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Journal of Educational Studies

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EDITORIAL NOTE:

TRUST AND BRIDGE BUILDING: BASE LINE CONDITIONS FOR NGOs SUCCESS IN EDUCATION

Felix Maringe

JES Editor in Chief

I was particularly drawn to the article on the role of NGOs in education written by colleagues at Rhodes, Nqobile Nomonde Msomi and Jacqueline Akhurst. The article attracted my attention as this area tends to be a silenced area despite the important role played by NGOs in education systems all around the world and indeed in other areas of human endeavour. My mind began buzzing with thoughts about the role of NGOs in development generally and in education in particular. I decided to dedicate this editorial to sharing a few thoughts about this subject.

NGOs play important, though often disputed roles in development (Morrow & Moila, 2003). They tend to focus on development spaces which governments often make electoral promises about, but which the same governments do not give sufficient attention to during their tenure in office. This becomes a source of tension and mistrust, as on one hand, NGOs are seen to be exposing government failures while on the other, fuelling public mistrust which often leads to political and social unrest with real possibilities of influencing people's future voting intentions and preferences. A few examples of spaces NGOs tend to focus on in national development include poverty alleviation, poor governance and weak democratic practices, human rights, education and health care, infrastructure, roads, and transport rehabilitation. Frankly, in Africa, governments which have a poor record in these areas tend to lose the trust of the people and find it particularly challenging to be voted back in power at the next general elections. Interestingly, opposition parties focus on similar issues to sway peoples' attention from ruling parties as they make their cases for changing governments. A lot of these are bread and butter issues, which, if not met, can cause people to consider/risk changing their governments. Thus, opposition parties, especially in Africa, are frequently associated with NGOs' agendas.

There is also an assumption that NGOs are more financially efficient and accountable than most governments, which tend to have poor records in these areas (see Wegner, 1993). Corruption has become the leading cause of the erosion of trust and ultimate collapse of many governments on the continent. According to the 2015 survey of people and corruption in Africa by Transparency International, corruption creates and increases poverty and exclusion, allowing those in power to live a lavish life, while millions of Africans are deprived of their basic needs like food, health, education, housing, access to clean water and sanitation. When NGOs work within these spaces, they are frequently assumed to be supporting regime change. For that reason, many NGOs have been evicted out of some countries.

The NGO focused on in the article is specifically interested in ameliorating inequalities in education in the Grahamstown area around Rhodes university. Inequality, alongside poverty and unemployment, are often considered to be triple cocktail for underdevelopment in many countries, including in South Africa (Chibba & Luiz, 2011). It is arguably the hardest thing to do to try to achieve high standards of education, in recognition of its promise and potential to move people out of poverty when inequalities abound in society. For some, inequalities are as natural as people's lives, a result of how God created people. Some were created to rule and lead, while others were created to serve and follow. Many do not believe in this unfair distribution of potential in people as an act of creation but as a human creation, based on subliminal human tendencies to attract wealth to themselves while the rest who cannot attract wealth are left to feel that have no one else to blame other than themselves. So, on one hand, you have insanely rich and powerful people who live in extreme opulence while others live in conditions of abject poverty. This divide alone is not only one of the most formidable obstacles faced by education systems the world over and especially here in Africa and certainly in South Africa, it is the biggest challenge faced by NGOs in their developmental agendas.

Working in such contexts, requires building trust between and amongst different groups in society as a basic requirement. Based on the evidence obtained from their research, the authors, illuminate two important ways in which this could be achieved, through bonding and bridge-building, explaining how these values and enablers can not be mere impositions upon the people, but achieved through hard work, both within and outside of different groups of people. Fortunately, NGOs in South Africa enjoy a relatively trusting relationship with the government, unlike elsewhere on the continent (Morrow & Moila, 2003). However, the task of building trust and bridges between communities with different capitals and enablers/ disablers, is never an easy task. Building bridges and establishing trust in a country which is essentially racially constructed, in which most African families live in conditions of poverty and deprivation, and where most Black families live from hand to mouth, with those employed earning close to or below living wage levels and with a growing population of unemployed young people, bifurcated health and education sectors, can only be expected to be a nearly impossible task.

Despite these challenges, NGOs in South Africa have made notable progress towards building trust and building bridges between different stakeholders. Those that have been most successful have tended to be ones which have made a quantum leap from the highly polarised apartheid dispensation to the liberation struggle political context, through to embracing the current democratic, non segregatory politics of the current government. By so doing, they have set the foundation upon which trust, and bridge-building can be laid and are working to foster the same principles within the communities they serve. They tend to work in partnership with government and in doing so, have created a solid basis for garnering trust and good will from the communities they work with.

In this issue, which I highly recommend to our readers, eight well-written and exciting articles are presented.

The first, titled **"A FEEDBACK TOOL FOR THE IMPLEMENTATION OF ASSESSMENT FOR LEARNING AND PROCESS WRITING IN ENGLISH HOME LANGUAGE WRITING LESSONS"** by Marina Burger makes an excellent contribution to the discourse of assessment feedback. Feedback is an essential element of Assessment for learning, as through it, students can be encouraged towards deeper learning and understanding in their learning journeys. Teachers are not very good at giving feedback for a variety of reasons, including the fact that they see assessment as a closed loop exercise, ending in the blind alleys of summative assessment, which is largely designed for external decision-making, rather than progressing the learning capacity of students.

The second, titled "**ALTERNATIVES TO CORPORAL PUNISHMENT IN PRIMARY SCHOOLS: THE CASE OF MASVINGO DISTRICT, ZIMBABWE"** by Logic Magwa and Simangele Mayisela at Zimbabwe Open University and WITS, explores the age-old practice of corporal punishment in primary schools in Zimbabwe. Despite the laws and regulations which seek to prevent its use in schools, corporal punishment continues to rear its ugly face across primary and secondary schools across many countries on the continent. There appears to be subtle support from parents, who believe that sparing the rod always spoils the child and a perception amongst the older generation that the language of rights in our laws is wrongly interpreted to mean that children have a right to do anything with absolute impunity. The article thus provides realistic alternatives that can achieve order, respect and discipline amongst young people in primary schools without having to resort to the use of the banished stick.

The third, titled "**EXPLORING TEACHING GRADE 6 PROGRESSED LEARNERS IN LICHTENBURG DISTRICT PRIMARY SCHOOLS"** by Ailwei Solomon Mawela and Daniel Kgaogelo Moagi at UNISA looks at the thorny issue of progressed learner in primary schools. Progressed learners are those who are allowed to move to the next grade levels despite not having successfully achieved the learning outcomes of the previous grades. This is done for a wide range of reasons, including preventing clogging up of the pipeline of learning, bullying of low achievers, erosion of aspiration and motivation, labeling and stigmatization amongst others. The article examines a range of alternatives designed to ameliorate the effects of this practice, while strengthening the quality of learning in schools in general.

The fourth, titled "**TRUSTING ONE ANOTHER AS WE MOVE FORWARD COLLABORATIVELY FOR TRANSFORMED TEACHING PRAXIS** by Janet Jarvis, Eva Mila Lindhardt, Ncamisile P. Mthiyane and Olav Christian Ruus at UKZN, University of Agder, Norway; Western Norway University of Applied Sciences is a perfect complementary to the article of focus in this issue. The authors, identify trust as central to the notion of transforming teaching praxis in schools. Collaborative transformative efforts are prone to the escalation of trust deficits at a number of levels.

First, collaborators work in different contexts with different transformational needs. Second, people from different contexts do not always believe in what needs transforming, and less so how the transformation might be achieved. And third, various tensions tend to occur at multiple decision levels in collaborative decision-making. Building trust thus seems to be an absolute minimum requirement for collaborative work and especially that which aims to transform classroom practices.

The fifth, titled "**FOUR TEACHERS' USE OF WHATSAPP AND MICROSOFT TEAMS FOR CURRICULUM DELIVERY DURING THE COVID-19 PANDEMIC: A CASE STUDY OF ONE PRIMARY SCHOOL IN CIRCUIT 8 METRO SOUTH EDUCATION DISTRICT" by Shabbeer** Wyngaard; Chantyclaire Tiba and Janet Condy at Cape Peninsula University of Technology, explores the use of WhatsApp and Microsoft Teams as teaching tools during the COVID 19 pandemic. The pandemic revolutionised teaching and learning across the world as schools had to use remote instructional strategies in compliance with the requirements to shut down schools so as to prevent the spread of the COVID 19 virus. Much research has been conducted since including that which sought to examine issues of quality of instruction, access to instruction, the impact of digital divides amongst others. This paper provides an in-depth analysis of a four teachers in a selected primary schools and their reflections of the impact of the new pedagogical approaches on learners and learning.

The sixth, titled "**GRADE 3 TO 6 LEARNERS' MISCONCEPTIONS AND ASSOCIATED ERRORS RELATED TO THE LEARNING OF PLACE-VALUE: A DOCUMENT ANALYSIS"** by Kgalushi M Themane and Kakoma Luneta **at** University of Limpopo and University of Johannesburg respectively consider the role that learning misconceptions on learners cognition and learning competence. Misconceptions emerge at multiple levels during teaching and learning. They could be strongly related to deep seated cultural beliefs and traditional learning; language and linguistic access issues in learners, and sometimes, can be caused by poor teaching by classroom instructors. The article identifies a range of misconceptions associated with mathematical reasoning and provides recommendations for how to deal with these in schools.

The seventh, titled "**BONDS AND BRIDGES BETWEEN COMMUNITY-BASED ORGANISATIONS AND THE EDUCATION SECTOR: THE CASE OF GADRA EDUCATION"** by Nqobile Nomonde Msomi and Jacqueline Akhurst at Rhodes University focuses on the question of trust and how this alone is fundamental for the effective working of NGOs in education sectors.

The eighth, titled "**EXPERIENCES OF STUDENTS WITH ONLINE LEARNING AT A SOUTH AFRICAN UNIVERSITY" by** Jameson Goto and Gertruida Du Toit at the University of Johannesburg focuses on how students experience learning through online and remote instructional strategies. The paper identifies a range of both positive and negative experiences by students and offers meaningful strategies to eliminate the weaknesses while building on the strengths.

The ninth and final article of the issue, titled ‘THE USE OF GEOGEBRA IN ENHANCING GRADE 10 LEARNERS' UNDERSTANDING OF PROBABILITY’ written by Innocent Moyo and Judah Makonye both at Wits discovers three important findings: that using GeoGebra positively affected learners’ understanding of probability. It particularly reduced item difficulty and error frequency while improving the incidence of correct methods in probability problem-solving and performance scores. Furthermore, using GeoGebra created an active learning environment where learners’ errors and misconceptions were addressed. This study highlights a pedagogical framework for harnessing the semiotic affordances of GeoGebra to leverage the potential of errors and to support learners’ understanding of probability.

NGOs make a difference in many fields of human endeavour. The presence of trust, both at the national and local levels, appears to be an essential driver for success in their roles. The articles selected here in different ways provide a robust evidence base for applications that can be scaled up through the work of NGOs.

I commend these excellent papers to all our readers and to NGOs and look forward to receiving research in similar and other areas for our next issues.

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A FEEDBACK TOOL FOR THE IMPLEMENTATION OF ASSESSMENT FOR LEARNING AND PROCESS WRITING IN ENGLISH HOME LANGUAGE WRITING LESSONS

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Abstract

In the South African curriculum, writing is regarded as a skill that allows for the coherent construction and communication of thoughts and ideas. Language teachers use process writing (PW) as a strategy for writing, with the expectation that assessment for learning (AFL) is the assessment strategy. However, the processes are not integrated, resulting in partial success in the teaching and learning of writing skills. Therefore, a writing feedback tool (WFT) was conceptualised to integrate the PW and AFL processes. The objective was to implement the WFT, so that the teachers and learners would use effective feedback strategies to improve learning. A multiple case study design with a participatory action research methodology was applied. The purposively selected sample comprised four Grade 10 and four Grade 11 English Home Language (EHL) classes from four senior secondary schools in Gauteng, South Africa. Qualitative analysis techniques of grounded theory were used to derive meaning from the data collected. The conceptual framework integrated the existing PW steps and AFL steps. The three converging concepts underpinning the conceptual framework were Vygotsky's sociocultural theory (1978, 1986 cited in Torrance, 2012), Zimmerman's (2013) self-regulated learning (SRL) based on social cognitive theory, and Hattie and Timperley's (2007) feedback model. The WFT development resulted in a practical tool for the effective implementation of feedback as part of PW and AFL, thus improving learning. The following issues emerged, which will require further research. Setting task goals and devising feedback strategies aligned with those goals need to be further developed. Furthermore, the assessment criteria should be clearly aligned with the task goals and feedback. The implementation of the WFT in several school subjects will contribute to rich data about overcoming learning gaps and improving learning overall.

Keywords: English Home Language, Writing and Presenting, Assessment for Learning, Feedback Writing Feedback Tool.

Introduction

AFL is described as a daily practice where learners work in partnership with their teacher and peers, to reflect upon and respond to information in ways that promote learner autonomy and enhance ongoing learning (Klenowski, 2009; Swaffield, 2011). However, research has shown that teachers have struggled to apply AFL successfully in their teaching (Black & Wiliam, 1998a; Carless, 2007; Dixon, Hawe & Parr, 2011).

The idea that assessment is intrinsic to effective instruction can be traced from early experiments with the individuation of learning, through the work of Benjamin Bloom, to reviews of the impact of feedback on learners in the classroom (Wiliam, 2011).

The central nature of AFL is recognised in the South African curriculum. The Curriculum Assessment Policy Statement (CAPS) for English Home Language in the Further Education and Training (FET) Phase explains the difference between formal and informal assessment, with the latter described as AFL. However, the implementation of AFL is not clarified apart from the expectation that it takes the form of daily assessment and is executed in various formats. While teachers routinely set informal tasks, the opportunity to use tasks as AFL is not exploited.

The term AFL can be used interchangeably with the term formative assessment, as classroom practice is formative to the extent that it elicits evidence about learner achievement. The interpretation of the evidence informs the next steps in instruction and learning (Black & Wiliam, 2009). Shepard (2000) states that if assessment is to be used to help learners learn, it should change fundamentally; its content and character should be improved, and the gathering and use of assessment information and insights must become part of the ongoing learning process. The overall claim of AFL is for learners to become autonomous and self-regulating (Nicol & Macfarlane-Dick, 2006; Willis, 2011), which Black (2015) regards as the main aim of education.

While feedback is central to both AF and process writing, the effective implementation remains problematic, and it benefits to learning are elusive. Providing feedback on writing is a complex activity and is often limited to corrective feedback, rather than being open-ended and focused on the gap in learning. The WFT acts as a frame, directing the feedback between the learner and the peer or teacher. Furthermore, the WFT allows the development of self-regulation as it is the learner's tool to direct the learning and to analyse the progress made.

The WFT was implemented at four schools, in one Grade 10 and one Grade 11 class. The Participatory Action Research (PAR) approach used led to one exploratory phase, followed by two implementation phases. During the two implementation phases, the WFT proved to facilitate the implementation of process writing and AFL. The learners were able to use the tool to respond to the task goals, using the feedback to improve their writing. The teachers with the learners were able to analyse the WFT to determine the gaps in learning, upon which the teachers could base their planning of the next teaching phase.

One key implication is that the use of the WFT enables the implementation of AFL and process writing. The identification of the gaps in learning, as a result of the WFT, means that teachers can attend to the gaps with the learners, thereby moving learning forward.

Research Objectives

The objectives were to find meaning through collaborative PAR to enable the teachers to implement the WFT, and to encourage teachers and learners to use effective feedback strategies to improve learning.

Formative Assessment and the Process Approach to Writing

Both AFL and PW should be implemented according to CAPS. The following is a brief explanation of what AFL and PW are, and how the expectation is articulated in CAPS.

Any assessment can be used as AFL; however, the EHL CAPS emphasises that the informal daily classroom assessment should be used as assessments for learning (DBE, 2011). Black and Wiliam (1998a), in their seminal review of assessment and classroom learning, describe ways to innovate teaching practices that would enhance learners' learning (Black, 2015). While the review states that there is sufficient evidence in place for offering helpful guidance to practical action, the changes to the classroom practice are central and must be incorporated by teachers in their classrooms, in their own way (Black & Wiliam, 1998a). In the same vein, Clark (2012) describes formative assessment as a set of teaching and learning processes that empower learners not only to progress, but also to become owners of their learning.

The AFL process is not clearly explicated in CAPS; however, the writing process is made clear. The process approach is presented as three steps: (1) planning; (2) drafting; (3) revising, editing, proofreading and presenting the text (DBE, 2011).

Black (2015) proposed AFL as a simple model comprising the following five steps: "(1) Clear aims: the first stage of planning. (2) Planning activities: setting up activities with the potential to achieve the aims. (3) Implementation in the classroom. (4) Review of the learning: using informal assessments to check achievement. (5) Summing up: using assessment to guide decisions about the next stage of students' work" (Black, 2015, p. 164).

AFL and process writing have a natural synergy in the steps, allowing it to be easily integrated. The two processes can be aligned in the writing classroom, with a focus on learning to write instead of the learners producing an error-free final writing task on their own.

Conceptual Framework

The creation of the feedback tool was the outcome of a conceptual framework. What follows here is an explanation of the concepts that undergirded the conceptual framework. The conceptual framework is the result of the converging concepts underlying formative assessment. The first is sociocultural theory.

Lantolf and Poehner (2014) argue that Vygotsky's sociocultural theory remains relevant to AFL. AFL provides a structure where teachers use activities that allow learners to move to autonomy in their learning. Of further importance is Vygotsky's belief that development is provoked by the tension between what a person is capable of and what that person is not yet capable of (Lantolf & Poehner, 2014).

Learning is oriented towards development by creating cognitive conflict and in AFL, it is expressed as a learning gap that teachers and learners identify, and take steps to close. How the gap is resolved is critical to understanding the activity that unfolds in the zone of proximal development (ZPD). The ZPD is seen in the context of conversations between learner and teacher or among learners. These conversations or mediations can be effective in promoting learner development, as it is appropriated and internalised; the learner achieves self-regulation and is able to recontextualise the ability. Self-regulating learners are actively engaged, can generate meaning, and can adapt their thoughts, feelings and actions to affect their learning and motivation (Boekaerts & Corno, 2005). In essence, assessment and feedback should enable learners to have learning opportunities that lead to reflective and thoughtful engagement (Adlington, Charteris & Nye, 2023).

Zimmerman (2013) proposes a cyclical model of self-regulated learning (SRL) based on social cognitive theory – to the causal relations between SRL processes, key motivational beliefs and learning outcomes. This model illustrates that a learner's learning processes and accompanying motivational beliefs fall into three self-regulatory phases: forethought, performance and self-reflection. Zimmerman's (2013) processes of the forethought phase are essentially preparing learners to learn, these preparations should also enable learning. The performance phase processes are when learners are actively learning. It is here where their abilities to monitor and control their own learning are facilitated.

The self-reflection phase's processes occur after efforts to learn and are intended to optimise a person's reactions to his or her outcomes. The cycle is completed when the self-reflections are used to inform the forethought processes and a new cycle SRL commences (Zimmerman, 2013).

The last concept is feedback, which creates an interaction between teacher and learner, the learners and the writing task, and among learners (Yildirim & Demir, 2022). Feedback is pivotal to learning and serves as a tool for self-regulation. It also forms a scaffolding intervention, which is identical to the ZPD. The system developed by Hattie and Timperley (2007) is based on the major questions learners may ask about their performance, and the important aspects of performance that feedback may address to reduce the difference in current understanding or performance (Hattie & Timperley, 2007). The first question: *Where am I going?* relates to the learning goals and the success criteria for the task. The second: *How am I going?* helps learners to compare their progress towards learning goals and success criteria.

The third question: *Where to next?* is more consequential, as teachers provide more information, tasks or learning intentions aimed at the next phase of learning (Hattie & Timperley, 2007).

The conceptual framework (Figure 1) informed the development of a writing feedback tool to facilitate the implementation of AFL in the writing lessons.

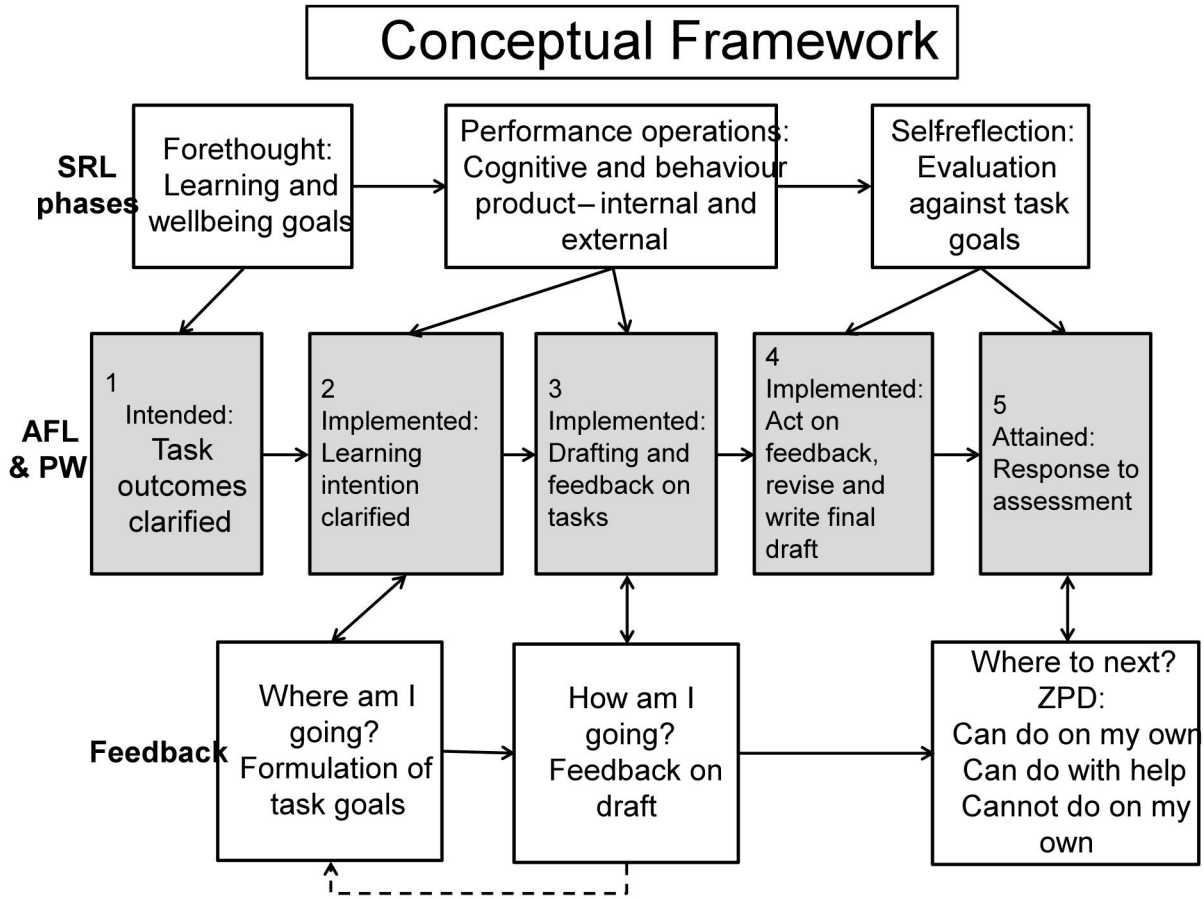


Figure 1: Conceptual Framework

Research Methodology

This section will explain the research design and the empirical research for this study, which was the result of a PhD study (Burger, 2018). A qualitative case study design with an action research methodology (Atkins & Wallace, 2012; Creswell, 2013) was used to answer the question. The multiple case study allows for the investigation of a contemporary educational phenomenon within the real-life context (Flyvbjerg, 2006). The question involved collaboration with teachers and learners as part of an enquiry into how the implementation of the writing feedback tool influenced their practice and improved learning.

Data Collection Methods

The units of analyses were four schools where the language of instruction was English and where the English language was offered at Home Language level. In each school, there were two sub units – one Grade 10 and one Grade 11 English Home Language class selected by the teacher. The class, as a sub unit, included the teacher and the learners.

Three schools (A, B and C) were Gauteng Department of Education (GDE) schools, writing the National Senior Certificate (NSC) examination of the Department of Basic Education (DBE). One school (D) was an independent school, writing the NSC of the Independent Examinations Board (IEB). Both the DBE and IEB national assessments are governed by the Umalusi Council, which sets and monitors the standards for general, and further education and training in South Africa in accordance with the National Qualifications Framework Act No. 67 of 2008 (RSA, 2010) and the General and Further Education and Training Quality Assurance Act No. 58 of 2001 (RSA, 2009).

As Hawkins (2015) observes, schools can be messy to an outsider and the conclusion was that sampling choices would have to include practical considerations to reduce logistical complications. The decision to include an independent school involved two issues. The first issue was that the assessment rubrics differ from the GDE assessment rubrics. The writing assessment rubrics determine the learning intention, goal formulation and feedback on writing tasks. Therefore, a comparison between the GDE and IEB schools added depth to the study of feedback in writing lessons. The second issue was a practical consideration. The GDE schools follow the CAPS teaching programme closely, which means that process writing takes place at similar times in the school term. The IEB schools follow a three-term school year – the longer terms give the teachers more flexibility in planning the implementation of the writing lessons. Since the IEB and GDE school holidays do not coincide, I had some flexibility to conduct the research, as the aim was to minimise the possible disruption the research may have caused. To further create flexibility in managing time, schools in close proximity to one another were chosen.

Purposeful sampling was used for the focus group interviews and the learner protocols because it would lead to information-rich sites that could be studied. The essays and WFTs of the learners who participated in the learners' verbal protocols were analysed. The four schools that were purposefully selected followed the South African curriculum.

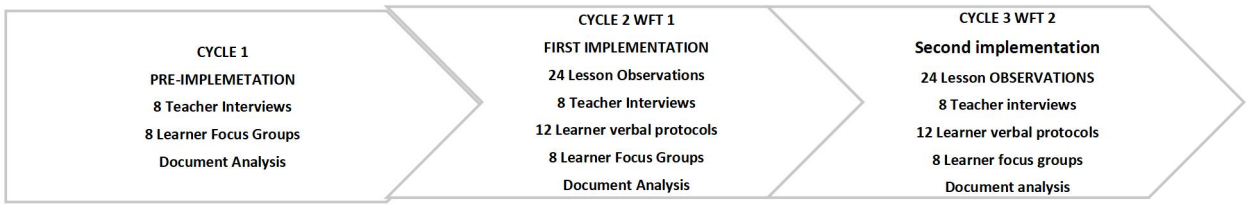
Table 1: Sample for Each of the Four Schools

Teachers	Learners' verbal protocols	Learner focus group	Document analysis Essays and WFT
1 Grade 10 1 Grade 11	3 Grade 10 3 Grade 11	10 Grade 10 10 Grade 11	3 Grade 10 3 Grade 10

The data collection instruments were semi-structured interviews with the teachers, focus group interviews with the learners, learners' verbal protocols, lesson observations and document analysis. A further instrument was critical conversations. In action research, these involve the researcher and the teachers discussing plans and intentions, and sharing learning (McNiff & Whitehead, 2010).

The Data Collection Procedure

Action research was conducted in the four schools during one academic year and the data was collected in three cycles. The study did not include a pilot study and is a potential source of error. The PAR was conducted in three cycles and needed to be completed between April and October of the school year, resulting in a considerable time constraint. The first cycle, as explained here, was exploratory and established the current practice, whereas the second and third cycles were iterative; consequently, the interview questions were adapted to the evolution of the WFT.



The first cycle was used to determine how writing was approached through the formal and informal assessments, and the current practice. The first phase of data collection resulted in the first design of the writing feedback tool to facilitate the implementation of AFL. Eight teachers and eight groups of ten learners each were interviewed during the first cycle. In each of the two subsequent cycles, the following interviews were conducted: 8 teachers, 24 learners' verbal protocols, 8 learners' focus groups of 10 learners each. The documents analysed in the first phase included the curriculum and annual teaching plans.

The WFT was implemented in two consecutive cycles: the first cycle in the second school term and the second cycle in the third school term. The WFT was adapted by responding to the observations and reflections shared among the researcher, teachers and learners. While the initial WFT was designed by the researcher, the implementation and subsequent development involved the participants. The WFT needed to be practical, but above all, it had to allow for the implementation of process writing and AFL.

The WFT was implemented during the process writing lessons, which generally comprised three or four lessons. All the writing lessons were observed using a lesson observation guide to determine how the WFT facilitated the implementation of AFL strategies in the process writing lessons.

Data Analysis

The study produced substantial data sets. A separate ATLAS.ti project for each of the phases was created. Grounded theory data analysis was used, because the data collection and analysis allow for explication and emergence (Charmaz, 2008). The grounded theory analysis followed steps from data collection to data preparation, data exploration, reduction of data in the coding process, to interpretation and presentation of the findings (Hesse-Biber & Leavy, 2006).

Using ATLAS.ti, the process was streamlined as data and emerging ideas were analysed throughout the action research cycles, and the WFT emerged. Informed by Saldaña (2009), the coding of the data was descriptive in the first phase and focused in the second phase of analysis. The focused coding resulted in conceptual similarities describing themes and sub-themes. Theoretical coding led to central categories identifying the primary theme of the data.

Collection Instruments	**Phase 1 – Coding**	**Phase 2 – Coding**
Interviews Eight individual teachers Verbal protocols Three individual learners per class Focus groups One group of 10 learners per class **Lesson Observations** Writing lessons 1 Grade 10 class 1 Grade 11 class **Documents** Completed WFT1 & WFT2 Assessed tasks.	**Attribute Coding** Participant information and contexts for analysis and interpretation **Descriptive Coding** The interviews were coded using phrases to summarise the data in the interview transcripts. **Analysis:** thematic and within-case and cross-case **Initial** (Open coding) Breaking down the data, comparing the data while open to emergent themes **Analysis** Line-by-line coding Theming data	**Focused Coding** Data categorised based on thematic or conceptual similarity. Categories are constructed emergently from the reorganisation and categorisation of participant data. **Theoretical Coding** covers the other codes and categories in the analysis. **Analysis** Describing themes and subthemes

The credibility of the data was achieved by meticulous, detailed descriptions and recordings. Detailed reporting of all interviews means that the work may be repeated without necessarily obtaining the same results. Permission to conduct the research was requested from the ethics committee of the College of Education at the University of South Africa, as well as the Gauteng Department of Education. To ensure ethical research, the following principles were followed: informed consent, indication to participants of the voluntary nature of their participation, assurance of safety in participation as well as assurance of privacy, confidentiality, anonymity and the principle of trust (De Vos, 2002). The outcome of the research will be shared with the participants.

Research Findings

The discussion of the research findings is presented by describing each of the three PAR cycles. In the first cycle, the current practice was established. The second and third cycles focused on the implementation of the WFT and the discussion is organised according to the three sections of the tool, namely, task goals, feedback and reflections on goals achieved, and learning gaps. The codes in brackets following the participants' words are references to the recordings and data sets.

During **the first PAR cycle**, the current practice reflected that process writing was implemented to a certain degree, in most cases. However, at schools A and C, the implementation of the process writing was rather mechanical and aimed at achieving an error-free product. The teachers expressed the importance of the writing process, although the process was only most rigorously applied during the formal writing tasks:

R: "Okay, I think, well, with formal assessment it is the assessment for their marks, isn't it, what they are going to get at the end of the year. Their marks, that is, formal assessment tasks and the formal tasks, they make up their year mark at the end of the year" (D6, 6:1, 5:5.

Teachers at school B did not implement process writing as part of the learning of writing. At school D, all the writing tasks were conducted for the purpose of marks and, while the writing tasks were planned, drafted, revised and rewritten, the process was not defined as process writing as such. The teachers and the learners provided feedback on the drafts; however, the focus of the feedback was largely on editing. At school B, there was formative assessment as part of the teaching philosophy, reflecting that the focused teaching of skills leading up to the formal assessments is *"your kind of day-to-day skill building"* (D10, 10:1, 8:8). Informal assessments were part of the teaching programme at schools A and C, where the tasks were referred to as practice tasks and used as preparation for the formal tasks:

"… and then informal assessment is when we just assess them, informally just for practise [sic], they practise, it is more learning" (D6, 6:2 5:5).

It was not clear how methodical or effective the use of the practice tasks were, or whether the choice of the practice task was determined by the specific teacher's learning intentions. The formal tasks were closely assessed by the teachers, using the assessment rubric provided by the Gauteng Department of Education – specific to the type of task (such as a transactional task or an essay). The rubric was used as an assessment tool and not as a teaching tool, therefore, it served as a tool to allocate marks and was not regarded as part of the teaching of writing:

"So before you move on, let them look at their marks, look at your comments, let them marry that with the rubric and also give them a chance to query your mark" (D3, 3:25, 44:45).

Peer feedback or feedback from others was used to edit the draft, to produce an error-free final task. The teachers provided multiple forms of feedback on the final task; however, the feedback focused mainly on error detection and correction. In all the cases, it seemed that the teachers assessed all the aspects of writing, the feedback was unfocused and not suitable for the purpose of addressing specific gaps in learning.

R: "It depends, the children want the written actually, because, the errors, because I mark errors actually, so the errors that we find mainly, is the spelling, the grammar, and tenses and punctuation, but it is mainly just tenses and the concord error, the verb, subject verb, they have lots of mistakes there" (D6, 6:13, 43:43).

The development of the WFT1 was informed by the conceptual framework and its theoretical underpinnings. The design of the WFT1 for the practical implementation emerged from the findings of the first phase of data collection. The writing lessons typically comprised three lessons: 1.) the introduction and planning; 2.) the drafting, editing and writing of the final draft (which in some cases, might have been part of homework); 3.) feedback on the assessed task. The three steps seemed to dominate the current implementation of writing and were, thus, incorporated in the WFT1 design.

WRITING FEEDBACK TOOL **NAME:** …….. **GRADE:** ……..

