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Enhancing Educational Practices during a Pandemic: Examining Teachers' Journey with Blended Learning in Rural High Schools

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Abstract. In response to the COVID-19 pandemic, schools and institutions all over the world utilised blended learning during the mandatory lockdowns that were imposed by their respective governments. This acted as a spur for educational reform. This study investigated teachers' experiences with the implementation of blended learning in rural high schools during the COVID-19 era in one educational district in South Africa. The social constructivism theory served as the theoretical lens for this study. This study employed the qualitative case study design. Purposeful and convenience sampling were used to select participants for the study. The data were collected using semi-structured interviews. The interviews were recorded, transcribed, and analysed using a thematic analysis approach. This study found that teachers perceived blended learning as easy to use, simple, user-friendly, straightforward to navigate, and offering creative modes of instruction. This study further found that teachers developed a positive perception of blended learning and its potential use in teaching and learning in the post-COVID-19 era, as blended learning promoted students' independence and engagement in the teaching-learning process. However, the participants also experienced challenges, such as a lack of pedagogical knowledge on the use of blended learning, in their respective subjects, connectivity issues, electricity cuts, and network and internet issues. This study suggests that schools implement blended learning in the post-COVID-19 era to evaluate its impact on the teaching and learning process.

Keywords: Blended learning; COVID-19 era; high school; implementation of blended learning

1. Introduction

In early 2020, the World Health Organisation (WHO, 2020) proposed school closures as one of the first non-pharmaceutical ways to minimise COVID-19 infections and transmission. Simultaneously, governments and educational institutions from around the world initiated policy initiatives to keep educating

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the citizenry. However, questions and disagreements persisted about the content to be taught, how it should be taught, and implications for educational equity (Zhang et al., 2020). Nonetheless, national initiatives on technology-enabled remote, distance, and online learning programmes emerged and evolved rapidly during the COVID-19 era. However, the literature underlines difficulties including online education infrastructure, teachers' lack of technological knowledge, and the complexity of the home-based environment (Murgatroyd, 2021). Nevertheless, despite these constraints, action was needed to protect student education.

From a global perspective, China implemented the "Suspending Classes Without Stopping Learning policy" to protect instructional time and to support student education (Zhang et al., 2020). To do this, students and teachers received standardised home-based teaching and learning tools and online teacher training to assist students with online learning (Huang et al., 2020). In Indonesia, the Ministry of Education published a Letter of Circular No. 4 of 2020 on COVID-19 emergency education regulations, and Blended Learning (BL) was progressively introduced into institutions (Pujilestari, 2020). In Africa, there was a general acceptance of the need for strict measures in the education sector to prevent the spread of the virus (Hub, 2020). In Ghana, considering the level of preparedness of basic schoolteachers to fully teach online, Aboagye (2020) argues that it was difficult for most basic schools in Ghana to fully transition to BL. In South Africa, the President declared that the national lockdown would begin on March 27, 2020. As a result of this decision, all modes of instruction were required to be delivered online which constituted remote teaching and learning in which the internet was used to deliver the content (Marcus et al., 2020). Therefore, numerous training sessions on how to transition to this format were conducted for both schoolteachers and lecturers from higher education institutions.

Blended Learning (BL) is defined as the combination of traditional face-to-face and online learning (Picciano, 2009). BL grew in popularity as a mode of delivery in both basic and higher education institutions during the pandemic and has facilitated improvements in pedagogical practices that provide students with access to high-quality educational opportunities while meeting institutional imperatives for productivity and social responsibility (Garrison & Vaughan, 2008). In particular, a BL environment can facilitate "a superior environment" for students' intellectual development and competencies through "multiple opportunities for reinforcing learning" (Dziuban et al., 2013, p. 326). However, without technology readiness, the benefits of BL would not be reaped and the probability of failure in adopting BL would be high. Therefore, this study sought to investigate South African rural high school teachers' experiences when implementing BL to deliver quality education in their classrooms during the pandemic. This study also suggests pedagogical approaches to learning and teaching at the high school level to improve the academic performance of learners.

A convergence of related studies has indicated that BL has remained a significant pedagogical concept as its focus is aligned with providing the most effective teaching and learning experience (Saboowala & Mishra, 2021; Wang et al., 2021). However, little research has been published on the implementation of BL in South African rural secondary schools (Mahaye, 2020) and, particularly, none of these studies have focused on the experiences of rural high school teachers in the implementation of BL during the pandemic. Against this background, the purpose of this study was to address a knowledge gap by investigating the experiences of rural high school teachers on the implementation of BL in schools during the COVID-19 era. The following questions guided the study:

1. How do teachers implement BL in their classrooms during the COVID-19 era?
2. What do teachers perceive as their experiences with BL in their classrooms during the COVID-19 era?
3. What are the challenges experienced by teachers with the implementation of BL in their classrooms during the COVID-19 era?

