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The Impact of COVID-19 on Technologically Disadvantaged Students in Afghanistan

Mohammad Ajmal Khuram✉

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Graduate School of Humanities and Social Sciences, Hiroshima University, Japan

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Afghanistan; online education; COVID-19; technology infrastructure

Abstract

COVID-19 has forced educators, institutions, and their staff to switch from physical to remote education This study investigates the effect of the COVID-19 pandemic on the international education system, particularly in Afghanistan. Specifically, this paper explores how students in Afghanistan have been affected by the pandemic, and identifies and evaluates the challenges faced by the education system of Afghanistan due to the pandemic. Moreover, factors affecting the use of technology by students in Afghanistan are also analyzed. A quantitative research methodology was utilized by collecting responses from students through a questionnaire distributed online. All data collected were subjected to descriptive statistical analysis. Results revealed that technology has not benefited students very much, and the effects of COVID-19 have been extreme on them. Furthermore, insufficient time to learn new technologies has proven to be challenging for students. Developing technology requirements for students during COVID-19 may be an important element of adaptability to the pandemic. Moreover, it was found that Afghanistan already had poor internet and technology infrastructure before the pandemic, which further deteriorated during COVID-19, leading students to experience increasing internet disconnection and costs and decreased communication with teachers. Effective strategies to deal with these problems are discussed.

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✉ Correspondence Author:
E-mail: ajmal.khuram44@yahoo.com

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INTRODUCTION

The COVID-19 pandemic has precipitated an unprecedented situation that has severely affected every global sector, including education. The shutdown of educational institutes, compounded by the related economic and public health crises, poses major challenges for teachers and students. The pandemic has forced educational institutions to close in around 188 countries, deeply unsettling the course of learning for more than 1.7 billion (94% of students worldwide) youth, children, and their families (OECD, 2020). Some 23.8 million additional youth and children (from pre-primary and tertiary education levels) might have to drop out of school next year because of the economic impact of COVID-19, regardless of whether the pandemic continues (The Hindu, 2020). These crises have exposed the severe inequalities and insufficiencies in the education systems of developing countries. This study examines how technologically disadvantaged students have been affected by the ongoing COVID-19 pandemic. Lack of technological infrastructure and inappropriate internet speed have created barriers for students who must now rely on technology to receive an education. This has resulted in little educational benefit for technologically disadvantaged students.

Afghanistan is one of the developing countries that has been hit hard by the pandemic because of its already fragile education system. Similar to other developing nations, Afghanistan possesses limited resources to counter socioeconomic disruption and public health threats (UNESCO Bangkok, 2020). Despite the remarkable progress in education made over the past two decades, Afghanistan still faces plenty of challenges. The enrollment of children in schools has increased almost tenfold, from less than a million in 2001 to 9.6 million in 2018. This has required the construction and establishment of schools, as well as the deployment of hundreds of new teachers. However, the COVID-19 pandemic has presented additional challenges to the Afghan education system, especially after the Ministry of Education closed all educational institutions on March 14, 2020 (Naidoo & Arian, 2020). Moreover, the increasing intensity of the socioeconomic barriers in Afghanistan has also affected the country's education system (García & Weiss, 2020).

Review of Literature

Rapid technological development has made distance education convenient and easy (McBrien et al., 2009). The outbreak of COVID-19 has forced a downward spiral in the world economy and has had a huge effect on the higher education system worldwide. Educational institutions faced the sudden closure of face-to-face classes in favor of remote learning as a social distancing measure to help prevent the spread of the virus. This, in turn, required the utilization of e-learning platforms and tools to effectively engage with students; however, affordability and accessibility limitations have affected most students. The global crisis has exposed the limitations of the current education system as well as the need for more training and development of educators in digital technology to better allow them to adapt to the rapidly changing educational climate of the world (Rashid & Yadav, 2020). The state of education and technology disadvantage have affected the education system and students of Afghanistan, especially now when many students are out of school.

Only seven million out of the total 12 million children in Afghanistan are enrolled in schools (Mehrdad, 2020). This data can be vague but is relevant to reflect on the education situation in Afghanistan.