Type of task:

Topic:

Where am I going?	**How am I going?**	**Where to next?**
		Feedback on final. Check against goals.
What are the task goals:	Feedback to check my progress towards my goals:	Which goals have I achieved?
		What do I have to work on in the next task?
My own goal:	Things I have to do to achieve goals:	
		How has the feedback changed my thinking about how I achieve my goals?

Figure 2: WFT 1

The WFT1 (Figure 2) integrated the AFL and process writing steps at an operational level, framed by Hattie's (2011) three feedback questions: *Where am I going? How am I going? Where to next?* – so that feedback drove the process. The teachers were able to implement the WFT1, assimilating it successfully with process writing steps they were used to – namely, planning, drafting, revising, editing, proofreading and presenting texts.

"For process writing I go through the steps with them, like step by step. I have to check, we do planning, we check, we do the first draft, we check, that is what takes so much time" (D3, 3:9, 13:13).

The **second PAR cycle** focused on the implementation of WFT1.

Task Goals

The vague and surface-level task goals did not indicate how such goals could be achieved or how they were aligned with the success criteria. Where the learners formulated the goals on their own, based on their understanding of the task criteria and success criteria, it resulted in disparate goals that were not aligned with the teachers' expectations.

R: "It is actually the format that she is mostly concerned with because it shows that we actually like following up and putting the right information in the right place" (D33, 33:4, 10:10).

The writing assessment rubrics were not included in the teaching or explicitly used as a guide to what the success criteria were. The role of the assessment rubric in AFL would not only be to assign a mark but, more importantly, to clarify what success looked like; it represented the attainment levels as determined by the relevant assessment body.

The formulation of own goals required self-regulation, as it reflected the areas the learners thought they needed to focus on, which were mostly task-level goals. The formulation of own goals was also vague, indicating a surface-level awareness of the learning gaps.

Feedback

The feedback, which was mostly corrective in nature and directly focused on error detection, confirmed the vague and surface-level task goals. The corrective strategies were consequently also on surface-level and sometimes included in the feedback. As a result, the section *Things I have to do to achieve my goals* was confusing and some of the learners did not know how to respond to this section.

At school C, for example, where the goals were at task level and vague, such as "format, punctuation, factual details", the feedback was also on task level.
"Spelling should improve (use a dictionary please)."

The surface-level corrective feedback did not allow for meaningful strategies, which focused on improvement (*"Improve punctuation") and corrective steps ("Correct my spelling mistakes")*.

The WFT1 allowed the learners to use the feedback to check their progress against their goals and to respond by correcting their work. In some cases, where the feedback did not only focus on the goals, but also on the task criteria, new goals were added. This kind of feedback was very useful in aligning the learner's goals with the task criteria. It further indicated how varied the learners' task goals were – a result of the vague learning intention and the lack of clear assessment criteria.

The way learners received feedback further became apparent during the WFT1 implementation. The peer feedback in the form of error detection and correction was received as such by the learners. However, the feedback did not enhance the learning by helping the learners to understand how to improve their writing. The teachers gave positive feedback in their written comments and also pointed out areas to work on; however, their feedback did not always align with the task goals. The teachers' criteria for success only emerged clearly with the final assessment of the task and was not always clear when the task was introduced.

Reflections on Goals Achieved and Learning Gaps

The reflections in the *Where to next?* column illustrated the learners' evaluation of their progress towards their goals. By considering the assessment of and the feedback on their writing tasks, the learners were able to see which goals they thought they had achieved, as well as note gaps in their learning.

Q: "Okay. Then you got it back from Miss, how were you able to identify areas of success in your writing? Things that you were able to achieve?"

R: "I achieved my spelling goal and the grammar is good."

Q: "How did you understand that? How could you see that you got that right?"

R: "Miss didn't like point out, or circle any errors like she always does, if you make a mistake" (D4, 4:14, 5150:5574).

The learners recorded the feedback they received and their response to the feedback; however, it was not possible to determine how much of the information they received was recorded. Some of the feedback information may not have been understood at that point and may only have become relevant to the learner at a later stage. The learners received feedback from multiple sources (such as their peers, teachers and themselves), and in multiple ways (verbal, written and global, which is to the whole class).

Coupled with the fact that the feedback was not always in relation to the goals, a rather messy reflection of writing learning emerged. The fact that the teacher's and the learners' goals may not be the same was a new realisation for the teacher:

R: "The tool revealed their goals, right, instead of what I would perceive a Grade 10 learner should know" (D1, 1:56, 17268:17977.

R: "The goals I wrote wasn't merely what I was doing, and then after ma'am marked it then I saw what I was doing wrong, then I could come up with new goals for myself" (D13, 13:7, 19:19.

There was also the recognition that the WFT and feedback may be used to address the gaps in learning:

R: "Well it shows us how to identify my mistakes and what we should look out for next time we write, things to fix" (D25, 25:28, 225:225).

The WFT1 succeeded in creating structure for the learning of writing, with the task goals and feedback emerging as critical aspects. The teachers regarded the WFT1 as an appropriate strategy for the implementation of process writing and the use of feedback to enhance learning. The teachers remarked that the WFT1 implementation brought structure to the writing lessons. While it was similar to their previous practice of process writing, it helped to make the process clear to the learners. Furthermore, the process became a concrete practice in the lessons. The aspects of self-regulation, where the learners used the goals to structure their writing and the feedback tool to track their progress, identify the gaps and address ways to overcome them, were regarded as effective. It seemed that the learners understood what process writing meant and also how the feedback helped them in the writing process.

The feedback, as implemented by WFT1, introduced elements that I had not anticipated – such as how the learners will respond to completing the WFT. The learners were new to the feedback process with the WFT1 and there was uncertainty about how to record the feedback on the tool. Some learners recorded the feedback themselves, while some preferred a peer to write the feedback down. Furthermore, the accuracy of the recorded feedback could not be verified.

The **third PAR cycle** focused on the implementation of WFT2, which was adapted according to the findings of the WFT1 implementation, and the input received from the teachers. The teachers approved of the WFT1 design because of its synergy with the process writing steps and the structure it created. The teachers (from schools A and C) felt that planning and drafting should be included in the *Where am I going?* Column, because it was a criterion in the assessment rubrics. The space for comments of learners and teachers was welcomed, as the comments became part of the WFT and the process.

The three levels of the zone of proximal development were included in the *Where to next?* column to allow for a more detailed identification of what the learning gaps were. The formulation of the task goals and the corrective nature of the feedback emerged as critical issues during the implementation of the WFT1.

WRITING FEEDBACK TOOL **LEARNER** **NAME: ……** **GRADE: ……**

Type of task:

1. Where am I going?	2. How am I going?	3. Where to next?
Task goals:	**Feedback from peer/teacher/self:**	**Which goals have I achieved?** (Tick in 1st column)
Planning		**What did I do to achieve the goals?**
Drafting		**Areas to develop to improve my writing:** Learner:
	Things I can do to achieve the goals (strategies):	Teacher:
Goals I want to focus on/my own goals:		**I need more feedback about/help with:**

Figure 3: WFT2

Task Goals

The task goals should clarify the learning intentions and the goals need to be informed by the task criteria, as well as the success criteria. Task goals and feedback are closely related, as task goals determine the learning and, consequently, the level of feedback expected and provided. In response to the two issues of the task goals and the feedback, the teachers agreed that the learners needed more direction in the formulation of the task goals.

The teachers understood that the learning intention must be clarified by answering the question: “What do I want the learners to learn?”. In response to the curriculum, the learning intentions included the task criteria – what the learners must do; and the success criteria – how the learners would know if they were successful.

The teacher at school D also noted that the learners’ own goals were related to what the task required of them:

Q: “So they decided on their own which goals they wanted to achieve?”

R: "But I also think that their own goals were based, they were not divorced from the task goal. So if the task goal required them to use adjectives and so then they would say, 'The task goal requires me to use adjectives' and then their goal would be: I am going to use adjectives" (D30, 30:15, 3802:4153).

Q: "So are the goals only to improve the mistakes?"

R: "No. I wouldn't say to improve my mistakes, I would say to improve the way I write and the style I am writing" (D21, 21:11, 2135:2297).

Learner T at school B explained that identifying the gaps and focusing on them were helpful to avoid repeating the mistakes:

R: "So if I know I have got a problem with contractions and using personal pronouns when I am not supposed to, then I include that in my feedback tool and it helps me all the time" (D14, 14:2, 175:350).

Therefore, a close alignment between the task goals, task criteria and success criteria was needed (Black, 2015; Clark, 2012). This alignment was undermined where the learners formulated the goals according to their understanding of the task criteria and success criteria, which was incongruent with the teacher's learning intention. The formulation of task goals was challenging as the teachers' learning intentions were, either, not clear or too broad. Furthermore, the success criteria were not clarified.

Feedback

The task goals – formulated as a list of what to do – allowed the learners to check their progress against the goals. However, such a checklist resulted in surface-level, corrective feedback. Task goals at process level – such as the use of figurative language and adjectives for descriptive writing, including specific goals with strategies, led to process level feedback. Strategies act as scaffolding – either included in the task goals or as feedback, allowing actionable and, thus, effective feedback. Scaffolded feedback was, however, the exception rather than the rule. The learners did not all complete the section *Things I can do to achieve my goals (strategies.* When the feedback was corrective, it replaced the need for a strategy. In addition, the question, *What did I do to achieve my goals?* in the last column, confused the learners as they saw it as a duplication.

The feedback during and after the drafting of the writing task was an opportunity to engage with peers and teachers about the progress made towards the goals. Corrective peer feedback was more readily accepted as it functioned as editing; however, the learners were not always confident that the peer feedback was accurate. The focus on errors and whether the task counted for marks undermined effective use of the feedback for learning.

The learners further explained that while it was useful to know what they had done wrong, they needed feedback on how to correct their work. This speaks to the need to address understanding of writing and not only error-free writing.

The learners' expectations regarding the feedback had not changed; the mistakes were pointed out and corrected:

"So it has helped me a lot because now I can identify mistakes, and learn how to, you know, to get feedback to help you when you are trying to achieve something" (D28, 28:18, 7239:7398).

The learners' pre-occupation with error detection distracted their attention from the goals – as the aim was to edit the entire essay, as explained by focus group learners and learners, interviewed as learners' verbal protocol:

R: "Like with the person that I gave it to we kind of did the same thing, we don't like to look at the goals first, we read each other's essays and then we like correct it like this is wrong, what does this mean, I don't really understand what you are getting at" (D26, 26:20, 4371:4636).

Q: "Did they look at your goals when they looked at your essay?"

R: "No, they didn't get a chance to look at my goals" (D27, 27:13, 3297:3410).

The focus group learners from school C found this problematic, because the expectation was that, as with editing, all errors should be corrected:

R: "The peer that I gave it to she actually marked my essay according to my goals, not extending beyond that, like if I didn't have something, like let's say I didn't have grammar inside my goals and my grammar was incorrect she wouldn't actually refer to that, she would just leave it and only focus on what I wanted in my task goals" (D26, 26:18, 3932:4264).

Reflections on Goals Achieved and Learning Gaps

The learners analysed the teacher's feedback in the form of marking codes, comments and marks allocated to identify the goals achieved and the gaps in the learning. Unlike WFT1, the last column on WFT2 represented the three levels of the zone of proximal development *(What I cannot do, What I can do with help* and *What I can do on my own)* by first identifying the goals achieved, thus, what they are able to do. Then the gaps in learning were made specific by differentiating between what learners needed help with and what they could not do. The learners used this information to request feedback on specific gaps, making the learning more focused.

Identification of successful strategies and the gaps in learning informed the planning of learning intentions for the next writing task.

Differentiation could be built into the task goals as the learners identified their individual learning needs; they may develop strategies to meet these and may ask for feedback on specific goals.

The teachers' engagement with the WFT2, during the lessons and when assessing the task, gave them the opportunity to observe the learners' thinking about their task goals, progress made and strategies used. Some teachers used the WFT2 to write feedback on the task goals or the peer feedback provided. The teachers' comments on the WFT2, in line with the WFT1 findings, indicated the alignment, or lack thereof, between their learning intentions and what the learners understood them to be. The teachers' feedback strategies did not change; their strategies included verbal synchronous feedback, written corrective feedback, written comments and mark allocations.

However, the WFT2 encouraged feedback during the three stages of process writing as implemented in the classroom; formulating goals, drafting and evaluating the assessment feedback. Furthermore, the feedback was somewhat more focused on and specific to the task goals.

R: "My teacher's feedback outlined that the last, the last, my goal to insert figures of speech and you know, and some flavour it never really worked and she also identified the grammatical errors. So I still stand on that, I don't know what is grammar, so I can't fix it" (D28, 28:17, 6255:6525).

R: "How was I able to, I looked at the goals and then I compared, and then if this one is not okay, and this one is going with, is not corresponding with my essay, then I know, okay, I like that and say next time I have to do this. Then following like that, so that is how I see, okay, I have improved" (D7, 7:34, 6722:7021).

The issue of clear and available success criteria remained unanswered. The three Gauteng Department of Education schools used the WFT2 with their practice tasks, which were not for marks. However, the teachers and the learners needed to understand what success looked like according to the criteria. According to the theory of formative assessment, success criteria must be agreed upon. Since the rubrics are the assessment tools and contain the success criteria, they must be used to develop an agreement between the teachers and the learners as to what constitutes a successful task. Therefore, as mentioned before, the task goals should be a combination of the task criteria and the success criteria.

The teachers' assessment of the tasks, particularly at schools A and C, concentrated on the rubric categories of**, style and editing, and Structure** – as these might have been easier to assess by detecting errors. The **Content and planning** category is critical for creative writing, as it demands that the learners develop "intelligent, thought-provoking and mature ideas".

For this category, error detection assessment is not appropriate and in the absence of clear success criteria, it is perhaps more subjective and easily challenged by the learners. The teachers did not teach this category beyond the task type and topic. The task type and topic are essential to the accessibility of the task – for the learners to develop their thoughts and ideas. Once they understand why they are writing the task, for example, that an argumentative essay is written to develop an argument, a topic such as "School uniforms should be optional" can be used to practise the skills of argumentative writing.

As a result of the WFT1 implementation, where the use of the assessment rubrics was lacking, the rubrics were printed on the back of the WFT2. It was notable that the Grade 10 teacher at school C and the Grade 11 teacher at school D were able to link the rubric with the WFT. Additionally, some learners came to see the WFT as their rubric, thus, a structure to direct and track their learning.

Examples of completed WFT1 and 2 are included as Annexure A.

Conclusion

AFL means that assessment practices are ongoing, and the results are used to inform teaching and learning. The WFT was developed because it was needed to facilitate the implementation of AFL and PW in English HL writing lessons, and to enhance the learning outcomes. While the WFT feedback was successfully used to drive the process of using assessment results and feedback to facilitate learning, the WFT was used to implement process writing.

Although the processes were implemented and the learners engaged in SRL, there were some gaps. The articulation of the task goals and the corresponding feedback strategies need to be further developed. In addition, the assessment criteria should be clearly aligned with the task goals and feedback. Further implementation of the WFT will allow for teachers and learners to engage with the feedback generated, to move learning forward. Black and Wiliam (2018) argue that the implementation of teachers' planning and learning intentions are a central feature of formative assessment. While not much research about the topic is currently available, studies discussing formative assessment provide resources for further exploration of assessment and learning (Black & Wiliam, 2018).

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ANNEXURE A

WFT1 Examples

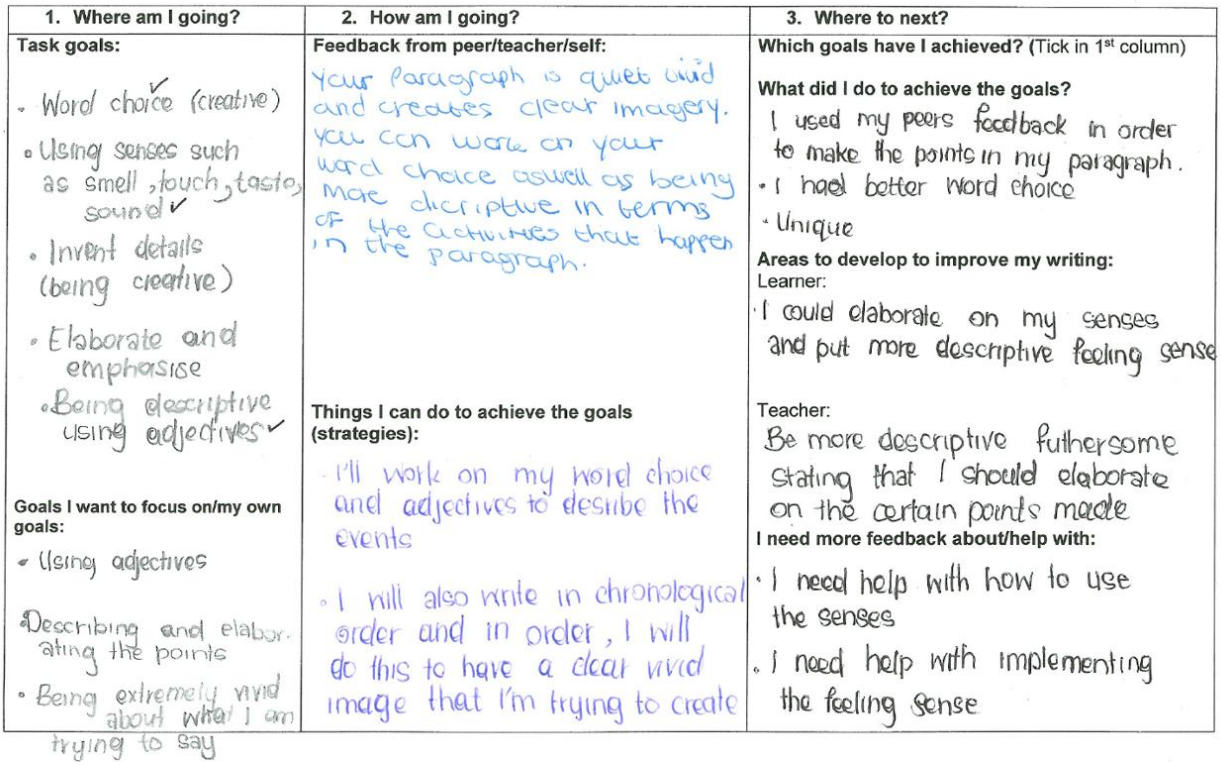
Where am I going?	How am I going?	Where to next?
		Feedback on final. Check against goals.
What are the task goals: · Write a meaningful obituary about Okwanhwe · To write facts about the deceased · Write about his amazing achievements	Feedback to check my progress towards my goals: Obetuary was incomplete but first part was very good Has meet the goals and is emotional. Will have to mention his name less	Which goals have I achieved? goals reached and good attention to the details of the novel
My own goal: · I want to write an obituary that will touch hearts · I also want to be uplifting and positive in the obituary	Things I have to do to achieve goals: I have to mention his name a lot less in the obituary and have to complete it alot quicker	What do I have to work on in the next task? I have to work on my writing and my punctuation. I also need to pay attention to my grammer. How has the feedback changed my thinking about how I achieve my goals? It has showed me that there is a better way of focusing on the writing and to pay attention to the task

Figure A1 Grade 10 WFT 1

Where am I going?	How am I going?	Where to next?
		Feedback on final. Check against goals.
What are the task goals: For Me to be able to write an open letter the right way Register Style Punctuation	Feedback to check my progress towards my goals: My sentences are too long. I leave out words.	Which goals have I achieved? Punctuation has improved NO COMMA SPLICE
My own goal: I want to be better with regards to Punctuation.	Things I have to do to achieve goals: Use what I have learnt at school (Style, Register, Tautology, Concord) to wright the open letter.	What do I have to work on in the next task? Punctuation has to keep improving How has the feedback changed my thinking about how I achieve my goals? That I should be open to other people's advice because it has helped Me.

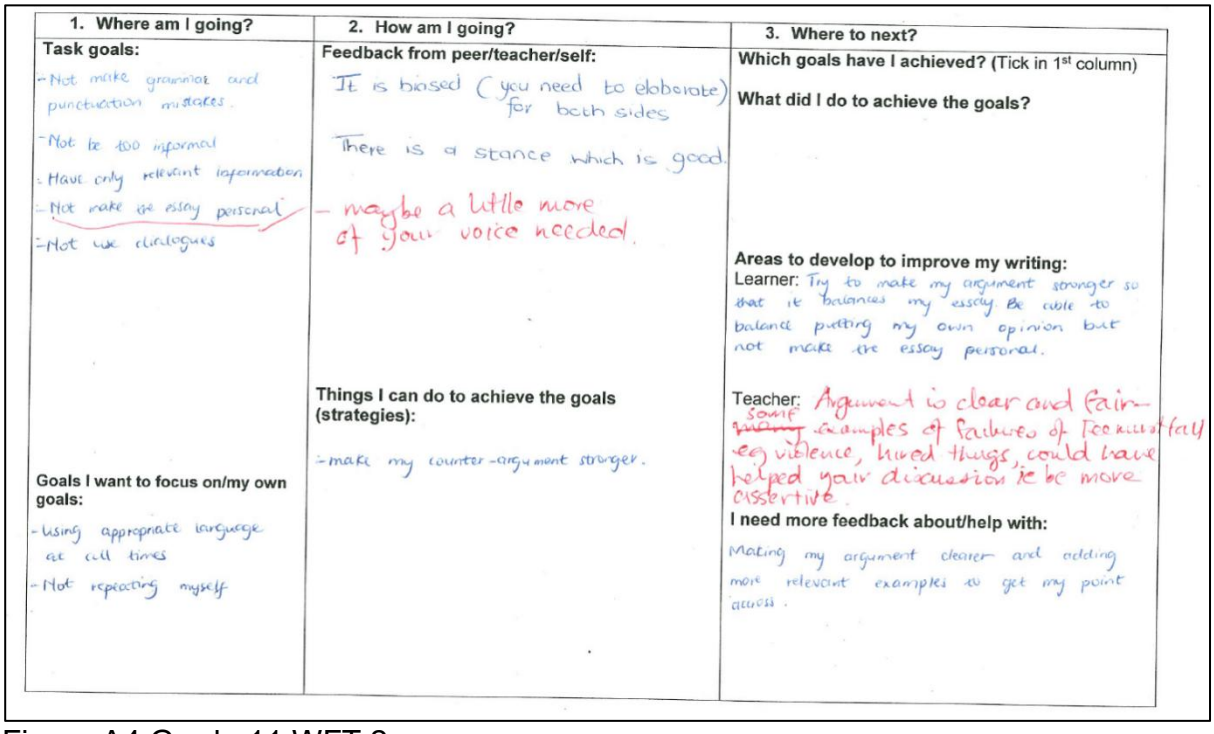
Figure A2 Grade 11 WFT 1

WFT 2 examples



1. Where am I going?	2. How am I going?	3. Where to next?
Task goals: • Word choice (creative) • Using senses such as smell, touch, taste, sound • Invent details (being creative) • Elaborate and emphasise • Being descriptive using adjectives **Goals I want to focus on/my own goals:** • Using adjectives • Describing and elaborating the points • Being extremely vivid about what I am trying to say	**Feedback from peer/teacher/self:** Your paragraph is quiet vivid and creates clear imagery. You can work on your word choice aswell as being more dicriptive in terms of the activities that happen in the paragraph. **Things I can do to achieve the goals (strategies):** • I'll work on my word choice and adjectives to desribe the events • I will also write in chronological order and in order, I will do this to have a clear vivid image that I'm trying to create	**Which goals have I achieved?** (Tick in 1st column) **What did I do to achieve the goals?** I used my peers feedback in order to make the points in my paragraph. • I had better word choice • Unique **Areas to develop to improve my writing:** Learner: I could elaborate on my senses and put more descriptive feeling sense Teacher: Be more descriptive futhersome stating that I should elaborate on the certain points made **I need more feedback about/help with:** • I need help with how to use the senses • I need help with implementing the feeling sense

Figure A3 Grade 10 WFT 2



1. Where am I going?	2. How am I going?	3. Where to next?
Task goals: - Not make grammar and punctuation mistakes. - Not be too informal - Have only relevant information - Not make the essay personal - Not use dialogues **Goals I want to focus on/my own goals:** - Using appropriate language at all times - Not repeating myself	**Feedback from peer/teacher/self:** It is biased (you need to elaborate for both sides There is a stance which is good. - maybe a little more of your voice needed. **Things I can do to achieve the goals (strategies):** - make my counter-argument stronger.	**Which goals have I achieved?** (Tick in 1st column) **What did I do to achieve the goals?** **Areas to develop to improve my writing:** Learner: Try to make my argument stronger so that it balances my essay. Be able to balance putting my own opinion but not make the essay personal. Teacher: Argument is clear and fair- ~~many~~ some examples of failures of Tech could fail eg violence, hired thugs, could have helped your discussion to be more assertive. **I need more feedback about/help with:** Making my argument clearer and adding more relevant examples to get my point across.

Figure A4 Grade 11 WFT 2

ALTERNATIVES TO CORPORAL PUNISHMENT IN PRIMARY SCHOOLS: THE CASE OF MASVINGO DISTRICT, ZIMBABWE

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Abstract

Corporal punishment is no longer legal in Zimbabwe and cannot be used as a corrective measure in schools. Therefore, this study sought to investigate alternative strategies used by Zimbabwean primary school teachers to deal with disciplinary behaviour without corporal punishment. Qualitative and instrumental case study design was used along with individual interviews and focus group discussions. The research sample was selected using purposive sampling among teachers, school heads, students, parents, and educational psychologists. The data were analyzed using the method of thematic content analysis. The results of the study revealed that the most common forms of student indiscipline in primary school were disruptive speech, bullying other students, absenteeism, not completing certain work, verbal attacks on other students and teachers, and drug addiction. In addition, teachers, school heads, students, parents, and educational psychologists who opposed the use of corporal punishment were found to support, among other things, counselling and guidance, reinforcement, and parental involvement as effective strategies to combat discipline in primary schools. The study recommends that initiatives for alternative strategies to corporal punishment be included in college and university teacher education curricula.

Keywords: Alternative Strategies, Corporal Punishment, Primary School, Zimbabwe.

Background of the Study

According to Busienei (2012), there is a growing outcry against corporal punishment among school children worldwide. Many global human rights and children's bodies, such as the African Charter on the Rights and Welfare of the Child (ACRWC) and the United Nations Convention on the Rights of the Child (UNCRC), have condemned corporal punishment in schools and officially recommended its abolition. In response to these global declarations, Zimbabwe, like many other countries, ratified the legal provisions of the ACRWC in 1992 and the UNCRC in 1990. In August 2020, the President of Zimbabwe signed an amendment to the Education Act that officially banned the canning of pupils by teachers. According to the amended law, school authorities are now obliged to draw up a disciplinary policy according to a regulation issued by the minister for this purpose. Part of the modified law says: "Under no circumstances should a teacher hit a child." This means that corporal punishment is no longer legal and cannot be used as a means of corrective tool in Zimbabwe. The above feelings call for various options that can be used to maintain discipline other than corporal punishment.

Against this background, it is worrying that Zimbabwean teachers are not sure whether alternative strategies to corporal punishment are effective in curbing disciplinary problems in schools. Therefore, this study is necessary to explore effective alternatives to corporal punishment in primary schools in Zimbabwe.

According to Gershoff (2017), Zimbabwean students indicated in interviews that corporal punishment in school was painful. Teachers and school staff also punish children, forcing them to stand in painful positions, stand in the sun for a long time, sit in an invisible chair for a long time, hold and carry heavy objects, dig holes, kneel on small objects. like rocks, exercise excessively without rest. In addition, the students said they were hit with hands or objects on every part of the body. Anecdotal evidence suggests that such punishment would lead to students hating their teachers, having difficulty concentrating and learning, performing poorly in school, and avoiding or even dropping out of school for fear of being beaten. For these reasons, research into alternatives to corporal punishment is very important to recommend non-punitive disciplinary methods that can be used in primary schools without corporal punishment.

Physical punishment in schools is prohibited in many parts of the world. This is because corporal punishment is said to be painful, violate students' human rights, and violate students' social emotional and psychological well-being (HaluHalu 2013). The above view suggests that some students may resort to socially unhealthy and illegal practices such as drug addiction and drug dealing to overcome the frustration of corporal punishment. HaluHalu (2013) further confirms that physical punishment increases dropout rates. Dropping out of school can lead some students to choose bad habits that can destroy their future lives. Considering the above facts about the effects of corporal punishment, this study examines various methods of maintaining discipline without corporal punishment from the perspectives of teachers, parents, educational psychologists and students themselves. Since corporal punishment has been abolished in Zimbabwe, there is still no information on how teachers can maintain discipline without corporal punishment. In other words, teachers have difficulty in identifying effective disciplinary strategies without corporal punishment.

Literature Review

Many countries around the world have banned corporal punishment in schools. These countries are Austria (1989), Finland (1983), Bulgaria (2000), Hungary (2004), Croatia (2007), the Netherlands (2007), Cyprus (1994), Greece (2006), Israel (2000), among others. New Zealand (2007), Norway (1987), Portugal (2007), Uruguay (2007), Spain (2007), Sweden (1979), Denmark (1997) and Germany (2000) (Agesa, 2015). The ban on corporal punishment resulted in chaotic schools and out-of-control student behaviour (UNESCO, 2001). Agesa (2015) argues that public schools in the United States have used police officers called school resource officers (SROs) and technological surveillance to manage school discipline.

However, these strategies tend to create disagreements between teachers and parents. Sub-Saharan countries such as South Africa, Kenya and Ghana have banned the use of corporal punishment in schools. South Africa abolished corporal punishment in 1996 with the South African Schools Act 84 of 1996 (South Africa, 1996). In Kenya, corporal punishment was banned by notification in the Kenya Gazette on 13 March 2001 (Agesa, 2015).

It was part of Legal Notice No. 56 of 2001, which repealed Legal Notice No. 40 of 1972, which introduced corporal punishment in Education Act. Also, in 2017, the Ghana Education Service (GES) officially banned all forms of corporal punishment in schools as part of efforts to promote a safe and protective learning environment for children (UNICEF, 2018). Since the ban on corporal punishment in these countries, there have been concerns about the weakening of school discipline (Agesa, 2015). This student indiscipline may be due to a failure to implement acceptable and appropriate alternative strategies to corporal punishment. Western methods such as the use of police officers, keeping students out of school, physical labour, segregation and exclusion probably do not suit the African child and sometimes lead to disagreements between teachers and parents. With this in mind, there is a need to explore alternative solutions to African children's school discipline problems. The physical and psychological effects of corporal punishment on children have been studied (Busienei, 2012). The impact of corporal punishment has emerged as a very important area in primary and secondary education research (Fakunmoju, 2018; Ekanemandamp; Edet, 2013). Numerous studies show that even two decades after corporal punishment was banned in Kenya, South Africa and Tanzania, such as Mweru (2010), Mayisela (2018) and Feinstein & Mahombela (2010), this is still a common disciplinary tool in schools and misses opportunities to promote student discipline through non-violent strategies. In light of this fact, it is obvious that the study of alternative strategies to corporal punishment in primary education is still in its infancy. Especially in Zimbabwe, there is little information on alternative strategies to corporal punishment in primary schools (Chimbamu, 2016; Gomba, 2015). Against this background, this study aims to investigate the strategies used by primary school teachers in discipline without corporal punishment.

Traditional Behaviour Management in Traditional African Societies

According to Dada (2016), traditional behaviour management skills are based on the belief that children are a blessing and a gift from God Therefore, parents have a sacred responsibility to raise their children in a way that respects their culture, traditions, and values (Dada, 2016). In Zimbabwe, indigenous parenting skills are based on Ubuntu, which stands for humanity, community, and interconnectedness. Ubuntu parenting emphasizes the importance of respect, empathy, and cooperation in raising children. It also highlights the critical role of extended family members, community leaders and spiritual mentors in shaping children's behaviour (Mutepfa & Mhaka-Mutepfa, 2017).

Additionally, the adage African proverb "*Induku ayiwakhi umuzi*" [the stick does not make a home*]* suggests that corporal punishment or violence not accepted as a child-rearing strategy or family relations within African homes (Mayisela, 2017).

Statement of the Problem

Since the ban on corporal punishment, there is growing concern among teachers and other stakeholders about the high lack of discipline in primary schools in Zimbabwe (Mushohwe, 2018; Magwa, 2018; and Gomba, 2015). Worryingly, primary school teachers are unsure of other alternative strategies to corporal punishment. Therefore, the purpose of this study was to identify effective disciplinary strategies that teachers use to deal with student misbehaviour without hitting them.

Main Research Question

What alternative strategies do primary school teachers use in the absence corporal punishment?

Sub-Research Questions

1. What sort of misbehaviours do learners exhibit in primary schools?
2. How do primary school teachers deal with student misbehaviour without corporal punishment?

Theoretical Framework

We used Indigenous knowledge (IK) as a lens to understand effective alternative strategies to corporal punishment in primary schools. In this paper, we combine the concept of IK with Munyaradzi's (2015: 59) view that IK is "a set of ideas, beliefs and practices (some of which have an indigenous religious basis) in a given region, used by its people in their interactions with their environment and other people over a long period of time." Indigenous knowledge is often considered synonymous with traditional knowledge and part of local heritage. With colonization, the term "indigenous" was associated with a limited view, because it was considered static knowledge, which led to the mockery of the behaviour of indigenous people and their environment, which prevented the spread of self-identity and a sense of myself determination in the colonial education.

Although the term had several meanings, the UN adopted the following principles to define IK:

"Identified as indigenous and accepted as a member of the community; demonstrating historical continuity with pre-colonial and/or colonial societies; showing a strong connection with the regions and surrounding natural resources; have separate social, economic and/or political systems; having a different language, culture and/or beliefs; form a non-dominant part of society; and determination to preserve and introduce indigenous peoples and communities to ancestral environments and systems" (UN Permanent Forum on Indigenous Peoples, n.d., p. 1).

Traditional African behaviour management strategies such as storytelling, warnings, clear rules, behaviour modification, parental guidance and exploring the consequences of negative actions are important for non-corporal punishment in primary schools. Also, Ali, Dada, Isiaka, and Salmon (2014) argue that traditional methods still have their place in any disciplinary system.

