental, social, and economic policymakers to focus on several key strategies. First and foremost, investment in digital infrastructure—including high-speed internet and affordable educational devices—is the most fundamental requirement for ensuring equitable access to online and virtual learning. Chimbunde (2023) suggests governments can lower access costs by liberalizing the Internet market and reducing monopolies in Internet service provision. Additionally, developing dedicated and locally adapted educational platforms that align with regional needs can significantly enhance student engagement and support teachers in delivering more effective instruction.

Second: Providing digital literacy training for teachers, administrators, and students is an undeniable necessity. In his study, Ndibalema (2022) argues that many administrators, students, and educators in developing countries lack the knowledge to utilize online teaching tools effectively. Conducting teacher training programs that focus on educational technologies and offering recognized certifications can significantly contribute to improving the quality of instruction. In addition, establishing technical support platforms or centers to assist both students and instructors in navigating and troubleshooting platform-related issues is another effective strategy for advancing the online and virtual education revolution in the digital age.

Third-Fourth: Designing engaging, effective, standardized, and interactive educational and academic content can significantly enhance student participation. Research by Rajeb et al. (2023) shows that factors such as content quality and instructor-student interaction play a critical role in the acceptance and success of online learning. Blended methods—such as instructional videos, psychology-based academic counseling, online assessments, and group discussions—can enrich the learning experience. Moreover, considering cultural and linguistic diversity in the development of course materials and resources is especially important in multiethnic, multinational, and multicultural societies such as India, Afghanistan, and Pakistan.

9. In Summary, the Following Key Points Are Highlighted

a. **Strengthening Internet Infrastructure:** Improving access to high-speed internet in remote and rural areas.
b. **Teacher and Students Training:** Organizing training programs for teachers and students to familiarize them with educational technologies and effective online and distance learning methods.

c. **Educational Content Development:** Creating instructional materials tailored to local, national, linguistic, and cultural needs.

d. **Support for Students and Families:** Providing financial and advisory support to families to help them acquire the necessary equipment for online and distance learning.

10. The Impact of the Ban on Education for Women and Girls in Afghanistan

The Taliban's ban on education for women and girls has not only restricted access to in-person learning. However, it has also deepened severe educational and social inequalities within Afghan society, significantly escalating both national and international concerns. Legally, this oppressive act against a significant portion of the population is in direct violation of human rights principles and international conventions, with potentially catastrophic consequences for the future of Afghanistan.

Catherine Russell, Executive Director of UNICEF, stated in a statement on June 13, 2024: "For 1.5 million girls, this systematic exclusion is not only a blatant violation of their right to education, but it also limits their opportunities and exacerbates their mental health challenges. Children's rights, particularly those of girls, must never be subjected to political agendas. Their lives, futures, hopes, and dreams deserve to be safeguarded and supported. The impact of this ban goes beyond the condition of the girls alone. This crisis exacerbates the ongoing humanitarian disaster and has serious repercussions for Afghanistan's economy and development path. Education is not just about creating opportunities—it protects girls from early marriage, malnutrition, and other health risks. It strengthens their resilience against natural disasters like floods, droughts, and earthquakes, which frequently affect Afghanistan. "

In the same statement, Ms. Russell emphasized, "As we closely monitor this tragic and bitter turning point, I call on the current regime in Afghanistan to allow all children to resume their education immediately. I urge the international community to remain steadfast and continue supporting the girls who need us more than ever. No country can progress or prosper when half of its population is denied education."

The prohibition of education for women and girls in Afghanistan following the Taliban's return to power constitutes one of the most severe educational crises in the modern world. Monib (2024) highlights in his study that, even before this ban, Afghan girls faced significant challenges in accessing online education due to cultural and economic constraints. Many families, driven by religious or social beliefs, denied girls access to digital devices and tools—a factor that further deepened gender disparities in education.

This educational exclusion is poised to bring devastating social and economic consequences for Afghanistan. Azam et al. (2014) argue that educating women contributes to their empowerment and plays a crucial role in promoting economic development and reducing poverty across Afghan communities. By removing women from the educational system, Afghanistan risks a decline in skilled labor, a rise in forced and early marriages, and a deterioration in the mental health of women and girls. Furthermore, this policy may drive the emigration of intellectuals and fuel widespread social unrest.

Although some universities, institutions, and governmental and non-governmental organizations—both nationally and internationally—have made efforts to support Afghan girls through in-person, secret, and primarily online or virtual education, these efforts are not sufficient in the face of a full-scale educational crisis and oppression imposed by the Taliban group in Afghanistan. The international community must exert early legal, political, and economic pressure on the Taliban group, demanding the immediate and unconditional return of Afghan women and girls to the country's education system. Additionally, offering scholarships to Afghan students—especially women and girls—can create opportunities for them to continue their education in regional, European, and American countries.