The pandemic has put additional pressure on the education system, with increasing reliance on technology. In the context of millions of students out of schools, this posits a bigger challenge. Technology is the main tool for schooling during the current pandemic, and the increasing use of technology in learning has greatly altered the tactics of teachers. The current pandemic has added to the teachers' responsibilities as they must facilitate and motivate students by utilizing technology (Onyema et al., 2019). By using suitable educational technologies, the accessibility to learning resources and multiple learning approaches could be increased to meet the needs of diverse learners. However, while telecommunication services in Afghanistan cover almost 90% of the population (including men, women, and children), the reach of these services is very low, making it difficult for students to access digital platforms and educational resources.

Table 1 shows that there has been a steady increase in the number of cellular subscriptions in Afghanistan since 2002. Cell phones allow students to use mobile internet for educational purposes. However, there are still many other technological challenges that students face, including low broadband reach. Currently, internet users in Afghanistan account for 8.64 million (Data Reportal, 2021), a relatively low proportion compared to the number of cellular users, which in-

dicates the low reach of broadband connection. Ultimately, there is a scarcity of infrastructure designed to connect smartphones to the internet, making possession of a phone and internet access two different things (Huber & Helm, 2020). Figure 1 shows the percentage of internet access based on different demographics.

Table 1. Mobile cellular users in Afghanistan from 2002 to 2018 (Source: Baiza, 2020)

Year	Number of mobile cellular users in Afghanistan
2002	0.03 million
2003	0.2 million
2004	0.6 million
2005	1.2 million
2006	2.52 million
2007	4.67 million
2008	7.9 million
2009	10.5 million
2010	10.22 million
2011	13.8 million
2012	15.34 million
2013	16.81 million
2014	18.41 million
2015	19.71 million
2016	21.6 million
2017	23.93 million
2018	21.98 million

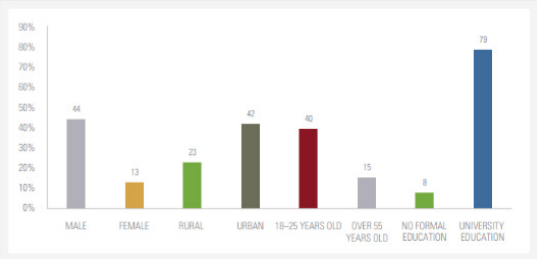

Figure 1. Access to the internet based on demographics in Afghanistan
Y-axis: percentage; x-axis: demographics
Source: Baiza, 2020

Along with technological limitations, other factors make the transition from face-to-face to remote education challenging. For instance, students are faced with inexperienced teachers, poor online teaching infrastructure, information gaps (i.e., limited resources and information available to all the students), and the complex and challenging environment at home (Zhang et al., 2020). The lack of support and mentorship from teachers due to inexperience with digital infrastructure formats has been evaluated previously (Judd et al., 2020).

On the other hand, there are several benefits to virtual learning. Computers, phones, and other internet applications help people interact and communicate effectively with others (Kanawattanachai & Yoo, 2007). Baytiyeh (2018) stressed the significance of digital technologies to support the continuity of learning and education during a pandemic. The importance of reliable internet connections at home to assist the delivery of education materials has also been highlighted (Song et al., 2004). Furthermore, digital technologies offer several advantages to independent learners such as online educational platforms that allow students to learn at their own pace, which in turn provides them flexibility during the day (Herold, 2017). However, this could also be perceived as a source of discrimination where students who are studying through e-learning might be able to do so as they have the technological privilege to access the learning materials.

Furthermore, research suggests that there has been a high level of satisfaction with virtual learning during the pandemic. Studies also showed that participants were satisfied with the online platforms and virtual learning tools(Almusharraf & Khahro,2020). Moreover, the students were pleased with the support from their teachers during the pandemic. Another study also suggested that parents had a positive level of satisfaction regarding distance learning (Bokayev et al., 2021). Overall, online classes foster positive satisfaction but have lower satisfaction than face-to-face learning (Hashemi, 2021).