In this sense, indigenous knowledge can therefore be an effective basis for developing alternative strategies to corporal punishment. Traditionally, family and community ties were very strong (Tanyaniwa & Chikwanha, 2011). These close ties made children feel that they were important members of the family or community, and therefore behaved in ways that strengthened their sense of community. Indigenous peoples believed in the importance of equality and cooperation between individuals (Ali et al., 2014). Traditional educators were satisfied with the students and were thoughtful and respectful when talking to children. They spoke softly, quietly and gently to the children. Therefore, it is likely that the indiscipline of primary school students in this modern world may be due to inequality and lack of cooperation between the teacher and students. According to this logic, students would behave antisocially if their teachers were unapproachable.

According to alternative nurturing strategies, classrooms should be socially constructed in a way that creates a sense of shared ownership in the classroom between teacher and students. Instead of assuming an authoritative role, the teacher could be considered a fellow student with the students and therefore should maintain a balance between personal warmth and the demand for academic success. This safe and respectful learning environment encourages teacher and student to build strong relationships that elicit desired student behaviours. Positive teacher-student relationships have the potential to create a favorable learning environment in the classroom and, in turn, create an atmosphere that is free from unruly behaviour (Paul, 2009).

According to Deaukee (2010, p. 32), one of the most fundamental and common components of indigenous disciplinary systems are the clear rules of community. The parents guided and taught the children to make smart and informed decisions. According to Evertson, Emmer, and Worsham (2000), a rule identifies general expectations or standards of behaviour. They further argued that providing students with clear expectations about what is appropriate is a significant start in creating a positive classroom and school environment free of unruly student behaviour.

Based on the indigenous disciplinary systems, every elementary school should have a guidance and advisory committee that provides students with clear rules and regulations to guide their activities during school hours. The committee should also inform students about the consequences of negative actions, which would help students understand acceptable behaviour in school.

The indigenous style of discipline through storytelling was very important to reduce children's misbehaviour in the past (Pewewardy, 2002). Traditionally, storytelling by community elders would help children imitate the desired behaviour of story characters and understand the consequences of negative actions. According to alternative corporal punishment strategies, teachers should model behaviours that have positive self-esteem and respect for others and the importance of academic success for students. Consistent with this view, Fields and Fields (2006) argue that teacher and parent role models are productive methods of instruction and discipline. Similarly, Mendler, Curwin and Mendler (2008) argue that students learn both moral and immoral behaviour from what they see, not from what they hear.

Indigenous educators used behaviour contracts as a strategy to manage children's unruly behaviour (Ali et al., 2014). These contracts were agreements between an indigenous educator and a child that required the child to behave more appropriately in return for receiving a certain reward for meeting the commitment. Aligned with alternative strategies to corporal punishment, a behaviour contract encourages self-discipline on the part of the learner and fosters the learner’s sense of commitment to appropriate school behaviours. It is important to note that the parent should be involved in the development of the contract to ensure that the learner obtains the necessary support in maintaining the stated standards of discipline.

Research Methodology

The aim of this qualitative study was to find out what teachers, school heads, pupils and educational psychologists think about alternative strategies to corporal punishment in primary schools. The emphasis was on depth, not breadth, of understanding in specific and small numbers of individuals and environments. A qualitative approach was considered most appropriate because it facilitated an open and comprehensive study of participants' experiences of methods that primary teachers can use to deal with student misbehaviour without hitting them. We used a case study because it allows for multiple methods of data collection and analysis (Baxter & Jack, 2008). In an effort to produce thick, rich and detailed descriptions to answer the research questions posed at the beginning, we used in-depth interviews and focus group discussions to understand participants' experiences of new ways of dealing with behavioural problems in absence. on corporal punishment (De Vos, Strydom, Fouché and Delpart 2005). We analyzed the data using six steps of thematic analysis (Braun and Clarke, 2006, p. 87).

The sample was selected using purposive sampling among teachers, school heads, students, parents and educational psychologists. Selection criteria were based on the participants' potential to provide rich and valuable information for the study. 31 men and women participated in the study, of which 12 were students, 12 were teachers, 4 were parents, 2 were school heads and 1 was psychologist. Masvingo district was conveniently selected because of its proximity to one of the researchers' workplace.

Table 1: Participants

Table 1: Participants

Research Site	**Participants**	**Gender and Number (n) = 31**		**Profiling details**
School 1	Teachers	Female	3	Ages, education level, experience
		Male	3	
	Learners	Female	3	Ages, grade level
		Male	3	
	Head of School	Female		Age, education level, experience
		Male	1	
	Parents	Female	1	Parents of learners at the school, experience in dealing with disciplinary problems at the school, awareness of the current legal position concerning canning of learners in schools, retired educators
		Male	1	
School 2	Teachers	Female	3	Ages, education level, experience
		Male	3	
	Learners	Female	3	Ages, grade level
		Male	3	
	Head of School	Female		Age, education level, experience
		Male	1	
	Parents	Female	1	Parents of learners at the school, experience in dealing with disciplinary problems at the school, awareness of the current legal

		Male	1	position concerning canning of learners in schools, retired educators
District office	Psychologist	Female		Age, education level, experience
		Male	1	

Ethical Considerations

Ethical approval was obtained from relevant institutions after meeting the requirements for data protection, confidentiality, informed consent and consent and voluntary participation. Permission was sought from the Ministry of Primary and Secondary Education in Zimbabwe before entering study areas. The purpose of the study was explained to the participants, who were informed during the research process that they could withdraw from the study at any time without consequence. Member review processes increased the accuracy and reliability of the results. We used the qualitative criteria of reliability, consistency, transferability, and dependability (Yin, 2011).

Discussion of Research Findings

Two key themes identified from the data are discussed in the next section. These themes are:

a) Misbehaviours exhibited by learners in primary schools
b) Alternative strategies to corporal punishment in primary school

Theme a): Misbehaviour Exhibited by Learners in Primary Schools.

Most of the participants in the interviews and focus group discussions revealed that stealing, disruptive speech - doing certain work, absences, violation of the school dress code, defiance of school authorities, verbal attacks and drug abuse were the most common forms of student discipline in elementary schools. In support of the above point of view, one school head mentioned in the interview the following things as bad behaviour of primary school students:

“Thefts; bullying other students; fighting; hide workbooks, writing; and being late for class.”

Answering the same question during an interview, an educational psychologist identified seven disciplinary problems or disciplinary problems among primary school students:

“Disruptive talking, chronic avoidance of schoolwork, interfering with teaching activities, verbal insults, rudeness to teacher, defiance, and hostility.”

Similarly, teachers and students in focus group discussions mentioned fighting, stealing, talking without permission, verbal abuse, defiance, graffiti on classroom and toilet walls, school visits and drug use as disciplinary problems. Most of the parents who participated in the study also noted that, for example, behavioural problems occurring in the home environment such as theft, fights, verbal insults, bullying, rudeness, and defiance are not significantly different from those occurring in school.

Theme b): Alternative Strategies for Corporal Punishment in Primary Schools

In this section we presented information on alternative strategies to corporal punishment in primary schools. We analyzed data from interviews and focus group discussions to find sub-themes supporting this theme. The sub-themes that emerged from this theme are:

- Positive Teacher-Student Relationships,
- Guidance and Counselling,
- Behaviour Modification and
- Parental Involvement.

Positive Teacher-Student Relationships

The study found that positive teacher-student relationships can influence the development of prosocial behaviour and significantly reduce classroom behaviour problems. To support this view, an educational psychologist said the following:

“Students should have warm and supportive relationships with their teachers. A warm and supportive classroom environment promotes a sense of connection in the classroom, which would lead to less problem behaviour and more prosocial behaviour.”

The quote above means that positive teacher-student relationships contribute to maintaining discipline in school. School heads also agreed on the importance of positive teacher-student relationships in reducing behaviour problems in the classroom. One of the school head expressed his opinion as follows:

“The teacher should consider the socio-psychological needs of students by showing students love, security, appreciation, acceptance, and success. In addition, the school should also understand that the teachers' comments affect the students, because as such teachers are not encouraged to make comments that harm the students. Instead, they should treat students equally regardless of their individual differences.”

"This means that there should be respect for each other to maintain discipline in the classroom. In other words, when teachers respect students, they focus on learning and learning goes smoothly."

Teachers also believed that positive teacher-student relationships influence the development of prosocial behaviour. During the focus group discussion, one of the teachers said the following:

"We can do a lot to prevent abuse, including building warm and supportive relationships with our students. The point is to say that as teachers we should create a favorable relationship with students."

This means that the key to maintaining the desired behaviour in students is to build a good relationship by respecting them. The quality of the teacher-student relationship is the cornerstone of effective discipline.

Responding to the same question in the focus group discussions, the students acknowledged that positive teacher-student relationships help prevent problems affecting teaching and learning in the classroom. Supporting this point of view, one of the students said:

"We had a 6th grade teacher last year who spoke to us politely and also gave us a chance to express our opinion. This positive interaction between the student and the teacher encouraged us to act accordingly."

This quote clearly shows that when teachers respect students, they are more likely to display prosocial behaviour in the classroom.

Most parents believed that positive interactions with children can result in a strong relationship that can reduce misbehaviour. To support this opinion, one parent expressed the following opinion:

"I do not hit my children and do not expect teachers to hit my children. The problem is that if a child gets hurt, it is the parent's responsibility to take the child to the hospital. As a parent, I have developed a positive relationship with my children where open communication is welcome. I expect teachers to borrow a leaf from what I am doing. Teachers must develop positive teacher-student relationships to reduce student misbehaviour in schools."

The purpose of this quote is that positive interactions with students can help reduce student behaviour problems.

Counselling and Counselling

Studies have shown that counselling is and can be used as an alternative strategy to physical punishment. In line with this view, an educational psychologist said the following:

"Teachers should teach students acceptable social behaviour in the classroom while guiding and counselling. However, it is important to note that most primary school teachers lack leadership and counselling skills."

The above position means that staff development workshops on guidance and counselling should be organized so that primary school teachers can acquire the necessary skills for leadership and counselling.

Headmasters also shared the same views on using guidance and counselling instead of corporal punishment to maintain discipline in primary schools. One of the school heads expressed his opinion as follows:

"Each school should have a guidance and advisory committee to listen to the disciplinary problems of students and provide guidance and advisory services to students."

The above position is in line with what we have received from most primary school teachers. Teachers reported that counselling and guidance can be used in the absence of corporal punishment to maintain discipline in the classroom. During the focus group discussion, one of the teachers pointed out that:

"Instead of corporal punishment, I take the misbehaving child to counselling to try to solve the problem, like bullying."

In support of the above point of view, one of the students said that:

"We had a teacher who called us and talked to us when we made mistakes. His expectations were fair and clearly stated. He taught us the importance of following school rules and the behaviour he expected from us without hitting us."

This means that teachers must teach students the importance of discipline in school so that students can make informed choices and decisions. Parents also agreed that the use of professional support, such as guidance and counselling, is essential to improve and correct student behaviour problems. One father said this:

"Instead of harsh discipline and punishment for bad behaviour, I sit down with my child and give him clear rules and consequences for every behaviour. Because of this strategy, I have no behaviour problems with my child."

From the quote above, it is clear that the parents were against corporal punishment at school.

Behaviour Modification

Studies have shown that behaviour modification is by far the best technique for creating positive emotional climate in any learning environment that does not facilitate effective learning and can clearly define the desired behaviour. To support this point of view, an educational psychologist expressed his opinion as follows:

“Teachers must positively reinforce the desired behaviour. This can be done through positive feedback, such as saying "good". It automatically stamps the desired behaviour on the student. Reinforcing correct behaviour is probably the best technique for dealing with discipline in any learning environment. Teachers should try to avoid corporal punishment and use behaviour modification strategies such as reinforcement and modelling. Corporal punishment is unpleasant for both the punisher and the punished and is much less effective than reinforcement.”

In line with the above point of view, the school head added that behaviour change strategy can be used in the absence corporal punishment:

“The school should use positive and negative reinforcement to deal with student discipline problems. The school should use behaviour modification methods instead of hitting students.”

This was also confirmed by the teachers in the focus groups. One of the teachers said:

“As teachers, we may need to reinforce positive behaviour by rewarding the child whenever he behaves or shows good behaviour. These rewards can be praises that ultimately help reinforce good behaviour.”

In support of the above point of view, the students expressed their opinion in the focus group discussion session as follows:

“We also need a reward when we have done good things and when we behave well. This helps us continue to behave well and our friends also copy good things.”

The quote above suggests that students should not use corporal punishment, but teachers should use nurturing strategies such as rewarding good behaviour.

All the parents who participated in the study believed that motivation plays a big role in shaping the behaviour of students. They found that even at home, when children are praised for good behaviour, that good behaviour is likely to be repeated. To support this, one of the parents said the following:

"I praised my daughter for doing the right things at home and therefore she continues to do good things to be praised. This is how good behaviour is achieved."

This means that reinforcement can be a viable solution to get students to behave well.

Parental Involvement

The results of the study revealed that teachers should involve parents as a disciplinary strategy instead of punishment because bad behaviour of students in schools can come from home. All participants agreed that parental involvement is a much more effective discipline strategy than hitting. To support this view, an educational psychologist pointed out that:

"Teachers are more likely to elicit appropriate behaviour if they understand the situation their students face at home, so parental involvement is necessary. Students may not respond to the demands of their teachers for reasons beyond their control. They may not have enough food, travelling long distances and more. In this situation, hitting the child is unlikely to be productive. Teachers and parents must work together to eliminate unwanted behaviour from the student."

Educational psychologists suggest that teachers report misbehaving students to parents so that they can deal with the child together. This was also confirmed by the school heads. One school head said:

"I also think that once teachers understand that bad student behaviour comes from home, parents should be involved. Physical neglect at home in the form of lack of food and stationery at school can lead some students to steal at school. Parental involvement should be required to resolve/correct student behaviour. In some cases, students may come from violent families who are constantly fighting, and children may exhibit this behaviour at school. In such circumstances, the parent/guardian is invited to the school so that the parents and the school can work hand in hand to eliminate such unwanted behaviour."

Similarly, one of the teachers expressed his views in the focus group discussion as follows:

"I always ask the child's parents to discuss the child's misbehaviour and offer several solutions. Involving the parents helps me assess whether the child's problem is ongoing or find the causes of the problem. This has helped me a lot to deal with misbehaviour in my class without hitting the students."

The view above corresponds to what we received from the students in the focus group discussions. Students also emphasized the importance of parental involvement in dealing with misbehaviour at school. One of the students said:

"Teachers can call our parents, for example, in case of absences or not writing school assignments. Some of our parents give home duties on school days. Some don't buy school supplies like books and pencils. It's not our problem, so they must not beat us."

This means that it takes a joint effort between teachers and parents to enforce discipline. Parents in this study reported that parental involvement was their best strategy for reducing student misbehaviour at school.

In support of this, one parent expressed his opinion as follows:

"We need to be included in school discussions about bad behaviour. As parents we need to be updated on what our children do at school."

From the above quotation, it is clear that parents should work with teachers to improve discipline at school.

Discussion

Theme a): Misbehaviours exhibited by Learners in Primary Schools.

The findings of this paper are in good agreement with those of Ali et al. (2014) who note three types of misbehaviour that are considered disciplinary problems for the educator in the classroom: misbehaviour that affects the student's own learning, misbehaviour of another student that damages another's learning, and disrespectful behaviour that defies or offends the teacher. Some examples of such misbehaviours are: the student constantly comes late to class and interrupts the course of the class; speak while the teacher is speaking to the class; graffiti is written on school property; there is constant shouting in the class; the student does not listen and asks questions that have already been answered; defies the teacher and refuses to follow instructions; and one moves around the class in such a way of becoming a distraction.

Similarly, Rosen (1997, p. 51-52) identified ten types of disciplinary problems or acts of indiscipline that can lead to suspension as a means of punishing the student who commits such acts.

These include defying school authority, disrupting class, truancy, fighting, using profanity, damaging school property, violating the school dress code, shoplifting or stealing, leaving campus without permission, and failing to report to after-school detention.

Donnelly (2000) listed some other common examples of the lack of discipline experienced in American schools: fighting, disobedience, lack of support for teachers, a general climate of disrespect, and mistrust of the administration.

Alidzulevi (2000) further highlighted that some schools have developed into battlefields when students carry weapons such as guns and knives into schools. There are reports of students stabbing their teachers and principals with pangas (a large heavy knife used as a weapon to cut vegetation) and fighting among themselves using these weapons. A study by Yaghambe (2013) shows that the most common disciplinary problems in Tanzania that teachers deal with as soon as they come to school in the morning are absenteeism, business, drugs, bullying, smoking, sexual relations, abusive language, physical fights and theft. In addition, there is no country in the world where students are not guilty of unruly actions; the problems are similar in different schools, but the degree of their appearance can vary from school to school.

Theme b): Alternative Strategies for Corporal Punishment in Elementary School

• Positive Teacher-Student Relationship

This study showed that students have more positive relationships with their teachers and showed prosocial behaviour. As part of indigenous knowledge systems, African children from different communities were brought up together by an elder member of society who had the best interests of the children at heart (Makwinya, 2017). The above point of view suggests that the traditional educator had to be approachable and approach the communication thoughtfully and respectfully when talking to children during story times. Thus, young people could freely open themselves to their grandparents, who would pass on the values and morals of society that helped shape their behaviour. Similar observations were made by Magwa (2018), who argues that teachers who nurture student relationships are expected to promote a sense of belonging in the classroom, which would lead to less problematic behaviour and an increase in prosocial behaviour. According to this logic, a constructive relationship helps create a learning environment that can significantly influence the development of prosocial behaviour. Similarly, Kitching (2010:6) believes that an enabling school environment helps teachers manage misbehaviour in the classroom. In other words, a supportive school environment is an important feature of disciplinary leadership. Although this is the first study conducted in Zimbabwe to investigate alternative strategies for corporal punishment in primary schools, these results are consistent with previous research findings (Ali et al., 2014; Busienei, 2012) suggesting that the student-teacher relationship that is positive, provides a suitable environment for the development of prosocial behaviour. These studies agree that a positive teacher-student relationship can help promote effective classroom discipline and minimize indiscipline throughout the school environment.

Guidance and Counselling

The study found that guidance and counselling can be an alternative strategy to corporal punishment.

In the African system, African traditional parents, guide their children through folktales and strategies, among other things (Makwinja, 2017). That is, when telling stories, grandparents told stories to young children that presented qualities such as giving, caring for others, greed, selfishness, etc. Makwinja (2017) also added that there are proverbs and idioms that were meant to guide the behaviour of children. These facts not only alerted the children, but also allowed wisdom to be shared, advised and acted as a learning mechanism. For example, children were warned not to walk backwards because they would fall into a hole. Its purpose was to warn children of the dangers, as walking backwards can cause accidents. Considering these facts, African traditional culture is very rich and should not be overlooked. Teachers must follow good traditional African parenting practices to raise well-behaved and responsible young people on the African continent without corporal punishment.

Ali et al. (2014) argue that adult counselling and mapping the consequences of negative actions can help students participate in decision-making. They added that guidance and counselling can also help learners make smart and informed decisions. Makendano and Mahlangu (2023), found that referral for counselling is one of the strategies adopted by a sample of the Nambian schools. Counselling helped learners to be mindful of their behaviour. When they choose a negative behaviour, they understand that they are choosing the negative consequences of that behaviour. Similarly, Busienei (2012) pointed out that teachers are more likely to elicit appropriate behaviour if they understand the situation a child is facing and can offer guidance and advice. He added that some students may not meet the teachers' expectations for reasons beyond their control. She noted that problems at home can affect students' ability to focus and how much time and energy they can devote to school. The above studies agree that guidance and counselling can be used to instill discipline in students without corporal punishment.

Behaviour Modification

Ali et al. (2014), the development of the behaviour contract as a strategy to control the uncontrollable behaviour of students was based on theories of operant conditioning, according to which reinforced behaviours are likely to be repeated and unreinforced behaviours will soon disappear. A behaviour contract is a written agreement between a student and a teacher that obliges the student to behave more appropriately and sets a reward for fulfilling the commitment. It also defines the consequences of non-compliance, the rewards for meeting expectations and the timeline. Thorndike's Law of Influence indicates that behaviour followed by a reward is automatically maintained or reinforced (Busienei, 2012). This means that responses associated with pleasant consequences tend to be repeated, while responses associated with unpleasant consequences tend to be eliminated. The importance of this law in maintaining discipline in schools is that the teacher must positively reinforce desirable behaviour in the classroom.

HaluHalu (2013) states that motivated behaviour probably occurs and forms a normal pattern.

This means that when students are encouraged to behave well, it increases the chances of good behaviour. Similarly, parents used indigenous knowledge systems using totems to motivate their children to successfully complete the tasks set in indigenous education. This means that teachers should try to reward students by praising them, shaking hands, saying "good" and "right". Teachers and school management can also use incentives to encourage students to behave well in school; for example, merit books can be given to well-behaved students on the school prize day. It automatically stamps the desired behaviour on the student without corporal punishment.

The study found that modelling good behaviour is an alternative strategy to corporal punishment. Values and morals according to the indigenous knowledge system, which shape children's behaviour and inspire them to be wise and make healthy decisions, were transmitted through parental modelling (Ganga & Chinyoka, 2017). Traditionally, girls eagerly watched their mothers cook, wash dishes and fish so they too could learn. Ali et al. (2014), modelling is another behaviour change strategy that researchers find very effective in managing student discipline. They emphasized that part of a teacher's role is to model behaviours of positive self-esteem and respect for others, and to reinforce the importance of academic success. Mendler, Curwin, and Mendler (2008) further state that students learn both moral and immoral behaviour from what they see, not from what they hear. Fields and Fields (2006) also added that sometimes inappropriate behaviour is caused by children learning from inappropriate role models. This means that teachers should model morally correct behaviour for students, which can lead to behaviour change. In other words, teachers must always practice the behaviour they expect from their students.

Parental Involvement

The results of this study confirm the results of the Warner (1997) study, which found that when parents are involved in school activities, the child feels safer and performs better and behaves better. Moloi (2002) also argues that although corporal punishment is prohibited, teachers have a duty to maintain discipline in schools. He added that teachers cannot do this alone; they need parental support to promote discipline and take responsibility for their children's behaviour. According to African culture, raising children is a shared responsibility (Makwinja, 2017). Magwa (2018) also states that there is a sense that children are everyone's children, that a neighbour is expected to discipline his neighbour's children if he finds them to be naughty, disruptive or disobedient. HaluHalu (2013) agrees that cooperation between teachers and parents can provide a solution to the misbehaviour of children, especially in developing strategies to maintain discipline without corporal punishment.

This means that adequate parental involvement in the school can help to find a code of conduct in which the child, parent and teacher agree to ensure that their children are not exposed to harm. According to indigenous African parenting practices, the father is an icon of moral strength and direction. Children turn to him for advice, satisfaction of basic needs and guidance (Mbugua, 2014). This means that education of children must be shared between parents and teachers. Parents should not hesitate to report their children's misbehaviour to the school administration and vice versa.

Similarly, Oppelt (2000, p. 16) shows that in many South African schools' discipline is very weak and parental involvement is lacking. Wanja (2008) also reveals that parents play a key role in maintaining discipline in schools and lack of their support leads to many problems such as bullying, independence, stealing, graffiti, fighting and alcoholism. The researchers mentioned above blamed the reasons for poor discipline as lack of parental interference.

Conclusion

Researchers concluded that disruptive talking, stealing, bullying other students, absenteeism, not completing certain work, verbal attacks from other students and teachers, and drug abuse were the most common forms of student indiscipline in primary schools. In addition, guidance and counselling, positive teacher-student relationships, behaviour modification, and parental involvement were recommended as alternative strategies to corporal punishment in primary schools.

Recommendations

- The study recommends that, teacher training curricula in colleges and universities in Zimbabwe should include African traditional behaviour management strategies that can be used to maintain discipline in the absence of corporal punishment.
- The government of Zimbabwe must deliberately organise seminars, conferences, workshops, and other symposiums where experts can be invited to teach teachers to adopt African traditional parenting practices to produce well-behaved and responsible children on the African continent.
- Some textbooks in Zimbabwe's primary school curriculum should include stories that help convey African values and morals that can shape children's behaviour.

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EXPLORING TEACHING GRADE 6 PROGRESSED LEARNERS IN LICHTENBURG DISTRICT PRIMARY SCHOOLS

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Abstract:

In South Africa, the National Assessment Policy Grade R-12 addresses learners who have failed to meet promotional requirements but have repeated the grade more than once in the same phase. Despite failing to meet the criteria, these learners are promoted to the next class and classified as 'progressed learners.' This paper aimed to explore teachers' experiences of teaching progressed learners at selected Grade six primary schools in Lichtenburg, South Africa. Lichtenberg district is located in the northwest province of South Africa, dominated by Afrikaans-speaking people and Setswana. Purposive sampling of six (n=6) Grade six English First Additional Language (EFAL) teachers to participate in this study was used in this qualitative study underpinned by an interpretive paradigm. Thematic analysis was conducted on data from semi-structured interviews, and document analysis was used to interpret and analyse the findings. The findings have implicated primary English First Additional Language teachers' lack of knowledge in designing lessons to teach and assessing progressed learners. The findings further indicated that the current National Policy Pertaining to the Programme and Promotion Requirements of the National Curriculum Statement in Grades R-12 (NPRRRR) learner promotion policy needs to be reviewed and revised with the intention to address learners' performance and promotion requirements. Lack of teaching and learning resources hinder plans to support EFAL progressed learners' learning. Lastly, the departmental heads should receive training on how to monitor the learning progress of the progressed learners and provide the necessary support to EFAL teachers. This study recommends the development of a training handbook on teaching progressed learners, lesson planning, and teaching methods that encourage teacher-learner interaction during instruction and learning.

Keywords: Culturally Responsive Theory, English First Additional Language, Expanded Opportunities, Interactive Learning Theory, Primary School, Progressed Learners, School-Based Support Teams, Screening, Identification, Assessment, and Support Policy.

Introduction

According to the norms and laws of the nation, it is crucial for teaching and learning to occur in classrooms in accordance with the policy documents that outline the purpose, scope, content, and assessment for each subject. According to Mogale and Malatji (2022), automatic promotion, which was implemented to let learners move regardless of what they had learned, had a detrimental effect because some learners were unable to handle the workload and obligations of the next class.

A negative attitude towards this strategy has an impact on the motivation of the afflicted learners to learn, according to Mogale and Malatji (2022), who also cited Cameroon as another country that used the same practice and called it "automatic progression".

The researchers in relation to the South African context, view learners' progression strategy as by far not producing favourable results with implementation faults discernible. Although this is the case, learners' performance in South Africa still varies according to their cognitive abilities (DBE, 2011). researchers posit the importance of taking into cognizance learners' abilities in the classroom to cab poor performance. Learner performance in South Africa is a worry, just like it is in every other country in the globe. According to Shaw (2010), in the United States of America (USA), learners that displayed low intelligence and borderline performance were referred to as being in the "slow learner trap" since they did not meet the requirements for special education but were instead included in "normal" schooling. The No Child Left Behind Act (NCLBA), which was adopted in South Africa to promote inclusivity in the classroom and guarantee that every learner receives an education, gives teachers the responsibility of working with slow learners in order to improve instructional efficiency. Due to the consequences of free education in Zimbabwe in the 1980s, secondary schools in that country were overcrowded with learners who had inadequate primary school preparation, which had a negative impact on learners' performance (Mapolisa, 2014). Many schools decided to implement a system of tracks or streams in order to uphold their standards (Matavire, Mpofu, & Maveneka, 2013). When learners were grouped according to their performance levels, the faster learners were in the higher stream, while the slower learners were in the lower stream (Mapolisa, 2014). The researchers posit that learner grouping won't help them do better in Zimbabwe; rather, learners should not be separated based on their cognitive abilities. however, teachers should be trained to teach learners in the same classroom. In Zimbabwe, the Department of Education must start implementing intervention measures to raise learners' performance. The next section discusses the problem statement.

Problem Statement

In South Africa, some learners perform well academically while others struggle, therefore underachievers are moved from grade to grade to reduce the number of learners who are repeatedly retained in the same grade or phase. This category of learners is known as "progressed learners" (DBE, 2011). The term 'progressed learner,' according to the National Policy Pertaining to the Programme and Progression Requirements (NPPPR), refers to a learner progression from one grade to the next, except Grade R, despite the learner's failure to meet all of the promotion's requirements (DBE, 2011). In South Africa, learner progression was put in place to prevent learners from remaining in one phase for more than four years. The result has been an exponential increase in the number of progressed learners in classrooms. Despite receiving additional instruction, learners' performance is subpar.

In the context of this paper, learners in South Africa progress to the following grade, resulting in large numbers of progressed learners in the Grade 6 class. Grade 6 class is an exit class to the senior phase. Researchers assume that grade 6 learners should be well prepared to join the senior phase (grades 7-9). This assumption was supported by the results of the 2014 Annual National Assessment. The Grade 6 Annual National Assessment Diagnostic Report (2014) and the analysis findings in the DBE Diagnostic Report (2016), indicated that learners in grade 6 perform poorly in English First Additional Language.

According to Taylor's (2011) report, Grade repetition is not beneficial for learners, as over-aged learners achieve significantly worse than appropriately aged learners in both numeracy and literacy and all skills assessed. Taylor cautions that the achievement gap widens as learners move through the grades, with overaged youngsters falling further and further behind, regardless of grade, gender, province, and socioeconomic position.

The reasons for the increasingly large numbers of progressed learners are unknown, but teaching such learners motivated the study. A key finding from the Diagnostic Report was that most of the progressed learners presented with poor language skills, which impacted the ability of learners to interpret questions and source material and frame appropriate responses to questions (DBE, 2016). Considering the above, the research question for the study asked: What are the experiences of grade six teachers who teach progressed learners? The next section presents the literature review concerning this study.

Literature Review

This paper aimed at exploring teachers' experiences in teaching progressed learners in selected Grade six primary schools of Lichtenburg District, South Africa. The literature focused on the illustration of the keywords, conceptual understanding of South African learners' performance, policy implementation on learners' promotional requirements, Teaching strategies to enhance progressed learners' performance, and teachers' challenges in teaching progressed learners, and theoretical framework.

Conceptualising Keywords

Conceptualising, according to Imenda (2014), is used to combine a number of linked concepts to explain or predict a specific event or to provide a more comprehensive understanding of the phenomenon of interest or a research challenge. According to Rapetsoa (2017), concepts are identified and clarified during conceptualization, defining what we mean when we use particular keywords. Rapetsoa (2014) continues by stating that all fundamental terms utilised in a study must always be defined. Below are some significant keywords from this study that are briefly discussed to give you an idea of its focus.

Culturally Responsive Theory

Boyd (2014) posits culturally responsive teaching theory (CRT) as an instructional practice that respect and takes advantage of cultural diversity in educational contexts to ensure the academic achievement of all learners. Researchers view this theory as essential in benefiting and empowering teachers with an understanding of the learners' backgrounds, and the language used at home. Gay (2018) agrees when arguing that cultural difference explanation provides a significant antidote for the cultural deficit paradigm and reveals the strengths and resilience of families, communities, and cultures for learners from racial, ethnic, and linguistic groups. In addition, Gay (2018) poses a concern about the disparities in academic achievement between mainstream learners and learners who are marginalised within the school and society at large.

Researchers view progressed learners as part of the school community, who are at risk of underachieving and or performance. This is argued from Gay's proposition that teachers who utilise CRT practices value learners' cultural and linguistic resources. It is the researchers' position that, in teaching English First Additional Language in grade 6, culturally responsive theory's knowledge should be seen as capital to build upon, rather than as a barrier to learning. Next is Interactive Learning Theory.

Interactive Learning Theory

Interaction is defined by Anderson (2003) as reciprocal events requiring two objects and actions. The emphasis of the interactive learning theory is on collaboration and interaction between teachers and learners. According to researchers, an EFAL classroom is a setting where teachers engage with students to improve learning. Teachers and progressed learners should respect each other and have a working comprehension of one another. Therefore, the researchers believe that interactive learning theory is most suited for educating progressed learners since they require more frequent interaction with them and the learning material. In order to get progressed learners habituated to interacting with learning information both inside and outside of the classroom, they should be encouraged to interact with their peers regardless of their comprehension levels. Additionally, according to the researchers, when advanced students collaborate with others in groups, it fosters a sense of independence in them that will help them reach their goals and pass the class on their own.

Progressed Learners

The progressed learners, according to Moagi (2020), are learners who were promoted to the next grade despite not meeting the requirements for that promotion. Due to the country's progression policies, which are outlined in the Government Gazette 36041 of 2012, NPPPR, 2011, and NPA, 2011, respectively, progressed learners are promoted to the following grade.

Different learning obstacles that the students face necessitate teachers to observe and address them one-on-one. Moagi (2020) describes Progressed learners as those with low IQs and academic achievement who may not all be eligible for special education due to cognitive or learning difficulties.

Screening, Identification, Assessment, and Support Policy (SIASP)

According to Matolo and Rambuda (2022), the rationale for the SIAS 2014 policy is to advance the ideas of White Paper 6 (2007), which intends to remove obstacles from the educational system that hinder it from addressing the full spectrum of learning demands. White Paper 6, which attempts to address the inclusivity of struggling learners as well as advanced learners, informs SIAS Policy. Teachers are required by SIAS (2014) to profile learners in an effort to solve their learning difficulties by checking for certain shortcomings. Individual Support Plans (ISPs) are created for each learner based on their profile through the Annual Academic Performance Improvement Plans. Students will now be evaluated in order to determine the type and degree of support the school will need to provide for them.

