

Embracing the new normal: Geography teachers' preparedness and the use of e-learning methodologies

Misheck Mhishi ^{1*}, Vimbai Marcia Chimbwanda ², Isaac Gwizangwe ¹

¹ Bindura University of Science Education, Bindura, ZIMBABWE

² Kutama Day Secondary School, Murombedzi, ZIMBABWE

*Corresponding Author: mhisheck@gmail.com

Citation: Mhishi, M., Chimbwanda, V. M., & Gwizangwe, I. (2023). Embracing the new normal: Geography teachers' preparedness and the use of e-learning methodologies. *Pedagogical Research*, 8(1), em0147. <https://doi.org/10.29333/pr/12665>

ARTICLE INFO

Received: 10 Jun. 2022

Accepted: 17 Nov. 2022

ABSTRACT

Unprecedented COVID-19 lockdowns forced schools to close and to adopt online teaching and learning methodologies. In Zimbabwe, underprivileged schools were the worst affected by this directive. This qualitative study, carried out in one cluster of rural secondary schools explored the preparedness of geography teachers to adopt e-learning strategies. Data were collected through interviews and questionnaires. Findings indicate that teachers at day schools were not well prepared to adopt e-learning strategies while their counterparts at boarding schools were better prepared. Teachers stuck to their traditional classroom roles and failed to adopt additional online roles resulting in feelings of boredom due to lack of social interaction with students. A lack of teacher training and support and inadequacies in infrastructural facilities were the major impediments militating against teacher preparedness. WhatsApp emerged as the most popular application used to communicate with students. It is recommended that stakeholder support be mobilized towards teacher capacitation.

Keywords: online teaching, e-learning, teacher preparation, teaching methods, geography education

INTRODUCTION AND BACKGROUND

The coronavirus and COVID-19, the disease that it causes, was first reported in Wuhan City, Hubei Province of China in December 2019. Since then, the virus spread rapidly across the globe both in terms of casualties and geographic coverage. In mitigation, the World Health Organization (WHO) declared the outbreak a pandemic on March 11, 2020, barely three months after the first cases were reported (UNDPZ, 2020). Zimbabwe was not spared either as shortly thereafter, on 17 March 2020, the pandemic was declared a national disaster and a week later, all schools were prematurely closed two weeks earlier than the normal school term schedule (MoPSE, 2020).

The school closures placed unprecedented challenges on governments and schools; hence, efforts were focused towards minimizing the disruption of teaching and learning activities. Many countries introduced or scaled up the existent distance education modalities based on different blends of Information and Communication Technology (ICT)-based technologies and the Internet to provide online platforms for continued learning (Chang & Yano, 2020).

Although the stance to recommend a shift to online teaching and learning in order to minimize the loss of teaching and learning time due to the COVID-19 lockdown was commendable, in Zimbabwe the implementation of the road map faced historical risks of inertia. Even before the COVID-19 pandemic, the Zimbabwe education sector was already under stress as a result of multiple crises, which included the impact of Cyclone Idai in 2019 (Chanza et al., 2020), the economic crisis and hyperinflation as well as low teacher motivation and incapacitation (MoPSE, 2020).

In addition, previous efforts to embrace ICTs in the country's rural secondary schools had limited success because of technological and infrastructural inadequacies as well as lack of preparedness on the part of many stakeholders, including teachers (Konyana & Konyana, 2020).

These constraints offer formidable challenges to successful implementation of online teaching and learning, especially for the poorly resourced rural secondary schools.

According to Bediako (2019), it is only those curriculum reform programs and innovations that enjoy the support and favor of teachers at the implementation stage that have a higher chance of succeeding than those without this blessing. In Zimbabwe little research has yet been done to examine online geography teachers' teaching practices and preparedness for online teaching in the COVID-19 era especially in the disadvantaged rural secondary schools. As such, it is necessary to gain an insight into the obstacles teachers face in undertaking online teaching and take corrective steps to overcome the said impediments. The research will assess

the level of teachers' digital proficiency, the types of digital technologies they use and kind of support they may need for successful uptake of online teaching.

The following research questions guided this study:

1. What teaching technologies did the geography teachers use in online teaching?
2. How did the teachers adapt their pre-existing teaching practices to suit the online teaching strategies?
3. What professional development had the teachers received in preparation for online teaching?