Computer-mediated technology has taken on a fundamental role in communication with the passage of time and has facilitated the online learning environment. It is likely to remain indispensable for business communication. Since the internet is ubiquitous, access to computer-mediated communication has increasingly become affordable and convenient (Rashid & Yadav, 2020). According to Vitoria et al. (2018), students perceive online educational platforms as valuable in refining their self-control, independence, understanding, motivation to learn, and ability to interact with each other and with their teachers. Furthermore, Mamattah (2016) demonstrated that most students perceive e-learning to be a new and innovative idea that increases its value, encouraging students to use the technology. Delgado (2020) identified that immediate response and instant feedback are possible in e-learning. This

requires online learning platforms with good internet connections, the possibility of video conferencing with 40 to 50 students, lectures that are accessible on mobile phones, the possibility of watching lecturers later, and achieving instant feedback from students (Basilaia et al., 2020). However, a growing concern is not only whether the methods of online teaching–learning provide quality education to the students, but also how academic institutions can adopt e-learning in a massive manner (Carey, 2020).

Although online learning has been an effective tool for other developed countries, the system has not been successful in Afghanistan. There are various reasons why online learning is not as effective in the country (Khuram, 2021). The major barriers to online learning are lack of community, technical difficulties, and challenges in understanding the instructional objectives and goals. Online learning could effectively deliver quality education to students if programs are designed so that they are group-based, student-centered, relevant, interactive, and creative (Partlow & Gibbs, 2003). The COVID-19 pandemic caused 1500 schools to close, which has intensified the already risky situation of five million Afghani children being out of school. This number could also be higher because of a lack of proper recording and reporting of data.

Nicolau et al. (2020) examined the impact of COVID-19 on the education system in Romania. Their study found that tele-education has failed to replace face-to-face education because of the lack of symmetrical policy, infrastructure, digital competencies, connectivity, and digitalized educational materials.

Hence, educators are required to spend a considerable amount of time, effort, and energy to develop effective strategies for providing online instructions. This is because effective online instructions most likely facilitate feedback and responses from students and learners, allowing them to raise questions as well as broaden the scope of the course content for the learners (Keeton, 2014).

Research Gap

There is a notable research gap concerning Afghanistan's education system. There is evidence that although telecommunication services cover 90% of the country's population, the lack of internet and telecommunication infrastructure is an existing problem (GlobeNewswire, 2020) that has resulted in low penetration of cellular network users and broadband connections. Moreover, Afghanistan has faced a prolonged civil war, which has particularly affected its education system. Children, especially girls, have found it almost impossible to obtain consistent opportunities for education. This situation has improved in the past two decades, but there is still much room for improvement.

Literature regarding Afghanistan, especially in the field of education is scarce, which makes it worthwhile to examine extant problems in this area. Furthermore, it is worth investigating how the present COVID-19 pandemic has worsened the above-mentioned, pre-existing problems. Therefore, studying the impact of COVID-19 in this context can be relevant and useful for understanding the Afghan education system.

Problem Statement

Despite Afghanistan's progress in the field of education, there is a lack of socioeconomic and technological infrastructure in place to provide education amid the COVID-19 pandemic. Moreover, the pandemic has plunged the world into an unprecedented situation that is worth analyzing and discussing. This study therefore examines the impact of the COVID-19 pandemic on the education system in Afghanistan.

Research questions

What are the impacts of the COVID-19 pandemic on students in Afghanistan?; What is the role of technological disadvantage in impeding access to education?; Which factors are exacerbating COVID-19's impact on Afghanistan?

Research Objectives

To investigate how students in Afghanistan have been affected by COVID-19. To identify and evaluate the challenges faced by the education system of Afghanistan due to the pandemic. To analyze the factors affecting the use of technology by students in Afghanistan.

METHOD

This study used quantitative research methods to collect data. Explanatory research approach was employed to explain the phenomenon through this survey research (Taylor et al., 2015).

Data were collected through a web-based questionnaire over Facebook from February to March 2021. In addition, secondary data were obtained through varied information sources, including Google Scholar, Google search engine, and Proquest. Search terms used for collecting secondary data include education in Afghanistan, COVID-19 and its impact on education, and

related terms. Respondents were 469 students, the majority being undergraduates (n = 441). Other students belonged to schools and universities. The sample was representative of the student population in Afghanistan because of the social media platforms used for data collection (Kumar, 2018).

