EXPLORING THE TEACHING AND LEARNING STRATEGIES EMPLOYED BY TWO ZIMBABWEAN SECONDARY SCHOOLS DURING THE COVID-19 PANDEMIC

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Abstract

The Covid-19 pandemic affected teaching and learning in Zimbabwean schools from March 2020. This study investigated the strategies adopted, the challenges faced and the solutions proffered by two secondary schools during the pandemic. A qualitative multiple-case research design was used. Two school heads, six teachers, and sixteen learners from the schools were interviewed. We also made observations when we visited the schools during their preparations for the examinations. Online teaching and learning augmented by face-to-face teaching and learning were adopted during examination preparations and writing. WhatsApp and Google classroom was used to conduct online teaching. Lack of familiarity with online teaching, limited financial resources to procure technological gadgets, insecure internet connectivity, and expensive data bundles were challenges faced by teachers and learners. Teachers were assisted to buy Tablets at subsidised prices and were provided with a monthly 30 Gigabytes of data. During the restricted face-to-face interactions, the Covid-19 guidelines were observed but social distancing was found difficult to implement. The adopted online applications were found less interactive than face-to-face teaching. Two video conferencing applications, Zoom and HeyHi, could have been used because of their video facility that mimics real classroom interactions..

Keywords: COVID-19, pandemic, online teaching, physical face-to-face teaching, internet, strategies, challenges

1.0   Introduction

COVID-19 has had a substantial negative impact on the smooth and successful delivery of teaching (UNESCO, 2020). Most schools the world over closed down in March 2020 with teachers and learners being confined to their homes as a measure to save lives (UNESCO, 2020). Schools could not have the usual physical face-to-face teaching and learning. This was because of fears of transmitting the disease in schools especially

those which could not meet all the requirements to conduct physical lessons. The unavailability of personal protective equipment (face masks, sanitisers, running water at the schools, soap, thermometers) was a significant challenge (Dzinamrira & Masuka, 2020). The authors note that physical distancing was a challenge as most schools did not have large enough classrooms to meet the requirement. An option was to split classes to accommodate fewer learners in each room per session to meet the social distancing requirement. However, the authors feel that this was not feasible as it brought in other challenges, such as the need for more teachers and classrooms.

Dzinamrira and Masuka (2020) posit that Zimbabwean educators, like other educators the world over, have been challenged to develop innovative ways of ensuring the continuation of teaching and learning in closed schools, such as online teaching and learning. Online teaching involves using various forms of electronic platforms such as WhatsApp, Zoom, YouTube videos, video conferencing, Google classrooms, and radio lessons.

Several strategies were put in place to help learners during the pandemic. In Zimbabwe, Econet Wireless Network made a stride towards online teaching by setting up educational platforms such as Ruzivo, Akello Digital Classroom, and Akello E-Library. These platforms allowed learners who could access them to have online lessons and access to hundreds of online school curriculum books. Matimaire (2020) points out that although there is various free and commercial software that learners and teachers could use, such as Google class, Google meet, and Zoom, the significant issues that were to be addressed are access, affordability, availability of infrastructure, digital gadgets, internet, and content.

Technological usage in teaching and learning unmasked many challenges that affect teaching and learning from home. The unavailability of necessary technological devices such as computers and phones at the teachers' and learners' disposal hampered the

schools' efforts. Internet access was beyond reach to many due to expenses associated with buying gadgets and data required for internet connection (Matimaire, 2020). Accessibility was curtailed by unavailable and intermittent networks, power cuts, expensive gadgets, and data charges.

According to Matimaire (2020, p. 4), "Zimbabwe cannot fully embrace e-learning, as it would prejudice and discriminate persons without internet access or those who cannot afford access to the internet." The author highlights that learners in rural and marginalized communities do not have the required infrastructure in terms of hardware (mobile phones or other devices that facilitate internet access) and finances to access e-learning portals. Teaching only those who have access to the internet during the pandemic would disadvantage those without access.