So, in response to this educational crisis in Afghanistan, several universities, academic institutions, and educational centers at the international and regional levels have extended a helping hand to Afghan girls and women deprived of education by the Taliban regime and have created valuable opportunities for them to continue their learning. The most notable of these efforts is as follows:

The University of the People (UoPeople) has stood out with remarkable distinction among these institutions and universities. UoPeople is a private, non-profit, tuition-free, and accredited American Online University—the world's first tuition-free online University—established to expand global access to higher

education. It offers a unique opportunity for high school graduates to overcome financial, geographic, political, and personal barriers and pursue higher education entirely online.

Founded in 2009, the University received official accreditation in 2014. Today, it serves over 152,933 students from 209 countries worldwide. More than 18,824 refugee and displaced students are among them, including over 4,328 Afghan women and girls studying safely and remotely from within their homes. To date, the University has awarded more than 5,000 associate and bachelor's degree scholarships to Afghan students.

Additionally, the University of New Haven in the United States has provided full scholarships—including tuition, housing, and visa support—to 30 Afghan girls. Universities in Scotland, including the University of Edinburgh, the University of Glasgow, the University of St Andrews, and the University of Dundee, have welcomed Afghan students with the support of the Scottish Government and the Linda Norgrove Foundation. The educational platform Future Learn has offered more than 1,200 free courses, and Boston College in the United States has provided online learning opportunities—both of which are among the active institutions in this field. The Indian Council for Cultural Relations (ICCR) has also awarded hundreds of scholarships to Afghan girls. At the research level, the Scholar Rescue Fund (IIE-SRF) has extended its support to Afghan women researchers in need of protection.

11. Can Online Education Replace In-Person Learning?

Over the past two decades, with the advancement of information and communication technologies in the digital age, online and virtual education has emerged as one of the most transformative developments in modern educational systems worldwide. This learning mode has played a pivotal role—especially during crises such as the COVID-19 pandemic—in ensuring the continuity of the teaching and learning process. According to a report by the U.S. Department of Education (Means et al., 2010), online and virtual learning can, under certain conditions, be just as effective as in-person education—and in some cases, even more effective—particularly when implemented through blended learning models.

Online and virtual education offers numerous advantages, including flexible learning opportunities, reduced costs, and increased access for marginalized and underserved groups (Dhawan, 2020). However, it also presents significant challenges, including reduced human interaction, the need for high levels of self-discipline, and unequal access to the internet and digital devices. Research has shown that effective interaction between students, content, and instructors plays a crucial role in the success of distance learning (Bernard et al., 2009).

Despite the numerous advantages of online and virtual education, in-person learning still holds significant benefits—particularly in developing social skills, facilitating hands-on learning, and providing a structured learning environment. Entirely replacing traditional face-to-face education with online formats is not feasible, especially in fields that require practical and technical training. As a result, online and virtual education can serve as an effective alternative, especially under specific circumstances. However, substantial improvements in digital infrastructure, enhanced content quality, and more effective virtual interaction mechanisms are required for it to become a complete substitute.

Online education can complement in-person learning, but cannot fully replace traditional face-to-face education. This is because the social interactions and hands-on experiences inherent in in-person learning are vital. However, the expansion and growth of online, virtual, and distance learning represent an undeniable educational revolution in the digital and technology age. Despite this, a significant portion of the global population is increasingly turning toward online and virtual learning in this era of technology.

The debate over entirely replacing in-person education with online learning is among the most contentious issues in higher, primary, and secondary education. On the one hand, virtual education offers notable advantages such as flexible scheduling, reduced transportation costs, and access to diverse and open educational resources. Research by Mathrani et al. (2022) suggests that online education can also help expand access to learning in underserved and remote areas in developing countries.

Nevertheless, the limitations of online and virtual education cannot be ignored. Ndibalema (2022) notes that reduced social interaction between students and instructors, decreased participation in group activities, and difficulties in assessment are among the main challenges of this method. Furthermore,

online education cannot fully substitute for in-person learning in disciplines that require hands-on practice and laboratory work.

The future of education lies in a blended approach, which could have a significant impact. Many institutions, educational centers, and leading universities worldwide, including the University of California, are adopting an advanced virtual model based on open educational resources. In this model, students can explore and study all their coursework and research online through defined open-access materials. This approach not only enhances flexibility in terms of time, employment, and duty but also maintains collaborative interactions in the virtual learning environment among students, instructors, administrators, and academic advisors.