Chosen Methodology and Research Design

A quantitative research methodology was used that collected primary responses from students over Facebook. The chosen research design is explanatory as it clarifies how the COVID-19 pandemic has affected technologically disadvantaged students in Afghanistan.

Sampling

Participants were recruited using a convenient, non-random sampling technique.

Data Analysis Tools

The data collected were analyzed using descriptive statistics. The use of bar and pie charts facilitated the visualization of the data.

Measures

The data were obtained through a web-based, comprehensive questionnaire composed of mainly closed-ended questions. The questionnaire asked about the students' sociodemographic (Table 2) and academic characteristics.

Table 2. Respondents' Sociodemographic Characteristics.

Sociodemographic Characteristics		Frequency	Percentage
Gender			
	Female	10	2.13
	Male	459	97.87
Age			
	18-25	394	84.01
	26-35	64	13.65
	Above 35	11	2.35
Education			
	Undergraduate	441	94.03
	Graduate	18	3.84
	School	10	2.13
Student Income (part-time / full-time work)			
	AFN 1000 - 40000	36	7.68
	AFN 4001 - 7000	56	11.94
	Above AFN 7000	73	15.57
	No Income	304	64.82
Household Income			
	Below AFN 10,000	176	37.53
	AFN 10,000 - 20,000	127	27.08
	Above AFN 20,000	84	17.91
	No Answer	82	17.48
Personal Communication Device			
	Smartphone	411	87.63
	Laptop Computer	53	11.3
	Desktop Computer	5	1.07
Respondent Location			
	Kabul	123	26.23
	Nangarhar	147	31.34
	Kandahar	98	20.90
	Balkh	29	6.18
	Herat	25	5.33
	Khost	19	4.05
	Other Provinces	28	5.97

RESULTS AND DISCUSSION

Question 1: Which platform did you use during classes?

Figure 2 shows the different platforms used by the participants during their online classes. A total of 38% of all participants responded that they used Teams as their online platform to attend their online classes. Furthermore, 14% used Zoom while only 6% used Skype as their online platform. Most of the students chose Others as an online platform they used, which includes platforms such as HELMS, Google Classroom, Google meets, and WhatsApp.

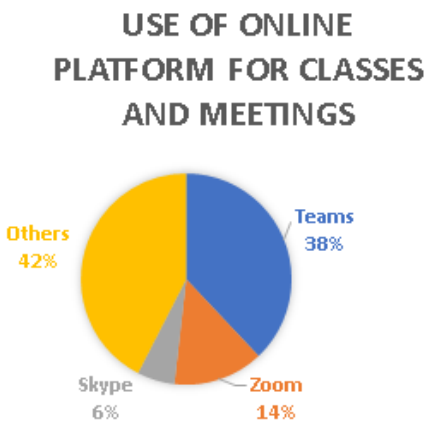

Figure 2. Use of online platform for classes and meetings.

Question 2: How was the internet quality during online classes during COVID-19?

Figure 3 shows that the majority, that is, 88% of participants did not have stable, good internet access during their online classes, while only 12% responded having good internet access. This shows that most of the students experience trouble concentrating in class since a stable internet connection is one of the top requirements for an online class.

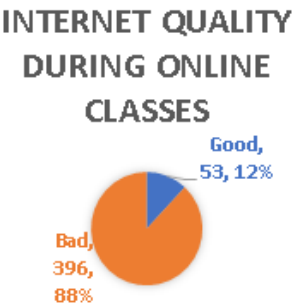

Figure 3. Internet quality during online classes

Question 3: Did internet cost increase during COVID-19?
Question 4: Did you experience internet disconnection during classes?
Question 5: Did your income decrease during COVID-19?

Figure 4 shows that a whopping 90% of participants experienced increased internet cost during the COVID-19 pandemic. Moreover, 90% of them experienced difficulties in their internet connection during classes. On top of that, 88% reported a decrease in their income as an effect of the COVID-19 crisis. Only minimal percentages of participants reported that they had not experienced increased internet cost, internet disconnection during classes, and decreased income during the COVID-19 pandemic.

