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Evaluating the teaching 'fitness' of Ghanaian teachers with disabilities to instruct online in a pandemic era

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ABSTRACT

The main focus of this phenomenological study was to identify the gaps in disability research with regard to teachers with disabilities (TWDs) and how they can be aided to effectively teach online. Eight (8) TWDs from two special schools in Ghana were interviewed. A thematic analysis of the field data yielded seven (7) themes categorised into pedagogical fitness and psychological fitness. The findings indicate that while teachers expressed a commitment to online instruction, they faced significant challenges, including situational constraints and insufficient support, which impacted their ability to teach effectively. The teachers reported being 'fairly fit' to teach online, largely due to their resilience in the face of these challenges. They acknowledged that the experimental, technology-driven form of online instruction could serve as a stress reliever and potentially enhance their teaching effectiveness if implemented properly. Furthermore, the TWDs emphasised that their involvement in professional development regarding the use of digital technologies and training for parents to assist their children in home education would make virtually-mediated instruction during pandemic periods more effective. Assistive devices and other digital tools were identified as valuable for online instruction. Findings recommend policymakers consider new approaches to integrate digital technologies effectively in special schools in Ghana.

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Fitness; inclusive education; online learning; special education; teachers with disabilities (TWDs)

Introduction

Policies to make education more inclusive have become increasingly important in educational systems globally, as a result of emergencies such as the COVID-19 pandemic and innovations like Artificial Intelligence (AI). Educational institutions all over the world have realised the need to develop crisis-resistant systems that ensure equitable and inclusive quality education opportunities for all communities to promote a sustainable

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society (Ossiannilsson 2020). In the area of policy, the journey to ensure inclusivity in education has been fuelled by international declarations such as the Salamanca Statement in 1994, the Convention on the Rights of the Child and the Convention on the Rights of Persons with Disabilities by the United Nations (UN) in 1989 and 2006, respectively (Buchner et al. 2021).

In Ghana, many PWDs experience limited opportunities for formal education, which subsequently hinders them from accessing well-paid jobs or gaining attractive employment offers (Odame et al. 2025). Opoku et al. (2019) reiterate that the deprivation of access to formal learning in tandem with limited access to skill-based education is a contributing cause of the higher than expected unemployment rate of PWDs (Opoku et al. 2019). This is evident in the inability of PWDs to pay their school fees and the non-conformity of the education system in Ghana (school buildings and learning materials) to the unique needs of PWDs (Odame et al. 2025). As a result, the poverty levels of PWDs in Ghana are much higher than other sub-populations without disabilities (Opoku et al. 2019).

To achieve the overarching goal of eliminating disparities in education as enshrined in the UN Sustainable Development Goal Four (SDG 4), Ghana developed an inclusive education policy in 2015 to increase educational access for all school children. However, the critical issue of inclusive education in Ghana is concerned with the questions of what to teach and how prepared the teachers are to teach (Naami and Mort 2023). Opoku (2024) posits that efforts to promote inclusive education in Ghana have seen minimal progress, with many educational institutions struggling to implement inclusive education. Besides, the steps taken by Ghana towards the achievement of SDG 4, which advocates for a more inclusive approach to quality education, were further threatened by the sudden emergence of the COVID-19 virus, which affected the ability of institutions to deliver education to a student population of over 1.6 billion around the world (Adarkwah 2020; Lennox et al. 2021). Online learning, which emerged as the ultimate solution to the disruption caused by the pandemic, was met with scores of challenges, from faculty resistance and limited ICT infrastructure, to problems with online platforms, power outages, poor Internet access, the high cost of data, unequal distribution of resources, and lack of social interactions, among many others (Adarkwah 2020; Kast et al. 2021).

At the time of this study, the threat of COVID-19 was still prevalent and online instruction was encouraged by the Ghanaian government to ensure the safety of students, teachers, and all the actors involved in education. However, due to the significant decline in the epidemiological and socioeconomic impacts of the COVID-19 pandemic in 2023, characterised by reduced case incidence, lower mortality rates, and a gradual recovery in economic activity, the government made a strategic decision to relax restrictions on physical school operations. Statistical data indicates that no new cases of COVID-19 were reported as of February 15, 2023 (Sasu 2023). In the post-COVID world, online learning is encouraged by many educational institutions because of the availability of groundbreaking technologies that increase educational access to marginalised populations like people with disabilities (PWDs). However, many educational institutions resumed face-to-face instruction in 2023 due to inadequate technological infrastructure to continue online learning.

To this end, a large body of research has been conducted to identify ways of bridging the digital divide in many continents, especially in Sub-Saharan Africa (SSA) and Asia

(Lembani et al. 2019; Zhong 2020) to ensure equal learning opportunities for students around the world (Bhagat and Kim 2020; Pan and Zhang 2020) and promote greater inclusivity (Amponsah 2021; Jia and Santi 2021). Scholars have advocated for strategies to address the challenges with online learning faced by teachers and students. Nonetheless, the significant amount of research conducted on online learning and the pandemic to date has not been inclusive enough (Couper-Kenney and Riddell 2021; Jia and Santi 2021; Meleo-Erwin et al. 2021), with only a minimal amount of research focusing on PWDs and how they have been affected.

Studies that focused on PWDs and online learning during the pandemic era tended to examine students with disabilities rather than teachers with disabilities (TWDs). For example, Jia and Santi (2021) explored education policy design and the accessibility of technology by students with disabilities. Meleo-Erwin et al. (2021) investigated ways of providing online support information for students with disabilities in colleges and universities. Couper-Kenney and Riddell (2021), in their study, also assessed the prioritisation of the rights of children with disabilities. Likewise, research on PWDs in the Ghanaian context has primarily focused on children, infrastructure and technology (Adarkwah 2020; Amponsah 2021; Asiedu, Hadjah and Tei-Doe 2018). We found one study that captured the experiences of faculty and administrators in providing online learning for visually impaired students in Ghana, but the focus was on mainstream Ghanaian higher education institutions and not on special schools (Amponsah and Bekele 2023). Amponsah and Bekele found that although policy frameworks were available in the chosen institution, they were limited in salience and significance because they failed to consider the inclusion of visually impaired students. Additionally, practices to support the visually impaired students in the online learning environment were a significant challenge.

It is significant to highlight that in inclusive settings, TWDs have the solemn duty of delivering educational content to their students and constructing a classroom that is engaging by nature to stimulate students' interest in what is being taught (Okungu, Griffin-Shirley, and Pogrund 2019). In this twenty-first century, where technology-enhanced learning is ubiquitous and emergencies are frequent, TWDS in developing contexts may require professional training on how to incorporate technology into teaching (Fontenelle – Tereshchuk 2021; Khazanchi and Khazanchi 2021). Such initiatives will enhance their pedagogical astuteness and psychological soundness to promote educational delivery even in the event of an unforeseen crisis such as COVID-19.