12. How Does the University of the People System Work?

The University of the People, officially registered in California, USA, is the world's first entirely online, non-profit University. Since its establishment in 2009, it has been dedicated to providing equal educational opportunities to students worldwide—particularly those from disadvantaged backgrounds, including women and refugees. The University's academic model is based on "Asynchronous Learning," meaning students are not required to attend live classes. Instead, within a designated timeframe (typically nine weeks), they must complete assignments, participate in weekly discussion forums, and sit for a final exam. This flexible structure enables learners to study independently while fulfilling their weekly academic obligations. Courses are delivered through a learning management system called "Moodle." All educational materials are developed using Open Educational Resources (OER), ensuring free and open access to high-quality learning content. This innovative model has made higher education more accessible, especially for those who face barriers to traditional academic pathways.

Another distinctive feature of this University is its "Peer Assessment" system, in which students evaluate each other's essays, projects, and assignments. This method fosters critical thinking, interactive learning, and academic responsibility. As an undergraduate student in the Business Administration program at this University, I have personally experienced this approach and found it highly beneficial and effective. This feature holds excellent potential for other online and virtual education institutions to incorporate into their learning models. Despite the challenges, the University of the People plays a vital role in promoting global educational equity by offering a flexible and accessible learning environment. It is widely recognized as a successful model in online higher education. The University of the People of California, as a proven online and virtual education model, can serve as a valuable resource for developing countries seeking to enhance the quality of their online and distance learning systems by drawing on the University's experience.

The educational system of the University of the People - California is a successful example of large-scale online and virtual learning implementation. Offering hundreds of online courses across various fields has made high-quality education accessible to students worldwide, regardless of their geographic location or socio-economic background. One of the key features of this system is the strong and structured academic advising support provided to students. Additionally, it offers free educational resources and skill-based courses focused on digital literacy, businesses, and technologies in efficient and contemporary disciplines.

This model demonstrates that online and virtual education can become effective and cost-efficient with careful planning and adequate investment. Unlike many developing countries that face resource constraints, educational systems like that of the University of the People of California benefit from public funding or private sector partnerships—factors that help ensure the sustainability of online and virtual learning programs. Adapting such models to fit local and national contexts can offer a practical path forward for developing nations. Creating shared platforms among universities, utilizing open educational resources (OER), and collaborating with international institutions can help reduce costs and improve the quality of online and virtual education. Ultimately, the goal should be to establish a system that ensures educational equity and maintains a high standard of learning.

13. Policy Recommendations

Governments can collaborate with technology companies and internet service providers to expand digital infrastructure in underserved areas, particularly through public-private partnerships that improve high-speed internet access and provide students with affordable digital devices. Investing in digital literacy programs is crucial for equipping teachers and students with the essential technology skills they need. Furthermore, in collaboration with governments, universities, and educational institutions, it is crucial to implement policies that ensure equal access to online education for girls and create safe online environments for them. Collaboration with the private sector to provide affordable digital devices will help ensure that online education is accessible to all social groups.

14. Recommendations for Future Research

Future research should focus on evaluating blended learning models that combine online education with in-person instruction, as this approach could provide valuable insights into the effectiveness of these methods in countries with limited infrastructure. Research into mobile-based learning platforms may offer solutions for regions with limited access to computers and high-speed internet. Studies should also investigate the cultural adaptations of online educational content and examine their effects on student engagement and learning outcomes. Lastly, research into the long-term impacts of online education on employment and labor market skills will help assess the economic benefits of this form of education.

Conclusion

The revolution in online education during the technological age has introduced new challenges and opportunities for developing countries. Despite the obstacles, it is possible to improve the quality of online and virtual learning quality through well-designed strategies and tackle the educational inequalities prevalent in traditional schools, institutions, centers, and universities. Online and virtual education reshapes traditional educational systems worldwide, establishing itself as a transformative phenomenon. The experience of the COVID-19 pandemic highlighted that developed countries, with strong digital infrastructures and coherent planning, were better positioned to manage this shift effectively. In contrast, developing nations face numerous challenges, such as technological limitations, unequal access, and a lack of digital skills.

Countries such as Iran, Afghanistan, Pakistan, and India have faced distinct challenges. While Iran has made progress, it still faces significant gaps in digital infrastructure and literacy. Afghanistan, grappling with widespread educational deprivation—particularly for women and girls—is experiencing a deep crisis in traditional, in-person education, and online education continues to face significant barriers. Pakistan and India, despite their efforts, still struggle with educational inequalities in various regions. The future of education will involve a combination of in-person and online methods. Successful models, such as the University of the People's online system in California, demonstrate that high-quality online education can be achieved through careful planning and targeted investment. For developing countries, realizing this goal will require national commitment, international collaboration, and a strong focus on educational equity. Ultimately, online and virtual learning should not be viewed merely as a substitute for traditional methods but as a powerful complement that can bridge educational gaps and expand learning opportunities, particularly for marginalized and underserved communities.

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