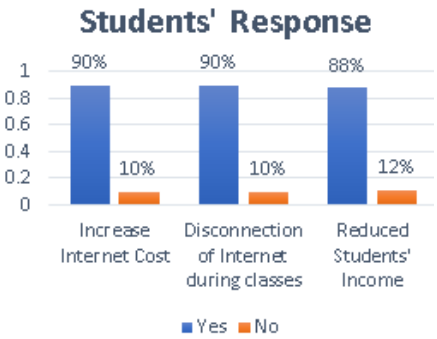

Figure 4. Increased internet cost, internet disconnection during classes, and income reduction during COVID-19

Question 6: Did you communicate with students and teachers during COVID-19?

Figure 5 shows that there was a high level of communication between the students during the COVID-19 pandemic, while only 28% did not communicate with their classmates. Furthermore, only 51% of students communicated with their teachers, while 49% did not. Hence, almost half of the respondents never communicated with their teachers during the pandemic.

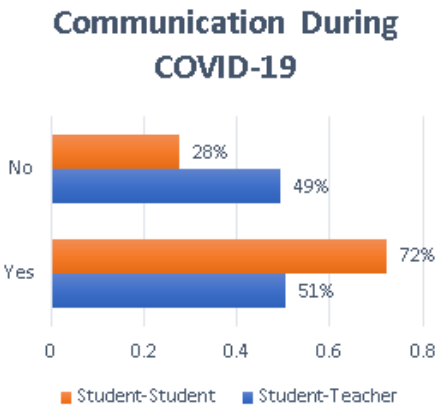

Figure 5. Communication with teachers and students

Question 7: How did students communicate with other students and teachers?

Figure 6 shows that most of the students' communications took place online. Only 14% of student–teacher communication took place physically or face-to-face. Moreover, only 12% of student–student communications were face-to-face during the pandemic. Figure 6 shows that most communications between students and teachers and among students largely took place via online platforms.

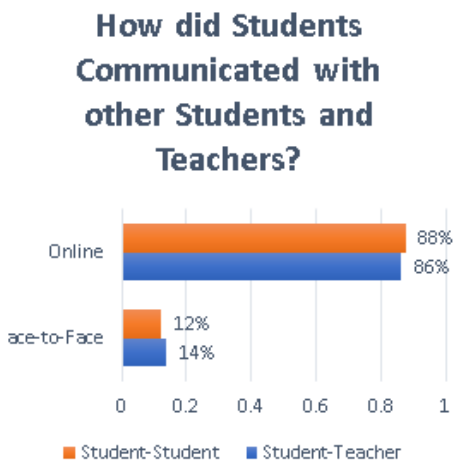

Figure 6. Students' communication with other students and teachers

Analysis of Collected Data

Most of the respondents were male (n = 459), between 18 to 25 years of age (84%), and undergraduates (441/459). This is representative of the educational and cultural context of Afghanistan, where male and young students are predominant. In addition, most students (n = 304) reported not having any income. Moreover, the household income of most respondents was below AFN 10,000 or between AFN 10,000 and AFN 20,000.

The data showed that respondents used a variety of online platforms (e.g., Teams, Zoom) for educational purposes. Also, an overwhelming majority of respondents (88%) revealed that internet quality during online classes was bad. This is consistent with previous research indicating poor internet infrastructure in Afghanistan. There are many reasons for bad internet quality, including increasing internet cost, disconnection, and decreased student income. Ninety percent of all students felt the internet cost had increased while their income had decreased during COVID-19.

Moreover, 90% of respondents experienced internet disconnection during classes. Face-to-face communication with students and teachers was generally low but it was even lower with teachers than with other students. However, online communication was popular, with more than 85% of respondents reporting participating in it. In general, there is room for more communication and interaction with students and teachers.

Afghanistan faces considerable challenges to its educational system. Owing to the civil war, many of the country's institutions have been destroyed over the years. Technology can however compensate for the lack of educational infrastructure in the country. However, poor technological development in Afghanistan as well as its neighboring counties in the Middle East has prevented that from happening. At the very least, one must have access to electricity, a computer, and the internet for virtual learning. However, most of the students in Afghanistan have no access to digital devices and the internet. Thus, students have been unable to cultivate the skills they require for virtual learning such as computer and communication skills. Online education was very uncertain in Afghanistan even before COVID-19 (Rabi, 2020).