Learners faced prohibitive internet data costs such that they could not sustain connectivity during online learning. Long hours of load shedding by the Zimbabwe Electricity Supply Authority (ZESA) affected connectivity. Learners had difficulties studying since the gadgets needed the power to stay connected.

Di Pietro, Biagi, Costa, Karpinski, and Mazza (2020) believe a shift to online teaching was met with teachers' and learners' lack of online teaching and learning experiences. Distance learning was new to both teachers and students as they were used to face-to-face tuition. The authors maintain that learners could not self-regulate while learning without being monitored, and some parents could not assist their children as they, too, were technologically illiterate. Dependency syndrome has also been a challenge with parents expecting the Government to take up the initiative of providing online requirements and protective equipment to the learners.

Lack of knowledge to prepare and upload learning content by teachers on educational platforms added to the challenges. Learners needed to be assessed for feedback and productive learning. However, teachers lacked online assessment expertise.

Inertia to change was one challenge that saw teachers, parents, and students not willing to embrace change as they did not believe in the efficacy of online teaching compared to face-to-face teaching (Mandikiana, 2020 and Matimaire, 2020). Such an attitude implies that the traditional methods of teaching where physical presence is the norm reduced the belief and acceptance of online learning among conservative sections of society. The stakeholders seemed to be saying that learning outside the classroom walls is anathema to them and is alien to their beliefs of effective teaching.

Based on the issues raised above, this paper argues that both learners and teachers in Zimbabwe faced challenges that impeded teaching and learning during the pandemic. Hence, this study explores the strategies two secondary schools in Zimbabwe employed during the pandemic. The research results could help inform how educational institutions could provide teaching and learning services during such a pandemic, that threatens to be with us for quite some time. The strategies will also be useful during other disruptions such as wars and natural disasters.

2.0   Research problem

The provision of educational services without exposing staff and students to the Covid-19 virus became a major concern for both government and private schools. The authors of this study found the problem threefold. First, the schools, teachers, and learners were not prepared for the pandemic when it struck (Matimaire, 2020). Secondly, teachers and learners were used to the physical face-to-face mode of teaching and learning. They had to learn new ways of doing things. Thirdly, online teaching and learning present challenges for both learners and teachers. Even the physical face-to-face interactions had their share of challenges during the pandemic. This research study, therefore, sought to explore the strategies employed by these two schools as they tried to continue providing teaching and learning during the Covid-19 pandemic.

3.0 Research questions

With the challenges faced by the Education sector during the Covid 19 pandemic having been acknowledged the world over, this research sought to answer three questions:

(1) What strategies did the secondary schools adopt to ameliorate the challenges?

(2) What challenges did the schools encounter as they adopted these strategies?

(3) What other approaches could the secondary schools have employed to ensure the successful provision of teaching and learning during the pandemic?

4.0 Research objectives

The research sought to:

(1) identify the different strategies adopted by the secondary schools to ameliorate the challenges faced during the pandemic.

(2) examine the challenges encountered as the secondary schools implemented the strategies.

(3) identify other approaches that the schools could have used to ensure a successful teaching experience during the pandemic.

5.0 Literature review

The Covid-19 pandemic resulted in the closure of schools and universities to curb the spread of the disease. UNESCO (2020) has estimated the number of Covid-19 affected students to be above a billion worldwide. To help learners, several governments and private players embraced technology in education during the COVI-19 pandemic. Though it was acknowledged that there could be challenges with this approach, there was a growing need to shift from face-to-face teaching to online teaching and learning if the education system was to be kept functional without risking the spread of Covid-19. Yokozeki (2020) sees the shift to technology as a way of allowing both teachers and learners to be creative and innovative.

5.1 Possible strategies for successful implementation of online teaching during the covid-19 pandemic

For the success of online teaching and learning, teachers and learners can utilise different online applications with different access modes. Economic Commission for Latin America and the Caribbean (ECLAC) (2020) distinguishes two forms of online access that can be used: asynchronous and synchronous. In an asynchronous form, learners decide when to be part of the learning. This means they access their emails or WhatsApp messages or other educational platforms at their own time and go over what teachers will have sent to them. This allows them to learn offline at their own pace. Alternatively, learning may occur in synchronous mode with live video and/or audio interactions, with learners getting immediate feedback (Hrastinski, 2008). ECLAC (2020a) recommends that both asynchronous and synchronous forms of teaching would go a long way in assisting learners during the pandemic.