LITERATURE REVIEW

Although distance learning methodologies have been around for some time now (Livas et al., 2019), the diversity of technologies has added to the process of transformation of teaching and learning environments (Cochrane, 2016; Daniela, 2019; Stojšić et al., 2019). While this has been the trend in developed societies, in the developing countries the uptake has been slower. However, the school closures as part of compliance to the physical distancing requirements of COVID-19, changed this in a matter of days. The sudden, almost overnight shift towards distance learning became the 'new normal' (Taquero, 2020). According to Hodges et al. (2020), this did not come as an evolution of traditional online teaching and learning, which takes time, careful planning, and decision-making. This was an 'emergency' remote teaching and going digital became the key word.

Going digital entails, the adoption of distance learning methodologies which rely upon the use of currently available technologies in order to reach the intended learners whose learning may not be hindered by physical, medical, or geographical barriers. In the COVID-19 induced restrictions, the major strength of distance learning is that learning takes place across different locations and not in a traditional face to face classroom (Stern, n. d.). The following types of distance learning modes exist from which a teacher would choose the most appropriate one in cognizance of the enabling factors (Blake, 2011).

1. Correspondence courses where regular mail is utilized. However, it offers very little teacher-learner interaction.
2. Tele courses in which radio and television communications are dominant.
3. CD-ROM courses, which rely on static computer content.
4. Online learning. Often referred to as e-learning. It takes place over the Internet, synchronously, and/or asynchronously.
5. Mobile learning. This is carried out through devices like smart phones and other diverse digital audio players like MP3 players, iPods, and associated software applications.

The boundary between e-learning and mobile learning though is blurred as the use of mobile devices may also be used to access the Internet through various internet supported applications like Facebook, WhatsApp, and Google applications amongst others.

While the route of "going digital" maybe the only option to take in the 'new normal', tackling the pandemic in the education sector may not be easy. To minimize the loss of valuable teaching and learning time, complex decisions such as urgency, readiness to deal with virtual and online teaching tools, digital fluency, and the necessity of dealing with the emotions of fear and boredom of social isolation associated with learning at home had to be made within severely limited time spans (Agnolotto & Queiroz, 2020).

Teacher Roles in Online Teaching

Just like in the traditional classroom where teacher quality is one of the major contributors to student learning, with the acceptance of online learning as a the 'new normal', the maintenance of quality of online programs remains a primary concern for educational stakeholders (Darling-Hammond, 2000 in Lin & Zheng, 2015).

In order to allow for a successful transition to online teaching, teachers have to adopt new roles. Different terms are used to describe these online teacher roles, for example, online teacher, e-moderator, online tutor, facilitator, or online instructor. Various taxonomies and models specifying the roles that the teachers need to perform are also given (Baran et al., 2011; Huang, 2018).

While the basic qualities of a good teacher may be similar to those of a virtual teacher (Davis et al., 2007), Cavanaugh et al. (2004) observe that some successful practices used in traditional face-to-face teaching do not necessarily translate into successful online teaching practices. Hence for online teaching, the teacher has to acquire new, expanded, and modified roles (Davis et al., 2007; Ferdig et al., 2009 in Lin & Zheng, 2015; Murphy & Rodriguez-Manzanares, 2009).

Among those who feel that the teacher has to adopt new roles in online school environments are Davis et al. (2007) who described three roles; namely teacher, designer and facilitator, Alvarez et al. (2009) who categorized five roles of designer/planning role, social role, cognitive role, technological domain, and managerial domain, while Ferdig et al. (2009) in Lin and Zhang (2015) extracted eight potential teacher roles based on published standards and research.

Other generalisations include pedagogical, social, managerial, and technical (Berge, 1995); instructional design, organization, facilitating discourse and direct instruction (Anderson et al., 2001); cognitive, affective, and managerial roles (Coppola et al. (2002) and the online teacher roles of managing social interaction, instructional design, guiding the use of technology, learning assessment, and learning support by Badia et al. (2017).

Suffice to mention that these roles overlap with each other and that on its own may present challenges for the unprepared and technologically untrained classroom teacher to decipher on his own what is best in the online teaching environment (Baran et al., 2011).

More recently, sentiments that online teaching is completely different from the face-to-face mode of teaching have emerged together with new online teacher roles (Hawkins et al., 2012; Huang, 2018). Here it is argued that teachers are compelled to assume new responsibilities, which include designing online course materials and interact with students using virtual technologies, amongst other duties (Kennedy & Archambault, 2012 in Lin et al., 2015).

