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Article

A perspective overview of the influence of the COVID-19 pandemic on the educational sector

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Abstract: There is no denying that the COVID-19 pandemic resulted in significant stress worldwide and impacted practically every aspect of human activity. The impacts of this deadly virus on education are not seen as gaining much-needed focus from the scientific research community. The majority of educational institutions globally switched to online instruction during the COVID-19 pandemic. However, there were considerable differences in the technical readiness of various nations. In this regard, the study's attempt to provide a way forward for how the educational sector ought to manage the challenges brought on by COVID-19 issues in support of online educational activities. Since some of the consequences that resulted have an impact on the educational sector, the answers presumably also should have included innovations that would improve scientific research to lessen its effects. Particularly, it appears there is still much that has to be done about the impact of the COVID-19 pandemic on the educational sector. Hence, this perspective review study aims to explore the potential relationship between the COVID-19 pandemic and the educational sector while suggesting a way forward.

Keywords: COVID-19; education; human; online learning; students

1. Introduction

Coronavirus disease (COVID-19) is a form of viral disease mostly brought on by the SARS-CoV-2 virus. The World Health Organization (WHO) declared it a pandemic on March 11, 2020, despite the fact that it was first discovered in Wuhan, China, towards the end of 2019 (Ukhurebor et al., 2021; Ukhurebor et al., 2022; Paladhi et al., 2023). The pandemic that followed severely affected the majority of the world's regions as various medical facilities were overwhelmed by a large number of ill individuals in the major healthcare facilities (Kumar et al., 2021; Ukhurebor et al., 2021). The pandemic had a significant impact on several areas and aspects of the world (Kumar et al., 2021; Ukhurebor et al., 2021).

The COVID-19 outbreak serves as a stark indication that, like other sporadic calamities, pandemics (or epidemics, as the case may be) have taken place in the past and could continue to do so in the years to come (Ukhurebor et al., 2021). Even if there are no known means to stop the hazardous viruses from developing, suitable steps

should be taken to lessen their consequences for mankind. The global lockdown, during which all international and domestic movements were prohibited and residents were compelled to stay inside their houses, was one of the effective measures that contributed to slowing the spread of the virus; hence, the educational sector was critically affected by this means.

Evidently, the COVID-19 outbreak had a significant economic and sociological impact on the entire world, changing everyday activities like agriculture, education, the environment, industry, etc. (Ukhurebor et al., 2021; Kumar et al., 2021).

The majority of educational institutions globally (especially the higher institutions) switched to online instruction during the COVID-19 pandemic. This again emphasizes the importance of online educational activities, despite the disadvantages of online educational activities vis-à-vis social media (Nwankwo and Ukhurebor, 2020; Asanga et al., 2023). However, according to Kummitha et al. (2021), there were considerable differences between the technical readiness of various nations. In this regard, the study's attempt to provide a way forward for how the educational sector ought to have managed the challenges brought on by COVID-19 issues in support of online educational activities. Their study was carried out based on a cross-sectional study of close to three hundred academic professionals who are employed in some selected higher education institutions in India and Ethiopia. Comparatively, they reported that the digital rift and deficiency of institutional readiness were the major difficulties that constrained the effective and operational implementation and execution of online educational activities. Also, the study reported that training activities for those involved in online educational activities to employ web resources and ease educational activities were found to be inadequate. They concluded by recommending suggestions and policy guidance that will lessen the digital rift and facilitate the effective implementation and execution of online educational activities, especially for higher education.

In the research they conducted to evaluate the mechanism of COVID-19-lockdown-induced catastrophe online educational activities at undergraduate level in Assam, its efficiency, as well as the issues from the viewpoint of students' experience and satisfaction, Rahman (2021) list some of these rifts and deficiencies as "poor Internet connectivity, irregular electricity, high cost in data plans, lack of compatible devices, lack of conducive environment". Consequently, his findings convincingly demonstrate the necessity for coordinated action to enhance digital infrastructure, lower costs, and offer well-organized professional development for educators in pedagogical and technological skills. The most important measures that need to be expedited for inclusive and successful online delivery of higher education in the future are the development, adoption, and evaluation of novel approaches and technologies, the creation of student-friendly material, and, most importantly, a positive mindset.