Furthermore, the accommodations TWDs need at their workplace, and the challenges they face with using technology to teach, are issues of relevance to policymakers and school stakeholders. In line with the UN's SDG4, quality education is to be provided for all students irrespective of context or circumstance. That is, the COVID-19 crisis, which threatened progressive education and lifelong learning, should not be the premise for substandard education in Ghana and other parts of the world. Policymakers and other stakeholders should brace themselves for the rapid change in education by ensuring that differently abled teachers are adept at using technology to teach, especially in a digital era where digital education is being normalised. The current study resurrects the discussion of ICT integration in education and the need for educational institutions to embrace online learning in Africa by focusing on the situation of TWDs in Ghana. This is particularly important

in light of the emergence of digital learning spaces facilitated by novel and innovative technologies such as generative artificial intelligence (GenAI).

Zeroing in on the Ghanaian context, special education schools in the country hire graduate teachers from higher education institutions who have been introduced to special education courses and pedagogical strategies in instructing students with special needs. Some of these teachers are themselves not disabled. It is assumed that teachers who have studied special education courses in any higher education institution have learnt and internalised the teaching practices and legislative frameworks necessary for operating in inclusive classrooms (Gyasi, Okrah, and Anku 2020). The COVID-19 pandemic, which led to disruption in delivery in educational institutions in Ghana, also affected special schools because education policy had not been proactive in integrating technology and adopting online learning (Adarkwah 2020, 2021a; Adarkwah and Agyemang 2022; Amponsah 2021). This is one of the likely reasons why the COVID-19-inspired lockdowns affected education in Ghana, and special schools have not attracted the much-needed attention and assistance that their unique challenges required.

The radical migration to fully online teaching and learning during the pandemic presented the education sector with many challenges, such as limited ICT infrastructure and facilities, glitches with learning management systems (LMS), resistance from teachers and students to adopt technology for education delivery, and Internet inaccessibility, among many others. Prior research conducted on online learning in Ghana in the broader school sector suggests that both teachers and students were faced with unique challenges that need to be addressed (Adarkwah 2020, 2021a, 2021b; Amponsah 2021; Gyampoh et al. 2020). While studies have been conducted on the types of online learning inspired by COVID-19, there is a lack of research that has been conducted on special schools in Ghana, and there are limited studies to our knowledge that have explored the daunting challenges faced by TWDs in special schools in the country.

Given the above context, we adduce that aiding teachers (in the context of this paper, teachers with disabilities) through specific training and the development of strategies to instruct in inclusive environments will enhance their pedagogical skills and lead to better performance (Fontenelle – Tereshchuk 2021). This paper, therefore, aims to identify the gaps in disability research with regard to teachers with disabilities and the pedagogical strategies open to them by focusing on special schools in Ghana. Specifically, the paper asks the following research questions: (1) How do TWDs perceive their online teaching fitness? (2) In what ways can TWDs be supported to instruct online students effectively?

Models for understanding disability

The concept of disability is multidimensional and dynamic in nature, and social scientists have grappled with its definition for several decades. Different definitions have given rise to different research methodologies and results (Grönvik 2009). Popular among the multitudinous models available are the medical and social models. In the medical model, disability is viewed as a personal problem caused by a disease, a health condition, or a trauma that requires medical care (Iezzoni and Freedman 2008). In this model, people

are referred to as impaired (Andrews 2017), and expert knowledge is required to ameliorate what is considered to be an abnormality (Miskovic and Gabel 2012). Because the medical model views disability as a personal tragedy, asylums and dormitories were constructed to separate the faulty and unproductive PWDs from the general population (Odame et al. 2025). In a world where the medical model is implemented, PWDs may not realise their educational dreams because of being ascribed a 'sick role' in society (Haegele and Hodge 2016).

Moreover, the social model contends that individuals are unable to function due to external factors, which include structural, attitudinal, and general environmental barriers (Andrews 2017). In the social model, there is a shift away from the individual and the notion of impairment by viewing disability as a social construction. Thus, the failure of society to provide appropriate services for disabled individuals is what is referred to as disability (Riddle 2013). The model argues that people do not own their impairments but are rather prevented from fully participating in societal activities because of external barriers in society. In a pandemic situation, such occurrences are termed 'shadow pandemic' (Amponsah and Bekele 2023; Mutavati and Zaman 2020) as persons with disabilities are hindered from functioning fully. Although the social model ensures full participation of PWDs, it does not account for other societal factors, such as culture and religion (Odame et al. 2025). It is, however, important to draw attention to the fact that the social model is not comprehensive because it fails to address disability as an observable attribute of an individual's lived experience, distinguish individuals with disabilities, and consider disability as a social construction by a racist, sexist and disablist society (Haegele and Hodge 2016).

In a study by Tal-Alon and Lishchinsky (2019), disabilities were categorised as visible and invisible. Visible disabilities are described as those that are obvious to an external person as a result of the disabled individual's appearance, communication, or restrictions in movement. On the other hand, invisible disabilities are physical and mental states that are difficult to perceive by observers. Arising from this distinction, this paper adopts a more general definition provided by the UN Convention on the Rights of Persons with Disabilities (UNCRPD 2006: Article 1, purpose), which incorporates both aspects: 'persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others'.

The general definition by the UN Convention was chosen for this study because of its comprehensiveness, and also provides details on the phenomenon that neither of the popular models, medical or social, offer (Haegele and Hodge 2016). This comprehensive view is crucial in Ghana, where societal perceptions of disability often lean towards a more limited understanding, primarily focusing on visible physical impairments (Odame et al. 2025) or as a generational curse or sin related to the individual or family, or from a supernatural cause (Gyimah et al. 2024). Odame et al. (2025) revealed that PWDs believe poor definitions of disability hinder them from proving themselves as valuable members in society. In response to this, the UNCRPD's (2006) definition adopted for this study aims to amplify disparities in education by highlighting the need for educational systems to develop and implement strategies that enhance educational accessibility and inclusion.