2. Literature Review

2.1 Blended Learning in Education

In the last few years of the COVID-19 pandemic, basic education and higher education institutions have increasingly employed the term "Blended Learning" (BL) (Nikolopoulou, 2022). BL is a combination of face-to-face and computer-mediated instruction. BL is an educational method that integrates (or merges) online learning with traditional classroom methods (face-to-face learning) (Saboowala & Mishra, 2021). Various models of blended learning have been identified (for example, flex, online lab, self-blended, etc.), each offering unique benefits and strategies for implementation. One prevalent model is the flipped classroom model, where students engage with online materials before in-person classes, allowing for more interactive face-to-face sessions (Nida et al., 2020). Another common model is the station rotation model, where students rotate between different learning stations, including online activities and teacher-led instructions (Nida et al., 2020). The fundamental principle is that face-to-face and online components are optimally integrated so that the strengths of each are blended to create a unique learning experience that is consistent with the context and intended educational purpose (Larkin, 2010). By integrating delivery modalities, BL aims to provide the most efficient and effective learning experience. Therefore, in integrated learning environments, students and teachers collaborate to provide realistic opportunities for independent, useful, sustainable, and ever-expanding learning (Graham, 2005; 2016). According to Garrison and Kanuka (2004), the facilitation of a community of inquiry makes integrated learning particularly effective. This implies that the community provides a platform for collaborative activities between teachers and students through interactive sessions, which increase student satisfaction and academic achievement (Khan et al., 2012). This implies that BL provides time flexibility for online learning, which gives students access to information at all times.

Several models of BL may be integrated into different levels of the educational system (Graham, 2005). These models offer teachers a set of shared features that distinguish BL classes from traditional face-to-face classrooms. In the traditional model of BL, activities may be created to enhance students' learning, interactions, and cooperation with both their peers and the teacher. These activities may include presentations, working with groups, and engaging in conversations on topics that have arisen from their online learning. Kudryashova et al. (2016) state that the in-person aspect allows teachers to provide instruction covering much of the curriculum, while giving a lengthier task to be completed online. Conversely, under the online model, the teacher delivers all information and teaching via an internet-based platform, and students carry out their tasks from a distance (Staker, 2011). Dix (2007) and Trucano (2005) argue that students who have access to computers and the internet at home are more likely to achieve mastery in their learning compared to those who do not. This is because they can complete their assignments and engage in extensive practice.

Amidst the COVID-19 pandemic, this strategy has shown to be highly beneficial as it was deemed the most effective means of fulfilling students' educational requirements (Wahyuningsih & Afandi, 2023). A convergence of the literature demonstrates that BL transforms pedagogy and has been linked to heightened learning motivation in elementary school learners due to the provision of autonomous learning opportunities and access to global learning resources (Azizan, 2010; Hanum & Sari, 2022). Assessment is one of the most important learning and instructional instruments during the pandemic. BL enables teachers to deliver lessons and assess students' learning using creative and innovative methods through online assessment platforms (Elmahdi et al., 2018; Khan et al., 2012).

2.2 Teachers' perceptions of implementing blended learning

Teachers' perceptions of BL are crucial for the successful implementation and effectiveness of this educational approach. Various studies have explored teachers' attitudes towards and readiness for BL. Zhang (2023) indicates that there may be differences in perceptions between teachers and students regarding the effectiveness of BL environments. This highlights the importance of considering teachers' viewpoints to ensure a cohesive learning experience. Studies by Masadeh (2021) and Wang et al. (2022) have demonstrated that both students and teachers generally have positive attitudes towards BL, which can influence the adoption and successful integration of BL models in educational settings. Additionally, the study by Ye et al. (2022) emphasises that teachers' attitudes directly impact their use of BL. Positive attitudes towards BL can mediate the relationship between factors, such as ICT self-efficacy and organisational support, ultimately influencing the effective implementation of BL practices. Moreover, research by Alconis (2023) reveals that teachers exhibit high self-efficacy towards BL and generally hold favourable attitudes towards this approach, which can contribute to their motivation and willingness to adapt to BL methodologies.

2.3 Challenges of blended learning implementation

A recent study by Janse van Rensburg and Oguttu (2022) suggests that the integration of BL into education poses many challenges for students, teachers, and institutions. According to Waha and Davis (2014), successfully implementing BL can be challenging, especially when the objective is to bring about educational reform rather than just adding to existing practices. Powell et al. (2015) identify the following challenges to the implementation of BL: (i) barriers related to technology; (ii) a lack of universally adaptable data that teachers can use to develop BL; (iii) difficulty in constructing appropriate learning systems to support students; (iv) proficiency-based grading and instruction; and (v) multiple forms of student evidence.