School-Based Support Teams (SBST)

In order to maintain inclusivity in the South African educational system, where students with learning disabilities and other vulnerabilities are managed, the Department of Education in South Africa established the school-based support team (SBST) (Tsotetsi & Omodan, 2020). School-Based Support Teams are teams in schools that deal with supporting both teachers who struggling to teach progressed learners and learners who struggling to learn as expected. According to Tsotetsi and Omodan (2020), one of the responsibilities of the SBST is to use the Screening Identification Assessment and Support Policy (SIASP) to support learners who are perceived as vulnerable and those with learning deficiencies. Rhulwa-Mnatwana (2014) emphasises the importance of inclusivity in class. It is, therefore, essential for teachers to be aware of progressed learners' learning styles as part of promoting inclusivity in an EFAL classroom.

Expanded Opportunities

Anderson (2015) proposes that expanded opportunities in a lesson plan are an alternative, afford approach through which teachers make changes in the lesson plan to allow it to play the role of responding to the learning opportunities to be afforded to the learners. Researchers posit that with an affordance-based approach, learners are active participants, and the opportunity to learn develops because of their participation, making it easier for teachers to prepare for expanded opportunities for the progressed learners.

Conceptual Understanding of South African Learners' Performance

Since 1994, learner performance from lower grades to higher grades has been a concern in South Africa (DoE, 2001). Much research is conducted on learner performance, teaching, and learning, with scholars identifying issues that affect learner performance and suggestions for addressing challenges (Taylor, 2011: Spaull, 2013; DBE, 2016). Despite the introduction of 'no fee-paying schools in South Africa to ensure that vulnerable learners have access to the schooling system, performance levels are lower than in many other countries in the region (Yasunaga, 2014). Spaull (2013) highlighted some improvements in learners' outcomes, as well as policy innovation, learners' performance when measured irrespective of which grade is put to the test. Spaull (2013) further added that the South African system is grossly inefficient and severely underperforming as it stands. It is evident from the reviewed literature that most South African learners are significantly performing below the expected standard in most of their school subjects. While most of the literature are focusing on the generally poor performance of learners, this study paid attention to the performance of the progressed learners as a result of the policy implementation. The next discussion focused on policy implementation on learners' promotional requirements.

Policy Implementation on Learners' Promotional Requirements

In the South African context, the Department of Basic Education (DBE, 2011) provided the National Policy Pertaining to the Programme and Promotion Requirements (NPPPR) that guides learner performance and progression through the grades. Promotion requirements for learners in the Intermediate Phase (that is grade 4-6) are indicated as follows: Adequate Achievement (50%-59%) in one official language at the Home Language level; Moderate Achievement (40%-49%) in the second required official language at First Additional Language level; Moderate Achievement (40%-49%) in Mathematics; and Moderate Achievement (40%-49%) in any other two (2) of the remaining approved subjects such as Natural Sciences and Technology, Social Sciences and Life Skills (DBE, 2011:8). According to the above-indicated policy (NPPPR), no learner should repeat a grade more than twice in a phase. This implies that despite a learner’s poor performance, no learner can be in a phase for more than four years. This policy implies that, even if a learner fails to meet the requirements, they can progress to the next grade to prevent the learner from being retained in one phase for more than four years (DBE, 2022, P.16).

Besides the NPRRR policy, the DBE also uses the Screening Identification, Assessment, and Support Policy (SIASP, 2014) which was established to plan how to bring support to the learner, as well as to give indications and recommendations for support programs (DBE, 2014, p.29). The document regulates how progressed learners and other learners with learning challenges should be attended to at school with the teacher's support, the school-based Support Team (SBT), external support services, and the parents (DBE 2014:32-41).

Drawing from teaching experience, researchers view overcrowded classes, lack of parental involvement, and lack of learners' interest in doing their schoolwork as some of the commonly identified elements of learners' poor performance. Reddy, Van der Berg, Janse Van Rensburg, and Taylor (2012) expressed worry over low-income students' persistently poor achievement results. The research and policy challenges were established to enhance the educational system and break the pattern of low accomplishment in mathematics and other problem areas, such as languages and science. Despite the implementation of SIAS and the availability of school-based support teams in primary schools, teachers lament on lack of teaching resources to support the progressed learners. The following section discussed the teaching strategies to enhance progressed learners' performance.

Teaching Strategies to Enhance Progressed Learners' Performance

In reviewing the literature on teaching strategies, researchers paid attention to the lesson plan design, the assessment design, and the expanded opportunities given to progressed learners by teachers to enhance their learning. Harrison (2007) outlines effective lesson design as a lesson that is approached with the learner in mind and identified goals. The researchers concur with Harrison and are of the idea that the lesson plan should be inclusive. This implies that the below-average, average, and gifted learners should be in the mind of the teacher when designing the lesson. With this argument in mind, the researchers are of the view that most EFAL lesson plans are designed for standard lesson presentation and the progressed learners are not properly planned for.

In addition, it can also be argued that teachers understand how to design EFAL lessons with inclusive activities or strategies, nor any expanded opportunities planned for the progressed learners.

Furthermore, Harrison (2007) posits that a less effective lesson plan is the result of resorting to planning for convenience to cover the learning material as required. It can be deduced from these utterances that some teachers do not plan lessons to meet the needs of learners, but for the sake of covering the Annual Teaching Plan (ATP), a contrast to the intentions of lessons planned with the learners in mind. Moagi (2020) indicated that teachers who plan to cover the ATP are prone to fail learners to perform to the best of their abilities, hence the high number of progressed learners. The researchers posit that for teachers to improve their performance and that of the progressed learners, the primary factor when designing a lesson plan should first be the learners, and the planning should be centered on the multiplicity of learners in class.

The role of assessment for learning needs a careful design and planning to ensure that the key learning outcomes are addressed, and engagement in the tasks prompts the kind of learning most desired (Bearman, Dawson, Boud, Hall, Bennette, Molly & Joughin, 2014).

Researchers are of the view that teachers design standard assessments and not taking into consideration the progressed learners. Assessment activities should be designed to ensure that it provides an opportunity for learners to benefit from the comments they receive. According to Dreyer & Mawela (2020), teachers must give learners comments that will assist them (learners) to self-identify gaps that exist between them and the learning content. This implies that progressed learners require extensive feedback as part of providing learner support. Carefully designed assessment activities focus on developing learners' capacity to identify appropriate standards and apply them to their work and that of others, (Bearman et. al: 2014). The assessment designs given by Bearman et. al focused on the learner's ability to self-regulate, monitor their work, identify what they need to do, and seek to utilize feedback from a variety of sources. The researchers view the use of appropriate assessment planning as a good strategy to enhance progressed learners' performance. The implementation of diagnostic assessment can be handy in identifying progressed learners' challenges by teachers (Dreyer & Mawela, 2020). Besides the diagnostic assessment, formative assessment must be used to monitor their challenges and seek to address them while there is enough time before the summative assessment tasks are undertaken (Mahlambi, 2021). The researchers posit diagnostic and formative assessment planning as essential strategies in addressing progressed learners' challenges in learning.

Anderson (2015) proposes that expanded opportunities in a lesson plan are an alternative, afford approach through which teachers make changes in the lesson plan to allow it to play the role of responding to the learning opportunities to be afforded to the learners. This implies that the lesson plans should include expanded learning opportunities for struggling learners such as the EFAL progressed learners. Anderson (2015) goes on to say that with an affordance-based approach, students are active participants, and possibilities develop because of their participation, making it easier for teachers to prepare for expanded opportunities for these advanced students.

The researchers agree that where the platform of teaching and learning allows learners to be actively involved irrespective of the extent to which they are, teachers are therefore able to diagnose and produce expanded opportunities not only for the progressed learners but for all learners including the gifted ones. These expanded opportunities in the researcher's view may be used to afford both the learner and teacher to direct remedy required to the individual learner's challenges. The concept of expanded opportunities if implemented properly yields the results where learners' attitudes towards school improve including their behaviour in general Kauh (2011). It can be deduced from these utterances that there are benefits that come with the expanded opportunities in improving their academic performance. The next section discussed the teachers' challenges to teach progressed learners.

Teachers' Challenges in Teaching Progressed Learners

To establish a literature review on teachers' challenges to teaching progressed learners, researchers focused on the pressure that teachers have in covering the syllabus, the lack of training to teach progressed learners, and the support that teachers receive from the departmental heads and district officials. Muedi, Kutame, Ngidi, and Uleanya (2021) argue the impact of a lack of teacher support by members of School Management Teams and the Department of Basic Education (DBE) could lead to the underperformance of learners. This implies that for effective teaching of progressed learners, teachers should be well-equipped and supported by the school management team and district officials. According to Wafula, Kisilu, and Mukwa (2019), an evaluation of curriculum objectives has revealed that some subjects have difficult and broad content, with inadequate instructional materials and an inadequate number of teachers to teach, thus leaving teachers with overloaded curriculum implementation to undertake. Researchers view teachers' workload as an important aspect that needs to consider in addressing the problem of progressed learners in South Africa.

According to Edward et al. (2019), the syllabus's scope should be proportionate to the time allotted for its efficient implementation. According to the researchers, the time allotted for curriculum implementation in the South African context was solely intended to address the situation where all learners comprehend concepts easily, and the inclusion of progressed learners was not anticipated because there was absolutely no provision made for them in these policy documents. Teachers, therefore, find it challenging to find additional time, besides the allocated notional time to teach the progressed learners. The intended instructional time in the Curriculum and Assessment Policy Statement (CAPS) does not include teaching progressed learners. The understanding of the latter statement is that five hours allocated to English First Additional Language teaching in the grade six classes is standard to the normal case situation and does not accommodate the progressed learners as they need more instructional time which is not catered for by the curriculum policy.

According to Zwane and Malale (2018), the country's commitment to providing equal opportunity for all learners and youth in Swaziland, as stipulated by the country's 2005 constitution, formed the impetus for the introduction of inclusive education into mainstream schools. Even though educators are expected to be capable of teaching learners with a wide range of educational needs, in-service teachers received insufficient staff development and training before the implementation of inclusive education, and most teachers were not professionally developed for inclusive education as pre-service students at the tertiary level. The existence of teacher training in Swaziland does not include the training of teachers to teach diverse classes.

In the context of South Africa, Warnich *et al* (2014, p.1) indicated that inadequate training, the lack of resources and other support material in learning and teaching, increased workload, and a lack of support from subject and curriculum specialists contributed to the incompetency of teachers in delivering the curriculum in schools. Researchers deduce that teacher training should prioritise the training to teach progressed learners.

Researchers believe that progressed learners in South Africa are a by-product of a lack of teacher training and a lack of understanding of inclusive education. The success of every organisation including the school to a greater extent depends on effective and efficient supervision, Dawedo, Dzakpasu, and Agbetorwoka, (2020). It can be deduced from the preceding statement that in effective lesson planning, poor monitoring of teaching progressed learners and failure to provide progress reports on the learners' performance contribute immensely to the increase in progress in learners in schools. The latter further alluded that in the school, the ultimate objective of supervision is to improve teaching and learning. In addition, Dawedo et al (2020), emphasised that the Ghana Education Services has a policy regarding the supervision of teaching and learning in the basic schools wherein heads of department, circuit managers, school management teams, and parents form some of the bodies which have oversight responsibilities to see proper and efficient management and supervision of schools on daily basis.

This notion according to the researchers, bears reference to how support from departmental heads and other officials can yield good results if supervision is properly and efficiently implemented in our South African schools. However, the challenge raised by Moagi (2020) was that there was no proper support from the subject specialists and other district officials with schools invited to the sub-district professional support forums. Dawedo et, al further cautioned that in contemporary supervision within these decades, the field of supervision has been suffering from unfriendly and unstable relationships between teachers' supervisors, which had included harassment, settling of scores, intimidation, and fault finding. According to the latter, this method of instructional supervision created dread and panic among some teachers, affecting student performance. In the context of this study, teachers' efficacy in teaching progressed learners may be hampered by a lack of support from department heads and district officials on how to plan for and assess progressed learners. Discussed, next is the theoretical framework.

Theoretical Framework

Considering the NPPPR and SIAS policies used within the South African education context, culturally responsive teaching theory was deemed appropriate as the theoretical framework for this study. Bissonnette (2016) indicated that culturally responsive teaching theory embraces the teaching methods that demonstrate cultural caring, teachers should accommodate all learners in class and treat them equally.

The researchers posit that the culture of teaching and learning in a classroom is essential to yielding good learners' performance, particularly when the teacher cares about the progressed learners' learning styles. Researchers believe that teachers have the responsibility to reflect on designing lesson plans that cater to progressed learners, as a way of caring for their learning styles. A specific culture of teaching progressed learners is required for them to perform better.

Culturally responsive teaching is described as teaching that consists of instructional practices that recognise honour and leverage cultural diversity in educational settings to ensure the academic success of all learners, Boyd (2014). As learners often differ from each other and their teachers in cultural background, teachers who utilise culturally responsive practices, value their learners' cultural and linguistic resources and use this knowledge to build upon rather than seeing it as a barrier to learning (Bissonnette,2016). Successful instruction depends on sensitivity towards those differences and the ability to draw on them in creating supportive educational environments for all learners. Teachers who are culturally responsive to learners become interactive and apply collaborative teaching methods and strategies that engage learners and encourage them.

Besides the culturally responsive theory, researchers also paid attention to the use of Interactive learning theory which emphasises the interaction between teachers and learners, learners among themselves, and their interaction with the learning content (Joahkim & Frederick, 2013). Researchers believe that the interaction between the teacher and progressed learners in class can promote and create a conducive learning environment. Interactive learning yields more effective results as learners construct meaning from what they learn through interaction with the environment, real-life experiences, and social interactions. Progressed learners require special attention, therefore, teachers' availability to interact with them provides the opportunity for them to learn. Learners then realise that whatever takes place in the classroom is not in isolation from the outside world, but the two complement each other (Joahkim & Frederick, 2013). Learners should be significant participants during the teaching and learning process. They should value their cultural backgrounds, draw on their experiences, explore their understanding, and make meaning from what they have learned (Joahkim & Frederick, 2013). Next is the discussion on the methodology.

Methodology

Research Design

This study employed a qualitative research approach, which according to Creswell (2007), is a type of educational research that relies on the participant's vision, gathers data consisting of words from the participants, and expresses and considers these words for themes.

The qualitative research methodology was employed in this study because it offered participants the opportunity to share their understanding concerning a particular phenomenon. It allowed the researcher to communicate with participants by asking them questions to gather information. The interpretive paradigm research underpins this qualitative study since it allows the researcher to investigate teachers' perspectives about progressing learners in elementary schools as well as their behaviour when educating them. Qualitative research design has several advantages, including the ability to generate deeper insights into the design, administration, and interpretation of participants' behaviour, perceptions, feelings, and understanding (Shidur & Yemeni, 2017).

Population and Sampling

MacMillan and Schumacher (2010) utilized a purposive sample strategy to pick a group of information-rich individuals from the overall population of primary school teachers in the Lichtenburg district of South Africa. In Lichtenburg, data was collected at two primary schools. Data were gathered at two primary schools in Lichtenburg. Six (n=6) EFAL teachers who teach progressed learners in Grade 6 were purposefully sampled. Having interacted with policies such as the Screening Identification Assessment and Support (SIAS) and the school-based Assessment Team, Intervention, and Remediation, it has become clear that the underperformance of learners occurs in many schools around the country. In this setting, poor learners' performance in primary schools has resulted in classes with several progressed learners.

Table 1.1: Description of Study Participants

Respondent category	Sex		No. of participants
Teachers	3 males	3 Females	6
Subject	English First Additional Language	English first additional language	6
Number of years	25 years	18years	6
Highest qualification	Honour's degree	Master's degree	6

Data Collection Instruments

Data collection is the process of acquiring information that the researcher requires to address the study problem (Rouse, 2017). In this study, data was collected through semi-structured interviews. For the purpose of triangulation, the researchers also used both non-participatory observation and document analysis as part of the data collection methods. A checklist instrument was used during the non-participatory observation of EFAL lesson presentations. English First Additional Language CAPS document and NPPPR policy were used to gather information.

Intervention lesson plans were requested from EFAL teachers to analyse their strategic plans to assist progressed learners in grade 6. The use of three types of data collection assisted in the triangulation of data collection.

Data Analysis

Qualitative procedures were used to analyse data. The collected data from the semi-structured interviews were organised and then transcribed verbatim. Thematic data analysis was employed when analysing data collected from semi-structured interviews, document analysis, and non-participatory observation. The analysis process included coding and then establishing themes and categories (Kiger & Varpio, 2020).

Validity and Reliability of the Findings

To confirm the validity of the semi-structured interview guide's questions, the non-participatory observation, and the document analysis checklists, the researchers had an expert go over them and make ideas for how to better align the questions with the study's goals and objectives. This process was employed to ensure the reliability of the study's findings.

Ethical Considerations

All ethical considerations, such as secrecy, anonymity, and obtaining permission before collecting data, were followed. Under the ethical clearance certificate number (Ref:2018/09/12/43533515/06/MC), research protocols were followed as per the University of South Africa Research Ethics Committee guidelines to ensure the scientific rigor and validity of the findings (Bless et al., 2013). The researchers also ensured that all the participants in this study were EFAL teachers teaching progressed learners in primary schools. None of the teachers were discriminated against.

Findings

Data was collected utilising semi-structured interviews, non-participatory observation, and document analysis in order to establish themes for the findings. To keep their true identities hidden, the participants in this study were given the pseudonyms T1 through T6. Three male and three female EFAL teachers from primary schools in the Lichtenburg district participated in the study. The demographic data was gathered based on the participant's gender, age, highest qualifications, and EFAL teaching experiences.

The following research questions were posed: what are the views of grade six English first additional language teachers regarding teaching progressed learners? What are the challenges of teaching progressed learners? Three themes were identified from the research questions, namely, *1) Identification of progressed learners, 2) teachers' views on teaching progressed learners, and 3) Challenges experienced by teachers.*

Identification of Progressed Learners

This study discovered that grade six English first additional language teachers in Lichtenburg district primary schools lack an understanding of the importance of identifying progressed learners in class. Two out of six participants' EFAL teachers indicated that they look at learners' reports at the beginning of the year to see if the learner met the requirement to pass or progress. When asked *how they identify progressed learners in class*, participants responded as follows:

"I do not have time to check whether the learner progressed or not. The important thing is to start teaching on the first day. I should be able to cover the syllabus" (T3). "Yes, I check learners' reports to identify those learners that progressed. This process enables me to prepare my lessons properly" (T6). "I think it is time-consuming to check the progressed learners" (T2).

It is evident from the above responses that most EFAL teachers lack an understanding of the importance of identifying progressed learners in class. The issue of time and covering syllabus are raised as a hindrance towards identifying progressed learners. One teacher showed willingness to identify progressed learners, by checking their reports before teaching and learning started.

The other teachers also raise some concerns regarding identifying progressed learners, as follows:

"I never received any training on how to identify progressed learners in class" (T4). "the officials from the district should be the ones who identify to the teachers, those learners who progressed since they analysed learners' performance" (T5). "I give all learners in class a diagnostic assessment at the beginning of the year to identify learners who progressed from the previous class. Their lack of knowledge in subject concepts indicates their areas of need" (T1).

The above responses showed concern regarding training on how to identify progressed learners in class. Participants see it as the district's responsibility to identify learners who progressed rather than their own. From the participants' responses, it can be deduced that teachers are aware of the presence of progressed learners in their classes. Others are taking the initiative to identify learners who progressed from the previous class by checking the learner's reports, and others by using the diagnostic assessment.

Teachers' Views on Teaching Progressed Learners

This study revealed that grade six English first additional language (EFAL) in Lichtenburg district primary schools view progressed learners differently. When asked to elaborate on who are progressed learners, the participants uttered the following:

"Progressed learners are those learners who did not meet the requirements to pass the grade" (T3). "There is a policy that provides us with the requirements for each learner to meet, to pass a grade. If the learner fails to meet those requirements, the learner must fail, but if repeating the same grade more than twice, we push the learner" (T2). These are learners who have difficulties in learning. We push them to the next grade, to avoid repeating the same grade more than twice" (T4).

Grade six EFAL teachers showed understanding of the concept progressed learners. Teachers referred to the policy which provides a guideline for learners who qualify to progress. However, the teacher seemed not to know the name of the policy. The emphasis made by teachers is on trying to avoid learners' repetition of the same grade more than twice in a phase.

Some participant teachers were skeptical about the policy implementation and the support given to the progressed learners. They indicated that:

"Yes, progressed learners, perform very poorly in class. The policy favours learners to progress to the next grade despite their poor performance without providing the necessary support to the teachers on how to teach progressed learners in the next grade" (T5). "Progressed learners are below-average learners in class. These learners require serious attention from the teacher" (T1). "I regard progressed learners as learners who need expanded opportunities for them to learn and understand subject concepts. However, syllabus coverage is a challenge" (T6).

Participant teachers' utterances indicate that the application that regulates the promotion of progressed learners poses a challenge since it does not provide methods to be used in teaching progressed learners in the next grade. These learners since they are poor performers require expanded opportunities which are also considered a challenge since teachers are required to cover the syllabus on time. What is essential under this theme is that teachers know who progressed learners are, and what policy informs the decision to make them pass despite not meeting the requirements.

Challenges Experienced by EFAL Teachers

Despite being optimistic about the policy implementation, participant teachers alluded to the challenges that they faced daily concerning teaching EFAL-progressed learners. When asked, what the challenges of teaching progressed learners, they indicated the following:

"As previously indicated, I never received training in identifying progressed learners in class. I also never received training to teach these learners" (T4). "I often find it difficult to design a lesson that caters to progressed learners and even to assess them. Our classes are overcrowded, which makes it difficult to attend to progressed learners" (T3). "There is an allocated notional time to teach subject concepts in class, failing to cover the syllabus as a result of attending to progressed learners becomes a case against the teacher" (T5).

The participants' utterances revealed that teachers faced various challenges when teaching progressed learners. Not being trained to teach progressed learners, designing the lesson plan, and assessing them are flagged high among the challenges.

Teachers seemed to be afraid of failing to complete the syllabus and turning a blind eye to progressed learners' needs and focusing on the notional time allocated to complete the syllabus. Other participant teachers were of the view that overcrowding and lack of departmental heads' involvement in supporting teachers are core fundamental challenges faced by teachers in teaching progressed learners. They stated that:

"Yes, our challenges are enormous, particularly us who are teaching in public schools. My class has more than sixty learners. And I have twenty-five progressed learners. I don't have enough time to interact with them, despite being willing to assist them" (T6).

"I do not have support from my departmental head on how to design the lesson plan for progressed learners. The Departmental heads don't even moderate the progressed learners' book differently from other learners" (T2). "I haven't received any support from the district officials on how to design assessment activities for progressed learners, since the Curriculum and Assessment Policy Statement (CAPS) does not cater to them. We also don't have sufficient educational resources and infrastructure that necessitate the teaching of progressed learners" (T1).

The above articulations indicate the frustrations that EFAL teachers are encountering daily in class. Overcrowded classrooms deprive most teachers of interacting with progressed learners. Poor monitoring of progressed learners by departmental heads shows a lack of knowledge or ignorance by departmental heads on the importance of supporting progressed learners.

Next is the discussion, focusing on the above-illustrated findings of the study.

Discussion

This study explored the teaching of progressed learners in Grade six primary schools in the Lichtenburg district of South Africa. The study regards EFAL teachers' pedagogical competency as essential for the successful teaching of progressed learners. Most of the progressed learners presented with poor language skills, which impacted the ability of learners to interpret questions and source material and frame appropriate responses to questions (DBE, 2016). The current study revealed EFAL teachers' inability to identify progressed learners in class and provide the necessary support for them to perform. The literature confirms that insufficient teaching and learning in primary schools' results in learners' poor performance at the secondary level (Mapholisa, 2014). It is, therefore, essential that progressed learners at the primary level, receive serious attention, to improve their performance in preparation for their secondary schooling.

The National Policy Pertaining to the Programme and Promotion Requirements (NPPPR) was developed by the Department of Basic Education (DBE, 2011) to govern learner performance and progression through the grades. The findings indicated that teachers despite being familiar with the content of the policy, do not have the relevant pedagogy to teach progressed learners. Furthermore, it was revealed that teachers do not receive support from district officials on how to teach progressed learners.

As a result, the lack of teachers' competence in teaching and assessing progressed learners, contributes to an increase in the number of progressed learners in the next phase. The policy is seen as a document that avoids learner retention in a phase but does not solve the problem of poor learners' performance.

Progressed learners, despite being described as learners who passed the grade without meeting the promotional requirements (DBE, 2011), findings indicated that they perform below the average and require expanded opportunities for them to perform better. The reviewed literature indicated the need to design lesson plans that are inclusive to accommodate the below-average learners in class (Harrison, 2007). Lumadi (2016, p.30) stresses the importance of meaningful, creative planning to ensure that all staff members are aware of what students will be learning and why they will be studying it. He goes on to say that meaningful planning comprises teachers planning their classes ahead of time and collaborating and assisting one another to ensure that their lessons are well-planned, that they know exactly what they want to achieve, and that they know what learning outcomes should be achieved. The accommodation of learners who come from a poor socio-economic background was raised by Moyo and Maseko (2016) as a contributing factor to poor learners' performance in Zimbabwe. The implications are that the poor socio-economic status of learners could be one of the contributing factors to the increase in the number of progressed learners in schools.

The findings also indicated several challenges that teachers encounter when teaching progressed learners. Lack of training, overcrowded classes, poor infrastructure, and educational resources, contribute to learners' poor performance, hence progressed learners. This was supported by Wafula, Kisilu, and Mukwa (2019), who alluded to the lack of adequate teaching staff, and poor coverage of the subject content as contributing factors to poor learners' performance.

It also emerged from the study that teachers have a challenge in designing lesson plans to cater to progressed learners. The literature reviewed indicated that teacher proficiency in delivering the content through an appropriate approach was not appropriate (Behroozi & Amoozegar, 2013). Lack of support from the departmental heads and the district officials was indicated as an area of concern by teachers. This clearly indicated that not only EFAL teachers had challenges in providing the necessary teaching approaches and support to progressed learners, but also the departmental heads and district subject specialists.

The study considers the views of the EFAL teachers regarding the identification of progressed learners, their views of teaching progressed learners, and the challenges they faced when teaching them. This study provides empirical evidence that EFAL teachers from Lichtenburg district primary schools are willing to teach progressed learners. When asked about identifying progressed learners, some teachers indicated the use of diagnostic assessment activities. Although there are challenges in designing lesson plans, lack of support from departmental heads and district subject officials, and overcrowding challenges, teachers continue to teach progressed learners.

Finally, the study literature analysis revealed that because students learn in different ways, teachers cannot teach them in the same way. Instead, teachers should adapt their teaching approaches to suit the needs of their learners and connect with learners of various cognitive levels (Levi, 2008). This means that EFAL teachers should be educated to teach advanced learners differently, even if they are in the same class. Teachers should receive training on how to interact with advanced learners in the classroom. This is also supported by the Interactive Learning Theory, which emphasizes the importance of interaction between teachers and students, as well as between learners and the learning content (Joahkim & Frederick, 2013).

Conclusion

The current study explored the views of the EFAL teachers in grade the six Lichtenburg primary schools in South Africa. The study sampled experienced EFAL teachers, teaching progressed learners. The study concludes that EFAL teachers should receive training in teaching progressed learners. The Curriculum and Assessment Policy on the promotion of learners should provide guidelines for teaching progressed learners. It is also recommended that EFAL teachers should receive the necessary skills in designing lesson plans to cater to progressed learners. Researchers also conclude that the Department of basic education should provide the necessary educational teaching and learning resources to support the teaching and learning environment of progressed learners.

The findings of this study suggest the need of using diagnostic assessment to identify EFAL-progressed learners and provide the necessary support to enhance their learning. Overcrowded classes should be avoided, to opportune teachers to interact with progressed learners during teaching and learning. Progressed learners should be given expanded opportunities to learn as a supporting strategy to enhance learning. The departmental heads should receive training on how to monitor the learning progress of the progressed learners and provide the necessary support to EFAL teachers.

Recommendations

Several conclusions were drawn from the study's findings. First, the current NPRRR learner promotion policy should be reviewed and revised internally.

Second, creating a training handbook on teaching progressed learners, lesson planning, and teaching and assessment methods that encourage teacher-learner interaction during teaching and learning. Furthermore, the Department of basic education in South Africa should strengthen the knowledge of the departmental heads and the district subject officials to assist teachers in designing lesson plans that promote the effective teaching and assessment of progressed learners.

More research into progressed learners' perceptions of teachers' support in their learning might be conducted. Other studies on progressing learners' assessment approaches that encourage learning can be conducted. Finally, more research into the perspectives of district subject officials on aiding progressed learners can be done.

Limitations

The study's findings may not be expressly generalised to all study fields in progressed learners, which is one of the paper's limitations. While there is a lot of study on progressed learners, this article focused on findings concerning EFAL teachers' experiences in teaching progressed learners in Grade 6 primary schools in South Africa's Lichtenberg district. It is also important to state that though the lack of teacher training to teach progressed learners and teaching resources are amongst the contributing factors to having progressed learners in the Lichtenburg district, other provinces in South Africa might have different factors.

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TRUSTING ONE ANOTHER AS WE MOVE FORWARD COLLABORATIVELY FOR TRANSFORMED TEACHING PRAXIS

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Abstract

Since 2016, four researchers in Higher Education Institutions in South Africa and Norway, specifically in the School of Education, have collaborated on three small-scale qualitative research projects with their students. In this article, we focus on our international collaboration and Empathetic-Reflective-Dialogical Restorying as the research methodology that we have employed. Inspired by our intersectionality, this article presents a collective self-study, focusing on us as researchers (and teacher educators) who, using digital tools, collaborated across geographical boundaries, different languages and academic traditions. Findings indicated the importance of risking and venturing into the unknown in terms of troubling existing research boundaries, also teaching against the grain, in alignment with a decolonial approach. It also became clear that building authentic relationships and adhering to ethical considerations is critical to establishing successful research collaboration. This article argues for the importance of courageous conversations in safe and brave spaces. It highlights the importance of trusting one another and acknowledging the strengths of each researcher. The benefits we experienced through our collegial collaboration and the implications for further research have the potential to transform teaching praxis.

Keywords: Collaboration, Empathetic-Reflective-Dialogical Restorying, Internationalisation, Intersectionality, Praxis, Trust.

Introduction

In 2016, two visiting academics from Bergen and Stord, Norway, met with two academics from Durban, South Africa, in Durban. This informal meeting and discussion led to collaborative work across academic traditions and geographical, gender, language, and ethnic boundaries. This article addresses the following research problem: how four colleagues from different geographical and contextual backgrounds and Higher Education Institutions can successfully engage in academic enterprises to pursue teaching-learning praxis. Employing a research methodology designed by one of the South African researchers, we reflect on this collaboration's dynamic and what has made it so successful. Academic ego-centrism can suffocate successful cooperation, and openness and collegiality opened the door to this collaborative relationship. In this article, intersectionality and collaboration provide the theoretical framework for analysing the data that emerges from the conversations and dialogue in which we have engaged.

This article argues the importance of forming sound relationships built on trust to move any collaborative academic project forward. This article does not report on specific collaborative projects per se (Jarvis, Lindhardt, Mthiyane, & Ruus, 2018, 2021).

The successful application of Empathetic-Reflective-Dialogical Restorying (ERDR) with students across geographical boundaries led us to use this methodology as an instrument of collective self-study. Specifically, the focus is on what has made our ongoing collaboration successful. Individual reflective self-dialogue, followed by a Community in Conversation (CiC) in each geographical setting, led to a Community in Dialogue (CiD) across geographical boundaries and then to a Community for Transformation (CfT) to move forward collaboratively.

The article seeks to answer the following questions:

- How does reflecting help us move forward in our teaching and research?
- How has Empathetic-Reflective-Dialogical Restorying as a research methodology helped in this process?
- What is the impact for our teaching praxis moving forward?

Theoretical Framework

The following theoretical framework provides the lens for analysing the participants' responses, namely, intersectionality and collaboration.

Intersectionality

Intersectionality is included as an analytical lens to acknowledge differences, specifically to think across these differences to build solidarity for successful collaboration (Collins & Bilge, 2016). Intersectionalities originating from lived experiences can include the following: geographic boundaries, and, in particular, the north/south divide and implications for decoloniality; ethnicity and language; gender; and academic seniority (Crenshaw, 2003; Wetherell, 2005). Power undercurrents and privileges exist across these differences (Reyes, Aronson, Batchelor, Ross, & Radina, 2021). Intersectionality, as a form of critical inquiry, uses intersectional frameworks to study a range of social experiences (Collins & Bilge, 2016) and, in this case, that of working collaboratively across geographical and contextual boundaries in Higher Education. Reyes et al. (2021) contend that while different power relations must be acknowledged, teacher educators and researchers from various backgrounds/contexts can engage in research collaboratively. We contend that this intersectionality can be inspiring.

Collaboration

Understanding intersectionality (Crenshaw, 2003) is crucial for effective collaboration, as it acknowledges the complexity of identity and the unique challenges faced by individuals with multiple identities. Collaborative intersectionality builds upon intersectionality theory to emphasise the importance of collaborative efforts among individuals and groups from diverse backgrounds (Carrigan et al., 2023). Successful, collegial collaboration is often missing in Higher Education (Reyes et al., 2021). Higher education has become increasingly complex with the changing nature of knowledge, particularly online networking, which has required new ways of working and collaborating (Walsh & Kahn, 2010).

The pressure of globalisation has created new challenges, and Higher Education Institutions (HEIs) need to adopt innovative and efficient methods for knowledge production and dissemination (Munoz, Queupil, & Fraser, 2016). Drawing on Choo and Ferree (2010), who promote a group-centred approach to intersectionality, we collaborated as a group of teacher educators. We did so to prepare us better to engage more meaningfully with our students in a way that could be transformative (Reyes et al., 2021).