TWDs' online teaching fitness, assistive technologies and learning management systems

Technology has made the work of teachers easier, but there is evidence that TWDs have difficulties navigating online learning environments (Burns and Bell 2010). There are also concerns in the research about the accessibility and usage of technology among disabled people and their match with the learning styles and needs of some learners (Hersh 2014). To define online teaching 'fitness', research suggests that it is important to evaluate this in terms of teachers' (1) pedagogical fitness – their ability to teach, facilitate learning, and assess students online, and (2) psychological fitness – support mechanisms to ensure teachers are physically, socially, and emotionally fit to deliver content to and interact with their students (Keane 2018). Thus, online teaching fitness is operationalised as the ability of a teacher (TWDs in this context) to be psychologically sound and apply appropriate pedagogical strategies, which include the use of educational technology to effectively deliver educational content synchronously and/or asynchronously to students. Teachers who are 'fit' have the mental fortitude and requisite pedagogical expertise, flexibility, and adaptability needed to enhance communication among students and facilitate learning.

In most cases, TWDs need assistance in acquiring information, accessing resources, or commuting between teaching sites. For example, Presley (2010) reports on how TWDs rely on assistive technology for mobility and information. Braun and Naami (2021) and Okungu, Griffin-Shirley, and Pogrund (2019) also add that many of the TWDs are aided by other people for transportation to their work premises and for accessing information. In this era of digitisation and globalisation, there are many technical advancements aimed at making the lives of people with disabilities, such as TWDs, comfortable (Vornholt et al. 2018). Visually impaired teachers can have access to text-to-speech technologies (for instance, the JAWS Software), and hearing augmentation systems, sign language interpreters, and captioning can be made available for teachers with hearing impairments (Darcy, Taylor, and Green 2016).

However, the reality is that most of the TWDs do not have access to ICT resources, such as computers, nor the opportunity to learn about the usage of technology for educational purposes (Lamichhane 2016). In Ghana, access to ICT resources and affordable and reliable Internet services is a challenge (Adarkwah 2020). Additionally, the geographical and digital divide in the country means that special schools and TWDs located in remote areas are not likely to deliver effective educational content to their students. It is important to note that the lack of technological and assistive devices is what turns impairments into disabilities (Parker and Draves 2018). TWDs are also faced with professional identity issues, which negatively affect their psychological well-being and may translate into low-quality teaching (Dvir 2015; Keane 2018). Thus, there is a need to put measures, such as professional development and training, and access to the needed assistive devices in place to facilitate effective online instruction by TWDs and ensure their physical and psychological needs are met. In addition to the need for targeted professional development and access to assistive technologies, the accessibility of learning management systems (LMS) and online instructional platforms is another critical consideration for supporting TWDs in educational settings.

The use of LMS for online learning is nothing new, but the effective use of LMS is constrained by design, accessibility, and procurement issues. For example, a study

conducted in Ghana revealed that although students were conscious of the Sakai LMS in their school, they had no desire to use it because of challenges such as access to computers, online course materials, power fluctuations, a stable network, and a poor network interface (Biney 2020). Additionally, the low knowledge levels of teachers and students in Ghana about LMS hinder them from rapidly engaging in online learning. Dampson et al. (2020) recommend that teachers and students in Ghana should be educated about LMS usage and its benefits. With the background information that online learning is perceived to be more advanced in higher education and mainstream schools (where difficulties with LMS usage have been observed) than in special schools, the situation of teachers and students in special schools is worsened regarding procuring and accessing an effective LMS for online learning. Aside from the limited funds to engineer an effective LMS, design methods for most of the current LMS in institutions in Ghana are not inclusive enough to capture learners with different abilities, interests, and diverse backgrounds. The level of accessibility to tertiary education facilities and products among people with disabilities (PWD) is a challenge. Educational products and services available to mainstream schools should also be easily accessible to users in special schools. That is, in designing and procuring online learning frameworks, educators should consider the needs of users with hearing impairment, visual impairment, and other forms of disabilities (Mohamed, Alqurashi, and Alshmmry 2022). LMS should be designed with accessibility in mind. Common accommodations in LMS that are inclusive are audiobooks, note takers, books in an alternate format, adaptive technologies, a tape recording of lectures, tutoring, readers for tests, oral instructions, extended time for tests, and sign language interpreters (Pendergast 2015).

Methodology

Design

This study sought to answer two research questions: (1) How do TWDs perceive their online teaching fitness, and (2) in what ways can TWDs be supported to instruct online students effectively? A phenomenological design with qualitative methods was used to obtain an in-depth description of the experiences of TWDs. In a qualitative phenomenological study, researchers gain insights into the phenomena under study, which enables a deep exploration of the feelings, behaviours, and experiences of the participants (Holloway and Brown 2012). The primary goal of a phenomenological study is to describe or interpret human experiences as lived by the experiencer (in the context of this study, TWDs) in a way that can be used as a source of qualitative evidence (Mayoh and Onwuegbuzie, 2015). The study employed a descriptive phenomenological design, which emphasises the participants' descriptions of their experiences (Mayoh and Onwuegbuzie 2015). This approach was selected because it leads to a comprehensive narrative that captures participants' stories as recalled in the interviews (Jackson, Vaughan, and Brown 2018). Additionally, it facilitates detailed descriptions that maintain a balanced perspective, reducing any bias that might favour positive experiences over negative ones, or vice versa. By using this approach, the researchers in this study designed a semi-structured interview guide to obtain answers to the research questions.

Participants and sampling

The sample for the study comprised eight (8) TWDs instructing in two special schools in Ghana. Both the special school for the blind and the demonstration school for the deaf are located in towns in the Eastern Region of Ghana. The school for the blind consisted of a basic school (primary and junior high) and a music and rehabilitation department with a total of 37 teachers and around 370 students (Kwarteng et al. 2021). The school for the deaf ran basic and vocational programs with 56 teachers and 460 students (Bonney 2020). Four of the participants were hearing impaired, while the remaining four were visually impaired. The participants were purposely chosen first for their disability and secondly because they agreed that they have some understanding of and have engaged in some form of online teaching during the COVID-19 pandemic. They also had at least three years of teaching experience with special needs students. Detailed information on the study participants is presented in Table 1.

Ethical clearance was granted by the researchers' university research ethics committee. As part of this process, the management of the two schools provided approval for the research, and the researchers met the gatekeepers assigned by the schools' management to aid the fieldwork. The gatekeepers referred the researchers to teachers with characteristics and experiences aimed at answering the research questions, which reflect what Frey (2018) calls chain referral sampling. Though there were about six visually impaired teachers and seven hearing-impaired teachers, only four from each site met the criteria in terms of minimum years of teaching special students and knowledge of and experience with online teaching. Arrangements regarding the interviews were agreed upon after the objectives of the study and its benefits were made known to the teachers chosen to participate in the study.

Procedures

The researchers designed a semi-structured interview guide based on the extant review of literature and the gaps identified to elicit information from the participants (see the appendix). The interview guide was divided into three sections. Section A contained

Table 1. Background information of the participants.