The importance of teachers in online teaching therefore requires further attention. According to research, for any educational innovation to be successfully implemented into the daily teaching practices, it must meet the teachers' approval (Hung, 2016; Leontyeva, 2018) and allow them to make adjustments to their beliefs as well as to their pedagogical roles (DiPietro et al., 2008 in Lin & Zheng, 2015). This may not come naturally because the teachers' adoption and implementation of mobile technologies in pedagogical practice hinges on various factors such as the availability of gadgets, the individual teacher's digital literacy as well as the new technology's perceived ease of use and usefulness (Graziano, 2017).

However, the abrupt adoption of online teaching and learning due to COVID-19 meant that teachers, just like everyone else were caught unprepared when schools were suddenly closed, and learning shifted to distance pedagogies. Professionally, teachers were overwhelmed by large volumes of teaching and learning materials and products on the market many of which they were not trained to use (Agnoletto & Queiroz, 2020; Sahni, 2020). On the other hand, they were grappling with this new normal in their individual personal lives as mothers, fathers, aunts, uncles, and grandparents. It is therefore pertinent to find out how teachers adapted to the demands of online teaching in geography.

Bridging the Technological Divide

Technology has the potential to achieve the goals of distance education but in order to unleash its potential, the digital divide must be addressed. To close this gap, access to technology, infrastructure and connectivity must reach the remotest, underprivileged and under resourced rural day secondary schools which have no access to electricity nor digital devices for the Internet connectivity (Sahni, 2020).

According to Konyana and Konyana (2020), Zimbabwe has a huge rural-urban divide in the Internet penetration, which is heavily skewed against the underprivileged rural secondary schools. Although the country's Postal and Telecommunications Regulatory Authority (POTRAZ, 2020) reported an average internet penetration of 59% in 2019 in practice the quality and accessibility was lower in rural and peri-urban areas where up to 15% of the total population had no access to any form of telecommunications because there is no network coverage (Kadirire, 2019).

A key concern in the COVID-19 lockdowns was how to provide all teachers and learners with access to online teaching and learning platforms and tools, especially for the poor, rural and under-privileged schools (Agnoletto & Queiroz, 2020).

In order to ensure uninterrupted access to online learning resources across all socio-economic communities and schools, effort in Zimbabwe was aimed at using radio programming, the Internet, and the provision of supplementary learning materials (MoPSE, 2020). The radio, as the most prevalent mass communication medium capable of reaching the highest number of learners was also roped in. For those in areas with access to the Internet connectivity and computers, online learning was enabled by the MoPSE (2020) and its various partners while a considerable number of learners in remote and inaccessible places, could learn through the provision of reading materials in various languages. It was hoped that these strategies would narrow the technological gap existing across the learning groups in the country.

This study will look at the strategies adopted by selected rural secondary schools in order to continue learning during the lockdown.

Cognizant of teacher inadequacies, poor internet connectivity and infrastructural challenges especially in underprivileged rural secondary schools, the necessity of psycho-pedagogical, technical, and organizational aspects of training for the teacher should be defended.

METHODOLOGY AND SAMPLE

This qualitative case study research, sought to explore geography teachers' response to COVID-19 induced impediments in their teaching and learning. Zvimba District in Mashonaland West Province, Zimbabwe is made up of 22 clusters of five or six schools each. One such cluster was selected as the area of interest for this study.

This cluster as a bounded system (Johnson & Christensen, 2017) was studied as one case where the aim was to come up with an in-depth analysis and description of teacher adoption of online teaching and learning methodologies during the lockdown. Among the schools is a missionary boarding school and a privately sponsored school providing an interesting diversion in the narrative. The remaining four are under-privileged rural schools.

The choice of this cluster was through convenience sampling since one of the researchers was teaching at one of the schools. This choice of this area was therefore prompted by its accessibility, short preparation time and low costs. These conditions to generate data presented a chance as well as an opportunity too good not to miss given the impromptu nature of the onset of COVID-19 lockdowns.

The choice of the study area was therefore by chance unlike purposive sampling where the research goals would have determined the choice and criteria of leaving or including each school.

The resultant diversity in the present sample in terms of socio-economic characteristics like resource availability, management and school environments which are relevant to the research questions was a bonus for triangulation in the study.

Admittedly, not generalizable, the findings from this study will provide insights for further research in teacher responses to online teaching and learning of secondary school geography as well as complementing existing findings in the field (Bryman, 2016).