Collaboration is a joined-up approach that transcends institutional, individual and discipline-based barriers to knowledge production (Power & Handley, 2019). By its very nature, collaboration requires long-term commitment, negotiation, trust, effective communication, and joint decision-making while working towards a shared vision or goal (Coombe, 2015). When they work collaboratively, teacher educators find the way forward to a transformed teaching praxis, resulting in a transformed shared philosophy (Anzaldúa, 2015). Sachs (2003) contends that all parties in the process are learners. In the HEI context, the journey of working collaboratively, cross-fertilising ideas, and generating enthusiasm and momentum through professional conversation is essential in and of itself (Gajda, 2004). Interpersonal connections and trust are imperative to developing a firm foundation for collaborative work, with "the personal considered to be as important as the procedural" (Jarvis & de Jager, 2021, p. 2). The impact of successful collaboration should be evidenced at an individual and institutional level, as well as having a national and possibly international impact (Al-Youbi, Zahed, & Tierney, 2020).

Conceptual Notions

The concepts of trust and internationalisation assisted in understanding our collaborative experience.

Trust

Trust is presented as a possible analytical tool, and the relationship between trust in people and trust in institutions is explored.

Trust is a complex concept, and Grimen (2013) suggests that while definitions of trust can be significant, they can also be misleading. The idea of trust could be likened to expectations/perceptions (Løgstrup, 1997), as a demonstrable act (Grimen, 2013), or as an example of spontaneous life expression (Løgstrup, 1997). A characteristic of trust, then, would be that it is instinctive, without reservation, and a way of acting (Grimen, 2013). Løgstrup (1997, p. 18) goes so far as to say that "[o]ur life is so constituted that it cannot be lived except as one person lays him or herself open to another person and puts him or herself into that person's hands either by showing or claiming trust." This understanding of trust speaks to the role played by the attitude displayed by one to another. In a HEI, confidence is usually based on the assumption that those who work there are professionals and that ethical practices are monitored. However, trust can be undermined by unethical practices, academic ego-centricism and the like. Successful collaboration in academia requires a personal trust relationship as one of its basic tenets, including an attitude of mutual recognition (Petherbridge, 2021).

Internationalisation

Internationalisation has been closely connected to globalisation, which implies a relationship between and among countries, people, systems, and cultures (Czaika & de Haas, 2014). Internationalisation of education has become a central feature of HEI policy, based on the premise that knowledge exported through internationalisation improves the quality of education in HEIs. Internationalisation and international collaboration can be expressed in the following ways: international mobility programmes, collaboration between institutions, faculties, and staff, studying abroad, and international classroom experience (Deardorff, De Wit, Heyl, & Adams, 2012). The international collaboration reflected in this article came about in response to the Norwegian general institutional policy of internationalisation. This translated into an institutional visit by Norwegian academics from the Faculty of Education at the University of Western Norway of Applied Sciences to the University of KwaZulu-Natal, specifically the School of Education. While official bilateral meetings were held at a faculty and programmatic level, the authors took an intercultural dimension as their initial point of departure (Knight, 2008; De Wit, 2020) to develop international and intercultural classroom competence (Deardorff et al., 2012). Our collaborative work established a virtual international classroom where two groups of preservice teachers from Norway and South Africa met to reflect on personal religious identity and gender equality (Jarvis et al., 2018) and best practices in teaching (Jarvis et al., 2021).

Academic research is typically stamped with dominant imperialist notions, conflated as it is, with European/ global north colonialism (Ngugi wa Thiong'o, 1986). The research methodology we used in our collaboration facilitated the troubling of these current hegemonies and allowed for a restorying (or reimagining) of possibly engrained narratives that advocate the inferiority of African countries in relation to more developed countries in the global north (Nweke & Nwoye, 2016).

Research Methodology

Working within a feminist research paradigm, an interpretive approach was adopted, recognising that an individual's thoughts and perceptions are more significant than "external, objective conditions and structural forces" (Neuman, 2011, p. 104). A collective self-study provided the opportunity to embrace collective wisdom (Dinkelman, 2003). The use of self-study in teacher education is intentional in analysing and improving the practices of teacher educators, both individually and collectively (Frambaugh-Kritzer & Stolle, 2019; Haberlin, 2018; Ringo, 2006). Our collective self-study (Hordvik, Fletcher, Haugen, Møller, & Engebretse., 2021; Makaiau, Leng, & Fukui, 2015) allowed us to engage in intersectional praxis when we opened up how our respective identities and experiences impact our teaching-learning with our students. We employed Empathetic-Reflective-Dialogical Restorying (ERDR) as the research methodology (Jarvis, 2018). This research methodology was developed by one of the South African researchers.

An empathetic approach refers to the capacity to understand and respond to another person with an increased awareness of their position and concerns and that these matter (Barton & Garvis, 2019). Reflection implies thinking back through something to bring improvement. The methodology itself strove to create something of a figuratively safe space (Roux, 2012) regarding dignity and intellect (Callan, 2020), where we could be open with one another without fear of posturing. Callan (2020, p. 65) defines being dignity safe as "[to be] free of any reasonable anxiety that others will treat one as having an inferior social rank to theirs". This was also a brave space where we were required to challenge our comfort zones as we explored our collaborative praxis (Arao & Clemens, 2013).

The methodology entailed self-dialogue and written self-narrative (to an internal audience, a safe space), a Community in Conversation (CiC) (to an external audience, a less safe space), a Community in Dialogue (CiD) and a Community for Transformation (CfT) (to an extended external audience, a collective brave space). We engaged in re-search that decolonises interviews as typically Western data collection methods (Tuhiwai Smith, 2021). We were able to get to know each other in a safe space. Collectively, we took responsibility for becoming agents of our learning by generating new knowledges. Chilisa (2017, p. 212) refers to the CiC, CiD and CfT as "Talking Circle[s]" where we met in the Included Middle (Nicolescu, 2012) to share our narratives.

The methodology and personal narratives shared in our conversations became a tool of decolonisation as we worked in a way grounded in African Indigenous Methodologies. We addressed researcher reflexivity and power sharing, personal transparency and vulnerability, and inclusiveness within our South-North collaborative research (Chilisa, 2017; Snow et al., 2016).

Our respective institutional ethical protocols were adhered to, and unanimous consent was forthcoming from each of us, including consent to record Zoom sessions. These recorded sessions were transcribed to facilitate individual and collective reflection on our conversations and dialogue. We listened to Zoom recordings of the CiD and CfT and identified key emerging themes. ERDR provided the opportunity to explore our narratives and the convergence of our collective narratives in response to the questions in the table below. The theoretical framework presented provided the lens through which to consider the responses.

Table 1: Questions informing the 5 levels of ERDR (Jarvis, 2018)

Levels 1 and 2 Self-dialogue is expressed in a written self-narrative. Individual activity	**Levels 3 and 4** Level 3 and Level 4: Community in Conversation Colleagues in South Africa and Norway separately	**Level 5** Community for Transformation Colleagues in South Africa and Norway together
● How did teaching-learning experiences as a learner at school/ the tertiary level and as a teacher educator in Higher Education inform my approach to education today? ● How has my approach to teaching possibly changed over the years? We encouraged one another to consider and reflect on our respective socio-political contexts.	● What are the similarities and differences in our narratives? ● How did we get to where we are now?	● What is the efficacy of Empathetic-Reflective-Dialogical Restorying as a research methodology in the way it has been applied in this self-study? ● What are our hopes/aspirations moving forward in the education endeavour for transformed teaching praxis? ● Reflections on working collaboratively with our Norwegian/SA colleagues.

At level 1, individually, we considered our narratives and committed these to a written narrative in level 2. In level 3 (CiC) we met in our respective geographical locations (using digital technologies during COVID when physical contact was not permitted). We exchanged responses to the questions reflected in Table 1, drawing on our personal written narratives.

Level 4 (CiD) followed, and at this level, we came together across geographical and contextual boundaries, using Zoom as a digital tool to dialogue with our overseas counterparts and drawing on our respective conversations at level 3. We learned more about one another as individuals and as fellow researchers and teacher educators and to identify and discuss possible commonalities across academic traditions and geographical, gender, language, and ethnic boundaries. In particular, the dialogue centred around how and why our collaboration has worked.

In level 5 (CfT) we explored the way forward regarding continued collaboration. In particular, the efficacy of ERDR for this collective self-study was discussed. In addition, we spoke about how this methodology and working collaboratively has possibly transformed our teaching praxis in Higher Education. We continued this CfT as we met regularly to shape this article, increasing our understanding of one another and our collaborative lived experience.

Findings and Discussion

The findings are presented according to themes that emerged that address the three questions given at the beginning of this article. We have elected to present the collective opinion substantiated by selected verbatim quotations indicated by participant initials.

Risk-taking and Building Trust

Our first meeting in the office of one of the colleagues in South Africa began with a semblance of institutional trust as we were all academics, particularly teacher educators. In addition, and in the interests of internationalisation, our respective HEIs had signed a Memorandum of Understanding, endorsing any collaborative research ventures. We thought initially that perhaps our primary act of trust (Grimen, 2013) was based on our expectation of common institutional ethical considerations. However, we had all experienced different levels of unethical practice in our academic careers, and therefore this could not have been the basis of our trusting relationship. We concluded that we started our collaboration with more than institutional trust. We instinctively adopted an unreserved attitude of mutual trust, thereby putting ourselves in another's hands (Grimen, 2013; Løgstrup, 1997). This case of trust as a spontaneous life expression (Løgstrup, 1997) became a starting point for further collaboration. This meant risk-taking to an extent. What if the mutual trust was misplaced? EML signalled this risk-taking and exposure when she said: "The value of trust among all of us is extremely important…when you say what your pedagogy is, what things you do in the classroom…this is a very vulnerable place."

Engaging with ERDR with our students over the past four years, exploring different human rights issues and their professional practice, contributed to the continuing development of trust among us as we trusted one another with our students (Coombe, 2015). In the same way, as we created a safe, non-threatening space for our students to freely and openly participate in a CiC, CiD and CfT (Jarvis et al., 2018, 2021), we were encouraged to do the same in our collective self-study. Our shared experience was that ERDR provided both a safe space (Roux, 2012) and a brave space (Arao & Clemens, 2013), where we developed an increased awareness of our relationship. The reflective process of looking back individually as we engaged in our self-dialogue and wrote our self-narratives, followed by sharing these self-narratives in a CiC and CiD, allowed us to understand and learn about each other as authentic selves. This took place on the essential foundation of trust and feeling safe (Petherbridge, 2021). Revisiting our uncomfortable and, at times, emotional narratives and then sharing the same led to new meaning-making, regard and respect for one another. One of our colleagues referred to the level of vulnerability we shared, sometimes even disclosing experiences that we had not necessarily set out to share. JJ said, "[t]he collective level of vulnerability was heightened as we became vulnerable with one another."

One of the Norwegian colleagues noted that engaging in self-dialogue and writing a self-narrative was not merely about responding to specific questions (see Table 1) but an opportunity to reflect deeply, remember, and then capture one's experiences. He said: "Writing the narrative was an eye-opener…made me aware of things…see things from a different perspective…what has made me who I am as a teacher (OCR)." The South African colleagues commented similarly.

Courageous Conversations

In a safe space, based on a foundation of trust, we could learn from one another, inspired as we were by the narratives shared in our talking circles (CiC and CiD) (Chilisa, 2017). We realised that in our peculiar socio-political contexts, our lived experiences of academic traditions and geographical, gender, language, and ethnic boundaries are important, as these have shaped who we are as individuals and as teacher educators.

It became clear that our collective intersectionalities (Crenshaw, 2003; Wetherell, 2005) brought richness to the fabric of our collaboration (Collins & Bilge, 2016; Kohli & Picower, 2017). We revealed who we are, cognisant that our different identities and lived experiences enrich our collaboration. Sharing our narratives in brave spaces (Arao & Clemens, 2013) contributed to us building identity capital (Côté, 1996; Côté & Levine, 2002). This identity capital can be emancipatory. ERDR provided the framework for this to take place. In the CiC that took place between colleagues in their respective geographical locations, personal narratives were shared. Colleagues reflected on the similarities and differences between these narratives and commented on their professional journeys to date.

The Norwegian colleagues commented that in sharing their narratives, they experienced empathy as they gained new perspectives on one another. In many ways, their narratives mirrored one another. EML said: "practising empathy…gave me a whole lot of new perspectives [listening to my colleague's story]…and in many ways mirrored my own story."

They shared that they both started their schooling in a transition period in Denmark and Norway, respectively. They experienced the decreasing influence of Christianity in schools, with both Danish and Norwegian societies becoming increasingly multi-religious and secular. The role of teachers was also in transition, especially that of male teachers. The colleagues recounted how the traditional, dominant, masculine teacher role changed with the emergence of a new generation of male teachers who were more inclusive in their approach to teaching and gentler in their attitude towards learners. Teaching strategies also transitioned noticeably from viewing learners as empty boxes to be filled to more of a focus on motivating learners and approaching each as an individual with specific needs.

Neither of the Norwegian colleagues had planned on becoming teacher educators. Their initial tertiary education focused on Theology and the History of Religion. However, with the introduction of Religion Education as a compulsory school subject in the late 1990s, there was a need for highly qualified academics in the field of Religion in teacher education. The colleagues both completed an additional education qualification in teacher education and took up the opportunity to be employed in Higher Education. Before the collaboration focused on in this article, both Norwegian colleagues had been strongly influenced by time spent in South Africa and Southeast Asia respectively.

Their research in Religion in these different geographical contexts, over many years, impressed upon them the importance of a methodological approach to teaching-learning that is both multicultural and contextualised. This led them both to get involved in an international project that took them on a journey to the office of one of the South African researchers.

The colleagues from South Africa shared how revisiting uncomfortable emotional stories in their self-dialogue and, committing these to a written narrative and then sharing these narratives led to new meaning-making, regard and respect for one another. The South African colleagues both find themselves in a post-apartheid dispensation, where racial distrust continues to form part of the bedrock of South African society. There are persisting challenges, including racial tensions between different ethnicities and also prevailing gender inequalities, that make it very difficult to form authentic, genuine cross-cultural trust relationships. However, these two researchers, a Black African female and a white female, developed an inclusive culture (Beatty & Brew, 2004) where racial boundaries blurred as they co-lectured specific courses and engaged in collaborative research and writing.

They chose not to allow political or racial injustices to influence their professional relationship, which grew into friendship and even sisterhood. "We chose to meet on a human level with a common goal. We became friends, even sisters (JJ)." NPM expressed this relationship as follows: “We are moving together."

During the apartheid era, education was racially discriminatory both in the curriculum content and approach to teaching. For the isiZulu-speaking colleague, it was a considerable challenge to master the languages of instruction, namely English and Afrikaans. Proficiency in these languages was a requirement for tertiary education. Being English and Afrikaans speaking was an advantage for her white counterpart. Both colleagues were subjected to an authoritative teaching style and rote learning. Corporal punishment instilled fear in learners. One colleague shared how the ideological framework of Calvinist Christian National Education sought to prepare white and black children for their very differently designated roles in society and taught them that apartheid could be justified on Christian grounds.

Their shared self-narratives showed that their lived experiences as women in South Africa were similar. Both were subjected to patriarchy and colonial influences. Both colleagues initially taught in schools before moving to tertiary education. It was distressing to them both that their male counterparts in education, with the same qualifications, earned more money, received housing subsidies and were readily promoted to management positions. As women, they had to demonstrate high levels of resilience (Masten, 2001) in fighting for their position as academics.

By sharing the commonalities and differences in their narratives, the colleagues realised that they do not focus on the colour of their skin or their very different ethnicities but prioritise their friendship, respect and trust in one another. Their connection point is in their humanity and their shared aim of positively impacting the lives of their students.

The CiC highlighted how comfortable they feel within each other's space and that they authentically live out their relationship's Ubuntu philosophy (Buqa, 2015). From this platform, they can engage around troubling, deep-seated anxieties, discomforts, ambiguities and controversial issues related to education in South Africa. They foster an engagement with human rights with their students as they work together, creating a synergy with mutual respect in the interests of restorying (Beatty, 2002) previously held narratives of distrust, suspicion and uninformed perceptions.

Collaboration with colleagues from Norway added another dimension to collective professional practice and professional development (Frick & Kapp, 2008). It became possible for the four of us to interact via Zoom, learn from one another and create meaningful trusting relationships (Walsh & Kahn, 2010; Munoz et al., 2016).

Authentic Relationships

The CiD provided the opportunity for us, across geographical boundaries, to discover more about one another as individuals and as fellow researchers and teacher educators and to identify and discuss possible commonalities across academic traditions and geographical, gender, language, and ethnic boundaries (Power & Handley, 2019). In particular, in the CfT, dialogue centred around how and why our collaboration has worked. It became apparent that as we engaged collaboratively in research that spanned international boundaries, we increasingly appreciated, embraced and respected one another (Brooks, 2011). "There is an ethic of care between us (JJ)." NPM said: "[i]t begins with being a colleague…if you form a relationship everything falls into place".

Our international collaboration started on a meso-level with the formal collaboration between one institution in Norway and one in South Africa. Our collaboration developed into professionalism at a micro-level when we focused on ERDR as a research methodology with our education students. The outcomes of our shared research and publications (Jarvis et al., 2018, 2021) are significant. In addition, the new knowledge we shared emerging from our common methodological approach significantly impacted our collaboration across different contexts (Gajda, 2004; Waldron, 2015). In particular, as an outcome of internationalisation on a micro-level, our CiC and CiD processes contributed to personal enrichment (Deardorff et al., 2012). This collaborative knowledge-sharing space improved our professional discussions and conversations in our shared research (Anzaldúa, 2015; Sachs, 2003). We moved beyond a multi-disciplinary approach to one that is transdisciplinary, working across and beyond our specific subject specialisations. We were able to create new knowledges by doing so and in a way that has been sustained. One of us expressed the view, supported by all, that sharing our perspectives and lived experiences with a collective attitude of empathy, trust, and respect has enriched our research relationship. Engaging empathetically "makes us more capable of looking at each other in new ways (EML)." This has taken our international collaboration to another level. We have grown as individuals, academics, researchers, and collaborative partners. The Norwegian colleagues, in particular, expressed the view that they have gained insight into the challenges the South African colleagues have experienced concerning issues of race and diversity.

They admitted that this was something that they had not fully appreciated at the start of the collaborative process and that they felt humbled and have great empathy for their South African colleagues. This insight and empathy provided an added dimension of appreciation and trust in moving forward.

It became apparent in the CiD and CfT that, had the South African colleagues not built a foundation of trust to secure their collaboration, including the Norwegian colleagues in international collaboration, may not have been as successful.

The attitude (Løgstrup, 1997) adopted by the South Africans ushered in the possibility of successful international collaboration. Through our collaboration, we have found commonality and a productive space to develop our thinking. Furthermore, we have extended our teaching-learning beyond mainstream structures organised around white, Eurocentric ways of knowing and being in the classroom (Collins, 2009; hooks, 2015). We have worked harmoniously, equitably, cooperatively and respectfully, blurring the South-North divide, with one of the South African researchers taking the lead in steering the research and writing processes. The myth of African inferiority in academia has been dispelled in this particular international collaboration (Jarvis et al., 2018, 2021).

A CfT has been ongoing in working collaboratively on this article. Regular, ongoing conversations have added depth and understanding of one another, facilitating a journey of transformation both individually and in our collaborative partnerships in each geographical setting and as an international team of collaborators. To this end, we worked within a decolonial framework by changing how collective self-study research takes place. We engaged in a transdisciplinary way that empowers us to become agents of our transformed praxis, blurring and crossing geographical and colonial boundaries to dispel the myth of African inferiority, and working within a feminist paradigm that challenges patriarchy.

Reflecting Together to Move Forward for Transformed Teaching Praxis

Reflecting on our collaboration, it became clear that our propensity for trust has been significant since our first meeting in South Africa. JJ expressed how we all felt when she said the collaborative relationship is not underpinned by competitiveness. "None of us is trying to compete with one another…I never feel like you have an agenda to use me to get to the next level. We value one another as people first, friends first, relationship first (JJ)." We realised that even if our academic project came to nought, we would still value one another because of the healthy interpersonal connection based on trust and mutual respect that we have built through our authentic collaboration (Beatty, 2002; Brooks, 2011; Jarvis & de Jager, 2021). Our self-narratives have made us intrinsically vulnerable with each other, and sharing these illustrates a high degree of trust and mutual recognition (Petherbridge, 2021). We also trusted one another with our academic insights, strengths, and not least our students, as we engaged in international research projects (Jarvis et al., 2018, 2021). Our ability to do this has helped us with our praxis with our students. We agreed that we are committed to our research to produce scholarly knowledge and, similarly, to improve our teaching-learning interactions with our students.

This aligns with critical inquiry and praxis that Collins and Bilge (2016) refer to as the core of intersectional work. According to Aoki (1993, p. 257), the lived curriculum "is not the curriculum as laid out in a plan, but a plan more or less lived out." We are working from the premise that there is an oscillation in the curriculum in that it is embodied, relational, and experienced.

EML said that she intends to "start any course using this methodology [ERDR] in a way to get students to know each other's background…to get them to meet each other on an empathetic level, while feeling safe." NPM agreed saying: "We can extend this methodology to our students."

Our collaborative research using ERDR has shown us that this research methodology can also be used as a teaching-learning strategy that can be transformative for teaching praxis. Using ERDR allows our students to participate in a group, listening to one other empathetically as they share self-narratives in a CiC and then in a CiD, discussing possible tensions and points of departure relating to the specific topic. Our role as teacher-educators is to facilitate the highly personal, messy, and often contradictory experiences of engaging with our students (see Anzaldúa, 2015) and to create a safe and brave space that leads to possible restorying of previously held narratives. Through this process, students become aware of the importance of being reflective. They realise they can become agents of change in how they approach their teaching practice, contributing to curriculum construction. By doing so, they would be teaching against the grain, thereby validating teachers' everyday experience with their students, enabling them to move from "technical educators to teacher leaders and educational advocates" (Batchelor & Sander, 2017, p. 3). Restoried attitudes and approaches to teaching and diversity can possibly lead to transformed classroom practice. Our findings indicate that the dialogue between the students across international boundaries created a supportive learning environment. For these students, this could possibly contribute to transforming their classroom practice into classroom praxis (Jarvis et al., 2021).

As four HEI lecturers with different positionalities and lived experiences, we adopted an intersectional approach to studying our pedagogy connected to our identities. This allowed us to reflect upon our findings and, together, to push the boundaries by teaching against the grain. The position we adopted concerning our scholarship and practice reflects that of Collins and Bilge (2016, p. 42), who see these as “intimately linked and mutually informing each other, rejecting views that see theory as superior to practice.” We made ourselves vulnerable in a brave space (Arao & Clemens, 2013). We trusted one another as we considered the restorying of previously held narratives and the possible transformation of our teaching praxis.

Conclusion

We have argued that the connection we have built amongst ourselves as teacher educators has allowed us to prepare better to interact with our students in meaningful and transformative ways. Co-teaching and collaboration can also provide the support necessary to engage in spaces that are often draining, both emotionally and mentally. We are all better teachers when we feel valued and supported.

Strong collaborative relationships are usually missing in Higher Education, where there is all too often a pervading academic ego-centricity. This article has argued for collaboration in HEIs where colleagues embrace teaching-learning as a relational and empathetic process. Our feminist orientation has encouraged us to invest in relationships with one another based on mutual trust. Working collaboratively has provided the authors with a healing, affirming and transformational space within the academy. Our very attitude has been to open up to one another, putting ourselves in the hands of one another (Løgstrup, 1997), to shape one another's teaching praxis. We have done this in a collaborative relationship based on trust.

ERDR is a methodology that has facilitated an empathetic process of reflection, conversation and dialogue for transformation. We agree that our teaching praxis needs to trouble curriculum boundaries, and we are committed to transforming our teaching spaces as we move forward. We look forward to future research collaborations that could possibly include teaching in one another's geographical spaces. We continue to trust one another as we move forward, nudging boundaries in the interest of transformed teaching praxis.

Disclosure Statement

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FOUR TEACHERS' USE OF WHATSAPP AND MICROSOFT TEAMS FOR CURRICULUM DELIVERY DURING THE COVID-19 PANDEMIC: A CASE STUDY OF ONE PRIMARY SCHOOL IN CIRCUIT 8 METRO SOUTH EDUCATION DISTRICT

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Abstract

With the emergence of the Coronavirus (COVID-19) pandemic, globally schools were closed to curb the transmission of the virus. The aim of this study was to explore the experiences of four teachers in a suburban school regarding the use of WhatsApp and Microsoft (MS) Teams for curriculum delivery during the COVID-19 pandemic. The Community of Inquiry (CoI) theory was employed as a framework and data was inductively and deductively analysed. Four teachers voluntarily agreed to be interviewed. The findings revealed that WhatsApp and MS Teams enhanced teaching and learning for the teachers' curriculum delivery. The challenge was that not all learners benefitted as many came from socio-economic backgrounds with limited resources to support remote learning. As a result, the researchers made recommendations to policymakers and practice.

Keywords: Coronavirus, COVID-19, Information Communication and Technology (ICT), Instant Messaging, Online learning, Remote Technology, Social Media, Suburban School, WhatsApp.

Introduction

According to the World Health Organization (WHO) (2020), the Coronavirus (COVID-19) pandemic altered various aspects of society across the world by consuming lives and livelihoods. The WHO (2021) reported that just over 112 million people worldwide have been infected by the virus, over 2.5 million have died and just over 63 million have recovered. As a result of the rapid spread of the COVID-19 pandemic, education systems all around the world were disrupted and experienced learning losses (World Bank, 2020). On 16 March 2020, the President of South Africa (SA), Cyril Ramaphosa, announced the government's measures to curb the spread of COVID-19, which included the closure of schools from 18 March with staggered return of learners by 1 June 2020 (Department of Basic Education [DoBE], 2020).

To continue educating more than 13 million school learners in SA, a remote learning approach was rapidly adopted for the 2020 and 2021 academic years (DoBE, 2020). According to Netolicky (2020, p.17), teachers were required to adopt "emergency remote pedagogical practices" in an attempt to support learners who were not attending schools due to the pandemic.

Wu (2021, p.2) reported that “teachers and students have had to quickly alter their teaching methods, regardless of whether they were experienced in and prepared for online education”.

Therefore, the transition to remote teaching and learning during COVID-19 was mandatory rather than a choice (DeCoito & Estaiteyeh, 2022). The majority of educational institutions in SA used platforms such as MS Teams and WhatsApp for teaching and learning because of the opportunities they offered which include: delivery of lessons, communication, sharing of notes and flexibility with regards to time (Kılınç & Medeni, 2023; Glietenberg, Petersen & Carolin, 2022).

However, the challenge was that about 83.5% of SA learners could not, with minimal disruption, continue learning from home through online platforms (Statistics SA, 2018). This statistic further reported that only 37% of SA households had consistent access to the internet through cell phones or computers. Serafimovska and Alagjozovska (2023) noted one obstacle to online learning which is the economic divide, where some learners have an abundance of technological resources while others experienced a lack of access to technology and data. Another challenge was that teachers were not adequately prepared and trained to use technology in their curriculum delivery (Wu, 2020). Similarly Kılınç and Medeni (2023) reiterate that in certain instances teachers received no training to plan, teach and evaluate their teaching using technology. This meant that some teachers lacked the necessary skills to efficiently teach remotely during COVID-19 (Winter, Costello, O’Brien & Hickey, 2021).

Four teachers at a suburban public primary school participated in this current study; they shared their experiences on how they used WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic. Suburban schools in a SA context are schools located in high income areas, yet the majority of these learners are from poor socio-economic contexts.

This study is significant as the way we teach and learn has changed since the COVID-19 pandemic as there has been a digital transformation. Many teachers are integrating technology into their instructional practice, hence the need for continuous research to improve teaching and learning. The use of technological tools for teaching and learning is a concept that is not fully understood by the majority of SA teachers, who were trained to teach face-to-face and lack resources to support remote teaching. Winter et al. (2021) state that teaching online has created challenges for teachers who were trained to teach in a traditional way, thus they lacked the skills to teach remotely. Education sectors globally encourage teachers to robustly and effectively use technology, as it has the potential to motivate learners and enhance learning (Nsabayezu, Iyamuremye, Kwitonda & Mbonyiryivuze, 2020; Cetinkaya, 2017) and utilising technology for teaching and learning has become a prevailing practice following the COVID-19 pandemic.

Therefore, it is important for teachers to reflect on their experiences and suggest practical ways to improve teaching and learning. The study adds to the debate on whether technology should be used to teach younger learners, accessibility of technology and the need for educational institutions to use a blended approach to teaching and learning post COVID-19. The research question that guided this study is: What are four teachers' experiences using WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic?

Literature of the Study

The literature was guided by the following four areas: importance of technology knowledge, remote teaching during COVID-19, use of WhatsApp for teaching and learning during COVID-19, and use of MS Teams for teaching and learning during COVID-19.

Importance of Technology Knowledge

Technology knowledge is important in today's society as people need it to navigate all sectors of the economy (Rodrigues, Cerdeira, Machado-Taylor & Alves, 2021). Children are surrounded by different kinds of digital technology, therefore, it is fundamental for pre-service teachers to be prepared to teach with technology. In Gülbahar's (2008) study, pre-service teachers were exposed to computer application programs on a course. From the findings, it was revealed that pre-service teachers enhanced their computer competences and were positive about using technology in their classrooms in the future. For pre-service teachers to effectively teach with technology, they must be able to blend technology, pedagogy and content knowledge (Mishra & Koehler, 2006). These authors explain technology knowledge as competence to use a variety of technology, pedagogical knowledge as the strategies used in the classroom and content knowledge as the knowledge of the subject matter to be taught. Therefore, today's teachers must have a deeper knowledge of strategies to use when using technology to teach content, in order to enhance the educational experiences of learners.

Remote Teaching during COVID-19

During the COVID-19 pandemic, teachers were forced to teach remotely by using the technological tools that were available at their schools. There was a 'temporary shift from face-to-face to emergent remote teaching' (Hodges**,** Moore, Lockee, Trust & Bond, 2020) to curb the spread and for education to continue amidst the COVID-19 pandemic. With the emergence of remote teaching, teachers did not have that much time to plan as the implementation was abrupt (Nhongo & Tshotsho, 2021). Many researchers such as Erlam, Garrett, Gasteiger, Lau, Hoare, Agarwal and Haxell (2021) and Olugbade and Olurinola (2021) reported that using remote tools was an effective way to reach students during lockdown because they could work from any location and time.

These findings are consistent with a statement made by Maphosa (2021) that today's learners prefer to learn informally without the hindrance of space and time. Teachers integration of technology during COVID-19 pandemic was therefore beneficial to learners, as learning was flexible and not confined to a physical space.

Use of WhatsApp for Teaching and Learning during COVID-19

In SA, one technology application that was widely used by educational institutions was WhatsApp. Many people were using WhatsApp on a daily basis for communication, hence its wide acceptance and use. The benefits of WhatsApp include that it is simple and easy to use, it is easy to send pictures, videos, audio, files, emojis and messages and it allows for rapid access to information online in real time (Napratilora, Lisa & Bangsawan, 2020; Annamalai, 2019; Gon & Rawekar, 2017; Sayan, 2016; Barhoumi, 2015; Waluyo & Purwati, 2020). Therefore, the interface of WhatsApp, which is easy to use serves as an advantage for both teachers and learners.When WhatsApp was used in an English classroom to improve vocabulary, Afsyah (2019) found that students became more interactive with their peers on the platform, thus enhancing their learning as they learnt from each other's mistakes. In another study, Nsabayezu et al. (2020) revealed that WhatsApp facilitated learning and improved engagement and collaboration amongst students. It was further reported that WhatsApp increased students' motivation to learn. These students could communicate class-related matters on the WhatsApp group at any time, and get timely feedback which motivated them. The communications that occur on the WhatsApp group fosters a sense of connection within students, which ultimately boost their motivation.

Regarding the benefits of using WhatsApp for teaching and learning, an empirical study conducted by Nihayati and Indriani (2021) found that some learners preferred WhatsApp because it reinforced teaching, as learning materials shared were supplemented by voice notes. With the learning materials that were shared on WhatsApp, learners could access the information at any place and at any time (Nihayati & Indriani, 2021; Durgungoz & Durgungoz, 2021; Annamalai, 2019; Gon & Rawekar, 2017; Cetinkaya, 2017) which was convenient. Therefore, using WhatsApp made learning flexible and has been shown to enhance learning (Annamalai, 2019; Afsyah, 2019; Gon & Rawekar, 2017). The learners' ability to access and engage in learning materials on WhatsApp at any time and place has therefore removed the constraints of traditional classroom setting.

Although the aforementioned paragraphs have highlighted the benefits, and that there was a wide acceptance of WhatsApp by both teachers and students in SA, many studies have also raised concerns. For example, studies conducted by Enyama et al. (2021) and Nsabayezu et al. (2020) found availability, accessibility and quality of the internet as challenges in the use of WhatsApp for teaching and learning. Schools that are in townships in SA, historically disadvantaged schools, are under-resourced (Nkambule, 2023).

These schools lack resources to support remote teaching and learning. To exacerbate the situation, some of these schools lack basic resources such as electricity and water. In resource-limited schools, teachers may require strategic approaches when they teach with technology, which could be a challenge since they were not trained to teach remotely. Another challenge echoed by participants in a study by Gon and Rawekar (2017) was the overload of materials shared on WhatsApp which was sometimes hard to navigate (Gon & Rawekar, 2017). This challenge can be overcome as teachers could put restrictions on information that is shared on WhatsApp groups.

Use of MS Teams for Teaching and Learning during COVID-19

Another remote tool robustly used by teachers during COVID-19 pandemic was MS Teams because of its varied functionalities. Studies found the benefits of using MS Teams for teaching and learning: access to readily available information and learning resources, timely feedback, user friendliness and functionalities that promote interactive learning (Sobaih, Salem, Hasanein & Elnasr, 2021; Almodaires, Almutairi & Almsaud, 2021). Evidence shows that teachers are using MS Teams because of its flexibility as students can access recorded audio and video files at their own convenience to increase the conceptual understanding of subject matter taught (Wea & Kuki, 2020). This form of learning enables learners to be independent and disciplined (Wea & Kuki, 2020) as they have the opportunity to manage their own learning, work at their own pace and take responsibility for their own learning progress. In SA in particular, there is digital divide where some students lack the necessary devices or internet connectivity, limiting their ability to participate fully in digital learning experience. With MS Teams learners can interact orally with teachers by unmuting themselves during lessons, and communicate in the chatroom (Yen & Nhi, 2021). These added functions cater for the diverse needs of learners and make learning more effective for shy and unconfident learners as they are able to use different features to communicate ideas and ask and answer questions. Slow learners who cannot catch up with lessons during the virtual sessions are able to download videos and watch later to increase their understanding of concepts taught (Yen & Nhi, 2021).

