The Effect of COVID-19 on the Ugandan Education System: A Review

Aniku A. M, Moyini[1*] and Taban Habibu[2]

[1]Department of Business and Management studies, Islamic University in Uganda.

[2]Department of Computer Science, Islamic University in Uganda.

[*]**Corresponding author's email address:** ahmedaniku@gmail.com

Abstract

Prior to the COVID-19 pandemic, climate change-related disasters, armed conflict, protracted crises and forced displacement disrupted learning for seventy-five (75) million learners. It is estimated that more than 1 billion and 575 million students in 188 countries worldwide have been impacted by schools and universities being shut-down as a preventative response to contain the pandemic. For instance, more than 17.5 million students in Uganda were sent home during the lockdown. The worldwide consensus was that education is vital and must continue amidst the closing of the learning institutions. As such, e-learning was adopted although how it would be achieved remained more problematic especially in primary-secondary schools. The responses to education by a large-number of citizens and government officials varied from country to country. In Uganda, the government offered the use of online material via the Internet, television or radio. Teachers were required to adapt to new pedagogical approaches for which continuous training is needed. By January 2022, all institutions of learning were fully opened on condition that all students, teachers and non-teaching staff receive COVID-19 vaccinations in addition to adhering to standard operating procedures, such as observing social-distance, washing hands with detergents and wearing a mask. However, vaccine procurement, vaccine hesitation and emergency of new variants like the Delta and Omicron remained a challenge. The number of COVID-19 vaccination dozes administered per 100 people in Uganda from 3rd January 2020 to 17th January 2023 stands at 57.5 percent. This prompts the question: how can education be sustained? In this paper, the authors examined the aspects that distress the feasibility and quality of e-learning in Uganda. The study found that technical-infrastructure and accessibility, remote-learning competencies and pedagogies, and the specific-field of study affect teacher performance, student knowledge, and skills.

Keywords: Covid-19, Remote learning, Online access, Education in Uganda

INTRODUCTION

Education is one of the powerful growth instruments in a number of sectors in Uganda. It is believed that education has been a key element in stimulating social growth, economic development and transformation since its political independence. Besides, Uganda's 2040 vision offers avenues for becoming a more prosperous nation and stresses that education is a critical mechanism for economic growth through the provision of human capital (Fanelli et al., 2020). As such, COVID-19 has threatened Uganda's education system, hence innovative solutions are need to sustain it.

Global education has been affected by COVID-19 school closures (Marioni et al., 2020). More than 1 billion and 575 million students in 188 countries were affected by the COVID-19 shutdown (Duraku & Hoxha, 2020b). In Uganda, over 17.5 million learners (e.g. higher learning institutions, high schools and elementary schools) were all seated in their homes (Schleicher, 2020b). There was a general consensus by the citizens of Uganda that education was vital and had to continue despite the shutdown of institutions of learning. Hence, a

common acknowledgment that effective online learning was essential but how that would be realized was more challenging (Bhavya Bhasin et al., 2021). The response of Governments across the globe was diverse in the areas of education. In some instances, the government's responses remained timely, relevant and broad. In other cases, very narrow verdicts were proposed and remained in schools, teachers and lower administrative levels. In Uganda, for example, government proposed the use of the Internet, TV or radio for every learner to pursue distance learning. Teachers have also needed to shift to new teaching methods and approaches, where they have little or no training (COVID-19, 2020). For the schools to reopen, the government recommended for vaccination and following of the standard operating procedures like observing social distance, hand-washing using detergent or sanitizing, and wearing a mask. Nonetheless, bottlenecks in vaccine acquisition, vaccine hesitation and the development of new variants like the delta and omicron represented serious threats to the schools. The issue is not with the shutdown of schools but with the consequences and effects of the closure. The important questions would be: a. how and in what conditions can schools and Universities remained fully open? b. how can planners ensure that susceptible learners are not left out? c. most important of all perhaps, how can education continue?