Particularly in roughly close to two hundred nations, higher education institutions were shut down during the COVID-19 hit period (WHO, 2020). As a consequence, approximately 1.58 billion students, or 91.3% of all students enrolled worldwide, were ejected from various educational institutions (UNESCO, 2020). As a consequence, the pandemic has presented educational institutions in advanced and developing nations with a number of difficulties (Desrosiers, 2020). Higher education institutions all around the world have made the decision to switch from traditional classroom-based

instruction to online instruction in an effort to lessen the crisis (Desrosiers, 2020). In light of this, higher institutions have worked very hard to make the most of digital technologies in order to hold lectures and provide online educational activities (Awogbenle, 2020; Rahman, 2021; Labar, 2020). However, not even the entire world uses digital technology as much as higher institutions (Rahman, 2021). In order to solve some of the pandemic-related concerns confronting mankind, global collaboration has become necessary (Ukhurebor et al., 2021; Kumar et al., 2021). Hence, this article offers a perspective review of COVID-19's impact on the educational sector. Both the positive (beneficial) and negative (detrimental) impact of the COVID-19 pandemic on the educational sector as well as the way forward in the form of suggestions that will guide future scenarios are highlighted.

2. Possible connection between the COVID-19 pandemic and the educational sector

All facets of global civilization were affected by this pandemic (Ukhurebor et al., 2021), with the educational sector suffering the greatest losses (Garg et al., 2020; Rose et al., 2020; Stanistreet et al., 2021; Kumar et al., 2021; Papademetriou et al., 2022). Its effects on the educational field continue to be felt strongly and are extremely concerning (Stanistreet et al., 2021). This is due to the fact that every society's or country's development heavily depends on how well its education system is doing (Whitehead, 2018; Andrew et al., 2020; Nnadozie et al., 2023). As stated by Whitehead (2018), education continues to be the means by which societies and innovative advancements raise themselves. The quality of education received by a country's or nation's youth, whose educational standard has been hampered, if not jeopardized, by the pandemic, is another important factor in determining a country's or nation's future (Whitehead, 2018; Nnadozie et al., 2023).

Numerous changes were brought about by the COVID-19 pandemic in multiple sectors (Kumar et al., 2021; Aidonojie et al., 2023). A worldwide shutdown was implemented to stop the pandemic from spreading, which had a negative impact on educational programs because they were hidden away (Ukhurebor et al., 2021; Kumar et al., 2021). Online classes became popular when it became clear to many cultures and governments that finding a cure for the epidemic was unlikely and that waiting forever was not the best course of action (Garg et al., 2020; Kumar et al., 2021; Nneji et al., 2022). The steps used to monitor and control the COVID-19 outbreak and the disintegration of the majority of economic operations have had a significant impact on the global educational landscape. The impacts on educational settings are said to have both beneficial and adverse consequences. The pandemic has caused a significant worldwide socio-economic upheaval that has either directly or indirectly (entirely or partially) impacted the educational sector (Kumar et al., 2021).

3. Effects of COVID-19 on the educational sector

The educational sector was significantly impacted by the COVID-19 pandemic. A worldwide lockdown forced the closure of schools. According to UNICEF (Engzell et al., 2021), the closure of educational institutions in more than 186 countries has an effect on 98.5% of the world's students. 60.0% of children in homes with the lowest

levels of schooling experience learning loss (Kumar et al., 2021). Closing down the educational sector was thought to help control the coronavirus's spread. The death rate decreases by 2.0% to 4.0% as a result of the shutdown of the educational sector, according to some COVID-19 studies (Kumar et al., 2021; Viner et al., 2020).

Closing educational institutions was not the best idea, though. Its efficiency can differ with regard to the durations of the eruption of COVID-19 (Kumar et al., 2021). It would significantly affect the degradation of the mortality rate if it were introduced in the early stages of COVID-19. However, if this action is implemented later in the process, death rates may not be significantly affected. A little rise in the mortality rate was seen following the reopening of educational institutions (Magomedov et al., 2020; Kumar et al., 2021). Students, staff members, and their families are all immediately impacted when educational institutions close. Over time, the primary effects have been demonstrated in a number of areas (Kumar et al., 2021), including; food insecurity, global stock market, healthcare, as well as internet services (Kumar et al., 2021).

UNESCO has offered advice on how to modify online learning platforms and remote learning techniques. The central government implements a variety of preventative measures in most nations. In the early stages of the COVID-19 widespread, they decreed that all educational institutions must close permanently. However, this shutdown had an impact on a number of stringent examinations, internships, employment opportunities, educational counselling services, etc. **Figure 1** as adapted and modified from Kumar et al. (2021), illustratively depicts the COVID-19 pandemic's beneficial and detrimental effects on the educational sector.

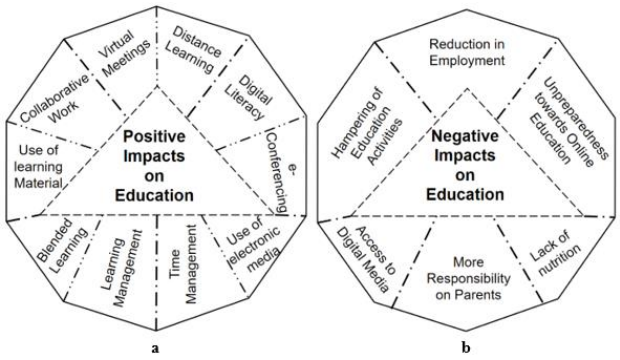

Figure 1. The COVID-19 pandemic's beneficial and detrimental effects on the educational sector. (Copyright: Licensee MDPI, Basel, Switzerland. Reproduced from Kumar et al., 2021. CC BY 4.0. https://creativecommons.org/licenses/by/4.0/).