Dimension	Visually Impaired Teachers	Hearing Impaired Teachers
	Frequency	
Male	2	4
Female	2	–
Visually impaired	4	–
Hearing impaired	–	4
Impaired Since Birth	3	1
Impaired for over 20 years	1	3
Years teaching special needs students	3 years (1), 12 years (2), 21 years (1)	3 years (1), 7years (1), 8years (1), 15years (1)
Institutions trained in	Tertiary (3), College of Education (1)	Tertiary (4)
Training on online teaching	Informal training (4)	Introduction to ICT at the tertiary level (2), Informal training (1), Self-taught through YouTube videos (1)
Current level of teaching	4 (Junior High School)	2 (Junior High School)
	-	2 (Senior High School)

seven questions that elicited biographic information on the participants. Section B (Pedagogical Fitness) was further split into two sub-sections, 'Facilitating Online Teaching and Learning' and 'Online Assessment Strategies' with a total of 12 questions to elicit responses for the two sub-sections. The third section, 'Psychological Fitness', also had two sub-sections with respect to 'Institutional Support Mechanisms' and 'Social Support' and also contained eight questions. Altogether, the instrument had 29 questions that were answered through the interviews.

Informed consent forms were signed by both the researchers and the participants before each interview. Participants were informed that they could withdraw at any stage of the research. They were also assured that their privacy would be maintained and that confidentiality and anonymity would be ensured. The instrument for the hearing-impaired teachers used an open-ended format that enabled them to write their responses. The gatekeeper who understood sign language volunteered to interpret what the participants found difficult to answer, while doing the same when interviewers responded to queries. After collecting the data, the gatekeeper also helped the researchers to clarify words and sentences from the participants that were not readily identifiable or easy to comprehend. These interactions with the participants helped the researchers with verification and transcription in ways that were understandable and did not distort the information they had provided. In addition, oral interviews with visually impaired teachers were conducted in October 2021 at the two study sites in line with COVID-19 health protocols.

Interviews with the visually impaired teachers lasted roughly 45 min, while the hearing-impaired teachers spent approximately 30 min completing the instruments. The data from the visually impaired teachers were audio recorded and transcribed verbatim, while that of the hearing-impaired teachers were typed. The tailored approach employed was effective because it addressed the unique communication needs of each group. The written interviews allowed hearing-impaired teachers to express their thoughts clearly and at their own pace. Conversely, oral interviews facilitated dynamic interactions with visually impaired teachers, enabling deeper engagement and immediate clarification of their responses. The transcribed and typed data were compared to the audio recordings and handwritten ones to ensure accuracy and that the information was a true reflection of what the study participants had originally shared with the researchers.

Data analysis

The analytical strategy followed a 'six-phase approach of thematic analysis' (Clarke and Braun 2014). In the first stage, researchers meticulously read the transcripts to obtain a holistic understanding of common concepts that emerged from the data. After familiarising ourselves with the data, an initial coding group was generated and entered into a Microsoft Excel spreadsheet. Using an interpretive approach, codes with similar patterns of meaning were then categorised as sub-themes. All the sub-themes were further aggregated into main themes. The next step involved evaluating the main themes and sub-themes to examine their potential relations. The main themes were then categorised under the already established sections developed from the literature: (1) 'Pedagogical Fitness'; a. *Facilitating online teaching and learning* and b. *Online assessment strategies* and (2) 'Psychological Fitness'; c. *Institutional support mechanisms* d. *Social support.* The final stage involved presenting the findings of the study to convey a compelling

and coherent story. This was done by connecting extracts from the transcribed data that provided a deeper meaning to the two research questions and the main themes. To ensure trustworthiness and transferability, the '15-point checklist for a good thematic analysis' (Clarke and Braun 2014) was used as a guideline. The credibility of the study's findings was further ensured through peer audits and peer debriefing in order to 'bracket' any pre-assumptions and pre-conceived ideas.

Findings

The objective of the study was to identify the gaps in disability research with regard to teachers with disabilities and the pedagogical strategies open to them. After distilling the main ideas from the field data by way of analysis, two categories based on the research questions were established for this study. From each of the two categories emerged two sub-categories, out of which 7 themes were developed. In what follows, these are discussed and connected with the literature and models guiding this study alongside the participants' supporting narratives.

Pedagogical fitness

Theme 1: understanding of technology in teaching

The interviews revealed that almost all the teacher participants had some form of understanding of technology in teaching. Their shared understanding of technology was as a medium of communication, a source of information, and assistive devices for teaching. Some also referred to electronic devices such as computers, mobile phones, projectors, and printers as technologies that make teaching and learning easier. They also acknowledged that a teacher needs to be adept at utilising technology in teaching. While the teachers believed that integrating technology into education was significant and helped make teaching and learning easier, they also considered e-learning systems to be complex. Understanding the complexity of technology made the user more flexible and adept in using it for educational purposes, as demonstrated in this excerpt from teachers from the school for the blind:

> I have detected that when you learn and practice, the interest within the individual becomes more. And so, it [technology] is a very simple means of communication if you have a skill. Without a skill, it may seem complex. But after acquiring the skill, you see that it's a very simple medium of communication for doing any activity (ASB teacher 1).

> I use mobile phones to get information from the internet. I use a computer if I want to type something and print. If I want to record a video or want to capture certain things, it is based on using a computer and all are technology. (ASB teacher 3)

One of the teachers also pinpointed that technology usage has helped in formulating a curriculum for his students. According to the teacher, because there is no well-structured curriculum at his school, he sometimes visited online platforms to design a curriculum for the academic semester. He said:

> Technology is very helpful. I don't have a designed curriculum for my class. Without technology, it is very hard for me to teach because there is no syllabus and curriculum. Yes, I

> designed a curriculum purposely for the school for the blind and I've been using it. (ASB teacher 2)

Theme 2: training and facilitation for online teaching

Generally, the teacher participants did not receive any specialised training for online instruction. Most of the teachers relied on their daily use of electronic gadgets such as handheld mobile phones to search for educational content for their students. The popular source of information was YouTube. Although it was mentioned by some of the teachers in this study that there were computer labs in their respective schools, they did not have the time or opportunity to enhance their technical skills in the labs. Only a few of the participants from both schools suggested that they received introductory training on Information and Communication Technology (ICT). The following excerpts from the interviews are an indication of the points expressed above:

> We didn't receive training for teaching online, but we had training on the introduction to ICT (DSD teacher 1).

> It's just an informal training. I have not received training on online teaching. I also have a difficulty in how to access online training (DSD teacher 3).