The increasing cost of the internet, along with internet disconnection during classroom activities, makes it challenging for students to remain engaged in educational activities during COVID-19. Increasing internet disconnection is mainly due to the lack of effective and proper infrastructure in the country as well as expensive internet services. This is more problematic for individuals with low income, as is the case in this study, with most respondents having a very low household income and reporting decreased personal income as well.

This study has achieved its research objectives by examining the tendency of online communication among Afghan students. However, it is also noted that the internet connection and infrastructure in Afghanistan are not supportive of online education. Much work needs to be done to enable students to use the internet during a pandemic where face-to-face interactions might be dangerous. On a positive note, the pandemic has forced the country to investigate its digital technology and internet infrastructure, which might not have been possible without the presence of such severe conditions.

This study's findings are in line with existing research on the online and technological development of Afghanistan. It was found that the low socioeconomic progress in the country, in part due to individuals' low level of income, has affected the level of connectivity among students. There is a higher need for internet connection and connectivity during the COVID-19 pandemic. However, the lack of proper infrastructure has caused little positive development in the country, which has worsened students' experience with digital learning during the pandemic.

To summarize, the critical assessment and evaluation of the education system of Afghanistan provide a deeper understanding of the factors responsible for ineffective online learning, including inadequate resources, lack of infrastructure,

low level of internet access in general, lack of preparedness to deal with the pandemic, and high dropout rates among students.

CONCLUSION

To conclude, in Afghanistan, the new way of learning through online classes during the COVID-19 pandemic have proven difficult for the students. The increasing internet cost and slow internet speed are making it challenging for students to engage with digital learning. The use of technology during COVID-19 has increased, but a lack of infrastructure and low socioeconomic conditions in Afghanistan are acting as hurdles. As a result, technology has not benefited students very much, and the effects of COVID-19 have been extreme on them.

The pandemic has worsened an already technologically disadvantaged environment in Afghanistan. The lack of technological infrastructure, lower income, and increased internet cost due to the pandemic have been a challenge to the educational system of the country. Statistics have revealed that five million students are out of school, and the pandemic could increase this number. At a time when internet and technology have become vital for education in the context of COVID-19, the current situation is not suitable and has emphasized the need for the country to focus on its technological infrastructure. The present research confirmed the visible trend of inadequate technology infrastructure and means in Afghanistan. Students experienced disconnection and the increasing cost of the internet during the pandemic, which resulted in insufficient communication with their teachers.

Furthermore, students seemed to be unfamiliar with technology. Specifically, the insufficient amount of time to learn new technologies was challenging for students. Meeting the technology requirements of students during COVID-19 may prove to be an element of adaptability to the pandemic. Therefore, it must also be ensured that learning and teaching are less stressful, more engaging, and based on mutual commitment, trust, and accountability for all stakeholders, including teachers, students, decision-makers, and academic staff.

Moreover, the present research has noted that students' expectations and requirements, as well as educational goals, can be determined by the educational system in Afghanistan. Thus, the country should focus on closely monitoring the engagement of students by following up on their learning progress, behavior, and attendance, and addressing the potential constraints and barriers to their engagement by offering adequate resources (safe places to learn, laptops or tablets, etc.), and providing individualized support to students so they can get the best out of the new modes of education delivery (Gouëdard et al., 2020).

In addition, the radical transformation of every aspect of education would lead to an increased scope for digital development and innovation. Research indicates the need for such development (Dhawan, 2020). Moreover, it is of paramount significance that the digital competencies of teachers or educators be improved, and it be ensured that they are well trained in the pedagogical approaches best suited for hybrid learning models (Giorgio et al., 2020).