3.1. Effects on students

Students have embraced distance learning techniques as a result of the closure of the educational sectors during the pandemic (Stanistreet et al., 2021). However, many institutions are working to adopt online system of education. Some students live in places where they cannot use technological devices or a suitable Internet connection (Kumar et al., 2021). Utilizing programs for distant learning presented a significant problem as a result (Kumar et al., 2021). It may be quite challenging for parents who work to watch after their children and keep things in equilibrium at home. Building a robust infrastructure system is necessary to solve the aforementioned issues (Jena, 2020). Students that experience loss of knowledge during vacations or over weekends

will learn more quickly as a result. By linking them to the entire globe, it will also allow students take advantage of a few more international possibilities for communication and learning beyond school.

The COVID-19 issues had a significant impact on the educational sector. Higher education institutions, colleges, and expenses such as tuition, tests, and others had to close due to a national lockdown. The closing of education centres in over 186 nations has an impact on 98.50% of the world's students, according to UNICEF as adapted from Engzell et al. (2021). In households with the lowest level of education, learning loss affects children to the tune of 60.00%. It was believed that closing down educational facilities would aid in containing the coronavirus outbreak. According to recent COVID-19 research, the death rate has fallen by 2.00% to 4.00% as a result of the closure of educational institutions (Viner et al., 2020). If the proper COVID-19 behaviours are not implemented, this situation can be altered.

A further study demonstrates that, despite the fact that children can have the coronavirus, they seldom experience serious symptoms and can spread the virus. To curb the spread of COVID-19, educational institutions were shut down. Closing educational institutions is not the most effective answer, though. Depending on when COVID-19 first appeared, it may or may not be effective (Schleicher, 2020). It would significantly affect the degradation of the mortality rate if it were introduced in the early stages of COVID-19. However, if this action is implemented later in the process, the rate of death might not be significantly affected. A little rise in the number of deaths was seen following the resumption of educational institutions (Magomedov et al., 2020).

Students, academics, staff members, and their relatives as well as the school, other stakeholders such as national authorities and the government and private educational bodies, etc were all immediately impacted during the closure of the educational sector (educational institutions) owing to the COVID-19 pandemics. Over time, the main consequences have been demonstrated in a number of sectors (Schleicher, 2020; Kumar et al., 2021), such as:

Global stock market: The worldwide stock market is significantly impacted by education. Professionally educated merchants have made use of novel instruments and techniques to study the stock exchange and increase their profits. The institutions will create fewer skilled traders as a result of this epidemic.

Food insecurity: Students, along with their relatives who are reliant on lunchtime lunches, are experiencing food insecurity. Over 100 million young people in most nations such as India eat lunch. Throughout this epidemic, they experienced food insecurity.

Internet services: Internet access is necessary for online educational activities, as are digital devices like tablets, smartphones, and computers. These products may now cost more due to the great demand for them. The pupils had trouble accessing the Internet because of the shortage of technology in their remote communities.

Healthcare problems: Families without a source of income at the moment are likely to have several healthcare problems.

UNESCO provides recommendations on how to modify online educational platforms and remote learning techniques. The federal government in most countries, such as India, has implemented a number of preventative measures. In the initial stages

of the COVID-19 epidemic, the governments of such countries announced the complete closure of all educational facilities. However, this shutdown had an impact on a number of competitive assessments, internships, job placements, student counselling services, etc. **Figure 2** depicts the COVID-19 pandemic's effects on educational institutions, both positive and negative.

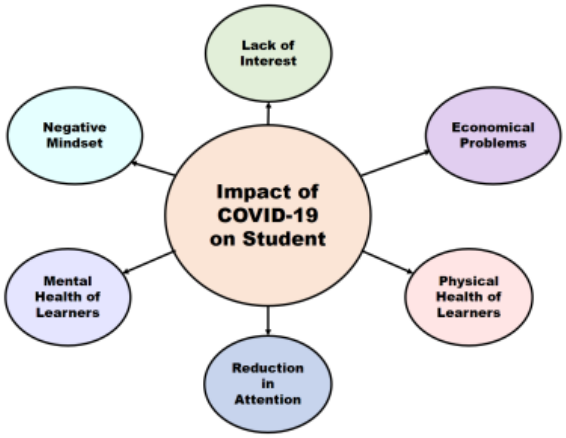

Figure 2. The effects of COVID-19 on students. (Copyright: Licensee MDPI, Basel, Switzerland. Reproduced from Kumar et al., 2021. CC BY 4.0. https://creativecommons.org/licenses/by/4.0/).