In order to explore the various ways online instruction occurred in the special schools, teachers were asked how they facilitated learning among students online. Many of the teachers considered live recordings as the best way to instruct students online. According to some of the teachers, the playback option in live recordings could help students, especially those who are blind and cannot read braille. The use of flash drives was also mentioned as a means of transferring pre-recorded class sessions to the students. Because students were able to borrow tablets in one of the schools, recorded videos could be loaded onto the tablets for the students to view. It was also noted that personal calls to the students were an alternative online form of instruction. Because some of the students were in lower-level classes and did not have mobile phones, many of the teachers sought the help of parents to guide students in learning from home. The teachers at the school for the blind confirmed this in the following data extracts:

> Sometimes I preload my videos onto the pen drive and hand it over to them. And then insert it into their personal machines. We get speakers connected to the tablets so they can listen to the oral discussions or watch videos on the tablets. (ASB teacher 1)

> This is a difficult question because my children [learners], don't use any gadgets. But you can give exercises and their parents will read it to them, and they send it back to you through mobile phones. (ASB teacher 2)

> If it becomes necessary, I also record lessons and leave them on the tablets at the library. Sometimes there are people who cannot read the braille, for such people I record for them to be played back, listen and get the notes. (ASB teacher 4)

Some of the teachers at the school for the deaf also believed that promoting student collaboration through group projects is effective in a virtual milieu:

> I sometimes give group work for students to work on and submit electronically. (DSD teacher 1)

Theme 3: challenges to online learning

The TWDs in the study revealed that they experienced general technological challenges that have hampered ICT development in the education system in Ghana, such as limited ICT tools and poor connectivity. In addition, data suggested that an ample number of students lacked skills in navigating the online learning environment. The multitudinous activities that occurred on the learning management systems were also highlighted as slowing down the teaching and learning process for effective education. Thus, the stipulated topics for the academic semester sometimes remained uncovered due to the slowness of the e-learning systems in the schools. Some of the teachers at the school for the blind also lamented the abrupt end of video calls made to students and glitches with their devices that sometimes logged them out of designated learning platforms like Zoom:

> The first challenge has to do with mobile networks. The last time I was using Zoom, but before I realized I went off. I had to teach certain topics, but it didn't work, so no instruction occurred. The use of data is a challenge. You purchase data and one minute it is gone. The mobile networks have not been consistent (ASB teacher 3).

> Yes, some are from remote areas too and access to electricity is a challenge. Also, it is not all parents that are using smartphones. Some of them [students] do not even have phones (ASB teacher 2).

Teachers were further asked how they navigated some of the challenges highlighted. Alternative ways of dealing with the challenges, according to the teachers, involved improving ICT skills and also making pre-recorded videos for the students. Others also agreed on getting ample data to help mitigate some of the difficulties associated with online learning:

> With my students, sometimes I do recordings so that when they get to their homes, they listen to it there. Sending files to them comes with difficulties because in some areas there is no electricity. (ASB teacher 2)

> Online learning is a good initiative, but as I'm seated here, I do less in terms of rectifying those challenges. I am trying more to get into the ICT myself, you understand? So, I do less in solving those challenges around teaching. (ASB teacher 1)

> There is one thing I have to do. I mean, to seek redress from the mobile network providers so that they can help us. The two things that I will monitor are ensuring I have enough data, charge my phone battery and then make sure I work efficiently. (ASB teacher 3)

The responses under this theme point to the fact that, though the teachers were doing their best in facilitating online learning (see Theme 4), there were inherent systemic challenges thwarting their efforts. It is also indicative of what has already been found in existing research that TWDs are disposed to doing their best for special needs students.

Theme 4: emotionally conditioned to teach online

The majority of teachers at the school for the blind considered the sudden shift to online classes to be less stressful. Aside from concerns about Internet access, they believed the technology adoption made their work easier. Some of the teachers mentioned that using technology kept their minds away from other stress factors that come with performing their routine tasks. For example, some of the teachers in the study said:

> Oh, well, that depends on the individual. And you could see that when you are dealing with technology, it takes your mind off one or the other pain and other issues around you. So emotionally, you become sound. (ASB teacher 1)

> It didn't bring stress to me. When I am making recordings for the students, there is no one to disturb me. There are no visitors to interrupt the class or excuses from students to leave class. So, I see it not to be stress-free. (ASB teacher 3)

Though the teachers were emotionally conditioned to teach online, they admitted that poor networks and a lack of technical know-how could trigger some anxiety along the way. With these findings in mind, the teachers suggested several possible panaceas to the triggers:

> Well, anxiety is obvious to come, but you have to balance the anxiety and your work so that you present quality work and put the students who are equally anxious at ease in the online environment. Because, at the end of the day, anxiety would also make you curious to learn. It should be understood that if it is overdone, you also lose what you want to put across, so all the time, you should manage all those things (ASB teacher 4).

One teacher remarked that it was frustrating when an instructor was not adept with technology in teaching:

> Sometimes it's frustrating. Especially if you're not all that skilled with the system you are dealing with. If you aren't able to operate to get on with the team you are moving with. Somehow, you become frustrated. So, the trick is to make sure you learn, practice and prepare well before you deliver to students. (ASB teacher 1)

Overall, the TWDs ensured that they managed their own anxieties, which they believed would cascade to managing those of their students and providing adequate preparation to deliver the best quality education to their students that they could.

Theme 5: forms of assessments and feedback

Teachers at the school for the blind noted that their primary mode of assessment was oral examinations. This was done through direct calls to parents of the students and occasionally by means of conference calls. Though administering examinations appears to be an arduous task, the teachers' commitment was proof that they were fully aware of their students' circumstances (Okungu, Griffin-Shirley, and Pogrund 2019) and the exigencies of the times. In this way, students were randomly chosen to answer open-ended questions listed by the teacher. Marks were awarded to students based on the (correct/incorrect) responses they gave. However, in the school for the deaf, students were given written examinations, which they submitted via email. Teachers were, however, wary of challenges involving academic integrity during online assessments:

> Yes, I assessed students online one by one. I recorded my questions and sent or I made conference calls to dictate the questions to them through their parents' phones. They answered them and I gave them another time when I can call for their answers. For example, number one; Who was the president of Ghana? The student will have to give me a straight answer. I just mark and collate everything and send their results back to them (ASB teacher 3).

> A challenge to the online assessment is that maybe somebody must have worked the answers for the students. So, I may get a raw score correct, but I will not get a proper assessment because the assignments were not done by the students themselves (ASB teacher 3).