The ECLAC (2020a) report recognises the role of the traditional broadcasting media such as radio and television in education. The report asserts that the broadcasting of educational programmes may help learners to access education during the Covid 19 pandemic. The report adds that the provision of technological devices to both learners and teachers (i.e. laptops or tablets) may empower distance learning. The approach would facilitate access to the internet and educational resources. Together with these resources, teachers and learners need to be provided with the skills to manipulate the devices as well as accessing information online (Schroeder & Kelley, 2010). The report points out that because of learners' lack of skills, remote learning requires adult availability, involvement, and supervision. This view implies that parents should be part of online learning through the provision of assistance to their children for the success of online learning.

5.2 Challenges of using the online teaching and learning mode during the covid-19 pandemic

Duraku and Hoxha (2020) posit that the challenges associated with implementing technology in education are related to factors such as the teachers' attitudes and perspectives about technology. What teachers think about technology integration results in their attitudes towards its adoption, be they positive or negative attitudes.

Flamholtz and Randle (2008) suggest that a change from the norm usually encounters resistance. This means that there is a likelihood of resistance by teachers to conduct online teaching. Ibrahim, Al-Kaabiand and El-Zaatari (2013) believe such resistance could be due to the need to maintain the status quo. The authors point out that technological adoption in education is influenced by the accessibility and suitability of technical equipment. This refers to whether teachers have the required devices to sustain the online education process or not. Mckenzie and Scheurich (2008) attribute rejection or acceptance of technology to a lack of commitment by teachers, learners, and parents. The authors posit that the rejection may also be due to a lack of expertise in educational technology by teachers and learners. Internet connectivity and expenses also add to the unwillingness to adapt and embrace technology and online teaching and learning by teachers and learners (Mckenzie & Scheurich, 2008).

According to Waqar (2020), students fail to keep up with online learning because of slow Internet connectivity. The author submits that as a result, learners fail to submit and access their assignments on time. Hence, to help learners cope, teachers should be flexible and allow extra time for assignment completion and submission.

UNESCO (2016b, p.7) suggests that "no education target should be considered met unless met by all". In support of this view, Kim (2020) identifies vulnerable groups as being disadvantaged since not all have access to computers or phones that can access the internet. The author adds that some areas have no internet access or even radio or TV

signals for the reception of broadcasted lessons. Learners in such areas or contexts would miss out when the online teaching and learning mode is adopted by the schools.

5.3 Strategies for successful implementation of the physical face-to-face teaching during the covid-19 pandemic

Several strategies that help the conduction of face-to-face teaching during the Covid-19 pandemic were put in place by WHO and UNICEF. The organizations suggested that to minimise infections when schools are opened, teachers should play a major role in educating learners about Covid 19. UNICEF (2020) noted that learners are misinformed about the disease in their homes. Teachers should teach learners about the reality of the disease and precautions they should take within and outside the school to safeguard their lives.

UNICEF (2020) proposed that physical distancing should be exercised between learners and teachers in schools. The distance between learners and teachers should be at least a metre. Congestion in schools is discouraged, with a staggering of tea and lunch breaks being suggested. Where not possible, learners should have their tea and lunch breaks at their desks. According to UNICEF (2020), teachers should discourage the mixing of learners. This means that students from one class should not come into contact with those of other classes and within the same class, learners should keep their distances. The school day should be staggered such that a minimum number of learners and teachers are at school at any given moment.

Hygienic practices such as conducting lessons in open spaces for adequate ventilation were also recommended. The WHO suggests that learners and teachers should wash hands in soapy running water as a way of curtailing the spread of the Covid 19 virus. In case of limited access to running soapy water within the school, hand sanitisers with an alcohol content of at least 60 percent should be used. A preventive measure when learners are in close contact is the proper wearing of masks (WHO, 2020a).