Due to the COVID-19 pandemic, nearly all schooling in Uganda has shifted online. Will this harm humanity? Is humanity ready for a dramatic change? Will online learning become the norm? Changing how students learn quickly can be difficult in computer science, medicine, the arts, and architecture (Pregowska et al., 2021; Toquero, 2020). The closure of colleges and universities affected student learning (Bhavya Bhasin et al., 2021). To ensure learning continuity, adopt or conduct online teaching. Online classes will be run by colleges and universities using LMS and open-source digital learning solutions.

Low-income private and government schools were closed and did not have eLearning solutions. The pandemic also affected parents. Long-term multipronged strategy is needed to manage Ugandan education crisis. Uganda's teaching needs to change. E-learning solutions can make teaching and learning possible, but engagement is a problem (Bigatel et al., 2012). Policymakers must address learner engagement and the digital divide. It is expected that a number of factors impact the quality of online learning, such as teacher performance, student knowledge and skills. In this article, the authors discussed aspects that impact the feasibility and quality of online education in Uganda especially the elementary and high schools. The study revealed that teacher performance, student knowledge and skills are directly influenced by, a. technical infrastructure and accessibility, b. remote learning competencies and pedagogies, c. the specific field of study. To benefit from technology-enhanced learning, consider the critical success factors above.

LITERATURE REVIEW

Due to COVID-19, almost all learning has moved online, causing a rapid revolution in education, this review highlights several factors.

Technical infrastructure and accessibility
As the pandemic closed schools around the world, fears grew about how students could learn without internet and equipment. Institutions and schools needed to facilitate home learning without students. Students relied on technology to attend classes, complete assignments, and submit them, but this wasn't always possible due to slow internet and shared devices. The prerequisites for the digital takeoff envisioned by Uganda's Digital Dream are not being satisfied, underprivileged infrastructure expansion as the major reason of low Internet usage and telephone penetration in Uganda. (Tumwesige, 2020). While several African countries, like Rwanda and South Africa, have over eighty per cent of their populace covered by 4G

grids, Uganda has not attained full coverage of 3G. Only half of the country is covered with wideband, where only seventeen percent of the people access 4G. The Uganda Communication Commission (UCC) in 2018 issued a new accrediting regime necessitating industry players to provide minimal 3G connection as well as reel out 4G amenities out of the core hub (Gillwald et al., 2019). This is supported by Opencellid data, an open cell that shows that 43.4% of Uganda's cellular locations are presently 2G, 53.3% are 3G and only 3.3% are 4G.

Uganda has approximately 12,000 kilometers of fiber optic cables installed, but repetition routes by several industry players have caused increased costs of production and effective maintenance of under 2,100 kilometers of fiber around the nation. To improve efficacy and expand fast Cyberspace access to the public, Uganda government has designed a policy for nationwide wideband that aims to ensure respect for the sharing of substructure among operators (Duraku & Hoxha, 2020b). This was envisaged to favorably influence the marketplace as new industry players can leverage present substructure, owned by the dominant industry player, Mobile Telecommunication Network (MTN), and operating parallel to Airtel and Google and Facebook (Gillwald et al., 2019). The absence of substructure sharing policy by industry players in Uganda unfavorably affected competition in the telecommunications industry. (Gillwald et al., 2019). This has greatly increased business operating costs, which are extremely hard to recuperate, mainly considering late arrivals. The existing operators are again inhibited from developing substructure in the villages, largely viewed as non-profitable by the multilateral corporations to expand their grids.

Uganda consumes the least energy compared to Kenya and Tanzania on African continent, with an average of about 71 kWh/per annum (Bimenyimana et al., 2018). A Study in 2017-2018 survey by *The After Access* reveals that only 18 in every 100 families in Uganda have connection to the national electricity network, just ahead of Lesotho, with 11 in every 100 families. The gap among town-center and village energy use is as wide as eighty five percent in Uganda. Seven out of every hundred families in the villages have access to the national power network in comparison to 48% in town centers. The energy access gap among town centers and villages has deciphered into a big town-village variance in Cyberspace usage of seventy-percent. Nine percent of the people residing in the villages have accessibility to the cyberspace while thirty percent of the town inhabitants have access to the cyberspace.