Students have embraced distance learning techniques as a result of the shutdown of educational institutions. However, many institutions are working to adopt online education. Some students live in places where they cannot use technological devices or a suitable Internet connection Kumar et al. (2021). Utilizing programs for distant learning presented a significant problem as a result. It may be quite challenging for working parents to watch after their children and keep things in balance at home. Building a robust infrastructure system is necessary to solve the aforementioned issues (Jena, 2020). Students that experience learning loss during the summer or over weekends will learn more quickly as a result. By linking them to the entire globe, it will also allow students to take advantage of a few more international possibilities for communication and learning outside of school.

In summary, the effects of COVID-19 on students, as highlighted by Kumar et al. (2021), include lack of interest, a negative mindset, the mental health of learners, a reduction in attention, the physical health of learners, as well as economic problems. These effects of COVID-19 on students are illustrated in **Figure 2**, as adapted from Kumar et al. (2021).

3.2. Effects on research

The effects and impacts of the COVID-19 pandemic were extensive on learning and research throughout the educational setting. Numerous research and higher education institutions have had to stop offering in-person instruction and research activities. Innovative and new instructional and evaluation approaches must be used immediately. We now have the chance to lay the groundwork for the introduction of digital learning and research approaches, thanks to the COVID-19 epidemic (Dhawan, 2020). Inadequacies in online teaching and research infrastructure, teacher exposure

to online teaching and research, the knowledge gap, an unfavourable environment for studying and research activities at home, equality, and academic excellence in research and higher institutions are just a few of the deficiencies that have been highlighted as a result of the COVID-19 issues. Therefore, it is necessary to assess how the COVID-19 pandemic has affected research, teaching, and learning practices throughout the world.

Massive internet traffic brought on by online learning has put a significant burden on internet service providers. In addition to meeting spaces, teleconferencing and videoconferencing were often utilized to interact with experts (Miki et al., 2020; Kumar et al., 2021). Before this pandemic, just 2.0% of researchers were engaged in the study of viruses. The COVID-19 virus is the focus of several laboratories and researchers nowadays. The amount of biomedical research has increased by around 10.0–15.0% as a result (Kumar et al., 2021). The research into artificial intelligence (AI) as well as machine learning (ML), alternatively, has been considerable, with several publications published in a number of reputable journals (Gianchandani et al., 2020; Kumar et al., 2021; Alshazly et al., 2021; Singh et al., 2021). On preprint services including "bioRxiv, medRxiv, and arXiv", several research publications on COVID-19 have also been posted. The peer review procedure, which significantly influences the reputation of top journals (Kumar et al., 2021), revealed the possible flaws. Researchers and academics may now share their expertise and information about this pandemic on a collaborative platform (Valencise et al., 2020). During the epidemic, many respected laboratories across the entire globe closed their doors to visitors, employees, and non-essential workers. At home, the researchers began their job (Kumar et al., 2021). In cloud computing, several scientists and researchers from reputable laboratories have worked together. They have combined funds to gain utilization of IBM supercomputers for research (Harper et al., 2020).

According to Kumar et al. (2021), there are several crucial uses for the COVID-19 "High Performance Computing Consortium", including predicting the virus's progress, finding COVID-19 vaccinations, and evaluating substances to create a novel COVID-19 vaccine.

Since research and learning were affected, this in turn affected globalization and industrialization. Hence, globalization was another aspect of the COVID-19 pandemic. The primary drivers of globalization are its many positive effects on longevity and the reduction of neonatal death rates (Bickley et al., 2021). Politically motivated economic and social aspects of globalization might all be at play (Bickley et al., 2021) (see **Figure 3** for the various important components of globalization as adapted from Kumar et al. (2021). While the advanced nations concentrated on social integration, the developing nations concentrated on the economic element of globalization, which encouraged wealth development to enhance the health of their populations. Social globalization was crucial in managing coronavirus containment during the COVID-19 scenario. The nations with a high level of social globalization moved quickly to enact limitations on travel and other forms of control. Travel limitations are less common in nations with stronger political globalization (Martens et al., 2010).

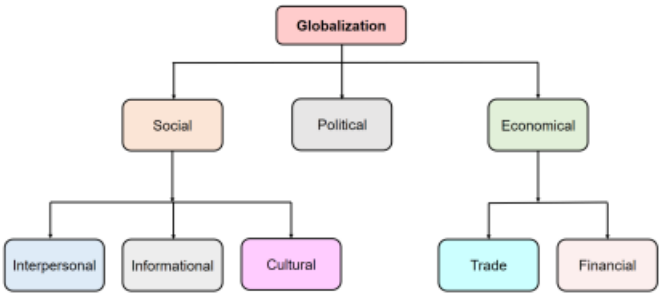

Figure 3. Important components of globalization. (Copyright: Licensee MDPI, Basel, Switzerland. Reproduced from Kumar et al., 2021. CC BY 4.0.)