Barriers to the implementation of BL in rural schools include access to the internet and teachers' lack of sufficient resources or training to proficiently employ the most effective strategies of BL (Burnham, 2021; Echazarra & Radinger, 2019; Rasmitadila et al., 2020). According to a study conducted by Prinsloo and Van Rooyen (2007) on how second-year accounting students from an institution in South Africa approach BL and their experiences with it, the inaccessibility of online material, due to a lack of internet connectivity, was identified as one of the barriers to the adoption of BL. In similar studies, students' readiness to learn in a blended environment (Sirisakpanich, 2022), teachers' commitment and ability to effectively teach through blended approaches (Alvarez, 2020), and teachers' competency (Rasheed et al., 2020) are some of the challenges of implementing BL.

3. Theoretical Framework

3.1 Social Constructivism Theory

This paper is framed according to Vygotsky's (1978) Social Constructivism Theory of learning. Social constructivism emphasises the collaborative nature of learning, where knowledge is constructed through social interactions and shared experiences (Al-Qaysi et al., 2018). In the context of BL, this theory highlights the importance of learners actively engaging with online materials and participating in collaborative activities facilitated by teachers (Varthis & Anderson, 2016). The integration of social constructivism theory in BL environments encourages self-regulated learning and emphasises the role of learners as active participants in the learning process (Varthis & Anderson, 2016). This approach aligns with the principles of constructivism, which posit that learners build their understanding of concepts through interactions with their peers and teachers (Al-Qaysi et al., 2018). By incorporating social constructivist principles into BL models, teachers can create a dynamic and interactive learning environment that promotes knowledge construction through collaboration and discussion (Marzouki et al., 2017). Furthermore, the application of social constructivism theory in blended learning can enhance student engagement and foster a sense of community among learners (Sokout & Usagawa, 2021). By encouraging collaborative learning activities and providing opportunities for students to interact and share their perspectives, teachers can create a supportive learning environment that aligns with the principles of social constructivism (Marzouki et al., 2017). This

approach not only enhances the learning experience but also promotes critical thinking and active participation among students (Wei-yi et al., 2023).

The relationship between teacher implementation of BL, teacher perception, experiences, and challenges of BL in a constructivist classroom can be synthesised to form a conceptual framework. The synthesis of these studies suggests that the conceptual framework for the relationship between teacher implementation of BL, teacher perception, experiences, and challenges in a constructivist classroom should consider the impact of professional development, technological challenges, student motivation, and the changing role of teachers and students in a BL classroom. Figure 1 illustrates the interaction between key concepts in the study.

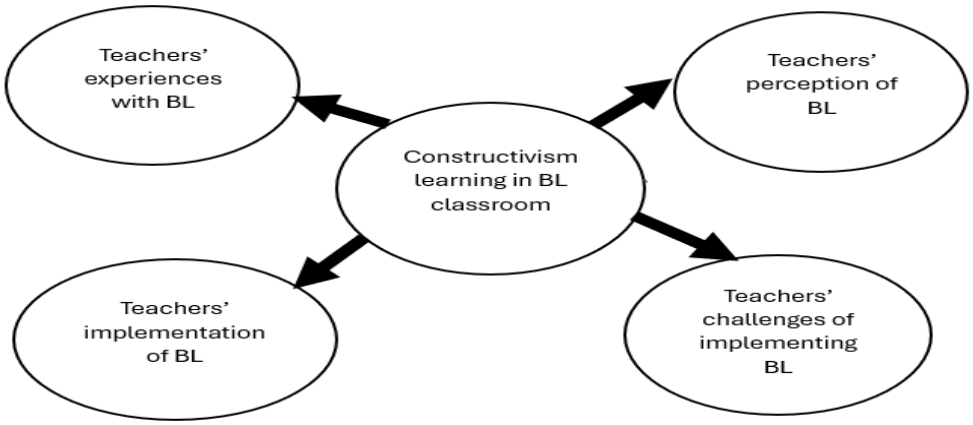

Figure 1: Conceptual framework of exploring teachers' implementation of BL in a constructivist classroom

4. Methods

4.1 The research approach

In this study, a qualitative research method was employed to guide the research process. According to Creswell and Plano Clark (2018), qualitative research allows the researcher to examine people's actions and report them in narrative and descriptive ways. This study considered the opinions and experiences of the participants and was conducted in a natural context. The qualitative research method was deemed suitable for this study for two reasons: firstly, the objective of the qualitative research method is "to better understand human behaviour and experience" (Bogdan & Biklen, 2007, p. 43) which aligns with the goals of this study, which was to investigate teachers' perceptions of their experiences of the implementation of BL. Secondly, the qualitative approach allowed the researcher to examine teachers' experiences of implementing BL in a "holistic" manner rather than in a "reductionist" fashion. Therefore, utilising qualitative methods allowed multiple perspectives on reality and participants' subjective accounts of their personal experiences with the implementation of BL in their classrooms during the COVID-19 era in a social context.