Electricity absence and the underdevelopment of ICT infrastructure are the major causes of the significant differences between urban and rural internet use and penetration across Uganda. Just eighteen-percent of Ugandan homes have an electrical access and 85% difference between town centers and villages. Half the population not using the cyberspace (i.e. eighty six-percent of the total population) do not have Internet-connectivity gadgets like PCs and mobile-phones. Uganda is among the 10 African countries with the lowest (14%) internet penetration rates according to the Global South Access survey by Research ICT Africa (RIA) conducted between 2017- 2018. Rwanda (nine-percent) and Mozambique (ten-percent) having lesser coverage rates (Toquero, 2020). The wideband penetration is minimal in Uganda even-though likened to several additional underdeveloped African nations. Sixty five-percent of the people have access to 3G, just seventeen-percent accessing 4G. The Uganda Communications Act (2013) supports the sharing of infrastructure that was not accepted, except tower systems. This is reflected in high infrastructure deployment and maintenance costs, underutilization of capacity, and high Internet prices(Bimenyimana et al., 2018; Duraku & Hoxha, 2020b).

On-line learning competencies and pedagogies

In recent decades, online enrollments have grown faster than overall enrollments (Bigatel et al., 2012). Online-learning demand requires flexible learning environments. For learner success, online learning must be as good as traditional methods (Adnan, 2020). While the demand for e-learning was evident at the arrival of the Covid-19, it was more complex to effectively reach students. Universities made their own decisions with varied responses depending on resources and resourcefulness, both public and private. But in most cases both the teachers and students did not have prior teaching and learning experience outside the classroom (Bhavya Bhasin et al., 2021). Respondents in that survey highlighted three main hindrances for students in the wake of the school closure: a deficiency of access to technology, an inappropriate home learning environment, and a nonexistence of access to learning materials. The inadequacy of training for the design and management of e-learning programs was reported on the part of the teachers. This situation has been exacerbated by a lack of infrastructure i.e. Electricity, connectivity, devices, and absence of suitable learning materials: books, TV and Internet connected devices. The results are clear: the poorest and most geographically dispersed students are most likely to miss out if there is no conventional school. On top of these challenges, respondents noted that most teachers were as ill-prepared and ill-equipped to cope with this new situation as their students. Similarly, parents were unprepared to back their children's learning at home. Whereas some jurisdictions have 'sensitized' educators and parents of which many have not. Eighty-three (83%) of respondents felt their current curriculum was not suitable for distance education (Bhavya Bhasin et al., 2021). At least 80% of modern distance learning content is online (VanBeek, 2011). Several study respondents (Osial et al., 2021; Pregowska et al., 2021) said online education requires a different pedagogy and that it's hard for faculty to switch from in-class to online teaching and learning. Students and teachers are unprepared. Continuing education may not be as good as semester-long classes. Supposedly it beats no education. Institutions lacked a management structure to develop staff teaching capacities so they could easily switch to online education, resulting in "learning by doing" tactics or emulating face-to-face methods online. Teachers' worries about remote-online learning were related to their technology skills, access to technology, and isolation at home (Duraku & Hoxha, 2020b). Countries where teachers' use of technology was low before COVID-19 measures expressed such fears. Online teaching demands have reportedly increased teachers' stress and anxiety. This therefore highlights development in electronics and recording media that have made asynchronous and synchronous training widespread.