The sample was made up of 12 geography teachers from six rural secondary schools in the cluster. The teachers were chosen by virtue of their being geography teachers at the selected schools.

The researchers made use of semi-structured interviews with the help of an interview guide which had a list of questions to be covered. However, some probing allowed certain questions not on this guide to be asked though all the questions were presented with similar wording across all the participants. On average, each interview lasted for up to an hour. As the interviews progressed, a lot of attention and care was taken through detailed note taking. Interviewees were made aware of this arrangement as well as other ethical implications.

In establishing rapport/prior to each interview, phone calls were made to each participant where the research objectives were explained, valuable background information provided and an appointment for the actual interview was set. This gave the teachers ample time to prepare for the interviews.

The participants' contact details were identified by one of the researchers who teaches at one of the six schools. It is through the same process that access to the rest of the schools in the cluster was facilitated.

In order not to lose valuable insights, immediately after each interview, the researchers collated all information into a detailed report, which highlighted the recurring concerns, preferences, and themes.

A section on the open-ended questionnaire was used to collect research data from the rural district's six schools about the participants' general bio-data, such as age, sex, work experience, professional qualifications, and type of school, that is boarding or day for the year 2020.

The instrument also covered the following themes: types of educational media used in the teaching and learning of geography during the COVID-19 induced lockdowns, the teachers' level of preparedness to adopt online teaching strategies and roles, the general challenges regarding the teaching and learning of the subject as well as professional development initiatives the teachers had received in preparation for online teaching.

An open ended questionnaire gave flexibility to the participants to freely express their ideas and allowed the collection of complementary data which was used as triangulation to the interviews.

The participants' responses provided a diverse group of sexes, years of experience and professional qualifications and duties, such as school heads, and geography classroom teachers.

The pre-defined research questions guided data analysis. Thematic content analysis served to explore the data recorded in the interviews and questionnaires. This was done by contrasting the participants' responses to the individual research questions set for this study.

RESULTS AND DISCUSSION

The results presented herein are as per the research questions of the study.

Demographic Profile of the Respondents

Table 1 provides a general appreciation of the participants'/variable characteristics. It is revealed that female teachers constituted the larger group. This was to be expected because such a general gender structure has become the norm in other parts of the world where the number of female teachers at secondary school level are larger than those of the males (Lukić et al., 2019; OECD, 2019). Findings further reveal that a majority of the teachers (67%) have a graduate qualification degree. Most of the teachers are aged 35-44 years and a majority of these (n=8 out of 12) have been teaching geography for a period of 6-15 years. Four of the schools in the rural district are poorly resourced day secondary schools, one is a mission boarding school, and one is privately owned.

Teaching Technologies/Tools Used for Online Teaching and Learning

There is a large diversity of e-learning tools to choose from on the technological market. Some of these are free whilst others are premium. Examples include WhatsApp, Zoom, Skype, and Google classroom. Teachers were therefore asked to mention those tools and packages they use for e-learning. Participants were allowed more than one option to specify the tools used. WhatsApp emerged as the only tool used by all the teachers from the six schools in the district. This dominance by WhatsApp may be attributed to its convenience and ease of use especially with handheld mobile phones. This tallies with findings by Fiomumwe (2022) and Kulal and Nayak (2020).

Probing on how the teachers got data for connectivity given the high costs, teachers revealed that they met this requirement through own funding. Teacher #9 reacted thus:

“the school had WIFI connected but it has been a while since it has been operational because the charges had gone beyond the reach of the school, so I had to sacrifice (sic) my own money to buy data bundles for teaching my students.”

On the availability or ownership of computers and mobile devices to the geography teachers, the results showed that a majority of teachers had access to computers for use in their schools, as well as the Internet access either at school or at home.

Table 1. Descriptive characteristics of the participants

Variable		Frequency (n)	Percentage (%)
Gender	Female	7	58.3
	Male	5	41.7
Age	≤34	2	16.7
	35-39	4	33.3
	40-44	4	33.3
	≥45	2	16.7
	Diploma in education	3	25.0
Highest professional qualification (geography specialization)	Bachelor's degree	8	66.7
	Master's degree	1	8.3
	≤5	2	16.7
Teaching experience	6-10	4	33.3
	11-15	4	33.3
	≥16	2	16.7
	Rural day	5	83.3
Type of secondary school	Boarding	1	16.7
	Community/council	4	66.7
Type of school (responsible authority)	Private	1	16.7
	Missionary/church	1	16.7

Only two teachers did not have access to computers. The ownership of mobile devices was dominated by smartphones followed by laptops while only two teachers admitted to not having any mobile device. Half the number of teachers had at least one mobile device. Findings from this study show similarity with those by Firozumwe (2022) and Stojšić et al. (2019), where the ownership and usage of smartphones in the teaching and learning of geography among Serbian and Zimbabwean teachers was found to be high, respectively.