4.2 The research design

In this study, a multiple case study (Yin, 2018) design was the most appropriate for describing teachers' experiences with the BL environment, within one educational district in South Africa, from the perspectives of teachers from different high schools. The researchers considered each school a case, and the analysis for each case was focused on the perceptions of the teachers in the school as they implemented BL. The same information was collected from each case and analysed across the multiple cases.

4.3 Sampling and sampling procedures

Three rural high schools that adopted BL were selected based on their accessibility and proximity. Farrugia (2019) explains that purposive sampling is a conscious and intentional selection of a sample that the researcher deems to be the most useful in addressing the research topic. The researchers reached out to grade 12 teachers, requesting their participation in the study. The study focused on grade 12 teachers as they were responsible for preparing learners for the matric examinations. Nine teachers, three from each sampled school, were purposefully and conveniently selected from the list of teachers who implemented BL during the COVID-19 era. This selection was made to prioritise in-depth analysis rather than broad coverage (Farrugia, 2019). Nevertheless, these teachers exhibited diversity regarding gender, age, years of teaching experience, specialised subject area, and varying levels of technology utilisation. In addition, these teachers were selected because they were the only teachers in the selected schools who implemented BL. The others were not selected because they used WhatsApp as a means of communication with their learners and did not implement BL during COVID-19.

4.4 Research instruments

The primary tool for data gathering in this study was through interviews. Seidman (2019) argues that interviews are highly effective because they allow the interviewer to address specific concerns and generate valuable suggestions. Additionally, interviews provide a deep understanding of participants' real-life experiences and their interpretations and development of ideas related to a particular phenomenon. Therefore, the semi-structured interviews enabled the collection of qualitative data that explored teachers' firsthand experiences with the integration of BL in high school classrooms.

4.5 Data collection

The researchers began data collection by approaching the three high schools and requesting the teachers to participate in the study. With the permission letter granting permission to conduct the study from the Eastern Cape Department of Education, a researcher visited the selected schools and built a positive relationship with the school administrators and the teachers. This was done by explaining the aim, nature, and criteria of the study and encouraging them to participate if they fit the requirements. An informed consent form was sent with this invitation letter. Based on responses to this invitation, interested participants who indicated that they implemented BL during COVID-19 participated in 60-minute face-to-face interviews, which were scheduled at a time convenient for the participants. A protocol for open-ended semi-structured

teacher interviews was created. Open-ended questions regarding experiences and perspectives allowed participants to share their experiences (Seidman, 2019).

4.6 Establishment of trustworthiness

The interviews were recorded in audio format with explicit consent from every participant. By audio-recording the interviews, the researchers were able to enhance their presence throughout the interview by concentrating on the ongoing topic. The researchers recorded all data-gathering operations in a study diary. Keeping a record of all data-gathering operations establishes the reliability of qualitative data (Remenyi, 2022). To establish the trustworthiness of this study, member checking was employed to verify that the researchers' interpretations authentically represented the viewpoints of the participants (Johnson & Christensen, 2019). All participants verified and submitted their interview transcripts and expressed their willingness to examine the study's findings. This study included comprehensive information on the study site, and the duration of data-collecting sessions to ensure the transferability of the data.

4.7 Data analysis

Thematic analysis was employed to examine the qualitative data and identify recurring patterns, significant themes, and underlying meanings that arose from the data (Yin, 2018). The objective of thematic analysis is to detect and categorise recurring themes. The interviews were recorded on audio and transcribed verbatim. The researchers conducted independent analyses of the data and subsequently combined their codes. The next step was to gain familiarity with the obtained data by extensively reviewing the voice recordings and transcripts. Subsequently, each case was meticulously transcribed and compiled into a comprehensive master file. By repeatedly examining the data, the researchers successfully encoded noteworthy characteristics of the data methodically throughout the whole dataset to identify recurring patterns. The researchers established and designated the themes, both within individual cases and across several cases. The researchers aimed to ascertain the precise content of the themes and their interconnections with each other and the primary topics of the study (Braun & Clarke, 2006). Subsequently, the researchers concluded by thoroughly examining each issue in conjunction with the existing literature.

4.8 Ethical considerations

The researchers applied to the Research Ethics Committee of the Faculty of Education of one university in rural South Africa, for ethical clearance to conduct the study. Ethics approval was granted with an ethics approval certificate (FEDSREC3005-05-23). After being granted ethical clearance by the university, the researchers then sought permission from the O.R. Tambo Coastal District office for ethical approval to conduct the study in the three selected rural high schools under their jurisdiction. Permission to conduct the study at the schools was granted.