Subject area of study

Different subjects use different technical equipment. This is another problem with online teaching and learning, especially in some fields (Duraku & Hoxha, 2020a). Clinical medicine, veterinary studies, and several lab-based disciplines cannot be learned online. Creative students cannot work well from home without the right equipment. Solo practice cannot replace orchestra practice (Tumwesige, 2020). Teaching in confinement focuses on theory making practical study difficult. Even in institutions with reliable technical infrastructures for online education and faculty ready to adapt to the new mode of delivery, the quality of the learning experience will vary greatly from one discipline to another. The open responses suggest the quality of online emergency teaching depends on infrastructure, teaching staff adaptability, and field of study. Online learning requires technology. Unsurprisingly, Institutions of Higher-Education (IHE) operating in areas where infrastructure is unreliable encounter increased difficulties during this crisis. Learners without access to online communication tools and the Internet will also be hardest hit (Tumwesige, 2020). Today's crisis will only exacerbate existing inequalities.

METHODOLOGY

The research method was scoping review (Pregowska et al., 2021). This is because existing knowledge is the foundation of all academic research regardless of the discipline (Snyder, 2019). This method can answer research questions more effectively than a single study by integrating multiple findings and perspectives. It can also provide an overview of disparate, interdisciplinary research, as well as an excellent way to synthesize research findings to show meta-level evidence and uncover areas where more research is needed, which is crucial for creating theoretical frameworks and conceptual models (Snyder, 2019). The authors considered resources from Google Scholar, Elsevier, DOAJ, and other databases i.e. Websites and government documents as the methodology for the review. Online learning, distance learning, remote learning, and online courses were used to select the articles. The sources chosen were analyzed for subject compliance and contribution to e-learning. The study considered geographical separation and the form of broadcasting educational materials, including correspondence courses, radio, and TV. Virtual, augmented, and mixed realities are also discussed as online learning tools. The accessible review aimed to show that online-learning should not shy away from the valid and useful alternative. Because it allows the educator and learner to set their own learning pace and allows students to practice time management. Documentary analysis is a key research method since they can be used to develop knowledge, create guidelines for policies and practices as well as generate new ideas and directions for future research and theory.

DISCUSSION

Online learning involves using computers in school and a new teaching method. It provides learners the opportunity to use computers or the Internet by remote teachers or software. In other instances, a local teacher might give additional instruction, but the spirit of online learning is that learners no longer need to share a classroom face-to-face with a teacher to learn.

Uganda's performance is poor on different global ICT indices. Out of 172 nations in the International Telecommunications Union's (ITU) survey, Uganda was ranked 152. Out of one hundred thirty-nine nations in the Grid Readiness Index, It was ranked 121st. Out of seventy-five in states in the recent EIU Inclusive Cyberspace index and the underprivileged info substructure and insignificant cyberspace coverage, it was ranked 64th. Whereas more than fifty percent of the people have accessibility to cellphones, just one out of every six people have access to the cyberspace. Due to the low concentration usage, Uganda might not reap from the grid benefits linked by improved data movements and efficiency. Uganda is among the countries with the lowest (fourteen percent) cyberspace infiltration rates of ten African nations recently surveyed by RIA as continuation of the Global South After Access conducted within 2017 and 2018. Where, just Mozambique ten-percent and Rwanda nine-percent, having lesser dispersion rates. Kenya, Ghana, Lesotho, Senegal, Nigeria, South Africa, and Tanzania were the other nations in the study. Cyberspace coverage is not the only extent where Uganda scores poorly. Under fifty-percent of the people have cellphones, however for nations like South Africa and Kenya, this marketplace is almost saturated, eighty-three-percent and eighty-seven-percent respectively (Gillwald et al., 2019).

Although data charges in Uganda look competitive and fairly cheap comparatively, its use is still inhibited, including the people who have succeeded in overcoming the cost blockade of Internet-connectivity gadgets where the Wideband Commission's affordability scheme reviewed downwards to 2% from 5% of average income, whereby 0.5 GB of data ought to be under Ugx 5 000 to fall inside this affordability amount. However, pricing index by RIA reals that in 2018 Uganda would spend UGX 10 000 far-beyond the income of the nation

with a Gross National Income per capita of just US Dollar, one thousand, eight hundred and twenty, a per capita income where most of the people live under. While Uganda Communications Act (2013) inspires common usage of substructure, it has not been enforced except for the grid towers. This has led to increased cost of developing as well as maintaining substructure operating below capacity and increased cyberspace prices. (Gillwald et al., 2019).