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REFERENCES

Almusharraf, N. M., & Khahro, S. H. (2020). Students' satisfaction with online learning experiences during the COVID-19 pandemic. International Journal of Emerging Technologies in Learning, 15(21), 246–267. https://doi.org/10.3991/ijet.v15i21.15647

Baiza, Y. (2020). *Coronavirus and education in Afghanistan: Responses, challenges, and the threats of the educational divide.* UKFIET. https://www.ukfiet.org/2020/coronavirus-and-education-in-afghanistan-responses-challenges-and-the-threats-of-educational-divide/

Basilaia, G., Dgebuadze, M., Kantaria, M., & Chokhonelidze, G. (2020). Replacing the Classic Learning Form at Universities as an Immediate Response to the COVID-19 Virus Infection in Georgia. *International Journal for Research in Applied Science & Engineering Technology, 8*(III), 101–108. https://doi.org/10.22214/ijraset.2020.3021

Baytiyeh, H. (2018). Online Learning during Post-earthquake School Closures. *Disaster Prevention and Management, 27*(2), 215–227. https://doi.org/10.1108/DPM-07-2017-0173

Bokayev, B., Torebekova, Z., & Davletbayeva, Z. (2021). Distance learning in Kazakhstan: Estimating parents' satisfaction of educational quality during the coronavirus distance learning in Kazakhstan: Estimating parents' satisfaction abstract. Technology, Pedagogy, and Edu-

cation, 30(3) 1–13. https://doi.org/10.1080/1475939X.2020.1865192

Carey, K. (2020). *Is everybody ready for the big migration to online college? Actually, no.* The New York Times. https://www.nytimes.com/2020/03/13/upshot/coronavirus-online-college-classes-unprepared.html

Data Reportal. (2021). *Digital 2021: Afghanistan*. https://datareportal.com/reports/digital-2021-afghanistan

Delgado, P. (2020). *Synchronous and asynchronous learning: Definition, advantages, and disadvantages.* Observatory of Educational Innovation. https://observatory.tec.mx/edu-news/synchronous-and-asynchronous-learning-definitions

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems, 49*(1), 5–22. https://doi.org/10.1177/0047239520934018

García, E., & Weiss, E. (2020). *COVID-19 and student performance, equity, and U.S. education policy*. Economy Policy Institute. https://www.epi.org/publication/the-consequences-of-the-covid-19-pandemic-for-education-performance-and-equity-in-the-united-states-what-can-we-learn-from-pre-pandemic-research-to-inform-relief-recovery-and-rebuilding/

Giorgio, D. P., Federico, B., Patricia, C., Zbigniew, K., & Jacopo, M. (2020). *The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets*. European Commission JRC Technical Reports. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC121071/jrc121071.pdf.

GlobeNewswire. (2020). *Afghanistan - Telecoms, Mobile and Broadband - Statistics and Analyses.* https://www.globenewswire.com/news-release/2020/12/02/2138020/0/en/Afghanistan-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses.html

The Hindu. (2020). *24 million may drop out of school due to COVID-19 impact: U.N.* https://www.thehindu.com/news/international/covid-19-pandemic-created-largest-disruption-of-education-in-history-un/article32265660.ece

Gouëdard, P., Pont, B., & Viennet, R. (2020). *Education responses to COVID-19: Shaping an implementation strategy*. OECD Education Working Papers. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/EDPC/RD(2020)9&docLanguage=En

Hashemi, A. (2021). Effects of COVID-19 on the academic performance of Afghan students and their level of satisfaction with online teaching. *Cogent Arts & Humanities, 8*(1). https://doi.org/10.1080/23311983.2021.1933684

Herold, B. (2017). *Technology in education: An overview*. Education Week. https://www.edweek.org/technology/technology-in-education-an-overview/2016/02

Huber, S. G., & Helm, C. (2020). COVID-19 and Schooling: Evaluation, Assessment, and Accountability in Times of Crises—Reacting Quickly to Explore Key Issues for Policy, Practice, and Research with the School Barometer. *Educational Assessment, 32*, 237–270. https://doi.org/10.1007/s11092-020-09322-y

Judd, J., Rember, B. A., Pellegrini, T., Ludlow, B., & Meisner, J. (2020). "*This is Not Teaching": The Effects of COVID-19 on Teachers*. Social Publishers Foundation Practitioner Research. https://www.socialpublishersfoundation.org/knowledge_base/this-is-not-teaching-the-effects-of-covid-19-on-teachers/

Kanawattanachai, P., & Yoo, Y. (2007). The Impact of Knowledge Coordination on Virtual Team Performance over Time. *MIS Quarterly, 31*(4), 783–808. https://doi.org/10.2307/25148820

Keeton, M. T. (2014). Best Online Instructional Practices: Report of Phase I of an Ongoing Study. *Online Learning*, *8*(2). https://doi.org/10.1007/s11092-020-09322-y

Khuram, M. (2021). *COVID-19 and Education in Afghanistan: Responses and Obstacles.* Kardan University.