Teachers' Adoption of New Roles from Pre-Existing Teaching Roles to Suit the Online Teaching and Learning

Although teaching and learning went on in the schools, effective adaptation, and acquisition of new teacher roles in distance education faced a lot of obstacles. Such obstacles include feelings of teacher disconnection with students (Hawkins et al., 2012), a lack of professional development and lack of institutional and government support (Rogerson-Revell, 2015).

Changes in teacher roles

While teachers are expected to assume new and added roles in online teaching (DiPietro et al., 2008; Ferdig et al., 2009), in this study a majority of the geography teachers felt that there was no content, material difference nor changes that they made to their traditional teaching materials in order to teach online hence no discernible shift in their roles. Converting the learning materials into distance learning data was difficult for them given the sudden onset of the pandemic and the lack of training in online teaching methodologies (Bacon & Peacock, 2021). The teachers bemoaned the absence of financial and administrative support as well as lack of training to shift to other roles required in online teaching and learning. The failure by teachers to customize their teaching to acquire additional roles that suit online teaching was echoed by Ferdig et al. (2009) who asserted that in a traditional face-to-face classroom, teachers play up to eight roles as compared to distance education where the teacher may play only one role.

Lack of social interaction in online teaching

Another palpable sentiment from the participants was that online teaching and learning alienated them even from their basic traditional teacher roles. The nature of online teaching disconnected the teachers from their students and peers and therefore stripped them of some of their teaching roles to just being content deliverers as opposed to additional roles they perform in the physical classroom. For these participants, teaching became emotionless and mechanical, where they were reduced to playing only one role of providing content to students. Teacher # 2 opined that:

“... face to face interactions with students were more dynamic and fulfilling than the online lessons. I like being within the students, seeing their faces and disciplining them when they disrupt teaching and learning. That is the beauty of teaching, but I cannot do that online and those are some of the aspects I miss a lot.”

Teacher # 7 further summarized the emptiness felt by teachers during online teaching saying:

“Online teaching is like radio broadcasting. All the contact with students, live classroom management, the physical contact in the corridors ... is not present. I feel my role as a teacher is no longer there.”

Such findings resonate with Bacon and Peacock (2021) and Hawkins et al. (2012) who found out that teacher connections with their students even on social issues outside the classroom help create the multiple roles that the teacher performs in a face to face classroom. In distance education, the same sense of professional identity and attachment to their work is simply not there.

Teacher In-Service Training in Preparation for Online Teaching

How teachers perceive online teaching, whether they are capable of teaching online as well as the professional development they receive are important questions that need to be addressed before implementing online classes (Sims et al., 2002). In the current study, such preparations could not be undertaken due to the abrupt nature of the COVID-19 pandemic lockdowns.

Teachers seem not satisfied with the training and support accorded to them prior to teaching online. Results show that teachers from all but one of the schools handled online classes through self-experimentation and on a trial and error basis without any e-learning training. It was only at one school where all teachers received staff development training. Inadequate skill development and shortage of skilled teachers in distance learning strategies are problems that impede effective implementation of online teaching. This is a challenge that face online teaching globally (Bacon & Peacock, 2021; Baran et al., 2011; Fiomumwe, 2021; Graziano, 2017).

The following are contrasting responses on whether the teachers had received any prior training on the use of online teaching strategies.

Teacher #8: “The school has adopted the use of technology hence all teachers at the school where I teach received their staff development in e-learning before COVID-19 and it became an advantage to us.”

Teacher # 10: “No, I didn’t receive any training. That is why I made use of the WHATSAPP. It is better (sic) for my learners than the other strategies when I consider the data charges and other difficulties.”

CONCLUSIONS

Furthermore, the physical distancing due to the COVID-19 regulations made online teaching indispensable. However, implementing it effectively in rural schools of Zimbabwe requires a deliberate approach and prior planning.