To ensure continuity of teaching and learning despite confinement, institutions of higher-learning pursued technology usage to provide online-courses as well as online-learning skills as an alternative to in- classroom sessions. Nevertheless, several institutions have experienced difficulties as they lack the skill and time to design a different method providing teaching as well as assignments. Exams remained interrupted, disrupting learning paths and student progress. Although many institutions of higher learning provided blended courses prior to covid919, many learners did not view it as a substitute to face-to-face learning. In United States for example, just thirteen-percent of the learners in higher education enrolled fully in courses administered remotely (Schleicher, 2020a). The OECD and Harvard university survey on the challenges of learning faced by nations and the tactics implemented to sustain educational opportunities during Covid-19, it was established that the education that took place in the period where institutions were shutdown was at finest just an insignificant percentage of what learners would have studied at college. The duration of studying from home contributed noticeable merits, which learners acquired from being able to study in close interaction with their educators and peers, as well as with complete accessibility to widespread variety of learning, societal and healthcare amenities which universities provide. This community consciousness of the importance of universities and instructors could be advantageously positioned to upsurge parent and public participation and backing for schools and teachers.

Online education is common in many educational institutions worldwide, but many factors affect online learning quality, teacher performance, and learner knowledge and skills. School deficiencies affect job skills and learning crisis drives job skills debate. Learning and skills shortages are related (Searson et al., 2015; World Bank, 2018). Uganda's school closures worsened the situation.

Online learning is part of many education systems around the world but usage and quality vary. This level depends on how many parties use this learning setup and integrate technology before COVID-19. Years of global research have focused on successful classroom technology integration. The same factors are assumed to influence the use of technology in remote or online learning and the quality of learning in both settings.

Results from studies to examine the aspects that influence the capacity of education schemes to blend technology in teaching, it is important to grasp the types of interactions amongst educators, learners, and technology (Duraku & Hoxha, 2020b). Among the cluster of aspects determining the prospects to successfully blend technology into schoolroom and making it slice of the learning process is the educator's perspective on teaching. This means it all depends on how the teachers envision the education process, for example:

- Is it a course of information transmission or the application of tutor-centered system in which the instructor communicates to learners and adopts several appraisal techniques to judge data retention?
- Is it a course through which a conceptual modification happens (such as alteration of attitudes, knowledge, and way of reasoning) or consider learning as process of a course that enables conceptual alteration?

- How can the learner-oriented method, where freedom in learning is given through discussions, debates, and questions amongst learners, where the forms of assessments through which conceptual alterations is measured?

Therefore, successful implementation of online education is expected to be influenced by the factors that are associated with teacher's perspective on teaching method, shifting from face-to-face to online setup ('Blended learning').

Teaching techniques must inspire learning and freedom in students, online or not, and courses should support their individual needs (Duraku & Hoxha, 2020a). Learner-centered flexible learning and Pandemic precautions or educational reforms can affect education (COVID-19, 2020). Until variation is defined as the creation of something rare and includes everything different from the norm, parties seeking variation may not recognize it and face conflict. According to education studies, change-averse groups that avoid collaboration and want to maintain the status quo are the most resistant. These studies examined factors affecting educational change so that leaders, teachers, and students must develop skills and knowledge.

Security, economic conditions, authority, status, responsibility, working conditions, level of self-satisfaction, or the time and dedication needed to implement the change that can inspire or discourage people to adapt to change accordingly (Duraku & Hoxha, 2020).