5. Results

5.1 Biographical information of participants

Table 1: Participants' Background Profiles

Teacher's school	Teacher's code	Gender	Qualifications	Teaching Experience	Subjects taught
HSA	HSAT1	Male	B.Ed (majoring in Mathematics and Physical Sciences)	6 years	Mathematics and Physical Science
	HSAT2	Female	B.Ed (majoring in Mathematics and Physical Sciences)	8 years	Mathematics and Physical Science
	HSAT3	Female	B.Ed (majoring in Mathematics and Physical Sciences)	10 years	Mathematics and Physical Science
HSB	HSBT1	Female	B.Ed (majoring in Mathematics and Physical Sciences)	4 years	Mathematics and Physical Science
	HSBT2	Male	B.Ed (majoring in Economics, Management Science [EMS]).	6 years	Accounting and Business Studies
	HSBT3	Male	B.Ed (majoring in Economics, Management Science [EMS]).	3 years	Accounting and Business Studies
HSC	HSCT1	Female	B.Ed (majoring in Economics, Management Science [EMS]).	19 years	Accounting and Business Studies
	HSCT2	Male	B.Ed (majoring in Economics, Management Science [EMS]).	8 years	Accounting and Economics
	HSCT3	Female	B.Ed (majoring in Economics, Management Science [EMS]).	10 years	Economics and Business Studies

Table 1 presents the background information of the participants. Out of the nine sampled teachers, four have a B.Ed (majoring in Mathematics and Physical Sciences) degree. Five possess a B.Ed (majoring in Economics, Management Science [EMS]). Concerning experience, there were two participants with fewer than five years of experience as teachers. The other seven participants had more than six years of teaching experience. Concerning their major subjects, four sampled participants majored in physical sciences and mathematics, while the other five majored in EMS. There were four males and five females. Five participants were in Post Level 1 (PL1) and four in senior posts (PL2). All participants indicated they received some professional training on BL. Participants were given pseudonyms as follows: HSAT1, HSAT2, HSAT3,

HSBT1, HSBT2, HSBT3, HSCT1, HSCT2 and HSCT3. Table 2 presents the themes and sub-themes that were generated from the data.

5.2 Themes and sub-themes from the interview

Table 2: Themes and sub-themes generated from the data

Research questions	Generated themes	Generated sub-themes
1. How do teachers implement blended learning in their classrooms during the COVID-19 era?	Theme 1: Implementation of blended learning	Preparation for blended learning before class. Access to digital tools for blended learning. The models of blended learning implementation. Frequency of implementation of blended learning.
2. What do teachers perceive as their experiences with blended learning in their classrooms during the COVID-19 era?	Theme 2: Teachers' perceived experiences of blended learning	The teacher perceived the definition of blended learning. Ease of use of blended learning. Promoting student independence. Sustenance of learners' learning and engagement.
3. What are the challenges experienced by teachers with the implementation of blended learning in their classrooms during the COVID-19 era?	Theme 3: Challenges with the implementation of blended learning	Student-related challenges. Teacher-related challenges. School-related challenges

5.2.1 Theme 1: Implementation of blended learning

Preparation for blended learning before class

When the participants were asked about how they prepare for BL, there were responses prioritising flexibility and adaptability in their teaching methods to prepare for BL during the pandemic. Two participants commented:

> *"I carefully organised my online and in-person components before each lesson during the epidemic. I usually upload the required content to the Microsoft Teams application in an organised and easily accessible way. I thoroughly researched effective online teaching practices and became familiar with key technological tools to smoothly move between virtual and physical learning settings." (HST6)*

> *"I revised my lesson plans to include online and offline activities, ensuring a mix of synchronous and asynchronous learning. I dedicated time to improving my skills using digital technologies such as interactive whiteboards, video conferencing platforms, and collaborative online spaces. I developed comprehensive tutorials to help students efficiently navigate the online components. Consistent evaluation and adjustment were crucial as I saw student participation and modified my techniques accordingly." (HST9)*

This implies that participants engaged with their learners using virtual discussion forums, and pre-recorded lessons to ensure accessibility using various formats for materials.

Access to digital tools for blended learning

When participants were asked about digital tools that were available for them to use during COVID-19, all participants indicated they had a variety of digital tools for themselves and their learners. They indicated that they had access to a vast array of BL technological tools, online learning platforms like Microsoft Teams and learning management systems such as Google Classroom. One participant narrated:

> *"The Department of Education issued us with laptops and tablets for our learners. Data bundles were purchased for both the teachers and the learners, of which we used to teach online. I received training on how to use online platforms like Teams and Google Classroom." (HST4)*

This finding shows that teachers were equipped with digital tools to implement the online component of BL during the lockdown in the COVID-19 era.