There is evidence that shows challenges when MS Teams is used for teaching and learning. For example, some students in Wea and Kuki's (2020) study reported a lack of internet access as they could not purchase data bundles, low internet as they lived in areas in which connection was poor and a lack of information on how to navigate MS Teams. Similarly, a study by Olugbade and Olurinola (2021) highlighted issues that teachers encountered teaching with MS Teams which include connectivity problems due to low bandwidth and technical issues with devices. Yen and Nhi (2021) posit that teachers and learners faced the following challenges: difficulties logging-in to class, interrupted access to internet and poor quality of image and audio.

This finding echoes some of the challenges that underdeveloped countries such as SA have problems with, namely broadband, unreliable internet and a lack of access to technology equipment which makes remote teaching difficult.

Some students in a study by Sobaih et al. (2021) and Almodaires, Almutairi and Almsaud (2021) indicated that they were not adequately supported by their peers and lecturers and they did not participate in course activities when MS Teams was used, as the platform was not suitable for independent and group interaction compared to other remote tools. Sobaih et al. (2021) suggest that sufficient training and workshops for both educators and students need to be provided on how to effectively use MS Teams and to maximise students' support and participation in activities. Although using MS Teams was a solution to curb the transmission of COVID-19, teachers needed to be creative by making their lessons more interactive and learner-centred.

Another challenge generally identified in the literature is that teachers lacked time to create innovative technology lessons. Olugbade and Olurinola (2021) suggest that time is needed to create stimulating activities to teach using MS Teams. This is because effective teaching with technology requires teachers to design their lessons in such a way that there is meaningful interaction and discussion taking place. Because COVID-19 happened abruptly, many teachers were not prepared for remote learning, therefore it took more time and effort to prepare and teach with technology. According to Yen and Nhi (2021), much effort and time is required from teachers to make their lessons lively, attractive to students and to create stimulating activities. Constructivist theorists argue for the benefits of interactive learning as it has the potential to enhance learning (Vygotsky, 1978).

Community of Inquiry as a Framework

The Community of Inquiry (CoI) was first used by Dewey (1959) and is based on his educational philosophy and practice of constructive collaborative approaches to learning. For Dewey, through collaboration in which there is mutual respect, learners take responsibility to construct and confirm meaning. Garrison, Anderson and Archer (2000) built upon Dewey's ideas of collaborative constructivist learning and incorporated these in the context of online learning in their CoI theory. Many researchers use the CoI to understand successful online learning experience. The CoI framework emphasises three key elements: social, cognitive and teaching presences.

Social presence is "the ability of an individual to identify with a community, communicate purposively in a trusting environment and develop inter-personal relationships by way of protecting their individual personalities" (Garrison et al., 2010, p.6).

In this current study, teachers were interviewed on whether they created an environment in which learners trust the online platforms to be able to communicate freely and purposively (social presence); cognitive presence is the extent to which learners are able "to construct and confirm meaning through sustained reflection and discourse" (Garrison et al., 2010, p.6). Teachers were asked if meaningful discussions took place on the online platform through collaborative reflection, exploration and inquiry (cognitive presence); and "teaching presence is the design, facilitation and direction of the social and cognitive processes for the purpose of supporting learning and realising meaningful learning outcomes" (Garrison et al., 2010, p.6). Teachers were asked if they were able to organise and design their lessons in ways that guided and facilitated discussion or instructional engagement (teaching presence). Hence, the CoI was used as a lens to understand teachers' pedagogical practices within the online platforms.

Methodology

This was a qualitative study set within an interpretive paradigm as the researchers wanted to gain an in-depth understanding of four teachers' use of WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic. According to DuPlooy-Cilliers (2014), a qualitative research methodology is used where little is known about a particular phenomenon and participants who have either lived or are living the phenomenon in question are then recruited to describe their experiences. In this current study teachers from a suburban school were asked to participate and share their experiences using WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic.

The research site was a suburban public primary school in the Western Cape, SA. The selected school is located in Circuit 8 Strandfontein of the Metro South Education District Mitchells plain. The school had 940 enrolled learners and 22 permanently employed teachers. The medium of instruction was English, Afrikaans was the second language and the average teacher-learner ratio was 1:35. The school started at 08:00 and ended at 14:35 from Monday to Friday. Due to the COVID-19 pandemic, the staggered dismissal times were between 12:00 and 14:00 from Monday to Thursday and 12:30 on Fridays. This suburban school was chosen because teachers had adopted and were using remote tools for teaching and learning.

In SA, schools are ranked into five quintiles - quintile 1 represents the poorest schools and quintile 5 the most affluent schools. The ranking takes into consideration the literacy and unemployment rate of the area in which the school is located (van Dyk & White, 2019). Quintile 1 schools receive more funding compared to quintile 5 schools which are in affluent areas, as they are impoverished and parents cannot pay school fees. The school chosen for this research is a fee-paying school which was ranked as a quintile 5 school by the Western Cape Education Department (WCED).

This ranking indicates that this school receives the lowest funding (compared to quintile 1-4 schools) per learner from the department, as it is deemed to be a wealthier school since it is located in a suburban area. However, this school accommodates many learners from disadvantaged surrounding communities where parents receive social grants and are not able to pay school fees.

All 22 permanent teachers were invited to take part in this study but only four voluntarily accepted. The reason for this could be that teachers were afraid of the risk of infection due to the Coronavirus. Therefore, the sample comprised of four primary school teachers from the Intermediate Phase (IP) [Grades 5 and 6]. The teachers' experience of professional practice varied as follows: Teacher 1 - 2 years, Teacher 2 - 13 years, Teacher 3 - 33 years and Teacher 4 - 7 years. All four of the teachers were female. They were knowledgeable about the phenomenon under study as they used WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic, hence purposive sampling was used (Cohen, Manion & Morrison, 2002).

One-on-one interviews were used in order to adhere to physical distance regulations during the COVID-19 pandemic, but still retrieve data related to the research question. Semi-structured interviews were chosen because the researcher wanted to gather in-depth data that would answer the research question by probing teachers during interviews for clarification of issues raised (Strydom & Bezuidenhout, 2014).

The interviews were conducted face-to-face using an interview schedule. The questions on the interview schedule were based on the three concepts (social, teaching and cognitive presences) as discussed in the CoI section of the paper. The interviews were recorded using an audio recorder in order to capture verbatim information (Shenton, 2004). This ensured that the participants' responses were captured correctly and accurately. Each interview was approximately 40 minutes to an hour in length. Teachers were reminded two days before the actual interview took place and all interviews were conducted at a venue of their choice.

The data obtained from the one-on-one interviews was inductively and deductively analysed. When identifying codes, the concepts from the CoI framework guided the researchers, however, the researchers were interested in new information that would answer the research question (Denscombe, 2007). Four phases of analysis suggested by Braun and Clark (2006) were followed: 1) Familiarisation with the transcribed data; 2) re-reading data to identify codes; 3) Codes were merged to form three overarching themes:

Benefits of using WhatsApp for curriculum delivery;
Benefits of using MS Teams for curriculum delivery; and
Constraints of using technology for curriculum delivery.

4) These three themes answered the research question. The themes were read and interpreted in relation to the salient features of the literature and CoI framework. Permission to conduct research was granted by the Ethics Committee at the university at which the researcher was studying (EFEC-699/2020) and the WCED (20200603-7349). The principal signed the consent letter as he was assured of confidentiality and anonymity. When reporting findings, teachers were given pseudonyms (Teacher 1, 2 etc.). The participating teachers signed consent letters agreeing to be part of the study (Cohen et al., 2002).

To ensure trustworthiness, the interview schedule was piloted with other teachers who were not part of the study to test the accuracy and adequacy of the questions asked (Koonin, 2014). From the feedback, poorly worded questions were adjusted to answer the research question. Member checking (McMillan & Schumacher, 2006) was used in order to authenticate the responses of participants. All the teachers affirmed that the transcribed information reflected their views and experiences.

Findings and Discussion

The research question that guided this study was: What are four teachers' experiences using WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic? From analysing the data deductively and inductively, there were three overarching themes that emerged which answered the research question. These themes will be discussed in the following section, linking to the theoretical framework and literature review.

Benefits of using WhatsApp for Curriculum Delivery

The WhatsApp application was one of the technological tools used by teachers to share information. This assisted in making learning materials immediately accessible to learners who had internet connections, ensuring quick access to educational resources. By sharing information on WhatsApp, learners had the flexibility to set their learning pace. The teachers also reinforced their teaching by sending supplementary materials of subject matter they had just taught on the WhatsApp platform. This served as additional support and enhanced learning for learners.

Three teachers reported that they shared learning materials such as videos and audio recordings using the WhatsApp application. The information shared was easily accessible to learners and their parents in real time. In relation to accessibility of learning materials on WhatsApp, Teachers 2 and 4 explained:

"I encouraged my parents [parents of learners since they were young] to save their work into their gallery on their devices, so that when learners need them again, then it is there to be used at their leisure." (Teacher 2)

"… I reminded parents and learners how important it is to save their work, because it is nice to be able to… uhm… refer back to the content later." (Teacher 4)

This finding is in line with several empirical studies such as that of Gon and Rawekar (2017) and Barhoumi (2015) as they found the benefit of using WhatsApp included sharing of learning materials which is not common in a didactic classroom. In a study by Annamalai (2019), video clips and other web materials were shared which enabled students to access information at any time and in any place. This finding is linked to the 'social presence' concept of the CoI framework. By sharing learning materials, teachers established a sense of community and connectedness with their learners.

From two teachers' responses it became evident that the video and audio files shared on the WhatsApp application were related to the lessons they taught and these learning materials reinforced teaching. This finding is consistent with the results of Nihayati and Indriani's (2021) study which revealed that students preferred WhatsApp because teachers shared and explained course materials using voice notes which supplemented their teaching. In this current study, Teachers 1 and 3 reported:

"WhatsApp really helps, because you can get in touch with your learners, send them [learning materials] and explain work. The parents can assist, by also listening to the voice note or they can watch the video, and explain it to their child." (Teacher 1)

"The features of the WhatsApp application allowed me [teacher] to chat, send voice notes, make phone calls, send video links [YouTube] and video-taped lessons." (Teacher 3)

It is evident that two teachers in this current study sent learning materials to parents and learners on subject matter they had taught which reinforced their teaching. The parents of learners took an active role during COVID-19 to virtually support their children's academic activities.

It should be noted that these learners are young, in primary school, so they used their parents' technological devices and their parents also assisted them to navigate the different remote tools. In the literature, parents' involvement in their children's learning has been shown to enhance learning (Khajehpoura & Ghazvinia, 2011). In line with 'teaching presence' of the CoI framework, teachers were actively involved as they supported their learners by supplementing their teaching with voice notes. This form of teaching fosters deeper understanding of the subject matter.

Two teachers indicated that when the learning materials were shared using WhatsApp, learners and their parents could access and learn at their own pace which was convenient. They shared their experiences as follows:

"It [WhatsApp] was amazing, because the learners can now receive information and explanations, also YouTube work, for example …, and do it without rush or having to catch up with the rest of the class." (Teacher 1)

"I feel that learners were able to work much better, and the way they felt comfortable. The learners now didn't feel rushed, because they had the work, and they could go through it on their own time and pace." (Teacher 4)

These findings indicate that learners could access information shared on the WhatsApp application by teachers at any time and engage with these materials at their own pace. This means that 'teaching presence' was evident as teachers used the WhatsApp application to make their lesson material accessible to learners. This finding is in congruence with that of a study by Gon and Rawekar (2017, p. 23) which revealed learning "anytime" and "anywhere" were the most significant advantages of learning through WhatsApp. Annamalai (2019) and Cetinkaya (2017) found that the key benefit of WhatsApp is its flexibility to interact without time and space constraints.

The findings in this section link to the CoI concept of 'teacher presence'. The teachers were able to design and organise their lessons as they shared learning materials, exchanged chats, sent voice notes and made phone calls to parents and learners. The teachers used WhatsApp for imparting knowledge through sharing of learning materials. Because lesson materials were shared, learners engaged (cognitively presence) with them at any time. Thus the teachers and learners established themselves as 'real people' which aligns with 'social presence' of the CoI framework.

Benefits of using MS Teams for Curriculum Delivery

Teachers use MS Teams for teaching and learning. By using MS Teams, parents and learners acquired basic technological skills which enhanced collaboration and interactions during an online class session. The teachers scheduled classes using MS Teams which developed learners' and parents' technological skills as they were comfortable with using the basic functions of this platform such as the 'chatroom' and the 'raise your hand' icon when they asked or responded to questions. Teachers were able to promote connectedness amongst themselves, learners and, hence 'social presence'. Teachers 1, 2 and 3 reported:

"My learners were so excited, once they got used to it [online class] …to share their answers and opinions. They were taught how to raise their hand, and also interact with each other." (Teacher 1)

"You know, Teams has so many functions and my learners and parents have managed to learn some of them so fast yah." (Teacher 2)

"Uhm, okay you know, when I used Teams, the learners were so amazing, they were so comfortable with using the platforms because I mean they were able to interact with me." (Teacher 3)

Studies' findings have suggested that users are satisfied with the basic functions of MS Teams as it is user-friendly (Sobaih et al., 2021; Almodaires et al., 2021). The findings in this current section show that parents were virtually involved in their children's learning during COVID-19 as they were at primary school, thus they needed their parents' guidance and support. The teachers created a collaborative learning community (social presence). The learners and their parents were able to use the different features of MS Team to engage in meaningful discussions (cognitive presence) with their teachers. By engaging with teachers, learners developed technology competence. In relation to 'teacher presence', teachers were able to enhance learning by fostering digital literacy and facilitate active engagements using the different features of MS Teams.

Constraints of using Technology for Curriculum Delivery

Despite the benefits, teachers faced some limitations when they use technology for teaching and learning. The lack of WiFi and data connectivity affected optimal use of MS Teams and WhatsApp by both the teachers and learners. Some of the parents were not technology savvy which impacted their ability to support learners to navigate the different technological tools. Because many of teachers were not trained, adapting and learning how to effectively use the different technology tools for teaching and learning was time-consuming.

The teachers, learners and their parents needed internet, Wi-Fi or mobile data to access information shared on the WhatsApp application. Three teachers reported that some learners had no access to internet or that the internet access was inconsistent. Regarding accessibility to internet, two teachers explained their feelings:

"A lot [many] of our learners could not attend these classes, because they did not have internet access… sometimes data for parents were a big issue, because many households did not have Wi-Fi, so it was a bit of a challenge." (Teacher 1)

"I didn't know if all of the learners were receiving all of the work I shared. It was a bit difficult to keep track of all learners, because many of the learners sometimes don't have internet access." (Teacher 2)

"Using Teams was too much of a hassle, like there were too many issues. I had most parents who didn't have enough data or no Wi-Fi and things like that. So Teams was too much of a challenge to use." (Teacher 3)

Although the school in which this study was conducted is based in a suburban area, the majority of learners were from poor communities and had working class parents. Some of these parents could not afford to purchase resources to support online learning. When internet is inaccessible, it becomes difficult for teachers and learners to collaborate within the online community and facilitate cognitive discussion. Enyama et al. (2021) found that the major challenge regarding the use of WhatsApp was access to the internet. The internet was costly as both lecturers and students increased their expenses to accommodate for online learning. Similarly, Nsabayezu et al. (2020) reported poor internet connection as one factor that hindered utilisation of WhatsApp in the teaching of chemistry during the COVID-19 pandemic in Rwandan secondary schools.

Another constraint highlighted by teachers was that some parents were not technologically savvy. They had difficulties assisting their children to navigate through the different features of the WhatsApp and MS Teams platforms. Two teachers said in the interview:

"... It was difficult for parents also because they obviously never used technology like this for school, so it was difficult for them." (Teacher 1)

"Some of my parents were very confused when it came to the technical things on Microsoft Teams, like for example, some of them struggled like with asking questions, they didn't know there was a section you could type, or you could raise your hand and unmute or so…" (Teacher 2)

Some teachers also had difficulties operating technological devices. Teacher 3 said:

"... you know we were not prepared to use this technology things, so when we were basically forced to use this because of COVID, we never had a choice. The only thing was that we struggled man, it was really hard because all of these new ways of doing things made it hard for us to teach the things that was so easy to teach in the class."

The COVID-19 pandemic posed a challenge due to the over reliance on digital resources for classes to continue amidst the pandemic. However, neither teachers nor parents were skilled because of the abrupt transition to online teaching and learning. These teachers had to learn how to creatively use the WhatsApp and MS Teams platforms. Theorists such as Vygotsky (1978) have encouraged teachers to create their lessons in such a way that learners are actively involved in their own learning. In relation to the concept of 'teacher presence' in the CoI framework, it appears some teachers did not have the ability to design their lesson in a way that encouraged critical and independent thinking because they lacked competency. This might have affected the school community's access to quality education when technology is used for teaching and learning.

When probed, teachers indicated that using technology was time consuming as they had to prepare and teach using technology. Teacher 4 explained:

"It was a bit difficult to get everything sorted before the class, because you didn't want to leave anything out. The preparations took a lot of time to make and it was a bit exhausting."

Teacher 1 said:

The issue of sending out links, and also getting the things ready, it wasn't easy, but I tried my utmost to try get through to as many learners and parents as possible.

Teacher 2 explained:

"... Teams was just time-consuming sometimes, because one had to sometimes wait for parents and learners to join and it was just a bit difficult man."

It is evident from the findings that it required much effort for teachers to organise, prepare and deliver technological lessons. The finding is linked to the concept of 'teacher presence' in the CoI framework. The teachers had to reshape their pedagogy during COVID-19 by designing and organising their lessons in such a way that the learning materials were easily accessible to the learners and their parents and could be presented on MS Teams. This suggests that the teachers had to think of ways to develop learning materials that they could upload and learners could download and how to engage learners on the different platforms. Therefore, maintaining a 'teacher presence' on the online platforms was time consuming.

Conclusion

This study explored the experiences of four teachers using WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic. The teachers used WhatsApp to share learning materials with learners and their parents, which enabled them to access this information at any time and in any place or location. The learning materials that were shared reinforced teaching of subject matter. Therefore, 'teaching presence' was evident as teachers leveraged the WhatsApp application to engage learners with content through sharing of lesson materials. The lesson materials shared built a sense of community between the teacher and learners. The researchers concluded that learners enjoyed online learning because of the connectedness and sense of belonging within the community, which is the WhatsApp group.

Teachers used MS Teams which developed learners and their parents' technological skills. This finding aligns with the concept 'cognitive presence' as teachers were able to use different features to engage with learners.

By teachers communicating with learners using MS Teams, they were building a 'social presence' within the online community, as they were seen as 'real people'.

As a result of these findings, the researchers asked questions on whether remote tools such as WhatsApp and MS Teams should be used to teach primary school learners as in this current study they needed their parents' guidance, and if all educational institutions should robustly use technology for teaching and learning post COVID-19.

Some teachers also complained about the amount of time that is required to prepare and deliver a lesson using technology. In relation to CoI, integrating technology into teaching and learning requires 'teaching presence' as teachers may require additional time for planning, creating digital resources and familiarising themselves with the technology. From this finding, it is concluded that teachers were not skilled as they abruptly switched from face-to-face teaching to robustly using remote tools for teaching and learning during the COVID-19 pandemic.

Another challenge reported by teachers was a lack of internet access or inconsistent connectivity. This highlights the inequalities that exist between learners, as not all of them benefitted from remote teaching and learning during COVID-19. The learners came from local working class communities that do not have adequate resources to support remote learning. Therefore, it can be concluded that some learners benefitted more than others when technology was used for teaching and learning.

The parents' involvement in learners' education created a positive learning environment during COVID-19. The researchers concluded that a strong bond between the school and learners' parents may enrich the learners' learning experience with technology.

The results of this study cannot be generalised due to a small sample. The sample size was small as only four teachers from one school and from the IP voluntarily accepted to be part of this study. Future studies could include other phases (Foundation Phase and Further Education Training) and more schools in different provinces to provide in-depth data. However, the teachers provided insight on four teachers' experiences using WhatsApp and MS Teams for curriculum delivery during the COVID-19 pandemic.

Teachers were only interviewed one-on-one due to the COVID-19 restrictions. Future studies could include an observation and focus group interviews for more depth. Data could be collected using both qualitative and quantitative methods. Future studies could include interviews with learners and parents so that they corroborate information provided by their teachers.

It is recommended that teachers should be continuously trained so that they are skilled in the remote tools they use in their classrooms.

Hence less effort will be required to prepare their lessons. Importantly, if remote tools are to be used, primary school teachers should be capacitated to engage learners in constructive learning, as the teachers in this current study did not use technology to engage learners in higher-order thinking.

It is recommended that teaching should be reimagined post COVID-19, where face-to-face teaching should be supplemented with both synchronous and asynchronous technological tools. This will create an inclusive learning environment. Therefore, this study adds to the current debate on accessibility to both teachers and learners if technology is to be used post COVID-19.

It is recommended that schools organise training that is aimed at guiding parents as to how they could provide technology pedagogical support at home as they supported their children during the COVID-19 pandemic.

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GRADE 3 TO 6 LEARNERS' MISCONCEPTIONS AND ASSOCIATED ERRORS RELATED TO THE LEARNING OF PLACE-VALUE: A DOCUMENT ANALYSIS

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Abstract

Place value is the value represented by a digit in a number based on its position in the number. For example, the place value of 6 in 4,643 is 6 hundred or 600. Low achievement in mathematics is a vexing problem among South African children. Many attempts have been undertaken to address the problem. In addressing learners' use and understanding of the concept of place -value, different research trajectories have been followed, including experimental designs, survey designs and case studies. Among these approaches, document analysis as a research methodology, appears to have received less attention despite it be found to be appropriate in documenting qualitative research. To address this literature gap, we scrutinised documents as a data source, as well as how that can be used and managed for research purposes. We used the Learning Assessment Frameworks as a theory to leverage the study. This helped to review documents for meaning rather than just a surface confirmation of facts. We were convinced that document analysis could contribute to a better understanding of how Grades 3 to 6 learners learn the place value concept. Additionally, how their teachers instructionally support them. We adopted a qualitative research approach and used a multiple case study research design to investigate the problem. We sampled both primary and secondary documents such as policy documents, learners' workbooks, teachers' lesson plans, journal articles, and monographs through a convenience sampling strategy to study the problem. We used Bruno Tesch's eight steps of data analysis that included formulating, for example, cleaning the data, coding the data, categorising the data, and developing themes and subthemes. Five findings emerged: a generalisation of the addition rule to subtraction, a lack of digit identification, weak understanding of quantities and amounts, weak comprehension of the importance of grouping numbers into units, tens, and hundreds, and failure to expand a number or add two or more double-digit numbers using compensation and decomposition. These findings have implications for how teachers should introduce the number theory, and particularly the concept of place value.

Keywords: Place Value, Multiple Digit Whole Numbers, Misconceptions and Errors, Document Analysis.

Introduction

Hartnett (2018, p.1) contends that 'Place value is not a single concept' and that other scholars such as Schmittau and Vagliardo (2006) have developed and used concept mapping to describe place value as a complex system. Place value is the value represented by a digit in a number based on its position in the number. For example, the place value of 6 in 4,643 is 6 hundred or 600. However, the place value of 6 in 6,432 is 6 thousand or 6,000. The place value concept can be regarded as one of the subthemes of the number system (Sari, Herzog, Olkun & Fritz, 2021).

An understanding of the place value concept is needed to lay a comprehensive foundation for other areas of Foundation Phase mathematics such as decimal numbers, measurement, percentages, and further mathematical learning. Regrettably, many learners experience difficulties mastering it. Its understanding has been extensively explored, however, there has been little progress in the number of children who find place value challenging. Previous research (Hartnett, 2018; Rodger 2013; Fuson, 1990) has investigated the place value concept in several ways, for example, from its understanding to its developmental and pedagogical perspectives. In our study, we investigated children's misconceptions and associated errors when learning the place value concept by peeling through their workbooks and other related documents.

Research Questions

To this end, we sought to answer two questions: *What are the misconceptions and associated errors displayed by grade three to six learners when using the concept of place value to add and subtract whole numbers? How can teachers support grade three to six learners in learning and using the place value concept?*

Theoretical Framework

The structure that supported and held the theory together in this study, which is the theoretical framework (Khan, 2019) was the Learning Assessment Frameworks by Siemon, Izard, Breed and Virgona (2006). In this framework the idea of the developmental process withing which learners acquire and explore the concept of place value played a vital role in our conceptualisation of learners' errors and the misconceptions that are responsible for them. The framework identifies concepts that learners need to understand to become place value experts (Rogers, 2012). Within the Learning Assessment Frameworks, Rubin and Russell (1992) and Ross (2002) recognise seven (count, make /represent, name/record, rename, compare/order, calculate and estimate) components of place value that are pivotal to learners' understanding of the concept and that most of the misconceptions and the ensuing errors are as a result of their low development in these areas.

The epistemological perspective of the framework is that teachers should be grounded in the conceptual and procedural content of place value if they are to expiate learners' conceptual understanding of place value and alleviate misconceptions and errors (Morgan, 2022; Hartnett, 2018; Fuson 1990).

Research Design and Methodology

We used a qualitative, descriptive research approach to describe, explain, and explore the data contained in CAPS documents, learners' workbooks, test books, and teachers' preparation, and prescribed books for the Foundation Phase when teaching and learning the place value concept. The data extracted were used to answer the two identified research questions.

Data Collection Instruments

Institutional and organisational documents, such as those produced in schools have been regarded as the mainstay of qualitative research for many years (Bowen, 2009). The use of document review as a qualitative data collection method has been on the rise especially after the data revolution and data science in the latter end of the 21 century (Boaler, LaMar and Williams, 2021; Mackieson & Shlonsky, 2019). Document analysis is regarded as a technique for evaluating documents both written and or electronic (Bowen, 2009). It deliberates on a form of qualitative data that uses a prepared technique to analyse documentary data and answer research questions (Bowen, 2009; Dalglish et al., 2020). Document analysis requires that data be collected, analysed, and interpreted to yield meaningful, thoughtful, and advanced knowledge of a phenomenon under study.

Despite its prevalent use in qualitative methodologies, document analysis as a typical research method appears to remain underdeveloped or under-reported in most studies of mathematics education (Karppinen & Moe, 2012). Furthermore, compared to other qualitative studies, document analysis, as a distinctive research method, remains under-utilised. This study therefore sought to close that gap by providing evidence-based value of documents analysis, most especially in the context of mathematics education research. By evaluating some topical contributions and their changeable methodological approaches to the study of how place value is learned, we contend that explaining the process, from data constructing data through actual analysis, would not only reinforce the validity of pedagogical content knowledge (PCK) research in mathematics education but will also increase its influence both in academic and policy discourses (Hartnett, 2018). Before entering this terrain, it may be expedient to explore in the next section what the document analysis method entails.

As explained in the previous section, we collected data from a variety of document sources tasks. Also, as we have mentioned above, document analysis has been routinely carried out in various qualitative studies such as programme evaluation, and others.

Its possibility is seldom selected and the resources about document analysis are scarcely used. It was therefore not easy to refer to previous work. We, therefore, took note of Caulley's (1983) advice which opines that inadequate observation and defective memory are reasons for the failure to use documents effectively in research.

In addition, it is important that documents should be studied within their context and the message or purpose that they were meant to convey. Some documents are intended to be used as a help to one's recollection, and so on. Consequently, documents differ as to their purpose. We used the research questions to frame the selection of documents that were incongruent with the purpose of the study. Thus, the learners' works formed the mainstay of the selection of documents. After learners' work, teachers' workbooks were targeted, followed by policy documents from the Department of Basic Education (2011) such as the CAPS document for the Foundation Phase and the Intermediate Phase.

Additionally, we conducted interviews with teachers and learners where we sought clarity on some documents. We used interviews to supplement document analysis, rather than as a second method of data construction.

Document Analysis Technique

Document analysis also called documentary analysis is a method that is widely used in qualitative research including educational research (Dalglish, Khalid, & McMahon, 2020). Though existing qualitative research handbooks offer direction for conducting document analysis, there is a scarcity of detailed discussion on it (Pratama & Retnawati, 2018). It is a type of qualitative research method in which documents are reviewed by the researcher to assess a theme under study. Its process involves dissecting documents by coding them in the same way as how focus-group or interview transcripts are examined. Normally, the rubric is used to review or score a document.

Document analysis can be useful in many ways. We agree with Morgan (2022) that when it is used to investigate pre-existing transcripts, it can allow researchers to conduct studies that, they might otherwise not be able to complete when using other methods. For example, some researchers may not have the required resources or time needed for field research. Also, conducting a document analysis can help to reduce some of the ethical concerns that are associated with other qualitative methods where access to the field or participants may be a challenge.

As a research method, document analysis is often used with other strategies to approach the same issue (Bowen, 2009; Nagy, 2023; Davies, 2022). This is because qualitative researchers are expected to draw upon a variety of multiple and varied (at least two) sources of evidence to seek convergence and authentication with varied data sources and methods.

By using different sources of data, researchers attempt to provide a convergence of evidence that increases credibility (Rees, Burton, Walters & Cooper, 2023). By probing information, collected through different methods such as interviews and documents, researchers can validate their research findings across different types of data sets and thus, reduce the impact of potential biases that can exist in a study.

Lastly, documents can reach where other qualitative methods cannot. For example, where videoconferencing technology and other types of software are used to reduce obstacles, qualitative researchers sometimes encounter challenges, such as lack of connectivity, document analysis can be an alternative.

Data Analysis

We used Tesch's (2013) eight steps of qualitative data analysis to prepare and code data. From this process, five themes emerged. We used a constructivist lens to make sense of the data. This allowed us to frame the experiences and challenges that influenced how learners learned the place value concept. We considered how policy documents and lesson plans could be adopted, modified, and improved in teaching the place value concept. We were thus, enabled to offer a list of documented misconceptions and errors and so we were able to formulate more informed decisions regarding the use or non-use of policy and lesson plans on how to support learners in learning the place value concept. The five themes that emerged from this process are unfurled here below.

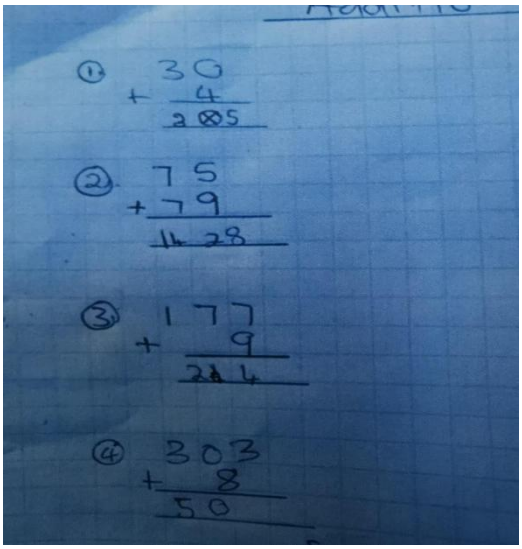
Findings and Discussion

Our study sought to answer two research questions, namely:1). What misconceptions and associated errors do grade three to six learners display in the learning of the place value concept? 2). How can they be supported to learn place value effectively?

We used the qualitative research approach and adopted multiple case study designs to answer these questions. We collected data by means of document analysis. We agree with Bowen (2009) who argues that document analysis is an efficient method of data collection because it saves time, and it is therefore more efficient than other research methods. Thus, the document analysis method was preferred as the main method of data collection and analysis. Furthermore, we used interviews as discussed above.

The study found that grade 3 to 6 learners struggled to master the place value concept, mainly due to the lack of good teaching (characterised by an algorithm approach rather than a conceptual undertaking). This finding can be discussed more fully when broken into five sub-themes, which we unfurl in the next section.

Finding 1: A Generalisation of the Addition Rule to Subtraction



When we studied the learners' works, we found that there was a problem with differentiating rules of addition from those of subtraction. This was at the heart of the lack of knowledge of the place value concept. Figure 1 on the left illustrates the point.

Vignette 1: An Example of Errors in Carrying out Addition Computations by Place Value in Grade 3

We followed Muthukrishnan, Kee and Sidhu's (2019) classification of errors (factual, conceptual, and procedural), who explain that factual errors occur because of a lack of information. For example, the most common factual errors occur because of a lack of vocabulary and digit identification, which may be emanating from inadequate instruction. This vignette also displays a conceptual error, which occurs due to a lack of understanding of the steps involved in solving a problem. According to Brown, Kaiser, and Allison (2018) conceptual errors arise because of a lack of understanding of the various concepts that are fundamental to solving the problem.

Vignette 1 underscores the advice by Owen (2014) and Luneta (2022) who surmise that document analysis comes in handy when the researcher considers the existence and authenticity of the document under review. We also agree with Bowen (2009) who opines that document analysis is not more time-consuming and efficient than other qualitative research methods because it requires data selection rather than data collection, which may be costly. This is also confirmed by Owen (2014, p. 38) who explains, "Document analysis is a low-cost way to obtain empirical data as part of a process that is unobtrusive and nonreactive".

This information was easy to access because all that we had to do was to distribute the test sheet to the entire group and then obtain the data. Indeed, we found that the data was not intrusive. Moreover, the context within which the data was obtained helped us to enter the world of the learner without a struggle; it also gave us the latitude to obtain an insider perspective than it would have could with interviews\ or observation.

In addition, we suggest that Vignette 1 gives us a space and a voice to interpret and unravel the deeper meaning around how this learner was learning place value (Bowen, 2009).