The lengthy process of adhering to the stringent travel restrictions Travel limitations and economic globalization do not, however, strongly correlate. A nation that has seen greater political, cultural, and interpersonal globalization is less likely to anticipate imposing travel restrictions in the event of a pandemic (Farzanegan et al., 2021). The majority of nations whose policies favour globalization have the least interest in enacting any travel restrictions. The Internal Labour Organization estimates that there are now an additional 25 million unemployed people worldwide (Kumar et al., 2021). In the first three months of 2020, trade in Los Angeles decreased by 22.00%. The GDP of the emerging nations, including South Asia and Africa, fell by 3.6.00%. Some restaurant businesses filed for bankruptcy. The COVID-19 pandemic has had a significant impact on several nations, for example, Thailand and Malaysia. The number of jobs in the travel and tourism sector has decreased by 14.00% (Shrestha et al., 2020). Additionally, it has been claimed that the economic effect in the United States exceeds $220 billion. In the wake of this outbreak, governments are concentrating on building the domestic supply chain for a few key items. For instance, South Korea has employed robots in the manufacturing sector. It is also stated that affluent nations are sending medical supplies and vaccinations to poorer nations (Kumar et al., 2021).

4. Current advances and future perspectives on the impact of the COVID-19 pandemic on the educational sector

The education sector has suffered both detrimental consequences as well as beneficial effects from the COVID-19 pandemic. The preventative actions implemented by the relevant stakeholders, in particular, had an impact on roughly one billion school children (Kumar et al., 2021). The relevant stakeholders—the governments in particular—have seized the initiative to create online learning platforms as a result of the pandemic; see **Figure 4** for COVID-19's beneficial effects on the implementation of the online education system as adapted from Garg et al. (2021). One of the major impediments to integrating online learning (e-leaning), predominantly in rural areas, is still internet availability (Asanga et al., 2023; Odinakachi et al., 2023; Emeka et al., 2023; Olusegun et al., 2023). The pandemic crisis did not give researchers adequate time to conduct their researches or studies. Instead of conducting scientific or systematic researches or studies, many of researchers were busy taking care for their children and family. Also, the researchers

were not having enough time to complete or undertake administrative responsibilities owing to the complete shutdown (Kumar et al., 2021).

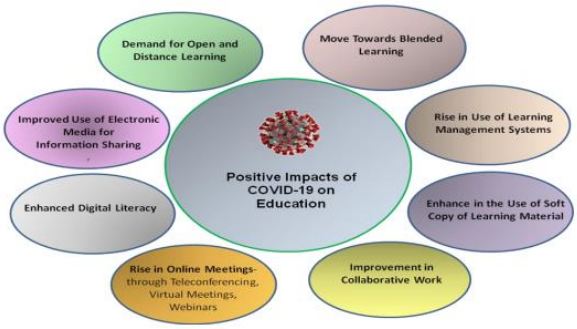

Figure 4. COVID-19's beneficial effects on the implementation of the online education system. (Copyright: Rajni Dwivedi (Maya Global Education Society), India. Reproduced from Garg et al., 2021. CC BY 4.0. https://creativecommons.org/licenses/by/4.0/).

Some published articles seek to deepen our comprehension of the COVID-19 crises' effects on education globally and to elicit thoughtful debate about the pandemic's educational ramifications in order to guide future responses (Kumar et al., 2021; Stanistreet et al., 2021). Contributions that are empirically and theoretically driven are included, with an emphasis on education, educational institutions, and adult and community education. The trend to online learning has strengthened the accessibility and engagement disparities in education, not just in educational institutions but also in adult education, as is the main summary from most published articles in this regard (Olusegun et al., 2023). Hence, this is a call to action because it emphasizes not only the larger systemic factors that contribute to the digital split and render recommendations for policy that maintain the status quo ineffective but also the necessity of placing the student at the centre of future policy measures and research rather than the institution, the educator (teacher), or technological necessities.

Additionally, it is uncertain if the transition to online learning would be advantageous for underserved populations given that virtual learning will continue since, according to Stanistreet et al. (2021), "it will seem a more viable route to program managers in the future due to its low cost and scalability". Due to educational seclusion and structural disparities in society, some countries struggle to guarantee the right to education for all citizens. This calls for the creation of a novel social contract that guarantees this right in order to prevent the present predicament from escalating existing inequalities. Therefore, partnerships and psychological support are crucial for teachers to develop the resilience and abilities necessary to handle this kind of crisis.