The models of blended learning implementation

The face-to-face model

Most of the participants indicated they often utilised the face-to-face model to implement BL. They described the face-to-face model as classroom-based instruction using both traditional teacher-centred instruction and learner instruction. One teacher explained:

> *"I delivered a face-to-face lesson using class demonstrations, illustrations, and discussions and then I assigned independent assignments or class activities to the students. Mostly, I prepare my lessons using PowerPoint presentations and I emphasised my points using blackboard illustrations during the COVID-19 era. Although I had the online component, I spent more time with my learners using the face-to-face model." (HST6)*

The online model

Four out of the nine participants responded that they often employed the online component to facilitate independent student learning and whole-class learning. Their responses indicated that they encouraged students to complete specific online exercises, and frequently required learners to enter the online learning programme to practice and watch video lessons and respond to class activities. These participants added that they observed learners completing work and submitting online and engaging in the forum discussion. One young teacher who knows more about the online platforms explained:

> *"For me, I design the online component of blended learning often, because of the pandemic. I didn't want to be infected with the virus. I posted all class activities and practice activities on the online platform for learners to complete as individuals." (HST2)*

The second strategy the four participants employed was to encourage their learners to utilise online learning components by introducing them to the significance of online learning and informing them of the available online tools and software. They indicated that they posted many video lessons and audio recordings of their lessons.

Frequency of implementation of blended learning
Most of the participants believed that the online and face-to-face environments were consistent with their comprehension of BL implementation. However, a few participants indicated that they did not often implement BL because they felt very comfortable with the face-to-face component of BL.

5.2.2 Theme 2: Teachers' perceived experiences of blended learning
Teachers perceived definition of Blended learning
When teachers were asked to define BL, most of the participants defined BL as a combination of in-person and online instruction. Four of the nine participants indicated familiarity with the term BL. One teacher asked:

> "*Ah, is that a rhetorical question? Of course, I am familiar with this term. It is the combination of in-person and online instruction.*" *(HST7)*

Three teachers thought that the term BL referred to online learning and thought that some universities had implemented it before COVID-19. However, they indicated that they learnt more about it in high schools during the COVID-19 era. These results indicate a need to assist teachers in gaining a more comprehensive understanding of BL and be able to distinguish BL from general computer-assisted learning.

Perceptions of teachers' experiences of the implementation of blended learning
When the participants were asked about their perceptions of their experiences with the implementation of BL, most of them indicated they implemented BL to conform to COVID-19 regulations. Otherwise, they were not ready to use an alternative means of instruction in their classrooms. However, a few participants responded that they implemented BL "every day" whereas others felt that they were forced into BL implementation and decided to reach their learners for lessons by using alternative forms such as WhatsApp voice notes and voice-over PowerPoint presentation slides. All respondents indicated that they acquired knowledge and skills to navigate the online space informally from the internet, their families, and their colleagues.
Ease of use of blended learning
When asked about the perceived ease of use of BL during COVID-19, most participants perceived BL to be simple, and user-friendly. One teacher maintained:

> "*The online component of blended learning is easy to use if you have an idea on how to use it or if you receive training on how to use it. Otherwise, to me, it is easy to use since I can easily navigate through the online platform, and it is also user-friendly and manageable for my learners.*" *(HST1)*

The majority of the participants agreed with HST1 that BL is simple, user-friendly, straightforward, and offers a creative mode of instruction.

Promoting student independence
The responses from most of the participants were that BL provides learners with independence and autonomy, which is beneficial. Participants believed that their learners could engage in learning and complete readings and assignments at their own pace and time. The responses from the teachers indicated that BL is effective when technological tools permit learners to work at their own pace. Moreover, learners can engage in independent learning using the platforms provided as they interact with the learning resources. One teacher highlighted:

> *"I assign my learners to individual assignments as well as group assignments, which they can independently and collaboratively complete after engaging with video lessons posted to Teams." (HST9)*

Using these online platforms alongside face-to-face instruction enables learners to have access to lesson content and to complete online assignments independently in their own time.

Sustenance of learners' learning and engagement
Most of the participants indicated that BL is beneficial for cultivating and sustaining student interest and encouraging student engagement. One participant asserted:

> *"Blended learning keeps my learners engaged in the lesson as they find the content to be more interesting when I post reading stuff online for them to access and respond by commenting on the video on the content for everyone to see. This allows for greater learner participation in class discussion online." (HST2)*

The participants maintained that BL sustains their learners' interest in the subject and expands their learning. They believed that BL extends learners' learning by helping them develop 21st-century skills and connecting them with real-world experiences.