Furthermore, where resources permit, daily cleaning and disinfection of surfaces that are regularly touched should be carried out. The surfaces and objects include door handles, desk surfaces, keyboards, and taps, among others.

Teachers are encouraged to be vigilant and be on the lookout for learners that display Covid 19 infection symptoms. In such suspected cases, learners should be isolated, and their parents called in to pick them up (WHO, 2020 & UNESCO, 2020). The organisations further recommend that daily temperature screening be carried out as learners and teachers enter school premises.

5.4 Challenges of using the physical face to face teaching and learning mode during the covid-19 pandemic

The rise of Covid 19 cases led to an increase in the demands for PPEs resulting in their shortages worldwide. The shortages were due to panic-buying (WHO, 2020). According to the organisation, the shortages were also experienced in the supply of related accessories such as face masks, sanitisers, soap and thermometers, especially in schools in third world countries. The inappropriate wearing of masks was a challenge as learners could not properly use PPE (WHO, 2020). Access to PPE is key to the safety of communities from the pandemic. Certainly, with the shortage of PPE, the safety of teachers and learners was at risk. With the opening of schools, there was an increase in demand for these items which were in short supply (WHO, 2020).

The WHO notes that PPE shortage was due to unpreparedness at facilities such as schools that had limited finances to procure or produce the required items. According to the WHO the challenges were compounded by factors such as skills of teachers and learners regarding PPE use and safe disposal practices. This means that with the sudden emergence of the pandemic teachers and learners had no such skills, jeopardising face-to-face interactions with learners. The organisation pointed out that a mistake in the disposal of used PPE items leads to the spread of the disease in communities such as

schools. There was, therefore, a need to have trained people to dispose of these materials and such personnel may not be available in institutions (WHO, 2020).

According to the World Health Organisation face-to-face teaching and learning during the Covid-19 pandemic can only be possible if specific measures are put in place. Early detection and testing of Covid 19 should be prioritised. However, with the unpreparedness of the schools, detection, and testing for Covid 19 was a challenge. To complement these measures, the World Health Organisation recommends enforcement of physical distancing between learners. The organisation acknowledges the limited infrastructure that may hinder physical distancing between learners.

6.0   Methodology

This qualitative multiple case study gathered data from two schools through interviews and observations. Participants of this study were the school heads, examination class teachers, and their learners. This was because they experienced both face-to-face and online teaching during the pandemic. Face-to-face teaching was used as the classes were preparing for their final examinations. Out of a population of 16 teachers, a sample of 6 teachers was randomly selected to participate in the study. The examination classes had a population of 135 learners and a sample of 16 learners was randomly selected to represent learners. The school heads were involved in the study as they are responsible for decision-making and policy implementation at the schools.

Interviews were held with school Heads, teachers, and learners. The interview guides had open-ended questions that were structured as follows: (1) introductory questions (e.g., What is online teaching/learning? (2) How do you conduct online teaching/face-to-face teaching/learning during this pandemic? What strategies do you use? (3) What online/face-to-face teaching/learning challenges have you faced when implementing the said strategies? (4) How did you manage to handle the challenges? The questions were

supplemented with follow-up questions that required participants to make further clarifications.

Because of the travel restrictions due to the COVID-19 pandemic, interviews were conducted through Zoom, a web-based video conferencing tool, phone calls, and WhatsApp audio. The researchers introduced participants to the purpose of the interview. All the interviews were transcribed verbatim. The responses were analysed through thematic analysis a technique for analysing qualitative data, generated from the interviews. The researchers examined common themes that emerged from the data. Ideas and patterns of meanings that repeatedly emanated from that data were noted and the researchers came up with themes that related to the research questions. The themes included the following:

1) Strategies used
   i) during online teaching/learning
   ii) during face to face teaching/learning
2) Challenges
   i) for online teaching/learning
   ii) for face to face teaching/learning
3) Proposed alternative strategies

During our visits to the schools, when the schools opened for the preparation and writing of examinations, we noted the extent to which the schools adhered to the Covid-19 protocols or guidelines.