The study established that a social media platform, WhatsApp played an important educational role as it was the only application used across all the schools. The choice of this application was attributed to its ease of use and the high ownership of smartphones by teachers. Apart from the high ownership of smartphones, many of the schools had computers and the Internet access for use by the teachers.

In the absence of institutional support, teachers in the cluster used own resources (smartphones and money) to send and access learning materials. Teachers failed to transform their roles from those they used in the face to face classroom onto new roles expected in distance education. This failure resulted in teachers not enjoying online teaching and learning. As revealed in this study, the teachers relied on the same teaching strategies they used in the traditional classroom even when the classroom was now virtual. This bred feelings of nostalgia due to a lack of social and physical interaction with their students.

Lastly, in-service training and professional development on e-learning and resultant teacher roles will create a knowledge base useful for future digital literacy and technology uptake in the schools. A lot of institutional support would be needed to assist the teacher to improve on their capabilities to implement the various e-learning strategies and widen the use of technological tools at their disposal.

The world over, teachers are now expected to adapt to the new normal and accept the inevitable transition in their roles, from being mere transmitters of knowledge to assuming new responsibilities. These include designing online course materials as well as teaching and interacting with students using virtual technologies, amongst other duties (Lin & Zheng, 2015). Taking recommendations from this study will accelerate teacher development and subsequent implementation of online teaching.

Author contributions: All authors have sufficiently contributed to the study and agreed with the results and conclusions.

Funding: No funding source is reported for this study.

Ethical statement: Authors stated that they have implemented a validity and regulatory data-gathering approach in order to reduce potential bias in the study. It is Bindura University of Science Education’s (BUSE) policy that all its members and students are aware of and have complied with the relevant research ethics requirements. The requirements stipulate a four point category of ethics in research approval. Section 3.3.1.1 of the policy exempts all qualifying research from Ethics and Bio safety Research Committee Review, that is, straightforward research without ethical problems. Since this study involved consenting adult teachers during the normal teaching and learning process at the schools, it posed no danger, possible injury nor risk of participation hence ethical approval was applied for from the Research and Postgraduate Research Ethics Committee and waived under Section 3.3.1 of the said policy framework. Authors further stated that, the teachers were made aware that the study was voluntary, and that they had the option to leave the study at will. To that end the participants signed a written consent form verifying that they were aware of the study and that they agreed to participate in the study. All respondents’ biodata (such as age, gender, educational qualifications and experience) were given a range of equal intervals so that no one could be recognized from the aggregated data. Participants’ names were not collected in this study to ensure confidentiality and anonymity. Furthermore, all participants were informed that their responses would be aggregated and published in a journal.

Declaration of interest: No conflict of interest is declared by authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