Moreover, formative rather than summative feedback was the most highly used form of feedback during online sessions in both schools. At the school for the blind, in situations where applications such as Zoom were used, teachers were able to provide direct formative feedback to their students via text chat between teachers and students. Other channels through which teachers at the school for the deaf provided feedback to students included emails and video recordings. Providing timely feedback, in particular, helped students with disabilities (Lohmann, Randolph, and Oh 2021):

> Like the recording I was saying, I make a recording and then it gets to them, and they too have to respond. They will respond by recording back to me. Like we did during vacations when they were going, I made a recording where they played and listened. They were also asked to make a recording, which was submitted to me. (ASB teacher 2)

> I give them feedback online. I would correct the wrong exercise/assignment and post it online for them to correct themselves. (DSD teacher 1)

Nonetheless, the teachers at the school for the blind recounted that students' lack of access to mobile phones, damaged and malfunctioning recording devices, power outages, and poor Internet connectivity were the main obstacles hindering the provision of effective feedback:

> I faced a challenge of delaying. As I said, the mobile phone may not belong to them. While maybe dictating the question, the mother can get a call and take the phone from the student's hand to receive the call before giving it back to the student. I'll have to repeat myself. Sometimes the students are not available when you call, or there is a low battery because of inadequate power supply. (ASB teacher 3)

Theme 6: institutional support

The overwhelming majority of the teachers from the school for the blind responded that school authorities provided psychological support for them in the form of meetings or by text message during this period. The distribution of tablets and other assistive devices was viewed by the teachers as a stress reliever, thereby ensuring they were mentally stable. Additionally, peer support was advocated among the teachers. In one school, counselling services were available for teachers:

> First of all, we always encouraged ourselves, and I think almost all of us here knew the nature of work before we agreed to work here. That alone is a psychological booster because once you are aware of what you are doing, then your personal orientation is heightened. From time to time, when there are difficulties, we share challenges and encourage each other and when there is any available workshop, we also attend. The school also has a counselling center to support us. (ASB teacher 4)

> Well, management provided us with these tablets, which were preloaded with learning content during the COVID-19 lockdown period. We can played it to the children to help them. This saves time and makes learning less stressful. (ASB teacher 2)

> The usage of the ICT tools is helping to save other resources, like time. You can input any information you want. So yeah, I think it provided a supporting system to individuals, I may say. (ASB teacher 1)

Many of the teachers from both schools revealed that there were ICT centers in their schools. However, not all of the teachers were able to access the centers to search for information or instruct online. Some of the teachers resorted to their personal devices to provide online instruction for their students. The teachers shared their experiences by saying:

> Okay, in my school, we have a computer, but if I am to go online, I used my own phone. Because we don't have any Internet connectivity. Basically, there is no computer in my class. It is the whole school that I know has a working computer. I don't often use it because everybody wants to use it all the time. (ASB teacher 3)

> Currently, there has been distribution of some tablets to individual teachers, a few weeks ago. And we have a number of them at the ICT lab for pupils as well. So, we have gained an interest in teaching. (ASB teacher 1)

One of the teachers stated that students lack ICT tools and sometimes have difficulties procuring them, which hindered effective online learning during the COVID-19 pandemic. For students who did not possess or had only a low level of access, teachers provided instruction through their parents' mobile phones:

> The only thing I used is the phone because the students don't have computers, and those in P3, level 9, 12, 13, 14, their parents cannot afford them. Even with the use of mobile phones, I would have to pass through their parents. Their parents would have to give their phones to them, and I would have to be telling them to do this or that (ASB teacher 3).

Many of the teachers in both schools felt they were not well-equipped enough on instructional strategies and lacked the technical know-how to teach their students. The teachers tended to value professional development activities as one way to ensure they were adept in the online modality of instruction. They also recommended the provision of ICT devices during professional development projects for educational purposes. Some of the points raised included:

> Most of us are doing shabby work just because we are not deep in ICT. You need to understand the technology you will use before you teach. So we need to be equipped well, including any tools like a laptop that will enhance our teaching. You could see that many people have interest, but because there is no appropriate or specified time allocated for professional training, we are just wandering around. (ASB teacher 1)

> I am lost as to how to adapt my teaching to suit my children. The recording I talked about, if I am taught how to adapt that will suit my children, I think it will be good for me. (ASB teacher 2)

Theme 7: parental, teacher unions, alumnus and NGO support

Family support is integral in special education (Cen and Aytac 2017). The study was also interested in shedding light on the kind of support parents offered to the schools in the emergency period. From the responses provided, teachers from both schools perceived parental support as lacking. In some situations, calls made by the teachers remained unanswered by the parents. Hence, the teachers could not offer meaningful directives or instructions to the students. Others also shared contrasting views as they indicated that during the emergent online studies, some parents voluntarily gave their phones to their children who were students in the special schools:

> When we educate them, they will be happy to support and corporate with us. They will help the students to learn. I tried to call to find out about my students, but even when the call goes through, they don't pick up, and so you don't get any feedback. (ASB teacher 2)

> Some parents gave their phones to students to use for online studies during the pandemic. (DSD teacher 2)

Even though teacher unions are considered the bargaining body of all teachers in the country, teachers in our study lamented that the teacher unions in the country do not have their welfare at heart. However, a few of the teachers agreed that in the past they received some basic technological tools (e.g. pen drives) and emotional support (oral encouragement) from one of the associations. Some of the teachers at the school of the deaf elaborated:

> All services that teacher unions have provided are related to all teachers. But I have not seen the unions, apart from GNAT [Ghana National Association of Teachers], going into issues that deeply concern those of us in the special needs schools. I've not seen it. That does not mean they have not done it before, but from where I sit, I've not seen it.

> The union has provided no source of assistance to a deaf teacher like me. Their policies don't help deaf teachers at all. (DSD 1).

> Teacher Unions are not interested in deaf teachers (DSD 3).

It was also mentioned by one of the teachers that there was a health insurance policy for them in the past:

> There is this cancer fund, but I have not benefited before, and they have not initiated activities in terms of health for us members. (DSD teacher 4)

Data from the two schools also suggested that their alumni advocated for and supported them by donating some technology devices. The teachers also opined that their schools received support in the form of personal protective equipment (PPE), such as face masks, from non-governmental organisations (NGOs):

> There are some NGOs that supported the school with teaching and learning devices to boost teaching and learning. (DSD teacher 1)

> Old students also helped in so many ways. When it was COVID [−19] time, old students donated some laptops to our students. At times, they also donated nose masks. (ASB teacher 2)

> Fortunately for us, most of our old students were calling for technology to be introduced to our teaching to help improve the results of our students. So old students are in for it, and a lot of like-minded NGOs are also into it and providing some gadgets to assist with our teaching. (ASB teacher 4)

Discussion

In the current study, the TWDs' understanding of technology in teaching is consistent with what prevails in extant literature, which states that the emergence of technologies has made the work of teachers easier (Burns and Bell 2010; Darcy, Taylor, and Green 2016; Smith and Okolo 2010). The eight (8) TWDs perceived electronic devices such as computers, mobile phones, projectors, and printers as technologies that make teaching

and learning easier in line with Vornholt et al.'s (2018) assertion. Nonetheless, it is quite surprising that the management of the schools and employers had not seen the need to train these teachers, even in the face of emergency situations. This only goes to show that inasmuch as the teachers had internalised policies to be able to do their work effectively (Gyasi, Okrah, and Anku 2020), educational management teams were either not developing policies or failed to implement policies on continuous professional development for these types of teachers. This lack of support becomes particularly evident in the context of the COVID-19 pandemic.