Ethical issues such as confidentiality and freedom to withdraw from participation at any time during the research were explained. Pseudonyms were used to conceal the identity of the participants and schools. As part of ethics, permission to record the interviewees was sought.

7.0   Results and discussions

Table 1: What strategies did the secondary schools adopt to ameliorate the challenges?

| THEME | RESPONSES OF | | |
	HEADS	TEACHERS	STUDENTS
Online teaching and learning strategies	- Adoption of online & face to face teaching - splitting classes to improve social distancing - use of laptops and phones - use of WhatsApp & Google classroom -Tablet purchase scheme for teachers - provision of data for teachers	- Adoption of synchronous/ asynchronous teaching and use of laptops and phones for teaching - Use of WhatsApp & google classroom - purchase of Tablets - Provision of data by the school to teachers	- Use of phones to access learning material and communications through WhatsApp & Google classroom with teachers
Face to face teaching and learning strategies	- provision of masks - temperature checks - sanitisations - posters on walls with reminders	- sanitisation - masking up - social distancing	- Sanitisation - Masking up - Social distancing

Table 1 shows that when the Covid 19 pandemic emerged, the two schools adopted the online teaching approach. Teachers highlighted that before this outbreak, the face-to-face teaching method was used. There was, however, a sudden shift to online teaching at the onset of the pandemic. The schools made it mandatory that teachers conduct teaching through the online approach. Even when schools eventually opened to prepare for examinations, they were still required to teach using both the face-to-face and online approaches.

According to the research participants, the online applications adopted WhatsApp and Google classroom. Educators explained that WhatsApp tools allowed them to effectively communicate with students through chat groups. They indicated that a collaborative

interaction between teachers and students was achieved with these tools. Through the applications, audio lessons, PowerPoint materials, Ms-word documents, books, and videos could be shared. Teachers hailed the WhatsApp message and video calls features which according to them, improved communication between them and the students. The educators mentioned that through the WhatsApp application, personalised follow-ups to students' progress were achieved and most problems could be solved without learners physically going to the institutions.

We were also told that google Classroom, another application used by teachers for online teaching, allowed teachers to create class groups. With the several options embedded in the application, teachers claimed that they could create and upload content to be sent to individuals allowing individualised attention, and also group tasks for the whole class. According to the teachers, the application allowed them to mark and give feedback to their learners. Reminders could be sent out to learners through the application. The application allowed different content types such as assignments, quizzes, questions, and other materials to be shared. Among the useful options was the feature to set assignments deadlines. A complete portfolio of the completed and pending tasks could be generated. Teachers had the option to add comments and marks to the marked assignments as feedback to learners.

Though the two online applications were useful in the delivery of lessons and communication with learners, one of the school heads said, "*online learning would be impossible without proper planning and clarity of instruction*". The administrators' response implies that for online teaching to be successful, teachers needed to prepare clear instructions for the learners. Clearer instructions help learners to follow and understand the content in the absence of teachers.

The educators indicated that other than the applications, teachers and learners needed tools such as laptops and tablets. To empower teachers, we were told that the schools

assisted teachers in buying Tablets at subsidised prices. Data amounting to 30 gigabytes was also provided to teachers for online teaching purposes. Explaining how they taught online, teachers said that they used either the asynchronous or synchronous mode for online teaching. This means that at some instances teachers would send information even when students were offline and at times they would conduct teaching in real-time, allowing for online discussions with participating learners.

Among the strategies implemented by the schools was the opening of schools for examination preparations through face-to-face tuition. Large classes had to be split into smaller classes to meet the social distancing requirement. Teachers and learners were encouraged to keep social distance in and outside classrooms. For these class groups, attendance to lessons was staggered with the groups coming on different days. Temperature checks and sanitisation for both teachers and learners were carried out daily. Face masks and sanitizers were provided to both teachers and learners by the schools, with reminders encouraging the observance of Covid 19 regulations posted on walls.

Table 2: What challenges did the schools encounter as they adopted these strategies?