It was argued that the cooperative model would be far more appropriate given the lasting impact COVID-19 will possibly have on higher education compared to the present ranking and competition model, which expresses virtually nothing regarding whether universities are combating or increasing discrimination in response to the pandemic and is probably going to make the distribution of resources even more unequal (Kumar et al., 2021; Stanistreet et al., 2021). The author's recommended paradigm, in contrast, would enable higher education institutions to participate in

public discourse and take on their role to reimagine education as a setting for learning to coexist in ways that give the globe a shot at survival (Stanistreet et al., 2021).

Some studies have indicated that the transition to distant learning as an effect of the COVID-19 pandemic lockdown has strengthened pre-existing socioeconomic disparities. According to Stanistreet et al. (2021), some students were left behind, facing online teaching and learning as inaccessible for them because they did not have accessibility to the internet, the required digital devices, or the technological or English language skills for utilizing some of these technologies. Hence, several measures for institutions to ameliorate socioeconomic disparities and promote the implementation of policies and practices that enhance the encompassing use of online and remote education programs, both in the post-pandemic period as well as in the near future, are recommended.

Acceptance of e-learning tools is dependent on concerns with assessment, readiness, and technological integration, as well as the influence of educational leadership and administrative change management (Kumar et al., 2021; Stanistreet et al., 2021). According to certain research, academic staff frequently encountered challenges while attempting to switch to online learning. The primary causes were sluggish internet access and a shortage of proper training regarding technological utilization. Because of this, online education exhibited an excess reliance on presentations and a corresponding underutilization of other digital resources. Therefore, in order to secure lasting change rather than short-term continuity, several of the indicated areas, such as the financial implications for training and administration of online education technologies, autonomy in institutions, and management, require emphasis.

5. Conclusion and the way further

The COVID-19 pandemic has a significant impact on pragmatic learning as well as the entire educational sector. With international organizations' functions and the notion that distance education (remote learning) alone offers a just, inclusive, or suitable response to the closure of schools and other educational institutions, we anticipate that it will spark more discussion about opposing viewpoints and prospective educational trajectories. The adoption of online learning in the midst of a global catastrophe poses a variety of problems, including the aggravation of already-existing inequities. The majority of the authors' viewpoints or perspectives on this topic all overwhelmingly convey this article. However, this perspective review consists of three broad aspects: the educational sector, students, and research, which cannot be adequately explained in separate studies.

Additionally, a number of more significant concepts are revealed in the extant literature. One of these is children's ability to learn outside of the classroom. The heart of the educational process was moved from schools to homes as a result of the de facto closure of education systems, with the active participation of parents and guardians and the technologically enabled remote assistance of teachers. This prompted the question of whether additional types of instruction may exist outside of conventional educational settings like schools. Have we jumped the gun and abandoned more community-centred approaches in favour of technology-driven ones? What other

educational possibilities might be available to children in the community as a whole? Most of the articles raise the issue of what we may learn from this experience in picturing education in a post-pandemic society, not just for children but also for adults and higher education students.

The fact that the pandemic and the responses to it have had an impact on systems that did not seem ready to handle the current crisis is another recurring theme. They were already undermined by pre-existing inequities, financial restrictions, and austerity measures, to name a few causes. Neoliberal policies that sought to cut public spending and boost markets and competition, sometimes at the expense of democratic transparency, often served to worsen these problems. Examples of this amplifying impact may be found in the adult education community, the youth education sector, the market-oriented education system, and the competitive ranking-based higher education systems in the majority of industrialized countries, including the US. For instance, the transition to distant learning strengthened already existing socio-economic disparities in South Africa, Nepal, etc. In addition, due to frequent student demonstrations, South African universities had previously been working hard to make up time when the crisis struck. For the group involved in the project, professional development and relationship-building made possible by EU funds helped to lessen the strains on teachers and schools in Egypt, indicating that teachers and schools without access to additional funding and training were less equipped to handle the crisis.

These realizations compel us to think carefully about how to improve the equity, resources, and resilience of our educational institutions. Generally, it is hoped that, in order to document, analyse, and discuss contemporary events such as COVID-19 throughout the world and their effects on education and learning, academics, researchers, and practitioners should seek innovative collaborative means to work together. Hence, more submissions and innovative proposals that will take these discussions further are necessary. Unique research methods, a new perspective, as well as novel insights into addressing the challenges in the educational sector should be proposed.