Though the abrupt nature of COVID-19 took the world by storm, findings suggest that the management of the special schools was oblivious to the conditions of TWDs (Okungu, Griffin-Shirley, and Pogrund 2019). These are teachers who might be suffering from different layers of disabilities (e.g. medical, social, visible and invisible) (Andrews 2017; Iezzoni and Freedman 2008; Tal-Alon and Lishchinsky 2019). Yet they had been left on their own to navigate online learning during the crisis period, which, if unattended to, could lead to stress and burnout and eventually yield low productivity. It can be inferred that the emergent nature of COVID-19 led to remote instruction without any proper planning and professional development (Khazanchi and Khazanchi 2021). TWDs and their students relied on assistive devices (Braun and Naami 2021; Presley 2010), and the situation of the 8 participants in this study was challenging in this respect.

Based on the responses from the teachers, it is evident that they faced accessibility and usability challenges in terms of facilitating online instruction, as indicated in research by Hersh (2014) and Lamichhane (2016). They had instead leveraged technology to make their work easier rather than allowing their disability or that of their students to inhibit their efforts (Andrews 2017; Darcy, Taylor, and Green 2016; Iezzoni and Freedman 2008; Tal-Alon and Lishchinsky 2019). The general challenges observed to have obstructed the success of online learning in Ghana (Adarkwah 2021b), including the lack of ICT tools, limited technological infrastructure, poor Internet access, inadequate power supply, and malfunctioning of ICT devices, were also found to be hampering the online delivery of educational content to students in both of the special schools. The digital divide in the country (e.g. disparities between urban and rural areas regarding power supply and resource allocation) makes it difficult for some students to access the Internet and underlines the challenge of access and usability (Hersh 2014; Lamichhane 2016).

In particular, the study revealed that school facilities for online learning were inadequate, highlighting the urgent need for improved access to technology in educational settings. That is, access to computers and other technological tools remains a challenge to the implementation of online learning in many developing economies (Adarkwah 2021b; Hersh 2014). The limited number of computers in the studied schools made it nearly impossible for all teachers to use them. Nonetheless, some of the centres had Wi-Fi that provided Internet access to teachers who had personal computers or other Internet-enabled devices to search for information. In one of the schools, teachers were privileged to receive tablets for educational use, and students also had the opportunity to borrow them for learning purposes.

Although technological challenges can have a spillover effect on the psychological well-being of the teachers to some extent, TWDs in the study were resilient throughout

the crisis. Dvir (2015) and Keane (2018) noted that challenges that negatively affect the psychological well-being of teachers may translate into low-quality teaching. The contrary holds true for the participants of this study. From the teachers' responses, they had leveraged available technology and positioned themselves psychologically for effective work. The teachers acknowledged that embracing technology, especially in a sudden manner, inevitably leads to some uneasiness, but they believed that it is the responsibility of individuals to manage their own anxiety and that of their students. This also buttresses the assertion that positive psychological well-being translates into high-quality teaching rather than the contrary view found by Dvir (2015) and Keane (2018). The TWDs expressed concern and showed enough efforts to prove that teachers who have disabilities do better with students with disabilities (Dvir 2015; Keane 2018). Having been disabled students themselves, they appreciated the challenges they faced and tried their best to enable their students to enjoy positive and inclusive learning environments. The TWDs made effective use of available technology to ensure that their students received timely feedback (Vornholt et al. 2018), and the use of multiple feedback modalities epitomised their understanding of their students' diverse disabilities and social conditions (Anderson 2006; Keane 2018; Riddle 2013).

Moreover, given that the physical and mental health challenges faced by persons with disabilities (PWDs) in inclusive environments were exacerbated by the COVID-19 pandemic (Nolan 2021), the establishment of robust support systems has become essential. From the reflections of the TWDs, the institutions' support for their well-being cut across the provision of facilities for online learning to structures. First, the provision of the tablets ensured that the TWDs were able to overcome some of the challenges associated with access and usability (Darcy, Taylor, and Green 2016). Moreover, the counselling and psychological services provided to teachers were novel as they served both preventive and remedial purposes among challenged staff working in crisis conditions. The peer support among the TWDs also demonstrated how they understood their challenges and conditions (Okungu, Griffin-Shirley, and Pogrund 2019).

The global emergency caused by the COVID-19 pandemic highlighted the crucial role of parental support to teachers in the education process. In many countries, parents provided home education to their children while at the same time cooperating with their instructors to ensure students' academic needs were being met (Cahapay 2020). This situation was reflected in this study as some parents allowed their phones to be used in learning (Lamichhane 2016; Okungu, Griffin-Shirley, and Pogrund 2019). In line with what has been established by Okungu, Griffin-Shirley, and Pogrund (2019), the teacher unions are supposed to negotiate better working conditions for the TWDs. However, they seem not to be aware of their conditions and hardly factor them into their agenda, as evidenced in the teachers' responses. It also indicates that not only are TWDs underrepresented in schools (Keane 2018), but they are also underrepresented in their own professional fraternity. The support provided by the alumni and NGOs may not have solved the varied challenges faced by the special schools, but they were nevertheless laudable. It is important to note that the alumni had experienced the challenges of students in the study and understood the types of challenges they faced as a consequence of their disabilities (Andrews 2017; Iezzoni and Freedman 2008; Tal-Alon and Lishchinsky 2019).

Likewise, NGOs are responsible for engaging with potential sponsors and other sources of financial support to assist the underprivileged in society and to provide them with effective forms of assistance in such challenging times.

Conclusion

The originality of this study resides in the fact that it is the first to explore the experiences of TWDs involved in technology-mediated instruction in the Sub-Saharan African region, specifically in Ghana. The research provides new perspectives on online instruction in inclusive environments during the COVID-19 era. Additionally, the study highlights the exclusion of TWDs in disability research. Policies relating to inclusion have not been provided for the integration of ICTs in special schools in Ghana. In the current study, eight (8) teachers, with different forms of disabilities from two special schools (schools for the blind and deaf), were interviewed on how they perceived their 'fitness' to teach in a virtual milieu and how they could be aided to instruct online effectively in the pandemic and post-pandemic era.