THEME	RESPONSES OF		
	HEADS	TEACHERS	STUDENTS
Challenges i) with online teaching/learning	- Shortage of gadgets for online teaching - Expensive data - Power outages - Incompatibility of gadgets - lack of teacher and learner experience with online teaching and learning - lack of and intermittent networks - financial limitations	- inadequacy of required devices - expensive data - intermittent networks - Load shedding - some learners without access to the internet - delays in receiving students' work - inexperience with distance learning	- poor network connectivity - power outages - data charges too high - delayed feedback from teachers - applications used not interactive - loneliness at home - no assistance at home
ii) with face to face teaching/learning	- inadequate classrooms - shortages of PPEs - poor acceptance of social distancing by learners. - limited funding - learners dropout	- more work - lack of adequate PPEs - difficult to carry out group work - absenteeism and learner dropout	- fear of infection - too many restrictions at school -inadequacy of PPEs

Table 2 shows the challenges faced by the participants when using online and face-to-face for teaching and learning. The administrators noted some incompatibility issues with some gadgets during online teaching, making sharing content difficult. Teachers and learners pointed out that they experienced intermittent network connections. The unstable internet connections resulted in teachers and learners facing challenges of downloading and uploading tasks, delaying feedback to the learners. The general feeling

of the participants was that the process was expensive as it needed a lot of data. Another challenge mentioned by all the research participants was the lack of gadgets for internet connection. The schools' heads said while they managed to assist teachers to acquire tablets, it was not possible to provide the tablets to the learners.

Electricity load shedding was cited as one other challenge. Gadgets that needed power would go off when learners were online. Alternative network and power boosters could not be provided in the eventuality of disrupted connectivity. The school heads said, network connectivity and power issues were beyond the schools' jurisdictions and nothing could be done about them. Teachers put it that though they were required to teach online, they were not conversant with the approach. They admitted that they were caught unawares by the pandemic. Also affected were the learners who did not have the technological devices to connect to the internet.

Online teaching was characterised as being time-consuming as it needed a lot of time to prepare for the lessons and mark learners' assignments. This sentiment was supported by learners who echoed the same sentiments that feedback was not immediate as in face-to-face interactions. Learners complained that they had to wait for the teacher to download a student's work, mark, scan the marked work and then send it back to them. Another complaint was that during the online learning, they couldn't get immediate assistance to some difficult questions. Parents could not assist their children as they were not the subject specialists and most lacked the required technological expertise. Concerning the required resources, both teachers and learners cited the lack of computers and phones that could be used to access online materials and lessons from home. About the adopted online applications used, learners complained that they were not interactive as the face-to-face learning in which they see and interact with the teacher and colleagues.

The teachers bemoaned the fact that it was not easy for them to check the extent to which learners were using learning materials sent to them when the learners were offline and that not all learners would take part during the online sessions.

The shift from face-to-face teaching to online teaching was according to teachers, not a smooth transition. Teachers put it that though they had to teach online, they were not conversant with the approach. They admitted that they were caught unawares by the pandemic. Also affected were the learners who did not have the technological devices to connect to the internet. According to the administrators, the transition was marred by several challenges which included the low learner risk perception. Accordingly, learners struggled to observe the Covid 19 regulations, especially social distancing and masking up. This research associate this assertion to the learners' contribution that there were too many restrictions at school. The educators said learners could be seen hugging or sitting in groups in defiance of the social distancing call. Group work as one approach that develops collaboration among learners, was difficult to implement because of the social distancing requirement. The teachers said instead of the usual group work, the group work was done collaboratively through WhatsApp groups. During the lessons, learners would then make presentations while seated at their positions to maintain social distancing. According to the schools' heads, several issues needed to be addressed for face-to-face teaching to take place. The large classes needed to be split to address social distancing, raising the issue of inadequate rooms.

The procurement of sanitisers, PPEs, and other accessories was affected by limited funding. Shortages of PPE raised fears of being infected by the Covid 19 virus in learners. Such fears according to teachers, contributed to learner absenteeism to the face-to-face lessons and learner dropout. Our observations when we visited the schools during the face to face sessions were that:

- Temperature checks and sanitisation were randomly done rather than systematically and strictly followed. Not all teachers and learners were always subjected to these essential services. Sometimes the thermometers were not working.