The crisis revealed academia's value. Students would not spend much time or money on online content. Students attend universities to meet famous people, have inspiring conversations with faculty, and collaborate with lab researchers. Universities must re-invent learning environments to expand and broaden learner-teacher and learner-learner relationships. School closures could prevent 15% of infections, according to past outbreaks (Tabassum et al., 2021). While this impact is modest compared to other public policy measures (such as workplace social distancing, case isolation, and household quarantine), it is not negligible.

COVID-19 and education became separate goals. It enabled online classes. High-speed Internet is a common limitation. Synchronous course participation can be difficult when students lack equal Internet access. Lack of physical interaction with teachers and other students cannot replace email. Individual attention prevents immediate feedback, and written words may be less effective at explaining complex topics. Educators often lack time to explain minor but important details or concepts. New online-learning technologies help and hurt. More tools are being developed to help students cheat on online exams or impersonate others.

CONCLUSION AND RECOMMENDATIONS

In conclusion, online learning has many advantages over in-person training. It allows learners to learn anytime, anywhere, spreading education to remote areas and societies with little time for traditional education. The COVID-19 pandemic tested e-learning to varying degrees in different countries. Leaners quickly access materials, ongoing knowledge checks, a customizable learning method, group work, and direct learner-teacher interaction. While full-time study benefits from constant and direct contact between learner and teacher. Even the latest technologies cannot replace this, and many professions rely on practical knowledge. In elementary and secondary school, the teacher teaches the students. A teacher can often assess a child's problems at home or with friends through direct contact and behavior observation. A student's connections with peers affect his or her development. Online education cannot replace manual skill workshops. Online learning is a good alternative when access to education is limited, such as during the COVID-19 pandemic.

The COVID-19 pandemic sparked innovation and accelerated digitization in education and the economy. Online, distance, and "open" learning can overcome historical skepticism. Developing more flexible learning pathways improves access to higher and lifelong learning for underrepresented groups and modernizes the workforce through improved Continuous Professional Development (CPD). Authors recommend the following to Sharpe online learning systems.

- There is need to document children and learners without ICT equipment (e.g., laptops) and Internet access. Give low-income students computers and Internet access. National governments should invest in ICT infrastructure in learning institutions (e.g., computers, access to e-learning platforms, virtual learning environments, etc.). Disability-accessible online learning platforms are needed (e.g., visual or hearing impairment).
- Given the high risk of contracting COVID-19 during face-to-face teaching, teachers should be provided with Personal Protection Equipment (PPE) i.e. masks, hand sanitizers, etc. and national COVID-19 immunization programmes.
- The government should launch and incentivize national teacher training programmes to improve teachers' digital skills and introduce them to online teaching pedagogies.
- Media education for students where they should be expected to address fake news and misinformation related to COVID-19. This will counter the acceptance of "fake" news and conspiracy theories in future crisis situations.
- Public authorities should consult student, school, university, and parent associations on how to handle the crisis; these non-governmental stakeholders are essential in developing informed and adequate responses to the pandemic's impact on education systems. This will promote consultation and collaboration to shape future crisis responses.
- Schools and universities should facilitate and encourage teacher training especially digital online learning skills and pedagogy. Teaching online is not about recording a lecture and uploading it to the institution's website or using a videoconferencing platform to conduct the same lecture online as the teacher would face-to-face.
- Covid-19 should be viewed as an opportunity to revisit traditional student assessment methods (final exams, open books, peer reviews, etc.) and work toward an assessment aligned with the graduate attributes required for active citizenship and economic engagement.
- Policymakers must address the high cost of internet-enabled gadgets, even though most citizens cannot afford them.
- Despite being cheaper, most people cannot afford data for productive use. Migrating the population from consuming amenities to productive use represents a much bigger challenge. This involves improving digital literacy to bring people online, but also developing broader proficiency for the production of local content to inspire demand, improving entrepreneurial bids to create jobs, and increasing the economy's consumptive capacity to drive growth.