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References

Aidonojie, P. A., Okuonghae, N., & Ukhurebor, K. E. (2022). The Legal Rights and Challenges of COVID-19 Patients Accessing Private Healthcare in Nigeria. BESTUUR, 10(2), 183. https://doi.org/10.20961/bestuur.v10i2.68118

Alshazly, H., Linse, C., Abdalla, M., et al. (2021). COVID-Nets: deep CNN architectures for detecting COVID-19 using chest CT scans. PeerJ Computer Science, 7, e655. Portico. https://doi.org/10.7717/peerj-cs.655

Alshazly, H., Linse, C., Barth, E., et al. (2021). Explainable COVID-19 Detection Using Chest CT Scans and Deep Learning. Sensors, 21(2), 455. https://doi.org/10.3390/s21020455

Andrew, A., Cattan, S., Costa Dias, M., et al. (2020). Inequalities in Children's Experiences of Home Learning during the COVID-19 Lockdown in England*. Fiscal Studies, 41(3), 653–683. Portico. https://doi.org/10.1111/1475-5890.12240

Asanga, M. P., Essiet, U. U., Ukhurebor, K. E., et al. (2023). Social Media and Academic Performance: A Survey Research of Senior Secondary School Students in Uyo, Nigeria. International Journal of Learning, Teaching and Educational Research, 22(2), 323–337. https://doi.org/10.26803/ijlter.22.2.18

Awogbenle, S. (2020). COVID-19: The revival must strat with education. Available online: http://saharareporters.com/2020/05/25/covid-19-revival-must-start-education-seun-awogbenle (accessed on 18 July 2023).

Bickley, S. J., Chan, H. F., Skali, A., et al. (2021). How does globalization affect COVID-19 responses? Globalization and Health, 17(1). https://doi.org/10.1186/s12992-021-00677-5

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

Emeka, E. P., Okoza, J., Ukhurebor, K., et al. (2023). The impact of internet use on tertiary institution students' academic performance: An exploratory study. Cypriot Journal of Educational Sciences, 18(1), 242–256. https://doi.org/10.18844/cjes.v18i1.8144

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. Proceedings of the National Academy of Sciences, 118(17). https://doi.org/10.1073/pnas.2022376118

Desrosiers, M-E. (2020). As universities move classes online, let's not forget the digital divide. Available online: https://policyoptions.irpp.org/magazines/march-2020/as-universities-move-classes-online-lets-not-forget-the-digital-divide/ (accessed on 18 July 2023).

Farzanegan, M. R., Feizi, M., & Gholipour, H. F. (2021). Globalization and the Outbreak of COVID-19: An Empirical Analysis. Journal of Risk and Financial Management, 14(3), 105. https://doi.org/10.3390/jrfm14030105

Garg, S., Aggarwal, D., Upadhyay, S.K., Kumar, G., Singh, G. (2020). Effect of COVID-19 on school education system: challenges and opportunities to adopt online teaching and learning. Humanities & Social Sciences Reviews, 8(6), 10–17. https://doi.org/10.18510/hssr.2020.862

Gianchandani, N., Jaiswal, A., Singh, D., et al. (2020). Rapid COVID-19 diagnosis using ensemble deep transfer learning models from chest radiographic images. Journal of Ambient Intelligence and Humanized Computing, 14(5), 5541–5553. https://doi.org/10.1007/s12652-020-02669-6

Harper, L., Kalfa, N., Beckers, G. M. A., et al. (2020). The impact of COVID-19 on research. Journal of Pediatric Urology, 16(5), 715–716. https://doi.org/10.1016/j.jpurol.2020.07.002

Jena, P. K. (2020). Impact of Pandemic COVID-19 on Education in India. https://doi.org/10.31235/osf.io/2kasu

Kumar, V., Alshazly, H., Idris, S. A., et al. (2021). Evaluating the Impact of COVID-19 on Society, Environment, Economy, and Education. Sustainability, 13(24), 13642. https://doi.org/10.3390/su132413642

Kummitha, H. R., Kolloju, N., Chittoor, P., et al. (2021). Coronavirus Disease 2019 and Its Effect on Teaching and Learning Process in the Higher Educational Institutions. Higher Education for the Future, 8(1), 90–107. https://doi.org/10.1177/2347631120983650

Labar, V. (2020). Digital divide across the hills. Sikkim Chronicle. Available online: https://www.thesikkimchronicle.com/digital-divide-across-the-hills/ (accessed on 18 June 2023).

Magomedov, I. A., Khaliev, M. S.-U., & Khubolov, S. M. (2020). The negative and positive impact of the pandemic on education. Journal of Physics: Conference Series, 1691(1), 012134. https://doi.org/10.1088/1742-6596/1691/1/012134

Magomedov, I. A., Khaliev, M. S.-U., & Khubolov, S. M. (2020). The negative and positive impact of the pandemic on education. Journal of Physics: Conference Series, 1691(1), 012134. https://doi.org/10.1088/1742-6596/1691/1/012134

Martens, P., Akin, S.-M., Maud, H., et al. (2010). Is globalization healthy: a statistical indicator analysis of the impacts of globalization on health. Globalization and Health, 6(1), 16. https://doi.org/10.1186/1744-8603-6-16