- Face masks were used during lessons but at tea and lunch breaks, these were not always used. We think that this was because there were no teachers to monitor and enforce their use. Again face masks were not always used when the learners travelled to and from school on foot or in public transport. There was nobody to enforce their use.

- Physical distancing was enforced during much of the lesson time but was not observed during group work and at the playground where learners were seen playing and hugging each other and generally having fun associated with children. Physical distancing was ignored when the learners travelled to and from school especially those who used public transport. The public transporters, preoccupied with a desire to make profits, completely ignored the Covid-19 guidelines on the number of passengers allowed in their vehicles.

Elaborating on their confinement at home, learners claimed they felt lonely at home. They said that they missed their friends so that they could socialise and get assistance for some of their school work. This contribution implies that apart from learning, learners need to interact and socialise, something that according to them, online learning deprives them of.

8.0 What other approaches could the secondary schools have employed to ensure the successful continuation of teaching and learning during the pandemic?

Participants' contributions indicate the need to consider alternatives to the online approach adopted by the schools. Firstly, because teachers and learners faced challenges with data costs, it would be beneficial to have WiFi hotspots set up at the schools and elsewhere so that teachers and learners can connect from their locations. This is very

expensive. The government and private partners should play a positive and significant part in the provision of such services.

Learners felt that the platforms used by teachers were not interactive. Zoom or HeyHi which are video conferencing applications could have been used as they are more interactive and mimic face-to-face classroom interactions. Through HeyHi and Zoom teachers and learners will be able to interact in real-time while they see each other. The classroom vigour, vitality, and vibrancy enjoyed during face-to-face interactions could be achieved through live video interactions that tend to replicate classroom experiences.

8.1   Zoom application

 Zoom fosters collaboration among the invited participants as resources are shared during the live meetings. The whiteboard, an integral feature of the application, allows the teacher to make annotations on-screen. When a student shares his or her work the teacher interjects and makes annotations directly on the screen. This whiteboard is however not expandable meaning the teacher can run out of space and ends up deleting the annotations on the whiteboard. In Zoom, participants' videos are seen in a gallery form, meaning the videos cover more space than the whiteboard. This application can be downloaded from the internet for free. Its characteristics are suitable for use as an online teaching tool.

8.2   HeyHi application

An alternative video conferencing application with similar characteristics to Zoom. It has a whiteboard whose interface occupies more space. The participants' videos are aligned to the right side of the screen creating more working space. The positioning of the videos forces learners to focus more on the whiteboard than the participants' videos. Sharing of resources is done on an expandable whiteboard. Thus, annotations by the teacher are not deleted but the screen is moved sideways to expose more space. These

characteristics make it a suitable pedagogical tool for online teaching. Furthermore, it is a free online application that schools can use at no cost.

9.0   Conclusions and recommendations

Because of the Covid-19 pandemic, which threatened the provision of education to students, schools had to adopt a blend of online and face-to-face teaching and learning. The blend was adopted for students who had to write their final examinations. Despite the challenges associated with both online and the face to face teaching and learning during the Covid-19 pandemic, the schools under investigation came up with several strategies to ameliorate these challenges. The sudden emergence of the Covid-19 pandemic found the schools ill-prepared for the challenges. As a result, the strategies used by the schools had their challenges. The schools should however be commended for the effort they made to continue offering educational services to students during this difficult period. However, more could have been done. For example, the schools could have adopted video conferencing applications that mimic real classroom experiences that learners yearn for. Also, WiFi hotspots could have been set up for learners and teachers to freely connect from their locations to reduce data costs and connectivity issues. The schools could have provided learners with learning materials which they could download, print, and use. Such material would have allowed learners without stable or reliable internet connections to access the learning content. One of the challenges faced by teachers and learners in the schools under investigation was the lack of technological expertise needed for online teaching and learning. We suggest that both teachers and learners be capacitated through workshops for teachers and lessons in information and communication technology where the use of the internet and other technological tools and software is explained and illustrated.

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