REFERENCES

Adnan, M. (2020). Online learning amid the COVID-19 pandemic: Students perspectives. *Journal of Pedagogical Sociology and Psychology*, *1*(2), 45–51. https://doi.org/10.33902/jpsp.2020261309

Bhavya Bhasin, Gautam Gupta, & Sumedha Malhotra. (2021). Impact of Covid-19 Pandemic on Education System. *EPRA International Journal of Environmental Economics, Commerce and Educational Management*, *29*(9),

6–8. https://doi.org/10.36713/epra6363

Bigatel, P. M., Ragan, L. C., Kennan, S., May, J., & Redmond, B. F. (2012). The identification of competencies for online teaching success. *Journal of Asynchronous Learning Network*, *16*(1), 59–78. https://doi.org/10.24059/olj.v16i1.215

Bimenyimana, S., Asemota, G. N. O., & Li, L. (2018). The state of the power sector in Rwanda: A progressive sector with ambitious targets. *Frontiers in Energy Research*, *6*(July). https://doi.org/10.3389/fenrg.2018.00068

COVID-19, M. of E. and S. T. for. (2020). Preparedness and Response Plan for COVID-19. In *TAPPI Journal* (Vol. 19, Issue 4). https://doi.org/10.32964/tj19.4

Duraku, Z. H., & Hoxha, L. (2020a). *The impact of COVID-19 on education and on the well- being of teachers , parents , and students : Challenges* (Issue April).

Duraku, Z. H., & Hoxha, L. (2020b). *The impact of COVID-19 on education and on the well- being of teachers , parents , and students :Challenges related to remote (online) learning and opportunities for advancing the quality of education* (Issue April).

Fanelli, D., Cajuste, F., Cetta, D., & Emmanuel, A. (2020). *Effect of COVID-19 on the Educational Sector in Uganda* (Vol. 30).

Gillwald, A., Mothobi, O., Ndiwalana, A., & Tusubira, T. (2019). *The state of ICT in Uganda*. https://researchictafrica.net/2019_after-access-the-state-of-ict-in-uganda/

Marioni, M., Land, H. van't, & Jensen, T. (2020). The Impact of Covid-19 on Higher Education around the World. In *International Higher Education* (Issue 102). https://www.internationalhighereducation.net/en/handbuch/gliederung/?articleID=2915#/Beitragsdetailansicht/811/2915/The-Impact-of-COVID-19-on-Global-Higher-Education%0Ahttps://www.youtube.com/channel/UCT5nt5FGVklxrtUHinF_LFA%0Ahttps://www.iau-aiu.net/IMG/

Osial, M., Pregowska, A., Masztalerz, K., & Garli, M. (2021). *education sciences A Worldwide Journey through Distance Education — From the Post Office to Virtual , Augmented and Mixed Realities , and Education during the COVID-19 Pandemic*.

Pregowska, A., Masztalerz, K., Garlińska, M., & Osial, M. (2021). A worldwide journey through distance education—from the post office to virtual, augmented and mixed realities, and education during the covid-19 pandemic. *Education Sciences*, *11*(3). https://doi.org/10.3390/educsci11030118

Schleicher, A. (2020a). *Covid-19 On Education Insights From Glance 2020*. 1–31.

Schleicher, A. (2020b). The impact of COVID-19 on education: Insights from education at a glance 2020. *OECD Journal: Economic Studies*, 1–31. https://www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf

Searson, M., Hancock, M., Soheil, N., & Shepherd, G. (2015). Digital citizenship within global contexts. *Education and Information Technologies*, *20*(4), 729–741. https://doi.org/10.1007/s10639-015-9426-0

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*(July), 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Toquero, C. M. (2020). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Research*, *5*(4), em0063. https://doi.org/10.29333/pr/7947

Tumwesige, J. (2020). *COVID-19 Educational Disruption and Response : Rethinking e-Learning in Uganda*.

VanBeek, M. (2011). Virtual learning in michigan's schools. In *Public Policy*.

World Bank. (2018). Learning To Realize Education's Promise. In *World Development Report* (Vol. 26, Issue 4). www.worldbank.org