Miki, Y., Chubachi, N., Imamura, F., et al. (2020). Impact of COVID-19 restrictions on the research environment and motivation of researchers in Japan. Progress in Disaster Science, 8, 100128. https://doi.org/10.1016/j.pdisas.2020.100128

Nnadozie, E., Jerome, A., & Aregbeyen, O. (2023). Perspective Chapter: Sustaining University Education for and National Development in Nigeria. Higher Education—Reflections from the Field - Volume 3. https://doi.org/10.5772/intechopen.109454

Nneji, C. C., Urenyere, R., Ukhurebor, K. E., et al. (2022). The impacts of COVID-19-induced online lectures on the teaching and learning process: An inquiring study of junior secondary schools in Orlu, Nigeria. Frontiers in Public Health, 10. https://doi.org/10.3389/fpubh.2022.1054536

Nwankwo, W., Ukhurebor, K.E. (2020). Web forum and social media: a model for automatic removal of fake media using multilayered neural networks. International Journal of Scientific & Technology Research, 9(1), 4371-4377.

Odinakachi, E.O., Mbalisi, O.M., Ukhurebor, K.E., Opateye, J., Leonard, E. (2023). Accessibility of instructional materials for effective teaching: Outlook from high schools in Eleme, River State, Nigeria. Cypriot Journal of Educational Sciences, 18(2), 456-469.

Olusegun, A. A., Uranta, E., Ukhurebor, K. E., et al. (2023). Appraisal of E-Learning and students' academic performance: A perspective from secondary schools. Cypriot Journal of Educational Sciences, 18(1), 351–367. https://doi.org/10.18844/cjes.v18i1.7996

Paladhi, A. G., Manohar, M., Pal, K., et al. (2022). Novel electrochemical biosensor key significance of smart intelligence (IoMT & IoHT) of COVID-19 virus control management. Process Biochemistry, 122, 105–109. https://doi.org/10.1016/j.procbio.2022.09.023

Papademetriou, C., Anastasiadou, S., Konteos, G., et al. (2022). COVID-19 Pandemic: The Impact of the Social Media Technology on Higher Education. Education Sciences, 12(4), 261. https://doi.org/10.3390/educsci12040261

Rahman, A. (2021). Using Students' Experience to Derive Effectiveness of COVID-19-Lockdown-Induced Emergency Online Learning at Undergraduate Level: Evidence from Assam, India. Higher Education for the Future, 8(1), 71–89. https://doi.org/10.1177/2347631120980549

Rose, S. (2020). Medical Student Education in the Time of COVID-19. JAMA, 323(21), 2131. https://doi.org/10.1001/jama.2020.5227

Schleicher, A. (2020). The Impact of COVID-19 on education insights from education at a glance. 2020. Available online: https: //www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf (accessed on 18 July 2023).

Shrestha, N., Shad, M. Y., Ulvi, O., et al. (2020). The impact of COVID-19 on globalization. One Health, 11, 100180. https://doi.org/10.1016/j.onehlt.2020.100180

Singh, D., Kumar, V., Kaur, M., et al. (2021). Screening of COVID-19 Suspected Subjects Using Multi-Crossover Genetic Algorithm Based Dense Convolutional Neural Network. IEEE Access, 9, 142566–142580. https://doi.org/10.1109/access.2021.3120717

Stanistreet, P., Elfert, M., & Atchoarena, D. (2021). Education in the age of COVID-19: Implications for the future. International Review of Education, 67(1–2), 1–8. https://doi.org/10.1007/s11159-021-09904-y

Ukhurebor, K. E., Aigbe, U. O., Onyancha, R. B., et al. (2022). Greenhouse Gas Emission: Perception during the COVID-19 Pandemic. BioMed Research International, 2022, 1–12. https://doi.org/10.1155/2022/6166276

Ukhurebor, K. E., Singh, K. R., Nayak, V., et al. (2021). Influence of the SARS-CoV-2 pandemic: a review from the climate change perspective. Environmental Science: Processes & Impacts, 23(8), 1060–1078. https://doi.org/10.1039/d1em00154j

UNESCO. (2020). COVID-19 educational disruption and response. Available online: https://en.unesco.org/ covid19/educationresponse (accessed on 18 July 2023).

Valencise, F. E., Boschiero, M. N., Palamim, C. V. C., et al. (2022). The COVID-19 impact on the scientific production on the 25 main death causes according to world region. Pulmonology, 28(1), 1–3. https://doi.org/10.1016/j.pulmoe.2021.05.011

Viner, R.M., Russell, S.J., Croker, H., et al. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. Lancet Child Adolesc. Health, 4, 397–404.

Whitehead, A. (2018). The aims of education, Moat Portcullis.

WHO. (2020). Coronavirus disease (COVID-19) Pandemic. Available online: https://www.who.int/ emergencies/diseases/novel-coronavirus-2019 (accessed on 18 July 2023).