- Agnoletto, R., & Queiroz, V. C. (2020). COVID-19 and the challenges in education. *Centro de Estudos de Estados Sociedade e Tecnologia (CEST) [Center for Studies on States, Society and Technology (CEST)]*. www.cest.poli.usp.br/en/
- Alvarez, I., Guasch, T., & Espasa, A. (2009). University teacher roles and competencies in online learning environments: A theoretical analysis of teaching and learning practices. *European Journal of Teacher Education, 32*(3), 321-336. <https://doi.org/10.1080/02619760802624104>
- Anderson, T., Rourke, L., Garrison, D., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), 1-17. <https://doi.org/10.24059/olj.v5i2.1875>
- Bacon, K. L., & Peacock, J. (2021). Sudden challenges in teaching ecology and aligned disciplines during a global pandemic: Reflections on the rapid move online and perspectives on moving forward. *Ecology and Evolution, 11*, 3551-3558. <https://doi.org/10.1002/ece3.7090>
- Badia, A., Garcia, C., & Meneses, J. (2019). Emotions in response to teaching online: Exploring the factors influencing teachers in a fully online university. *Innovations in Education and Teaching International, 56*(4), 446-457. <https://doi.org/10.1080/14703297.2018.1546608>
- Baran, E., Correia, A. P., & Thompson, A. (2011). Transforming online teaching practice: Critical analysis of the literature on the roles and competencies of online teachers. *Distance Education, 32*(3), 421-439. <https://doi.org/10.1080/01587919.2011.610293>
- Bediako, S. (2019). Models and concepts in curriculum implementation, some definitions and influence of implementation. In *Proceedings of the Curriculum Change and Evaluation Conference* (pp. 1-18). <https://doi.org/10.13140/RG.2.2.17850.24009>
- Berge, Z. (1995). The role of the online instructor/facilitator. *Educational Technology, 35*(1), 22-30.
- Blake, J. R. (2011). Current trends in online language learning. *Annual Review of Applied Linguistics, 31*, 19-35. <https://doi.org/10.1017/S026719051100002X>
- Bryman, A. (2016). *Social Research Methods* (International Edn.). OUP.
- Cavanaugh, C., Gillan, K. J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). The effects of distance education on K-12 student outcomes: A meta-analysis. *Learning Point Associates*. <http://files.eric.ed.gov/fulltext/ED489533.pdf>
- Chang, G. C., & Yano, S. (2020). How are countries addressing the COVID-19 challenges in education? A snapshot of policy measures. *UNESCO-GEM Report*. <https://gemreportunesco.wordpress.com/2020/03/24/>
- Chanza, N., Siyongwana, P. Q., Bruinders, L. W., Jakarasi, V. G., Mudavanhu, C., Sithole, V. B., & Manyani, A. (2020). Closing the gaps in disaster management and response: Drawing on local experiences with Cyclone Idai in Chimanimani, Zimbabwe. *International Journal of Disaster Risk Science, 11*, 655-666. <https://doi.org/10.1007/s13753-020-00290-x>
- Cochrane, T. (2016). Mobile VR in education: From the fringe to the mainstream. *International Journal of Mobile and Blended Learning, 8*(4), 44-60. <https://doi.org/10.4018/IJMBL.2016100104>
- Coppola, N., Hiltz, S., & Rotter, N. (2002). Becoming a virtual professor: Pedagogical roles and asynchronous learning networks. *Journal of Management Information Systems, 18*(4), 169-189. <https://doi.org/10.1080/07421222.2002.11045703>
- Daniela, L. (2019). Smart pedagogy for technology enhanced learning. In L. Daniela (Ed.), *Didactics of smart pedagogy: Smart pedagogy for technology enhanced learning* (pp. 3-21). Springer. https://doi.org/10.1007/978-3-030-01551-0_1
- Darling-Hammond, L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives, 8*(1), 1. <https://doi.org/10.14507/epaa.v8n1.2000>
- Davis, N., Roblyer, M. D., Charania, A., Ferdig, R., Harms, C., Compton, L. K. L., & Cho, M. O. (2007). Illustrating the “virtual” in virtual schooling: Challenges and strategies for creating real tools to prepare virtual teachers. *Internet and Higher Education, 10*(1), 27-39. <https://doi.org/10.1016/j.iheduc.2006.11.001>
- DiPietro, M., Ferdig, R. E., Black, E. W., & Preston, M. (2008). Best practices in teaching K-12 online: Lessons learned from Michigan Virtual School teachers. *Journal of Interactive Online Learning, 7*(1), 10-38.
- Ferdig, R. E., Cavanaugh, C., DiPietro, M., Black, E. W., & Dawson, K. (2009). Virtual schooling standards and best practices for teacher education. *Journal of Technology and Teacher Education, 17*(4), 479-503.
- Firomumwe, T. (2021). An Assessment on the Implementation of GIS and remote sensing in teaching geography in Zimbabwean secondary schools. *Journal on School Educational Technology, 16*(4), 22-30. <https://doi.org/10.26634/jsch.16.4.17991>
- Firomumwe, T. (2022). Exploring the opportunities of virtual fieldwork in teaching geography during COVID-19 pandemic. *International Journal of Geography and Geography Education, 45*, 76-87. <https://doi.org/10.32003/igge.973983>
- Graziano, K. J. (2017). Immersive technology: Motivational reactions from preservice teachers. *Internet Learning, 6*(1), 33-58. <https://doi.org/10.18278/il.6.1.4>
- Hawkins, A., Graham, C. R., & Barbour, M. K. (2012). “Everybody is their own island”: Teacher disconnection in a virtual school. *International Review of Research in Open and Distance Learning, 13*(2), 123-144. <https://doi.org/10.19173/irrodl.v13i2.967>
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Aaron Bond, M. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>