5.2.3 Theme 3: Challenges with the implementation of blended learning

Student-related challenges
All nine participants articulated that they experienced challenges with the implementation of BL in their classrooms. Most of the participants believed that many students lacked the motivation to study the content being taught online. As a result, the students had no interest in learning the online component of BL of their subjects. For instance, participant HST8 narrated:

> *"Well, for me, most of my students do not show much interest in learning physical sciences on the online platform. They neither attend the live online lessons nor do and submit work online. I attempted to encourage them, but they have remained unbothered."*

Most of the participants reported that some students do not even attempt to complete online class activities and would rather ask their peers to complete their online assignments for them. In addition, the participants indicated that

some students who attempted to log in online simply selected the answers without performing the exercises themselves. Furthermore, most of the teachers indicated the students' lack of access to digital tools. They were of the view that students had limited access to internet connectivity at their homes which may be far away from the schools or difficult to reach. For that reason, their students had a negative attitude towards the online component of BL. HST5 reported:

> *"To me, I can see that my students do not have access to their tablets and computers to study online whenever they desire. Most of the tablets they received from DBE were mugged by thieves on their way home. So they no longer have access to these digital tools."*

This implies that the participants viewed students' lack of motivation and lack of access as the most significant student-related challenges.

Teacher-related challenges

It emerged from the responses that most teachers lacked knowledge about possible applications of a BL environment in teaching. Some teachers struggled with the use of technology in teaching online despite the training they received from the subject advisors during the COVID-19 era. Some participants cited insufficient knowledge of technological tools as a factor that influenced the implementation of BL in their classrooms. HST6 explained:

> *"Although I receive some training on online learning, I still experience a lack of complete understanding of how to use a specific app and that has prevented me from utilising some online tools for BL after the pandemic. Going back to the online component of blended is a no-goal area for me [laughs]."*

These respondents believed that teachers' limited technological knowledge and skills prevented them from maximising the BL environment.

School related challenges

Other school-related challenges mentioned by the respondents were: a lack of access to internet data; load-shedding of electricity; poor networks; infrastructural restrictions; resource constraints; socio-economic inequities; and community participation concerns. Some participants noted that insufficient infrastructure for dependable internet connection and the limited availability of technological items, such as PCs and tablets, are challenges schools face in implementing BL. HST9 shared her experience:

> *"Well, as you can see, our school is a rural school and often face financial constraints, with smaller budgets and less resources in comparison to metropolitan schools. Rural schools often have financial constraints, with smaller budgets and less resources in comparison to metropolitan schools. Acquiring and upkeeping technological equipment, software licences, and online learning platforms can be costly for small institutions. Moreover, there might be a lack of skilled personnel available to offer technical assistance and training to teachers and students."*

There were responses concerning challenges experienced by rural schools

with transportation, scheduling, and facility upkeep. Arranging dependable transportation for learners to visit internet hotspots or off-site learning centres was difficult in remote areas. Furthermore, the upkeep and modernisation of technological infrastructure in remote school facilities require certain skills and resources.

This implies that there is a need to approach these challenges effectively by devising a comprehensive strategy, and investing in infrastructure, resources, professional training, community involvement, and policy backing. Collaboration among government agencies, educational institutions, non-profit organisations, and local communities is crucial to address challenges and provide fair access to high-quality education through BL in rural schools.

6. Discussion

The discussion is structured around three prominent themes and their corresponding sub-themes, which emerged from the data. These themes are explored in light of the relevant literature, with a specific emphasis on framing the discourse within the social constructivism theory. Social constructivism emphasises the collaborative nature of learning, where knowledge is constructed through social interactions and shared experiences (Al-Qaysi et al., 2018). In the context of BL, this theory highlights the importance of learners actively engaging with online materials and participating in collaborative activities facilitated by teachers (Varthis & Anderson, 2016). This approach aligns with the principles of constructivism, which posit that learners build their understanding of concepts through interactions with their peers and teachers (Al-Qaysi et al., 2018).

The first theme addressed teachers' implementation of BL in their classrooms during COVID-19. The findings from the interviews suggest that all the teachers understood what BL pedagogy is and implemented it successfully in their classrooms. Within this theme, four sub-themes were identified: teacher preparation for blended learning before class; access to digital tools for blended learning; the models of blended learning implementation; and frequency of implementation of blended learning. The study revealed that teachers implemented the face-to-face and online components of BL differently. According to the findings, some participants implemented BL using the face-to-face model, while others utilised the online model. This finding is consistent with the claim made by Kudryashova et al. (2016), who state that the face-to-face component enables teachers to deliver instruction spanning the majority of the curriculum while assigning an extended online assignment. This finding suggests that the teachers' understanding of instructional delivery in BL is primarily focused on in-class instruction. They appeared to view the online learning component as a way to supplement face-to-face instruction with additional exercises and practices, rather than as a way to make more effective and efficient use of class time. Therefore, the frequency of BL's online component implementation was drastically reduced to a minimum.