O'Leary (2014) There are three types of documents, which include public records such as student records (student transcripts, student handbooks) organisational records (mission statements, annual reports, policies, and strategic plans). The second category includes personal documents, which give first-person accounts of an individual's actions, experiences, and beliefs. The third category includes, physical evidence such as objects found in the study setting (artifacts). Within these categories, we used personal documents, for example, the learner's work (Vignette 1), and teachers' workbooks. We found the use of documents intriguing because they provided rich data within a short space of time. Interestingly, the document analysis method was neither time-consuming nor intrusive, yet informative. The tests became even more illuminating when used with some interviews held with a few learners and teachers (data not displayed).

Coming back to Finding 1 again, we deem that using data from documents can be useful to teachers when doing remedial work. Specifically, in the case of teachers, we think examples should be provided that are from manipulatives/ number lines, number cards, etc., in grade 3 and actual calculations in Grade 6 that show the difference between addition and subtraction. This finding is consistent with other findings from elsewhere (Fuson, 1990). Benton, Saunders, Kalas, Hoyles and Noss (2018), in their intervention programme, ScratchMaths (SM), which explored programming for the learning of mathematics, used documents from computer programming to understand how students engaged with the study of the mathematical concept of place value. Nunes, Dorneles, Lin and Rathgeb-Schnierer (2016) also used documents to review the teaching of numbers to search for pivotal ideas and domains of research that have occupied researchers in mathematics education for the past studies and others point out two salient points about the advantage of using document analysis as a distinctive research method. One, documents can provide data on the context within which research participants operate—a case of the text providing context. Two, the information in documents could suggest more questions that need to be asked and situations that need to be observed and understood as part of the research.

Finding 2: Grouping of Numbers

To understand how children, made errors when they used the place value concept to carry out additions, we used a documentary analysis of CAPS for grades 3 to 6 mathematics on number sense and the test worksheets that we developed on place value for these grades. From their answer sheets, we used error analysis to study the errors they made.

Herholdt and Sapire (2014) define error analysis as the study of students' work to look for plausible descriptions of errors in learning the place value concept We, therefore, analysed their errors by scoring each problem and marking each incorrect digit in the learner's answer.

To this end, we first consulted the CAPS document to find out what they were expected to know when using place value in carrying out additions in grades 3 to 6. CAPS is a policy document, which replaced the Subject and Learning Area Statements, Learning Programme Guidelines, and Subject Assessment Guidelines for all the subjects listed in the National Curriculum Statement Grades R–12, which were used under the Revised National Statement. We found that the document expected Grade 3 to 6 learners to have developed the number concept at this stage (DBE, 2011).

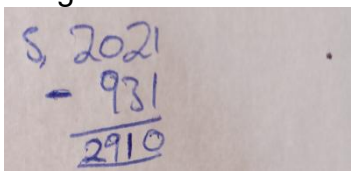
Luneta (2022) points out that by grade 3 learners should have mastered the use of place value to add and subtract two-digit numbers. Our findings were that even at grade 6 our sample revealed that learners grappled with addition and subtraction of multiple digit whole numbers. While there is a perception that grade 3 learners are expected to master the use of place value to two-digit additions in the literature (Chan, Au & Tang, 2014; Fuson & Beckmann, 2012), the reality is that most learners are not.

Graven, Westway and Tshesane (2013) who found that children in the Foundation and Intermediate phases did not master basic mental mathematics as prescribed by the CAPS document, confirm our findings and the assertion that document analysis can be a powerful tool for data construction if applied appropriately. Another study (Weitz & Venkat, 2013) found that where the Annual National Assessment (ANA) results showed good performance, the correct answers were produced from very elementary counting strategies. These findings underline the need for an investigation of the root causes of this problem, hence this study.

This evidence underlines the value of the use of documents to gather data or as a supplement to other research methods, such as interviews. For example, the use of the CAPS policy document provided us with a purview and the scope of the problem under study. Thus, the document provided supplementary research data. It also provided valuable additions to a knowledge base on how place value should be taught and learned in these grades. We were also able to access a means of tracking change and development. As Bowen (2014, p.30) rightfully states: "where various drafts of a particular document are accessible, the researcher can compare them to identify the changes". In South Africa, Hoadley and Galant (2016) found that the CAPS workbooks were suitable for some of the grades they prescribe. Documents can be analysed to verify findings and serve as evidence from other data sources.

Finding 3: Failure to Move from the Right to the Left when Executing Maths Operations.

Thirdly, we found that the learners failed to do vertical addition or subtraction properly, that is, they failed to follow the procedure of moving from right to left. This error shows a poor understanding of the maths operations in terms of place value. Vignette 2 below shows how the learner failed to move from left to right in his effort to make a subtraction operation.



Vignette 2: Lack of Understanding in Undertaking Place Value Subtraction

This error can be classified as a procedural error. To correct such an error there should be a remedial session with the struggling learner to eliminate the procedural error and any underlying misconceptions. The Vignette also shows that the learner apparently lacked an understanding of the rules of carrying and borrowing. Proper arrangement when learning place value remains a big problem for children at this stage. In the example above, the child had tried to learn by algorithm, but because of his lack of understanding of the significance of the position of the 'digits' in the tens' and hundreds' place, she had become confused as to exactly where one 'puts down the right digit'.

This finding is consistent with other studies elsewhere. Ryan and McCrae (2005) showed a range of errors again relating to place value understanding. Similarly, Luneta (2022), Liew, Leong, Julaihi, Lai, Ting, Chen, and Hamdan (2022) found that the most common errors made by learners were factual in nature, procedural or technical, or conceptual or theoretical. These errors may occur at different times and may occur for several reasons. They also discovered that reasons why students make errors include lack of knowledge, weak attention spans, and carelessness.

In the formal column method for both addition and subtraction, it is vital that numbers are set out correctly to maintain their place value. However, as pupils usually write from left to right, they can sometimes find this difficult to do. For instance, because of this type of error, setting out the calculation of 2021 - 931 has resulted in an error: 2910. Another study by Rusyani, Ratnengsih, Putra, Maryanti, Al Husaeni and Ragadhita (2022) which used documents (learners' tests) in which students were asked to answer questions about subtraction using a borrowing technique, came to a similar conclusion. The learners' tests helped teachers to uncover meaning, develop understanding, and discover insights relevant to how students learn mathematics.

The finding concur with Luneta (2022, p.19) who concluded that 'The connection between the strategies learners use and the errors they make is that when learners' knowledge of place value both as a concept and as a strategy of adding and subtracting multiple-digit whole numbers is weak, they adopt several mixed and wrong strategies, such as generalized used of commutative law to subtraction, flawed carrying procedures, and incorrect decomposition of whole numbers'.

Implications of the Study

These findings have at least two implications for our study. One, for researchers, to regards and use document analysis as a distinct method of data collection that should be used more than it is currently. We argue as others (Owen, 2009) do, that if it is used appropriately, it can unearth rich data. We recommend that more studies need to be carried out with document analysis as a leading partner among other methods. We explored grade 3 to 6 errors as being profound and should be addressed learners' weak knowledge of place value that culminates in errors such as generalisation of commutative law, wrong subtraction and addition procedures and incorrect decomposition of whole numbers should be addressed through professional development programmes for teachers. We further recommend from the literature explored in this study that policymakers should promote the use of textbooks, lesson plans, and learners' test work to develop a tool kit for learning mathematics, especially for teachers and learners in impoverished communities where they lack learner-support materials to support their learning.

Trustworthiness of the Study

The strength of any study lies in how far the readers trust its results. Therefore, researchers need to take pains to ensure that their research is trustworthy. Connelly (2016) describes the dependability or rigour of a study as the degree of confidence that it commands the readers to trust the way the data is collected, its interpretation, and the methods it used to arrive at the findings. This ensures the value of a study.

Researchers need to establish the protocols and procedures necessary for a study to be considered worthy of consideration by its readership (Amankwaa, 2016). Though, trustworthiness issues in qualitative research are always contentious. To address this matter, we considered five steps, the credibility of the study, the transferability of the findings, how dependable the findings were and dependability, conformable the findings were, and our own subjectivity (Lincoln, Lynham & Guba, 2011). Concerning credibility, we avoided superimposing our interpretation onto the documents under study and ensured that the documents we studied represented the learners' experience. We read out the data transcripts repetitiously to the learners and asked them whether the views we had captured were correct. This was meant to increase the credibility of the study.

This was also to ensure that there were no misrepresentations. Where there were uncertainties about the suitability of the documents, we used additional documents to corroborate their validity, for example, the minutes were used with the memoranda. In addition, we tried to read between the lines in the documents, and repeatedly, within their contexts until true meaning emerged. Transferability in qualitative research is one and the same as generalisability in quantitative research (Finfgeld-Connett, 2010). Researchers establish transferability by providing readers with convincing evidence that their research study's findings are valid and could be applicable to other contexts (Slevin & Sines, 1999).

To meet this criterion, we endeavoured to ensure our results were transferable to other novel contexts. Firstly, we made sure that we gathered enough documents (primary and secondary), which turned out to be rich data. This included the comparison of both primary and secondary documents, such as learners' works and textbooks. We did our utmost best to describe the learners' tests and homework, and teachers' workbooks on the learning of the place value concept. This allowed us to make informed decisions, that could enhance the transferability of results to other situations.

We asked ourselves whether similar findings would be arrived at if someone followed our methods to conduct the same study. We used more than one method to collect data. We oscillated between the learners; works and the teacher's lesson plans and interviews (Guba & Lincoln, 1994).

We then subjected the findings to review and produced a clearer report – a product of both participants' and our responses. Since our study was framed by an interpretive paradigm, we were not necessarily in pursuit of objectivity. For example, we allowed learners to integrate playing their cultural games to explain place value. We allowed a sway between objectivity and subjectivity, that is, we engaged in inter-subjectivity (Li, Lovatt, Eadie, Dobbie, Meier, Holmes & MacKintosh, 2017).

Ethical Considerations

We requested permission from the University of Johannesburg Ethics Committee as well as from the Department of Basic Education in Limpopo Provincial Education (the permission was sought by the first author for her doctoral study). The other serious ethical issues we addressed were informed consent, discontinuance, confidentiality, anonymity, and respect. Since, our study involved vulnerable persons, i.e., children, we sought assent from parents through the teachers. We approached the administration of tests with great caution. We were conscious of the possibility of making learners re-live their experiences and raising anxiety, especially where learners were struggling with the learning of the place value concept. We requested auxiliary services for guidance and counselling.

Limitations of the Study

Besides its usefulness as a data collection method, document analysis has a few limitations that if not attended to, may compromise the validity of a study. One such limitation is that, unlike interviews, it can provide insufficient detail because it does not allow follow-up or probing by the researcher. This is because documents are produced for varied reasons other than for the research itself, and therefore, in most cases, they are created independently of the research agenda. Thus, they usually do not provide adequate detail to answer the research questions. To counteract this limitation, we relied heavily on the test worksheets, which we created to answer the research questions. Thus, these were tailored for our research purpose.

Secondly, documents to be analysed can have a high irretrievability rate. Documents are sometimes not retrievable because they are classified as confidential. Access to documents may be deliberately blocked (Yin, 1994). For example, we found that teachers were not always willing to share their lesson preparation books. However, upon our second visit and subsequent follow-up meetings, we were able to access some. Thirdly, the trustworthiness of documents could be endangered by biased selectivity. An incomplete collection of documents may suggest that there could be a 'biased selectivity'. In a school context, the available (selected) documents are likely to be aligned with policies and procedures and the agenda of the school. However, this limitation was not a threat in our case because the policy documents (e.g., CAPS) were not of a private nature.

Conclusion

In this study, we investigated the errors exhibited by grade 3 to 6 learners by using the document analysis method to answer the questions:

"*What are the misconceptions and associated errors displayed by grade three to six learners when using the concept of place value to add and subtract whole numbers? How can teachers support grade three to six learners in learning and using the place value concept?"*

More specifically, we wanted to promote an understanding of the use of learners' tests to explore the problem. We found that the use of the documents created a window into the misconceptions and associated errors that learners and teachers contend with in their classrooms and established that errors are a learning necessity but their causes must be established and dealt with.

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BONDS AND BRIDGES BETWEEN COMMUNITY-BASED ORGANISATIONS AND THE EDUCATION SECTOR: THE CASE OF GADRA EDUCATION

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Abstract

Non-Governmental Organisations (NGOs) in South Africa occupy both contentious and influential positions and have played a key role in siding with the marginalised majority. Education is positioned as a site for the liberation and well-being of South Africa's majority; however, its state is marked by stark inequalities. Grahamstown Area Distress Relief Association (GADRA) Education (an NGO) locates itself at the centre of a dense network of educational institutions, including Rhodes University. From a critical community psychology perspective, we demonstrate how this NGO deploys bonding and bridging capital to contribute to social change in the public schooling sector in Makhanda, South Africa. A Foucauldian discourse analysis of GADRA's annual reports (2012–2015) revealed prominent discourses circulating in the organisation. The transformation, crisis and human capital discourses circulate to construct the educational landscape. Discourses of participation and collaboration co-construct a Makhanda-GADRA-Rhodes University partnership. We identify techniques reminiscent of community psychology's principles and values to construct their credibility. These techniques have wider applicability for reform in the public schooling landscape in South Africa. Through the case of GADRA, we see the functioning of both bonding and bridging capital deployed in a community-based organisation, in the process of community and educational regeneration and social change.

Keywords: Non-Governmental Organisations, Community-Based Organisations, Education, Bonding and Bridging Capital, Critical Community Psychology.

Introduction

Education is positioned as an important site for the liberation and well-being of South Africa's majority; however, the state of education in the country is marked by stark and persistent inequalities (Spaull, 2019). Located in the rural Eastern Cape province of South Africa, Makhanda's socio-cultural and contextual landscape mirrors country-wide inequalities. Makhanda, formerly known as Grahamstown, is described as "the cradle of education in South Africa" (Westaway, 2012, p. 1). The rural city is home to so-called famous schooling establishments, that appear on the top 20 list of most expensive and efficient schools in the country (Nomsenge, 2018). Rhodes University sits on the more affluent west side of Makhanda while Joza township is located on the far east end of the city.

Fee-paying schools, located in Makhanda west, perform relatively well while non-fee schools, located in the townships, perform poorly (Westaway, 2016).

Although the activities of Non-Governmental Organisations (NGOs) in South Africa have been rightfully challenged, they occupy influential positions and have played a key role in siding with the persistently marginalised majority (Matthews & Nqaba, 2017). Operating in the rural Eastern Cape province for more than 60 years, GADRA (the NGO) was initially established in response to South Africa's oppressive apartheid regime to fill gaps in education service delivery, resist the racially segregated education systems and advocate for education under one ministry. In the present day, GADRA Education positions itself at the centre of a dense network of educational institutions in the city, including Rhodes University. Using a critical community psychology perspective (Kagan et al., 2020), this article aims to demonstrate how this local education-focused NGO deploys bonding and bridging capital, to contribute to social change in the public schooling sector in Makhanda.

A Community Psychology Lens

Community psychology can be understood as both a worldview and an approach to action and research (Nelson & Prilleltensky, 2010). It is concerned with human resource development, political activity, and scientific inquiry. Kagan et al. (2020) describe it as focused on principled social change that addresses the most pressing issues of our time; hence our focus on education in Makhanda. Critical community psychology takes an explicitly political stance by identifying where power lies and how it is exercised in ways that maintain privilege and provoke discrimination against particular groups (Fisher et al., 2007). They emphasise value-based, participatory work as well as forging alliances. They offer an opportunity to rethink and reconstruct systems of knowledge and practice from the perspective of the marginalised majority (Burton & Kagan, 2005) and thus move towards our imagined transformed societies (Kagan et al., 2022).

Hook (2004) makes a case for why critical psychology may be a useful site to think about justice and social change and how its applications can be deployed as a means of consolidating resistance to power. Here, we aim to show how the operationalisation of the principles of critical African-centred community psychology (Ratele et al., 2022) specifically can make important contributions at the nexus of theory and practice in working towards community regeneration via education and, ultimately, towards social change. We deploy an African-centred orientation to community psychology by situating ourselves "here" (Ratele, 2019) to theorise about community-based organisations and the South African educational landscape. This offers insights that could contribute to the dialogues on transformative change in public schooling in South Africa.

Non-governmental Organisations

Non-Governmental Organisations (NGOs) have played a key role in siding with the poor, the excluded, the persistently marginalised or oppressed majority (Burton & Kagan, 2005). They have worked towards bringing about social justice (Matthews & Nqaba, 2017) following South Africa's colonial and apartheid histories, and in the current post-democratic dispensation. The activities of NGOs have however been challenged by "the depoliticization of poverty by stabilising and institutionalising power relations and thereby preserving the status quo" (Matthews & Nqaba, 2017, p. 8). They continue to occupy influential positions on the African continent as well as internationally as advocates of development, economic growth, human rights, and other such emancipatory and justice-related functions; yet, the question remains whether they lead enough towards social and political transformation. From a critical community psychology perspective, we discuss how a local education-focused NGO has demonstrated the deployment of both bonding and bridging capital to contribute to social change in the public schooling sector in Makhanda, South Africa.

The National Planning Commission (NPC) was formed in 2010 to construct a long-term vision for development in South Africa which resulted in the National Development Plan 2030 (NPC, 2022). Although South Africa has achieved considerable steps in the development of the provision of basic services and changed employment demographics in several sectors, post-apartheid South Africa is still characterised by widespread poverty, high unemployment, and systemic inequality. In their diagnostic report, the NPC (2011) identified unemployment and the poor quality of education for Black[i] people as the top two key challenges in democratic South Africa. Thus, education has been identified as central to achieving the overarching democratic goals of eliminating poverty and reducing inequality (Westaway, 2012). This positions education as a site for the liberation and well-being (Nelson & Prilleltensky, 2010) of the country's majority.

South African School Education and Makhanda's Educational Landscape

The discourse of crisis is regularly summoned to construct the state of education in South Africa. The evidence for what has been described as "an ongoing crisis in South African education" (Spaull, 2013, p. 3) is evident in the results from local and international tests of educational achievements such as the Annual National Assessments (ANAs)[ii], Progress in International Reading Literacy Study (PIRLS)[iii], Southern African Consortium for Monitoring and Educational Quality (SACMEQ)[iv], Trends in International Mathematics and Science Study (TIMSS)[v] and the National Senior Certificate (NSC)[vi] matric performance (i.e. at exit-level from school).

Crumbling school infrastructure (Amnesty International, 2020), poverty and inequality (Spreen & Vally, 2006), poor educational outcomes (Spaull, 2013), lack of teacher knowledge and low access to technology (Spaull, 2019), amongst others, have been further evidenced to note the broken and unequal state of education (Amnesty International, 2020). Spaull (2013, p. 3) offers this anecdote to capture the effects of the challenges in South Africa's education sector: "of 100 pupils that start school, only 50 will make it to Grade 12, 40 will pass, and only 12 will qualify for university" and, "only 6 will get an undergraduate degree in 6 years" (Spaull, 2019, p. 3). Such poor progress has deleterious effects on the employability of those unable to access some form of post-school education.

Educationalists further describe the South African education system as starkly differentiated between private and public schooling. Measures of educational achievement indicate that there are in effect two public schooling systems in the country: (1) fee-paying or partially state-subsidised schools, which cater for about a quarter of South Africa's learners (this sub-system is smaller and better performing) and (2) non-fee-paying schools that make up the larger sub-system and cater for the socio-economically poorer majority of learners (Spaull, 2013). Thus, rather than being a potential strategic site of liberation, the fissures in the education system seem to reproduce persistent inequalities and injustice.

Located in the rural Eastern Cape province of South Africa, Makhanda's educational landscape mirrors country-wide inequalities in the education sector. The city is home to so-called famous schooling establishments such as Kingswood College, Diocesan School for Girls, and St Andrews College, along with Victoria Girls High School and Graeme College (the latter two being partially state-funded). The former three appear in the top 20 list of the most expensive and efficient schools in South Africa (Nomsenge, 2018). Rhodes University (a Higher Education Institution, HEI) is located on the more affluent west side of Makhanda, while Joza and other township(s) are located at the far eastern end of the city. In Makhanda, the fee-paying schools located in the west, perform relatively well, while non-fee schools in the townships, perform badly (Westaway, 2016).

Recently, however, collective efforts by education practitioners in Makhanda, both state and non-state actors, have contributed to shifts in the exit-level educational outcomes of the city's so-called no-fee-paying schools. What this indicates is that the forging of alliances between community-based organisations with public schools has contributed to a level of community regeneration in the schooling landscape of Makhanda. This is evidenced by what Westaway (2022) labels "Makhanda's meteoric matric rise" across all nine public high schools in the city. A recent record pass rate of 83%, with 47% Bachelor passes, has been reported. This makes Makhanda the leading education city in the rural Eastern Cape province of South Africa (Amner, 2022). In addition to these performance outcomes, relationships among actors in education have been strengthened (McCann et al., 2021).

The NGO under study, GADRA, positions itself "at the centre of a dense network of educational institutions in the city, including Rhodes University" (Westaway, 2013, p. 28). Amid these shifts, we will seek to illustrate GADRA's leveraging of bonding and bridging capital that has contributed to this evidence of the regeneration of the city's public schooling landscape.

GADRA Education

GADRA Education is an NGO founded in the 1950s and located in Makhanda. Initially known as Grahamstown Area Distress Relief Association (GADRA), and presently known as GADRA Education, it was established to fill the gaps in service delivery by the then Department of Education and Training (which was responsible for the provision of poor quality schooling to the majority); to assist the marginalised and oppressed caregivers to educate their children; and to advocate for institutional and political change as well as education for all under one ministry (i.e. rejecting the system of Bantu Education: the laws under the apartheid regime that enforced racially separated education systems – see Westaway, 2017).

Makhanda, formerly known as Grahamstown and settled by colonisers after the 1800s, is described as "the cradle of education in South Africa" (Westaway, 2012). Since 2015, the GADRA Matric School emerged as Rhodes University's largest feeder school and the organisation was appointed to manage the Vice Chancellor's school revitalisation plan via the *Nine-Tenths* mentoring programme that caters to learners attending the city's no-fee-paying schools (Westaway, 2016). It is in the context of persistent educational injustice and stark contrasts within education that GADRA, the city's oldest NGO, continues to work at the interface of service delivery and advocacy for educational transformation.

In 2010, GADRA came under new management and worked to re-position itself as a community-engaged organisation as well as an advocate for the transformation of the public schooling sector in Makhanda. Playing a key role in the educational landscape of the city, they convened the Principal's Forum in 2013, hosted parent workshops and meetings and were trusted to lead a consortium of service organisations since 2014, as well as being appointed to lead the Vice Chancellor's Revitalisation Education Initiative since 2014 (Westaway, 2013, 2014; Rhodes News, 2022). Acknowledging their contributions, GADRA was named the Community Partner of the year in 2014, 2018 and 2020 by Rhodes University's Community Engagement Office. The types of social capital (Claridge, 2018) evidenced in their modes of intervention in the first period of their repositioning (2012–2015) are under review here.

Bonding and Bridging Capital of Education-Focused Community-Based Organisations

The concepts of bonding and bridging capital have conceptual utility for analysing the social interactions of GADRA's modes of intervention, and more broadly community participation in development initiatives. These concepts have their theoretical homes in social capital theory in the field of economic sociology (Granovetter, 1973) and educational sociology (Bourdieu, 1985). Woolcock (2001) extended these by arguing for linking capital as a type of bridging capital that acknowledges the inherent power relations in vertical associations.

For the purposes of this case, bonding capital is formulated as the connections within the public education community in Makhanda, where members share relatively similar statuses (e.g. head teachers and principals of schools) and have available to them similar types of information and socio-economic resources. Claridge (2018) describes these connections as inward-looking and protective, with members interacting frequently. A dense network of strong relationships is described where members feel a sense of belonging. This is sometimes geographically circumscribed. It helps members to build their social relationships and may then facilitate collaborative action (Adler & Kwon, 2002). Threats to these types of relations are that they may become rigid and exclusive, breeding discrimination towards outsiders. Chief critiques of this form of social capital are that it may be exclusive and has little effect on economic outcomes (Claridge, 2018).

Bridging capital draws people together from across social divisions (Putnam, 2000) and may be formulated as relations between different organisations, in this case, education stakeholders in Makhanda. Claridge (2018) describes this type of social capital as those connections of exchange between members with shared interests but contrasting social identities or statuses. This networking occurs outside members' typical social groupings. It enables an exchange of information, ideas, and innovation and may build consensus amongst members representing diverse interests. Members can access information and power for better placement within the networks or it affords members the opportunity to recognise opportunities. It functions as a social lubricant and members can build social leverage to "get ahead". It is inclusive yet dynamic (changing networks) as well as voluntary, including membership in associations that are representative of the larger society. Between the groups, there may be so-called 'weak' ties or 'thin' trust, but these could be strengths of this type of capital (Granovetter, 1973), being more outward-looking (Putnam, 2000). Bridging capital can improve economic development, growth, and employment (Claridge, 2018).

Linking capital considers the power dynamics of social relations. Woolcock (2001) describes it as a subset of bridging social capital. Claridge (2018) highlights that it can be both vertical and horizontal.

Relations here exist within a hierarchy where power, social status, and wealth are accessed differentially. Differences between partners are a conscious part of the relationship. There are inherent dynamics of power (e.g. the NGO builds a relationship with the HEI and the HEI has relative power over them). However, there is an expected level of reciprocity. NGOs may be described as brokers of social capital (Claridge, 2018).

Popularised by Putnam (2000), the concept of social capital has been used to argue for the strengthening of networks of solidarity to catalyse civic action and thus social change. Applied to education, scholars have used Bourdieu's (1985) formulations of social capital to explore the relationship between social capital and educational achievement in divergent socio-economic contexts (Menahem, 2011), diverse school contexts (Plagens, 2011), and its interactions in higher education (Jansen & Jetten, 2015). More locally, related to education NGOs and university-school partnerships, McCann et al. (2021) used the associated concepts of bonding, bridging, and linking the capital to illustrate the social capital leveraged by civil society and community organisations to contribute to social change. The authors, who also constituted members of the university-school partnership, reflect on the *Nine-Tenths* mentoring programme as a "model as a means of leveraging community resources in pursuit of educational change" (McCann et al., 2021, p. 46). They too argue for the bonds and bridges between community-based organisations and the education sector to contribute further to community and educational regeneration and social change.

With the above concepts in mind, a broad study has been designed to situate GADRA within Makhanda's educational landscape – to identify the discourses used to construct the organisation's activities and to seek evidence of the organisation's bonding and bridging capital in contributing to social change in the public schooling sector in Makhanda, South Africa. This article is concerned with examining the strategic plan and annual reports (2012–2015) during the first period of the NGO's repositioning and investigating the discourses summoned to construct the activities and modes of intervention at GADRA.

Methods

The data to be presented here are part of a larger single-case study of GADRA Education, referred to above. The project received ethical approval from Rhodes University's Human Ethics Committee (RUHEC number: 2021-4863-5961).

A key vehicle through which to reveal and explore the implications of discursive constructions of education in Makhanda is discourse. A Foucauldian conception of discourse was used to consider the role of discourse in wider social processes of legitimation and power surrounding the NGO and the public schooling sector in Makhanda.

This conception is deployed to refer to the ways of constituting knowledge and the accompanying "practices that systemically form the objects of which they speak" (Foucault, 1972, p. 49). From this perspective, discourse is the site of power relations and the embodiment of power and knowledge. Discourse shapes subjectivity and experience and is thus strongly implicated in the exercise of power (Foucault, 1972). In community psychology, these issues related to the nature and functioning of power are often left unexplored (Fisher et al., 2007). We sought to highlight these relations and reproductions as they apply to education actors in Makhanda.

Willig's (2013) stages of a Foucauldian discourse analysis guided the analysis of the availability of discourses within the NGO, as reflected by the strategic plan and annual reports (2012–2015). Stage one of the analysis involved a grounded reading and sifting of the data for the prominent discursive constructions. Stage two focused on placing the emergent discursive constructions within wider discourses and noting which discourses are drawn upon to make meaning of the discursive objects of investigation. Stage three considered action orientation, the discursive context in which different discourses are deployed and what is achieved by these constructions. Stage four involved identifying the subject positions that are made available for GADRA members. Finally, stage five focused on the relationship between discourse and practice, considering how the objects and subject positions contained in the reports open or close opportunities for action and the impacts on desired educational transformation. Below we see that GADRA both summoned discourses beyond those prominently circulating in South African education at this socio-political moment, and summoned counter-discourses echoing the principles and values of community psychology to contribute to regeneration in Makhanda's educational landscape.

Findings

The transformation, crisis and human capital discourses circulated in the annual reports to construct the educational landscape of Makhanda. In addition, discourses of participation and collaboration were used to co-construct the Makhanda-GADRA-Rhodes University partnership within the public schooling landscape. We will illustrate below how GADRA used techniques reminiscent of community psychology's principles and values to construct their credibility, and positioned multi-tiered modes of intervention as forms of social capital for bonding and bridging purposes within the public schooling community in Makhanda. The evidence below illustrates how GADRA's bonding and bridging capital has contributed to the regeneration of the city's public schooling landscape.

Makhanda's Educational Landscape

The transformation and crisis discourses were identified as central motivators by GADRA. Across the annual reports (GADRA, 2012–2015), there are multiple references to "the need for transformation".

We see recurring references to the construct of "public education transformation" and its positioning as "the goal of the Organisation" (GADRA, 2015). The object of this transformation is constructed as the "Grahamstown[vii] educational landscape" (GADRA, 2012). The organisation repetitively asserts its commitment to "educational transformation" and notes the "urgent need for public sector advocacy in Grahamstown" (GADRA, 2013). It constructs leaders of public schools as "key constituencies" (GADRA, 2012) and identifies "activist graduates" (GADRA, 2013) as contributors to transformation in public education.

The reports describe the city's education system as "weakening" (GADRA, 2013). Further, an "ongoing decline" (GADRA, 2014) in the Eastern Cape is more generally invoked. Deploying the "crisis in education" discourse, the reports contrast the results of the no-fee-paying schools to fee-paying schools, describing the achievements of the former to be at "unacceptable literacy and numeracy levels" (GADRA, 2014). Consistent with the discourse of crisis in South African education, the Annual National Assessments (ANAs) and National Senior Certificate (NSC) results are referenced as evidence for the "downward trajectory" of education (GADRA, 2014). The organisation describes the primary schooling results as consistent with the exit-level results. The "poor matric results" are described as persistent "in local public schools despite the advocacy efforts" of the organisation (GADRA, 2015). The discourses of crisis and transformation are thus simultaneously summoned to make a case that the "public sector needs transformation advocacy over the long-term" (GADRA, 2015).

In deploying these discourses of crisis and transformation steadily over time (GADRA, 2012–2015), what is produced is the organisation's position as knowledgeable of the "complexity of the problem besetting" (GADRA, 2015) the educational landscape in Makhanda, and being an influential actor in this city's educational space. By 2014, the organisation asserts that it is in a "better position" than previously to "lead and influence" education in the city (GADRA, 2014).

GADRA summons the human capital discourse to construct its transformation strategy: selected no-fee-paying schools are targeted as intervention sites (GADRA, 2015). What begins to emerge at the tail-end of their repositioning phase is a "coherent strategy" toward the public sector (GADRA, 2015). As an actor constructed as knowledgeable and influential, the NGO is interpellated into the educational landscape, which is constructed as weakening and stratified, thus in need of transformation. Using market logic consistent with the human capital discourse, idealised schools are viewed as objects of developmental intervention to be prioritised: these are described as "under-resourced schools" that "demonstrably offer a return on those investments" (GADRA, 2015). Further characteristics of these idealised schools include those that are "soundly led", "reasonably united", have "committed teachers", and show "improving educational outcomes" (GADRA, 2015).

Using the human capital (and more precisely, the scarce skills) discourse and crisis in education discourse simultaneously, stratified "under-resourced schools" are therefore produced in the Makhanda landscape. This production is reminiscent of Nomsenge's (2019) critique of the "local elite" created by development initiatives of local education NGOs in Makhanda, potentially excluding others. The 2015 matric results achieved by the schools are argued to "vindicate" this selection targeting strategy.

Collaborative Partnerships: Community-Based Organisations and the Education Sector

Discourses of participation and collaboration are also circulated in GADRA's annual reports. For example, they assert that the "life and success of the organisation [is] now interwoven with those of the public schooling system" (GADRA, 2013). In this way, the public schooling system in Makhanda and the organisation are co-constructed, in contrast to their historical "add-on" approach to supplementary provision. This is also evident in the Makhanda-GADRA-Rhodes University partnership, which is co-constructed within the public schooling landscape. This illustrates GADRA's situatedness and embeddedness within the city.

The Makhanda-GADRA co-construction is evidenced by constructions of the NGO as "based in the Grahamstown community", holding the "interest of the community", which "espouses relationships", "provides quality education" and "focuses on quality", and is recognised by the Impumelelo Social Innovation Centre[viii] where it received a Gold Award (GADRA, 2012). GADRA Education is thus "poised to play a leading role" in the education sector and describes itself as "unmatched by other education organisations in the country" (GADRA, 2012). Reflecting on the history of the organisation, it is described as having faced difficulties that were overcome, positioning itself to expand its ambitious endeavours. It characterises itself as running "successful programmes and pilots", having a "growth mindset", "offer[ing] a variety of programmes", being "innovative", and "recognises strategic opportunities" by awarding bursaries and the "spirit of volunteerism and activism at the heart of the organisation" (GADRA, 2012). These are all described as key characteristics of GADRA. Critiques of the trusteeship of NGOs are in this way evidenced and simultaneously produce credibility to build future partnerships, for example with Rhodes University (RU).

Discourses of participation and access then produce further evidence of the transformation of the co-constructed partnerships. The GADRA Matric School (GMS) is GADRA's longest-standing programme; it is portrayed as well-known and "award-winning" (GADRA, 2012). It offers learners an opportunity to rewrite and upgrade their NSC to enable access to tertiary education (GADRA, 2022). In the reports, GMS is initially specified as RU's "most significant feeder school" with an expressed intention of "repositioning GMS from a 'finishing school' to a 'bridging college'" (GADRA, 2013).