Kumar, R. (2018). *Research methodology: A step by step guide for beginners* (2nd ed.). Pearson Education.

Mamattah, R. S. (2016). *Students' perceptions of e-learning.* Linköping University: Department of Behavioural Sciences and Learning. https://www.diva-portal.org/smash/get/diva2:925978/FULLTEXT01.pdf

McBrien, J. L., Cheng, R., & Jones, P. (2009). Virtual Spaces: Employing a Synchronous Online Classroom to Facilitate Student Engagement in Online Learning. *The International Review of Research in Open and Distributed Learning, 10*(3). https://doi.org/10.19173/irrodl.v10i3.605

Mehrdad, E. (2020). *Inside Afghanistan's education crisis.* The Diplomat. https://thediplomat.com/2020/11/inside-afghanistans-education-crisis/

Naidoo, J. P., & Arian, A. W. (2020). *Afghanistan's COVID-19 education response*. Global Partnership for Education. https://www.globalpartnership.org/blog/afghanistans-covid-19-education-response

Nicolau, C., Henter, R., Roman, N., Neculau, A., & Miclaus, R. (2020). Tele-education under the COVID-19 Crisis: Asymmetries in Romanian Education. *Symmetry, 12*(9), 1502. https://doi.org/10.3390/sym12091502

OECD. (2020). *Education and COVID-19: Focusing on the long-term impact of school closures*. OECD. https://www.oecd.org/coronavirus/policy-responses/education-and-covid-19-focusing-on-the-long-term-impact-of-school-closures-2cea926e/.

Onyema, E. M., Anthonia, U. O., & Deborah, E. C. (2019). Potentials of Mobile Technologies in Enhancing the Effectiveness of Inquiry-based learning. *International Journal of Education, 2*(1), 1–23.

Partlow, K. M., & Gibbs, W. J. (2003). Indicators of Constructivist Principles in Internet Based

Courses. *Journal of Computing in Higher Education, 14*, 68. https://doi.org/10.1007/BF02940939

Rabi, A. (2020). *Afghanistan: Covid-19 brings uncertainty to learning.* https://edtechhub.org/2020/07/22/afghanistan-covid-19-brings-uncertainty-to-learning/

Rashid, S., & Yadav, S. S. (2020). Impact of Covid-19 Pandemic on Higher Education and Research. *Indian Journal of Human Development*, *14*(2), 340–343. https://doi.org/10.1177/0973703020946700

Song, L., Singleton, E. S., Hill, J. K., & Koh, M. (2004). Improving Online Learning: Student Perceptions of Useful and Challenging Characteristics. *The Internet and Higher Education, 7*(1), 59–70. https://doi.org/10.1016/j.iheduc.2003.11.003

Taylor, S. J., Bogdan, R., & DeVault, M. (2015). *Introduction to qualitative research methods: A guidebook and resource* (4th ed.). John Wiley & Sons.

UNESCO Bangkok. (2020). *Education and livelihoods at risk from COVID-19 in Herat*. UNESCO Bangkok. https://bangkok.unesco.org/content/education-and-livelihoods-risk-covid-19-herat.

Vitoria, L., Mislinawati, M., & Nurmasyitah, N. (2018). Students' Perceptions on the Implementation of e-learning: Helpful or Unhelpful? *Journal of Physics: Conference Series, 1088*, 012058. https://doi.org/10.1088/1742-6596/1088/1/012058

Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending Classes Without Stopping Learning: China's Education Emergency Management Policy in the COVID-19 Outbreak. *Journal of Risk and Financial Management, 13*(3), 55. https://doi.org/10.3390/jrfm13030055