The second theme addressed teachers' perceived experiences with BL in their classrooms during COVID-19. The findings from the interviews suggest that all the teachers perceived BL as beneficial for its ease of use and for its enhancement of student engagement in the lesson. Within this theme, four sub-themes were identified: the teacher perceived definition of blended learning; ease of use of blended learning; promoting student independence; and the sustenance of learners' learning and engagement. The study found that the teachers indicated divergent knowledge of the term BL. However, no teacher referred to the pedagogical aspects of such employment. These results indicate a need to assist teachers in gaining a more comprehensive understanding of BL and its applications to their core subjects. The study further found that teachers perceived BL as beneficial since it enhances the collaborative engagement of students and expands their learning in the subject. This finding corroborates with the assertion that BL promotes student interest and engagement in lesson content (Ndlovu & Mostert, 2018). In addition, the study found that BL enables teachers to assess students' learning as they engage in extended learning while accomplishing assigned tasks. According to Elmahdi et al. (2018), technological tools improve teachers' capacity to evaluate students' learning during BL instruction. Dix (2007) and Trucano (2005) contend that the majority of students who have access to computers and the internet at home, which promote student independence, have a greater chance of mastering their learning than those who do not. Following Vygotsky's (1978) constructivist theory that experience is the source of knowledge and learning success, students construct their knowledge as they engage with the available resources. In addition, students with limited computer literacy were anxious to learn more about computer fundamentals. This finding is consistent with aspects of Vygotsky's (1978) Zone of Proximal Development, in which students are encouraged to study far in advance of their knowledge and to progress from the known to the unknown.

The third theme addressed teachers' challenges and experiences when implementing BL in their classrooms during COVID-19. The findings from the interviews suggest that all the teachers experienced challenges with loadshedding, a lack of access to digital tools for their students, teachers' technological pedagogical knowledge, and a lack of access to the internet. Within this theme, three sub-themes were identified: student-related challenges; teacher-related challenges; and school-related challenges. This finding verifies Rasheed et al.'s (2020) assertion that teachers face challenges when implementing BL due to a lack of technological competencies. This suggests that it is difficult to implement BL without having the necessary skills or preparation.

In addition, the study revealed that teachers believed that students encounter challenges relating to their desire to learn online, their lack of proficiency with technological tools, and their difficulties navigating the online space due to the urgency of the transition to the online platform during COVID-19. This implies that students did not receive any formal training on the use of technology for learning. According to Trucano (2005), the use of technology varies by school and subject, and there is evidence that students are still in the initial developmental phase. However, Vygotsky (1978) asserts that learning in

multiple perspectives and presentations is effective in supporting students in making meaning. Therefore, the non-use of these technologies has a negative impact on students' abilities to utilise these tools, if they were available.

In addition, the study found that both teachers and students faced limited resources at the school level, such as a lack of internet access, power outages, and insufficient computers and data. This result is consistent with Rasmitadila et al.'s (2020) study, which identified the absence of internet access as a barrier to BL. Despite improvements over the years, Echazarra and Radinger (2019) assert that internet access remains a significant obstacle to the education of students in rural school districts.

7. Conclusion

This interpretivist qualitative study set out to explore the experiences of rural high school teachers' implementation of BL during COVID-19 lockdowns in their schools. In particular, the focus was on their experiences with BL. Using social constructivism as a framework, this study has revealed that there were attempts at the rural schools to make BL work during the COVID-19 era. Teachers' perceptions of the ease of use impacts their implementation of BL in their daily instruction, with the majority implementing it every day. The findings confirmed that teachers consider BL useful in providing feedback on student learning, giving students quick feedback, remediation, enrichment, and engaging students in the learning process. However, the findings confirmed that teacher technology competence and a lack of resources, internet access and technology tools are barriers to the implementation of BL. In particular, the study provided insights into the positive role played by BL during COVID-19 lockdowns by revealing the experiences of teachers with the implementation of BL at the selected schools.

8. Recommendations

This study examined the implementation of BL by teachers during the COVID-19 era. Therefore, the study recommends that schools implement BL in the post-COVID-19 era to determine its teaching and learning benefits. According to this study, the majority of teachers implemented the face-to-face component of BL more than the online component. This study therefore recommends comparative research using various BL models to determine which model is the most effective for implementing BL in high school classroom instruction. In addition, this study was limited to secondary school teachers in rural areas. Consequently, the collection of data was restricted to the experiences of these teachers at the selected schools. Hence, this study recommends that teachers' perceptions of BL at all grade levels, from grade 1 to grade 12, be the subject of future research.

The study recommends that the Department of Basic Education increases the supply of technological resources (computers, internet access, and Wi-Fi) to all schools and provides teachers with professional training on BL so that they can implement BL competently. The study recommends that teachers equip themselves with relevant skills that include: computer literacy, techniques,

methods, theories, strategies, and approaches that facilitate the incorporation of technologies for learning and teaching.

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