- Huang, Q. (2018). Examining teachers' roles in online learning. *The EUROCALL Review*, 26(2), 3-18. <https://doi.org/10.4995/eurocall.2018.9139>
- Hung, M. L. (2016). Teacher readiness for online learning: Scale development and teacher perceptions. *Computers and Education* 94, 120-133. <https://doi.org/10.1016/j.compedu.2015.11.012>
- Johnson, R. B., & Christensen, L. (2017). *Educational research: Quantitative, qualitative and mixed approaches* (6th Edn.). Sage Publications.
- Kadirire, H. (2019). POTRAZ to set up rural Internet broadband. *Newsday*. <https://www.newsday.co.zw/2022/04/potraz-targets-rural-internet-access>
- Konyana, S., & Konyana, E. (2013). Computerisation of rural schools in Zimbabwe: Challenges and opportunities for sustainable development: The case of Chipinge District, Southeast Zimbabwe. *African Journal of Teacher Education*, 3(2), 1-12. <https://doi.org/10.21083/ajote.v3i2.2156>
- Kulal, A., & Nayak, A. (2020). A study on perception of teachers and students towards online classes in Dakshina Kannada and Udupi District. *Asian Association of Open Universities Journal*, 15(3), 285-296. <https://doi.org/10.1108/AAOUJ-07-2020-0047>
- Leontyeva, I. A. (2018). Modern distance learning technologies in higher education: Introduction problems. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(10), em1578. <https://doi.org/10.29333/ejmste/92284>
- Lin, C. H., & Zheng, B. (2015). Teaching practices and teacher perceptions in online world language courses. *Journal of Online Learning Research*, 1(3), 275-303.
- Livas, C., Katsanakis, I., & Vayia, E. (2019). Perceived impact of BYOD initiatives on post-secondary students' learning, behavior, and wellbeing: The perspective of educators in Greece. *Education and Information Technologies*, 24(1), 489-508. <https://doi.org/10.1007/s10639-018-9791-6>
- Lukić, A., Ivanović Bibić, L., Đukićin Vučković, S., Milanković Jovanov, J., Ivkov-Džigurski, A., & Konečnik Kotnik, E. (2019). The role of homeroom and geography teachers in the obligatory administration in elementary schools. *Journal of the Geographical Institute "Jovan Cvijić" SASA*, 69(1), 67-74. <https://doi.org/10.2298/IJGI1901067L>
- MoPSE. (2020). Zimbabwe COVID-19 preparedness and response strategy. *Zimbabwe Education Cluster*. https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/zimbabwe_education_cluster_covid_strategy_12.05.2020_final.pdf
- Murphy, E., & Rodriguez-Manzanares, M. A. (2009). Sage without a stage: Expanding the object of teaching in a web-based, high-school classroom. *International Review of Research in Open and Distance Learning*, 10(3), 1-19. <https://doi.org/10.19173/irrodl.v10i3.579>
- OECD. (2019). *Women teachers (indicator)*. *Education at a glance 2019: OECD indicators*. <https://doi.org/10.1787/888933980298>
- POTRAZ. (2020). *1st quarter report*. http://www.potraz.gov.zw/?page_id=527 <http://www.ictministry.gov.zw/?q=cics>
- Rogerson-Revell, P. (2015). Constructively aligning technologies with learning and assessment in a distance education master's programme. *Distance Education*, 36(1), 129-147. <https://doi.org/10.1080/01587919.2015.1019972>
- Sahni, U. (2020). COVID-19 in India: Education disrupted and lessons learned. *Global Economy and Development, Center for Universal Education*. <https://www.brookings.edu/blog/education-plus-development/2020/05/14/covid-19-in-india-education-disrupted-and-lessons-learned/>
- Sims, R., Dobbs, G., & Hand, T. (2002). Enhancing quality in online learning: Scaffolding planning and design through proactive evaluation. *Distance Education*, 23(2), 135-148. <https://doi.org/10.1080/0158791022000009169>
- Stern, J. (n. d.). Introduction to online teaching and learning. *West Los Angeles College*. <https://www.wlac.edu/online/documents/otl.pdf>
- Stojić, I., Ivkov-Džigurski, A., & Maričić, O. (2019). The readiness of geography teachers to use mobile devices in the context of immersive technologies integration into the teaching process. *Geographica Pannonica*, 23(2), 121-133. <https://doi.org/10.5937/gp23-20762>
- Taquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Phillipine context. *Pedagogical Research*, 5(4), em0063. <https://doi.org/10.29333/pr/7947>
- UNDPZ. (2020). Policy brief 01/2020: A preliminary assessment of the socio-economic impact of coronavirus (COVID-19) on Zimbabwe. <https://www.undp.org/zimbabwe/publications/preliminary-assessment-socio-economic-impact-coronavirus-covid-19-zimbabwe>