The thematic analysis yielded 7 themes categorised into pedagogical fitness and psychological fitness. Specifically, it can be deduced from the teachers' responses that they were 'fairly fit' to teach online. There were several situational challenges, such as the insufficient technological skills of teachers, a lack of professional training on ICT, inadequate ICT resources, and difficulties with conducting examinations and providing feedback, that affected pedagogical strategies in providing online instruction. Lack of professional development, limited institutional support, and limited support from teacher unions and parents were the principal factors that affected the psychological well-being of teachers. The teachers gave credibility to the emotional drain and anxiety related to the sudden shift to the mode of online instruction.

Nonetheless, the teachers agreed that experimental technology-driven instruction was a stress reliever and could be an effective means of teaching if properly implemented. The influence of parents in online instruction was also considered integral. The teachers expressed the opinion that if parents were trained to assist their children in home education, the virtually-mediated instruction would be more effective. Moreover, assistive devices and other ICT tools were prized as valuable for online instruction.

Findings of the study recommend that policymakers in education in Ghana need to initiate and promulgate policies aimed at integrating ICT in special schools. The emerging variants of COVID-19 make full physical instruction an uncertainty. Without addressing the pedagogical and psychological needs of TWDs, effective online instruction may not be achieved. Teachers need to be pedagogically prepared and emotionally stable to provide effective teaching. Moreover, an efficient e-learning system in special schools will serve as a crisis management strategy against future disasters or pandemics that threaten education in inclusive schools. The need to assess the experiences, competence, knowledge, and skills of TWDs in inclusive classrooms has never been more important than in this COVID-19 era where the education sector has undergone significant changes.

Although the entire teaching workforce needs help in these devastating times, TWDs may require additional help in creating an enabling environment and effectively instructing students online. As previously reviewed, before the COVID-19 pandemic came to

light, teaching and learning mostly occurred in brick-and-mortar classrooms, even in higher education institutions in Ghana (Adarkwah 2021a). The pandemic, with its accompanying lockdowns, forced the hands of education institutions to migrate to online learning. In special schools, some teachers who were privileged had access to ICT centres. In the wake of the pandemic lockdowns, these teachers had limited/no access to the digital infrastructure available in their schools. The use of personal electronic gadgets to instruct and communicate with students along with the unreadiness to fully embrace online learning, was a daunting challenge for the TWDs. This is to say that education delivery and staying in touch with students became extremely difficult. Notwithstanding the efforts of TWDs to instruct online amid limited professional training and insufficient digital infrastructure, there were almost no incentives available to the TWDs. Special school administrators relied mostly on donors and traditional support from parents and alumni to keep TWDs motivated to teach (Cen and Aytac 2017).

After an extensive literature search, it appears that there is a lack of studies conducted on the needs of TWDs teaching in inclusive classrooms in this COVID-19 era. More research should be targeted at the experiences and dispositions of TWDs and other underrepresented populations to ensure inclusivity. A key limitation of the study is that it focused solely on TWDs working in special schools. While this approach helped to capture the unique needs of TWDs in specialised school environments, it is also essential to highlight the challenges and support systems needed by TWDs in inclusive mainstream classrooms, especially when adapting to crises or newly advanced digital technologies such as artificial intelligence. Relatedly, while this study is significant in being the first in-depth qualitative study in Ghana to address the context of TWDs, the sample size involved was small, and it is not generalisable to a wider population.

Additionally, there appears to be a lack of African-specific technological frameworks and approaches to instruction in special education settings. Pedagogical frameworks designed for Eurocentric and Western contexts might not effectively address the unique cultural, socioeconomic, and technological realities faced by educators and students in African nations such as Ghana. Future studies should focus on developing a sound pedagogical framework for technological instruction that is context-specific. It is also important to explore how TWDs can utilise digital learning tools to conduct examinations and provide effective formative and summative feedback to their students. While the current study explored the 'psychological fitness' of TWDs, there is a need for a future in-depth exploration of the mental or psychological health needs of TWDs in this AI era by looking at concepts such as the fear of missing out (FOM), technophobia, and technostress, in technology-enhanced learning contexts.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

ASPIRE project – teacher resilience and capabilities network in sub-saharan Africa: phase 2 in Ghana.

Teacher interview guide

Hello, I am … … . from the University of Ghana, and I am part of a team responsible for the above-named project. I would be grateful to have your answers to the following questions. Your part in this research is to assist with information about your online teaching experiences, especially during the COVID-19 pandemic lockdown period. By participating in this research, you are assured of absolute confidentiality. Hence, the information you provide shall be used only for this research. Your participation is purely voluntary, so you are free not to answer any question you find distressing.

Section A: biographic information

1. What form of disability …
2. How long have you been in that situation?
3. How long have you been teaching special needs students?
4. At what level(s) do you teach, and what are the age ranges of your learners?
5. What is your understanding of technology usage in teaching and learning?
6. In which institution(s) did you receive the training, and how long was your training?
7. Share the kind of training you have received to teach online (formally or informally)

Section B: pedagogical fitness

Facilitating online teaching and learning

1. What facilities are available in your school to aid your online teaching?
2. What technologies or gadgets do you mostly use in your online classes?
3. How do you facilitate learning among your online students?
4. What challenges do you face in your preparation to teach online?
5. What challenges do you face when teaching online?
6. How do the challenges affect your work?

7. How do you work your way around the challenges?
8. What facilities do you feel can enhance your online teaching?
9. What specific forms of training do you need to make you a better online teacher?

Online assessment strategies/approaches

1. How did you assess your students online?
2. What forms of feedback do you provide for your learners?
3. What challenges did you face in providing feedback online or performing online assessments?
4. What differences do you perceive between the manual and online assessment?

Section C: psychological/medical fitness

Support mechanisms

1. What measures have your school leaders put in place to ensure your psychological well-being?
2. How have the teacher unions served as a source of assistance in terms of your general well-being to teach?
3. What assistive devices are available to you to help you in your teaching?
4. How well have parents supported you in your online teaching?
5. What about other stakeholders (NGOs, Old Students Associations, etc.)?

Social and emotional fitness

1. How would you describe your general emotional wellbeing transitioning online?
2. Would you say that the time spent in-front of computers/digital devices to teach is emotionally draining?
3. How have you managed with the anxiety associated with online instruction?
4. How do you ensure adequate movement away from digital devices used for online instruction?

Thank you for sparing us your time to answer this questionnaire.