The organisation sets this "challenge for GMS" (GADRA, 2013) and reports responding to the challenge in the following year (GADRA, 2014) and more broadly "completing its work" of strategic repositioning by the next year (GADRA, 2015). Following "major innovations introduced", "raising the academic bar" and developing systems to identify "the most deserving candidates" for GMS (GADRA, 2013), the organisation reports producing 52 Bachelor passes and a decrease in failure rates (GADRA, 2013); this expands to an "unprecedented achievement" of 70 Bachelor passes the next year (GADRA, 2014).

Mary Waters, a local secondary public school, is named "a main feeder school of GMS" (GADRA, 2013), and then GMS is noted as "a feeder school to Rhodes University" (GADRA, 2013). In 2012, the NGO coordinated the formation of the "High School's Principals' Forum" and in 2014 the "Primary School's Principals' Forum" (GADRA, 2014), an expansion of their work with principals at the primary school level. The partnerships and activities surrounding the organisation's modes of intervention are constructed as collaborative and multi-tiered; they include "advocacy", "parent engagement", "learner engagement" "mentoring" and "tutoring" (GADRA, 2012). The "organisation's support work" includes work with youths, schools, parents and principals (GADRA, 2013).

What is reflected in these discursive transformations is the bonding capital being built between educators as both state actors (Mary Waters) and non-state actors (the GMS programme) in public secondary schooling as well as bridging capital from a non-state development programme (GMS) to an HEI (RU). This functions through producing meaningful access to education since GMS alumni are reported to be admitted to RU and to graduate successfully. Thus, the partnership enables both access and educational success.

Since 2012, the organisation reported seeking a formal agreement with RU and in late 2013 entered into an agreement with RU's Faculty of Education (GADRA, 2014). It was also named the Community Partner of the Year in 2014 by RU's Community Engagement directorate. In addition, it reported growing engagement at a primary school level and being invited to lead a consortium of service organisations as approved in December 2014 (GADRA, 2014). We thus see GADRA leveraging bonding capital between public school actors at a basic education level as well as building bridging capital with tertiary education institutions.

Discussion and Recommendations

The Change-Potential of the Community-Based Praxis of Community-Based Organisations

GADRA uses techniques that appear to resonate with community psychology's principles and values to construct their credibility (with HEIs, parents, learners, principals and local people).

Through African-centred practice that is deeply situated over time (Ratele et al., 2022) and the circulation of values such as social justice, participation, respect for diversity and human development (Nelson & Prilleltensky, 2010) and key features such as ecological and socio-cultural awareness, social and peer support, collaboration and partnership (Nelson et al., 2014), what we see emerging is a community-based praxis. Community-based praxis is the operationalisation of the principles and values of community psychology for transformative purposes (Kivell et al., 2022). It is *community-based* because it is situated; there is great awareness of the socio-contextual characteristics of these particular communities as well as the astute awareness of the matrices of culture, history, socio-economics and politics within the community. It is *praxis* because it is the application of theory through action, tempered by reflexivity to further sharpen social action for transformative change in the community setting.

It appears that GADRA's situatedness and modes of intervention, forming capital for bonding and bridging purposes within the public schooling community in Makhanda, seem to have supported the programmatic success evidenced above. Most importantly, and possibly unlike other NGOs that may be more distant from their constituencies, it is GADRA's credibility amongst community members – learners, parents, principals, educators and local people that is noteworthy. Simultaneously, they have also gained credibility with structures and leaders within RU.

In deploying the bridging and bonding functions of social capital for analysis here, we steer away from reductionist understandings of their distinctions and instead conceive of them as existing on a continuum. In so doing, we acknowledge the multi-dimensional nature of social relationships and apply an ecological perspective to analysis. Claridge (2018) stresses that a balance of all forms of social capital is desirable. Perkins et al. (2002) argue that greater emphasis should be given to network bridging (i.e. linking capital) as it increases power, access and learning, while (interpersonal) bonding capital is useful to encourage participation. Communities with higher levels of all forms of social capital are reportedly more able to mobilise action and experience fewer negative outcomes (Claridge, 2018). This perspective overcomes "the myth of social capital" proposed by DeFilippis (2001), wherein formulations of social capital are accused of being divorced from political and economic capital, and thus unable to influence structural community change. We see that the bonding and bridging modes of interventions at GADRA have contributed to shifts in the public education landscape in Makhanda.

These techniques have wider applicability for reform in the public schooling landscape in South Africa. They form a way in which to move beyond the constraints that exist in both the state and non-state educational landscape, potentially via collaborative partnerships.

Such partnerships are predicated upon, first and foremost, a keen socio-cultural awareness, which is a critical understanding of the matrices of culture, history, socio-economics and the politics of a particular locale, what African-centred psychologists call situatedness (Ratele et al., 2022). Secondly, these partnerships build both interpersonal communication and bonds that then bridge systems that may formerly have existed in silos, leading to exchanges of resources and thus building capacity. Through the case of GADRA Education, we see the bonding and bridging capital of an NGO being used in the process of community and educational regeneration and social change.

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EXPERIENCES OF STUDENTS WITH ONLINE LEARNING AT A SOUTH AFRICAN UNIVERSITY

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Abstract

The COVID-19 pandemic opened different pathways for higher education institutions and lecturers to deliver content using various unfamiliar digital tools, culminating in different student experiences. The study focuses on the students' online learning experiences at a South African university during the COVID-19 lockdown. The study is quantitative, and we used an online questionnaire to collect the data. A total of 288 students took part in the study. The exploratory factor analysis resulted in five factors. The confirmatory factor analysis verified the measurement model. The results suggest that the students' online experiences comprise access to connectivity, socio-economic status, online learning challenges, learning support and use of library e-resources. The results will inform policymakers, librarians and lecturers of the interventions needed to enhance the students' online learning experience. We proposed a new model based on Malik's framework on e-learning satisfaction.

Keywords: Online Learning Challenges, Access to Connectivity, Learning Support, Socio-Economic Factors, Library E-Resources, Online Learning Experience, Malik's (2010) Framework On E-Learning Satisfaction

Introduction

The COVID-19 pandemic and national lockdown levels in South Africa forced universities to revert to online teaching and learning and, consequently, to shift away from the traditional teaching method of learning. University institutions and students suffered from the turmoil and disorder brought about by COVID-19 (Marwala, 2020). To avoid further disruptions and uncertainty, universities had to draw on their resources and creativity and be inventive to ensure students get a high standard of teaching and learning (Marwala, 2020).

In transitioning to online learning, students encountered a host of problems. The students lacked sufficient support from their lecturers and peers (Gillett-Swan, 2017) and experienced stress, fear and anxiety when adapting to this new learning environment (Aguilera-Hermida, 2020; Bower, 2019; Di Pietro, 2017; Gillett-Swan, 2017). Furthermore, some students felt disengaged with the online learning environment and ill-prepared for this new environment they now had to function in (Aguilera-Hermida, 2020; Bower, 2019; Di Pietro, 2017; Gillett-Swan, 2017).

In South Africa, some first-year students were not prepared for online learning because they were exposed to information communication technology (ICT) for the first time when entering university (Mbodila, Bassey, Kikunga, & Masehele, 2016; Naidoo & Raju, 2012). Consequently, they lacked confidence using computers and other ICT applications (Naidoo & Raju, 2012). The literature indicates that students with advanced ICT skills are more comfortable using technology (Mac Callum & Jeffrey, 2013).

Studies indicate that one of the main problems students from low-income families faced was connectivity (particularly in rural areas), resulting in internet and data problems (Aguilera-Hermida, 2020; Fishbane & Tomer, 2020). Data for connecting to the internet was expensive (Dube, 2020), contributing to students' poor learning experiences (Aguilera-Hermida, 2020; Fishbane & Tomer, 2020).

The students' conception (experience) of online learning was shaped by the availability or non-availability of connectivity, internet computer efficacy, and support from their lecturers and peers. This study, therefore, investigates the students' conceptions of their online learning experience during the COVID-19 lockdown at a particular South African university.

Literature

The success of the shift to online learning depended mainly on the degree of online learning readiness of higher education institutions, lecturers and students. Online learning readiness is measured with regard to self-directed learning, enthusiasm for online learning and communication, self-confidence and control, computer and internet efficacy and students' preferred mode of learning (Muthuprasad, Aiswarya, Aditya, & Jha, 2021; Chung, Subramaniam, & Dass, 2020; Warner, Christie, & Choy, 1998). A lack of familiarity with online pedagogies forced some lecturers to develop a bad attitude towards online learning (Adarkwah, 2021; Coman, Țîru, Meseșan-Schmitz, Stanciu, & Bularca, 2020; Muftahu, 2020; World Bank, 2020). In addition, some lecturers were not proficient in using technology (Chaturvedi, Vishwakarma, & Singh, 2021; Coman et al., 2020; Oyediran, Omoare, Owoyemi, Adejobi, & Fasasi, 2020). For example, at the start of the COVID-19 pandemic in Romania, two-thirds of the lecturers confirmed using online teaching platforms for the first time (Coman et al., 2020); they used the basic functionalities of learning management systems (LMS) and struggled to use the advanced features of LMS such as web conference tools and discussion boards that promote student engagement (Coman et al., 2020; Dhawan, 2020).

Muthuprasad et al. (2021) indicated that a lack of capability in course design limits lecturers from promoting critical thinking through interaction or collaboration. Consequently, their students were now exposed to poorly designed learning materials which were difficult to comprehend (Coman et al., 2020; Muthuprasad et al., 2021).

In short, the lecturers were ill-prepared for the online learning experience and therefore designed poor learning experiences for their students (Simamora 2020). Nevertheless, the success of online learning depends on the lecturer's social, cognitive and teaching presence (Garrison, Anderson & Archer, 2001) and the lack of which would demotivate the students.

Another problem encountered by universities during the shift to online learning was their preparedness to function fully in an online space. Some universities lacked training support for their lecturers to switch smoothly from in-person teaching to complete online learning (Oyediran et al., 2020). In addition, the universities lacked the technical capacity to resolve the LMS problems the students faced. Lecturers resorted to using other alternative platforms, such as social media platforms but with mixed results (Coman et al., 2020). Some students preferred using social media (Msomi & Bansilal, 2018) because it allowed flexibility and saved data, whereas other platforms did not (Coman et al., 2020). The universities had no control over the lecturers' alternative applications, exposing the students to a possible breach of their private data and security.

Considering the preparedness of universities and lecturers for online learning, it is also essential to consider some of the problems students face during the shift to online learning. Like their lecturers, some students developed a negative attitude towards online learning due to a lack of familiarity with online pedagogies (Adarkwah, 2021; Chung et al., 2020; Muftahu, 2020). Accordingly, some students saw the online delivery mode as problematic and were not ready to embrace it (Muftahu, 2020). However, the online readiness problems for students were mixed. Chung et al. (2020) reported that students had excellent computer/internet efficacy in Malaysia but poor control over online behaviour.

On the contrary, the lack of computer/internet efficacy negatively influenced postgraduate students' use of e-resources in Kenya (Abdillahi, 2020). Similarly, in a pre-COVID-19 study in South Africa at a rural university, Chinyamurindi, Mahembe, Chimucheka and Rungani (2017) reported that the “lack of online preparedness or little or no online experience in their communities and former schools” was a stumbling block to online learning for first-year students. Likewise, in a study in Hong Kong Chung et al., (2020) reported that online learning was affected by the university students' poor internet/computer efficacy and "their attitudes towards it, learners' learning styles as well as peer and teacher support" (p.48). However, Mpungose (2020) in South Africa posited that computer/internet efficacy was not a barrier to online learning but "the affordability and availability of those physical resources for e-learning" (p.7) since students were already digital natives and knew how to transverse the digital spaces.

A successful online learning experience depends mainly on the availability of excellent and stable connectivity.

Connectivity is the backbone of online learning (Adarkwah, 2021; Allo, 2020; Coman et al., 2020; Dube, 2020; Flack, Walker, Bickerstaff, & Margetts, 2020; Giray, 2021; Muftahu, 2020; Rotas & Cahapay, 2020; Chaturvedi et al., 2021; Mpungose, 2020; Muthuprasad et al., 2021; Oyediran et al., 2020; Safta-Zecheria, Ştefănigă, Negru, & Virag, 2020). The lack of connectivity leads to exclusion from online learning. Also associated with connectivity is the non-availability of electricity or intermittent power cuts and poor network common in developing economies (Coman et al., 2020; Dube, 2020; Fishbane & Tomer, 2020).

Another major problem is the shortage of connecting devices (Abdillahi, 2020; Adarkwah, 2021; Fishbane & Tomer, 2020; Giray, 2021; Muthuprasad et al., 2021; Oyediran et al., 2020; Rotas & Cahapay, 2020). Muthuprasad et al. (2021) and Mpungose (2020) posited that some students did not have access to laptops. Of concern was that some students who did not have laptops had either lost or sold the laptops they received for free from their universities (Mpungose, 2020). Low data limit thresholds hinder online learning (Abdillahi, 2020; Fishbane & Tomer, 2020; Muthuprasad et al., 2021). Slow internet speeds (Abdillahi, 2020; Muthuprasad et al., 2021) are also a significant problem associated with connectivity and online learning. Slow or unstable internet connections lead to frustration (Giray, 2021; Muthuprasad et al., 2021) and a bad experience. For instance, at the university where the study took place in South Africa, the students were given 10GB of data for daytime use and 20GB for night-time use, which the students thought was inadequate (Goto & Munyai, 2022). Also, of concern in South Africa is that the internet is expensive, and not all students can afford it (Dube, 2020; Mpungose, 2020). Overall, the availability or the lack of stable connectivity, electricity and internet will result in some positive or negative learning experiences.

Student support is another essential factor in online learning. Support can come in different forms, including library, student and lecturer support. In online learning environments, the interaction between the lecturers and students is critical (Chaturvedi et al., 2021; Chung et al., 2020; Muthuprasad et al., 2021; Rotas & Cahapay, 2020). Several authors (Giray, 2021; Rotas & Cahapay, 2020) posited that during the COVID-19 pandemic, there was limited instructional scaffolding, communication, feedback and encouragement from the lecturers. Coman et al. (2020) reported that students were disconcerted by the absence of interaction between their lecturers and themselves. For instance, Dost, Hossain, Shehab, Abdelwahed and Al-Nusair (2020) posited that medical students complained about watching the pre-recorded lectures, which do not provide an opportunity to interact with the lecturers. Furthermore, the online learning environments resulted in delayed teacher feedback, isolation and demotivation (Chaturvedi et al., 2021; Coman et al., 2020; Muthuprasad et al., 2021). Accordingly, the students' online experience was affected by a lack of student-to-student and lecturer-to-student interaction.

Library support is also essential for online learning. Burke and Tumbleson (2016) view librarians as part of the academic faculty that collaborates with and supports students in their quest to achieve academic success. The support by librarians was twofold. First, the library information-seeking strategies for undergraduate students did not change during the COVID-19 pandemic, unlike those for postgraduate students who relied mainly on electronic journals (Abdillahi, 2020; Nelson & Tugwell, 2022). In their information-seeking, the students had problems using databases, had inadequate time to find quality search results and failed to access full content (Nelson & Tugwell, 2022). However, for any information-seeking service to occur, one must be connected to the internet. Nevertheless, as argued earlier, bandwidth availability, cost and power cuts limited the students' participation in these activities. For instance, Zimbabwe's poor information and communication technology infrastructure meant that digital library services were limited (Tsekea & Chigwada, 2020).

Second, the library staff were not available to assist the postgraduates in their information seeking (Abdillahi, 2020; Nelson & Tugwell, 2022). Goddard (2020) reported that the library staff had to adjust to working online and learn how to use web conferencing tools such as Zoom, Microsoft Teams and social media platforms to train and communicate with the students.

An equally important factor contributing to a positive online learning experience is one’s socio-economic status. Azubuike, Adegboye and Quadri (2021) indicated a strong correlation between low socio-economic status and the digital divide, with poor students having limited access to online learning materials and connectivity. Students from low socio-economic backgrounds had internet connection problems in their homes during the COVID-19 lockdown (Aguilera-Hermida, 2020; Fishbane & Tomer, 2020). For example, in a study conducted in the United States of America, students from low-income families (Black, Latino and Hispanic) found the move to online learning challenging (Aguilera-Hermida, 2020; Fishbane & Tomer, 2020). For instance, Fishbane and Tomer (2020) found that students who lacked technology at home fell behind and struggled to keep up with their online learning. Students from low socio-economic status had problems using the LMS because they are more expensive regarding data (Allo, 2020). In addition, some of the students could not afford to buy internet data and internet connecting devices (Simamora, 2020). Furthermore, some students faced family distractions (Dost et al., 2020); for instance, due to limited home space, students had to share living spaces (Faize & Nawaz, 2020). Another challenge is that the students, especially women, had household responsibilities (Giurge, Whillans, & Yemiscigil, 2021; Rotas & Cahapay, 2020) that included managing older people and children who were not yet in school (Chaturvedi et al., 2021; Giurge et al., 2021).

In summary, the students had different online experiences owing to the availability or lack of connectivity, technical skills, e-resources and motivation.

Table 1 summarises and ranks the challenges the student faced in order of importance. In the four studies in Table 1, the biggest problems were connectivity and related data speed and limits (Abdillahi, 2020; Chung et al., 2020; Giray, 2021; Muthuprasad et al., 2021). The lack of technical skills in using online learning was ranked 8 out of 8 (last) (see Chung et al., 2020), resonating with the idea that internet/computer efficacy is not a permanent problem for digital natives (Mpungose, 2020).

Table 1: The students' responses to different online challenges

	Author 1/Rank Giray (2021) in Turkey (*n* = 227)	Author2/Rank Abdillahi (2020) in Kenya (*n* = 18)	Author3/Rank Muthuprasad et al. (2021) in India (*n* = 307)	Author4/Rank Chung et al. (2020) in Malaysia (*n* = 399)
Connectivity/Infrastructure	1/10	1/10	1/8	1/8
Motivation	2/10			6/8
Interaction with instructor	3/10		4/8	
Too many difficult assignments	5/10	2/10		
Difficult to focus owing to distractions from surroundings				5/8
Technophobia			8/8	
Self-discipline			5/8	
Data limit		9/10	2/8	3/8
Data speed			3/8	
Lack of technical skills in using online learning				8/8

Conceptual Framework

We used Malik's (2010) framework on e-learning satisfaction to frame this study. Malik (2010) posited that e-learning satisfaction was influenced by the student, lecturer, technical, design and course factors (see Figure 1). Students' e-learning experience depends on the students' attitude to online learning and internet efficacy (Bradbury & Suarez-Sousa, 2019; Malik, 2010; Sun, Tsai, Finger, Chen, & Yeh, 2008).

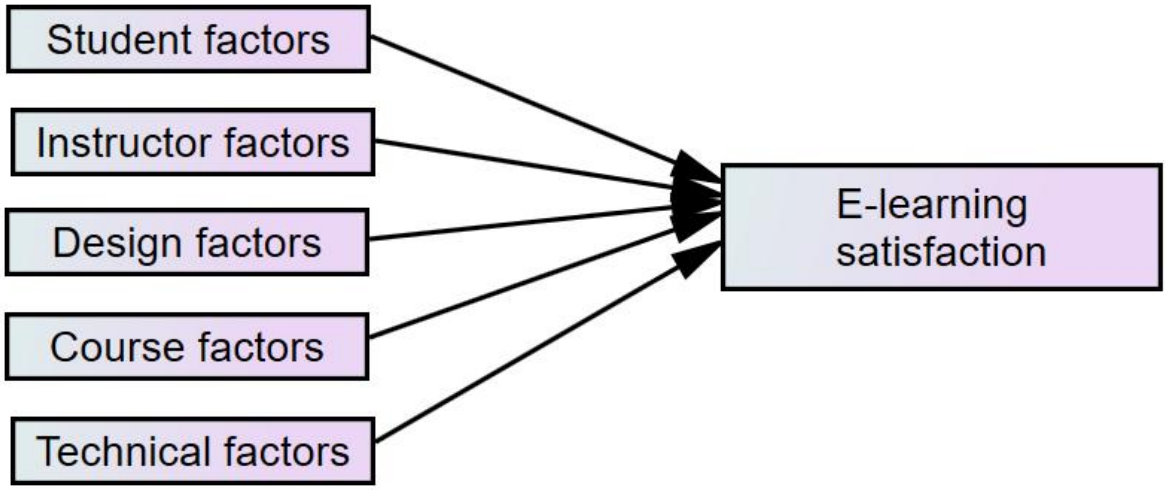


Figure 1: Malik's framework of factors affecting learners' satisfaction towards e-learning (Malik, 2010)

Factors such as the instructor's attitude, preparedness, technical know-how and knowledge of online pedagogical strategies and the inclusion of quality content are at the core of the successful implementation of online learning (Bradbury & Suarez-Sousa, 2019; Malik, 2010; Sun et al., 2008). The students' online experience also depends on lecturer support (Giray, 2021), with lecturers with good online pedagogical strategies and attitudes better positioned to help the students. Furthermore, course factors such as the opportunity to interact lead to satisfaction (Bradbury & Suarez-Sousa, 2019; Giray, 2021; Malik, 2010; Sun et al., 2008). Technical factors such as reliable and stable internet connections and technical assistance also lead to student satisfaction (Bradbury & Suarez-Sousa, 2019; Malik, 2010; Sun et al., 2008). Another factor contributing to online satisfaction is the way in which the course is designed (Malik, 2010; Bradbury & Suarez-Sousa, 2019; Sun et al., 2008). For instance, the perceived usefulness and ease of use (for example, navigation) of the LMS also lead to student satisfaction (Bradbury & Suarez-Sousa, 2019; Malik, 2010; Sun et al., 2008).

Proposed Research Model

We modified Malik's (2010) theory on e-learning satisfaction to suit this study. The factors used were online learning challenges, access to connectivity, learning support, socio-economic factors and use of library e-resources. In this study, these factors are defined as follows:

- online learning challenges refer to problems associated with course design and course factors;
- access to connectivity refers to technical factors;
- learning support (instructor, student and library support) refers to student and teacher factors;
- socio-economic factors refer to student factors and

- use of library e-resources refers to technical factors.

Figure 2 shows the proposed research model.

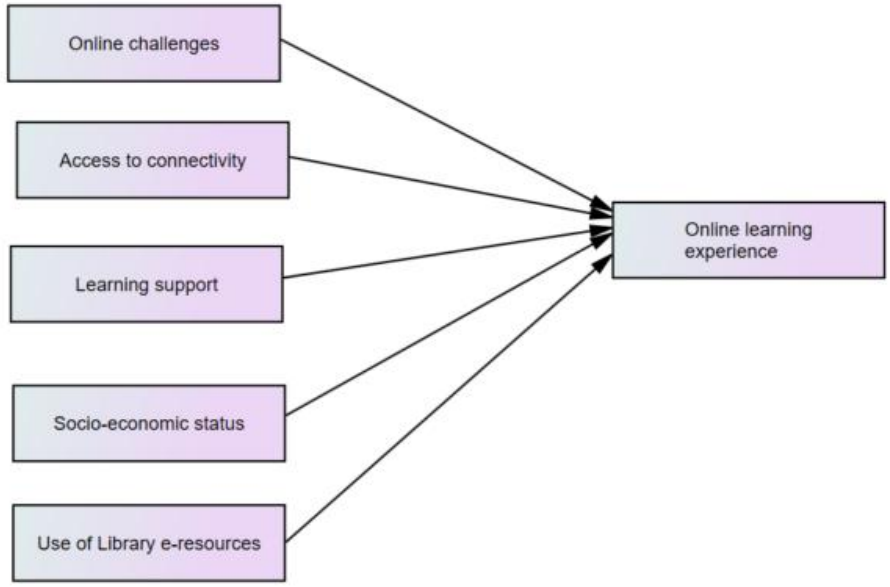


Figure 2: Proposed research model

Methodology

In the study, we employed a quantitative approach. The literature review guided the development of the questionnaire. The items used a 4, 5 or 6-point Likert scale, where, for example, “1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree”. A group of experts had to check that the item statements measured what they were supposed to measure.

Participants

The participants were students who used the library services and came from the university's various faculties, which include the College of Business and Economics, the Faculty of Art Design and Architecture, Education, Engineering and Built Environment, Health Science, Humanities, Law and Science. The participants were doing either postgraduate or undergraduate studies. Regarding gender, 53% of the students were female, 45.6% were male, and 1.4% were other. With regard to age, 86% of the students were younger than 30 years old, and 14% were older than 30 years old. A total of 37.9% of the students studied for a diploma, and 62.1% studied for a degree. A total of 76.1% of the students wished the 2020 academic year to continue, 11.2% indicated that they preferred the year to be cancelled, and 12.6% were not sure. A total of 63.2% of the students studied at home, and 36.8% studied elsewhere.

A total of 14.7% of the students did not have a quiet place to study, 45.6% indicated they had a quiet place to study, and 39.6% indicated they sometimes had a quiet place to study.

Settings

The university where the study took place has a population of approximately 60 000 students. Most of the students are black and come from low socio-economic backgrounds. During the 2020 lockdown, the university provided data and laptops and worked closely with telecommunication companies to provide data assistance.

The e-resources of the university library have always been available around the clock to students and staff. Before the lockdown, the university library offered information literacy instructions to students in person. When the university went into lockdown, the library changed its information literacy instructions from in-person to online, using different online video conferencing platforms such as Zoom, Microsoft Teams, and Blackboard Collaborate Ultra. The library also developed short instructional tutorial videos, for example, how to use the library's online catalogue and electronic journal databases, and how to download e-books. These videos and the real-time instruction recorded sessions were made available to the students via their LMS (Blackboard). Before the lockdown, the library training rooms could accommodate approximately 25 students. Owing to data being provided to the students, there was an increase in the attendance of the library's online information literacy classes.

Data Collection

We used an online questionnaire to collect the data. A total of 288 students took part in the survey.

Data Analysis

The Statistical Package for the Social Sciences (SPSS 26.0) was used to conduct an exploratory factor analysis (EFA) with principal axis factoring (Table 2). The EFA with Promax rotation was then used to identify a simple factor structure. Five factors with an eigenvalue > 1 and items with factor loadings > 0.3 were retained. The overall reliability constant, Cronbach's alpha was .770, which is adequate (Tavakol & Dennick, 2011). For each construct, the determinant of the correlation matrix was greater than 0.001, therefore indicating no incidence of multicollinearity (Field 2018). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for each construct was greater than 0.5, indicating the suitability of the exploratory factor analysis method (Bentler, 1977). The composite reliability (CR) and average variance extracted (AVE) were calculated to test whether the constructs had convergent and discriminant validity.

Table 2: Factor loadings, composite reliability and average variance values for the constructs

	Item #	Factor 1 (F1) loadings	Factor 2 (F2) loadings	Factor 3 (F3) loadings	Factor 4 (F4) loadings	Factor 5 (F5) loadings
	Q37	.777				
	Q27	.683				
	Q30	.640				
	Q35	.501				
	Q28	.461				
	Q21		.933			
	Q23		.666			
	Q13		.518			
	Q24		.340			
	Q17a			.904		
	Q17b			.746		
	Q17c			.455		
	Q41				.627	
	Q11				.305	
	Q14					.551
	Q36					.406
	Q15					.314
	Q43					.303
AVE		0.389	0,424	0.527	0,243	0,165
CR		0.754	0,724	0,757	0,365	0,426
KMO		.779	.747	.663	.500	.624
Det		.270	.360	.529	.963	.790

Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status; Det = determinant

Construct Validity of the Instrument

Convergent validity measures how items of the same construct correlate since they measure the same thing (Rojas & Widiger, 2014). Discriminant validity measures how different items from at least two constructs are unrelated or uncorrelated (Rojas & Widiger, 2014).

To meet convergent validity, the AVE and CR values must be larger than 0.5 and 0.7, respectively (Davadas & Lay, 2018).

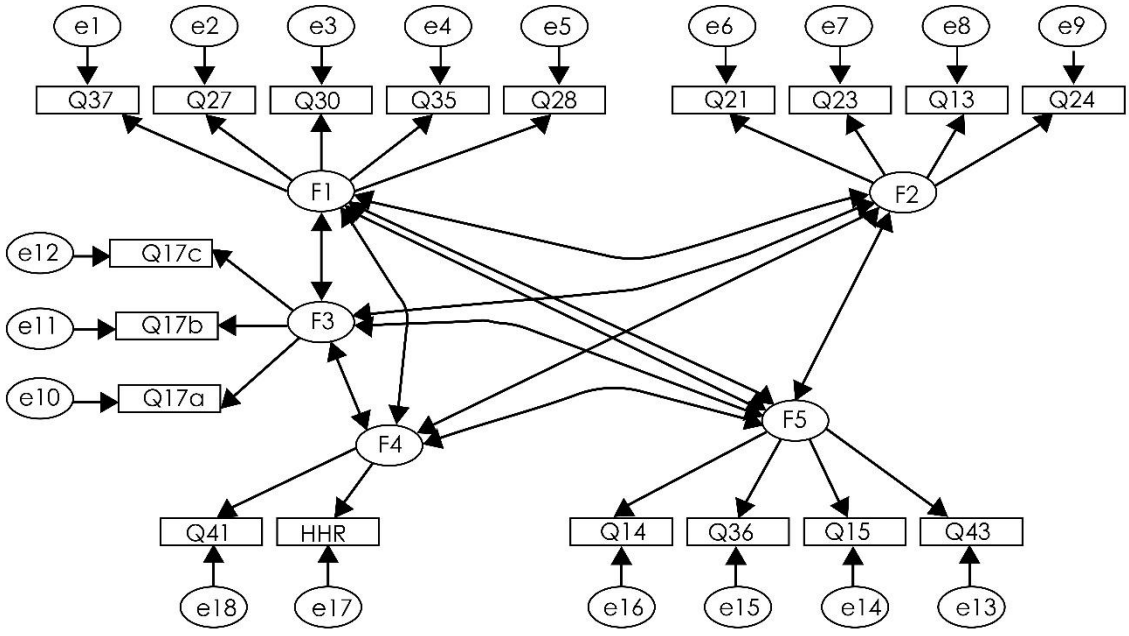
Factors F1, F2 and F3 have some reasonable convergent validity since the composite values are greater than .7 and AVE values are close to .5 (see Hair, Sarstedt, Matthews, & Ringle, 2006), but Factors F4 and F5 have poor convergent validity (see Table 3). However, the conditions for discriminant validity were met since the square root value of the AVEs for each construct (bolded values in Table 3) is greater than their inter-construct correlation coefficient (see Fornell & Larcker, 1981).

Table 3: Convergent and discriminant validity of the constructs

	CR	AVE	F1_av	F2_av	F3_av	F4_av	F5_av
F1_av	.754	.389	**.623**				
F2_av	.724	.424	.390	**.65**			
F3_av	.757	.527	.354	.225	**.73**		
F4_av	.365	.243	.132	.073	.183	**.49**	
F5_av	.426	.165	.372	.443	.263	.026	**.41**

Confirmatory Factor Analysis

We used the analysis of a moment structure (the AMOS 26.0 software) to verify the measurement model (instrument). F1, F2, F3, F4 and F5 represent the latent variables. Figure 3 shows the latent variables, the associated factor loadings for the items, the covariance among the latent variables, and the associated error measurements for the observed variables.



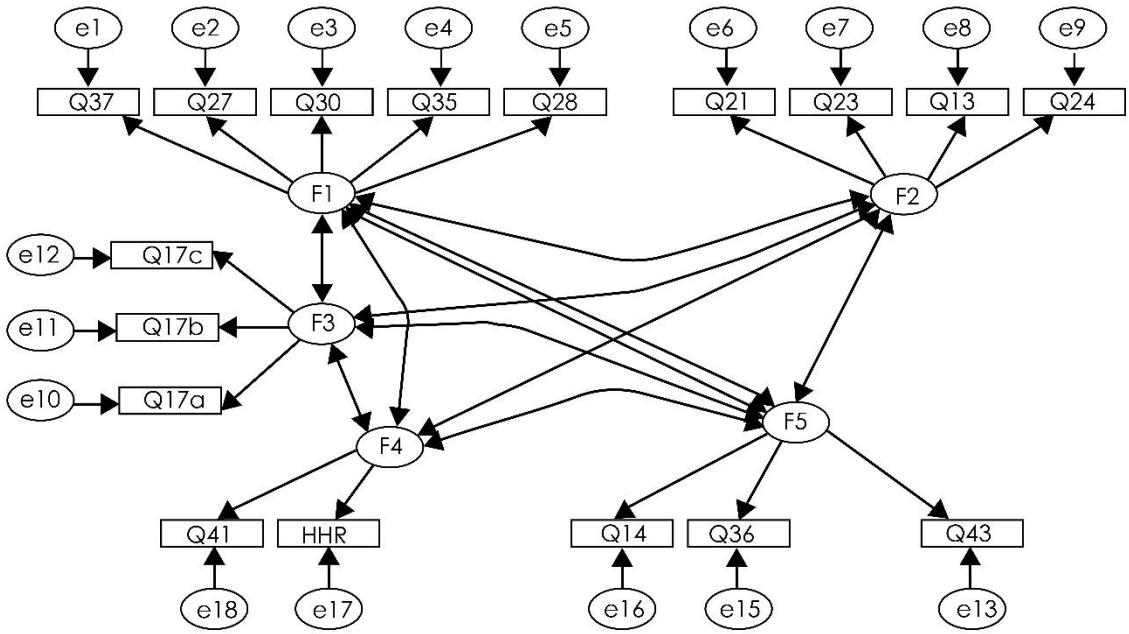
Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status
Figure 3: The confirmatory factor model 1

The goodness of fit measurement indices were used to evaluate the measurement model. All the fit indices, namely, the chi-square with degrees of freedom (CMIN/DF), the comparative fit index (CFI), the Tucker-Lewis index (TLI), the incremental fit index (IFI), and the root mean square error of approximation (RMSEA) were greater than the minimum acceptable values (.90) (see Hu & Bentler, 1999) (see Table 4).

Table 4: Model fit indices before modification

Suggested index	Threshold value	Excellent results	Obtained value
CMIN/DF	< 3	> 1	1.519
CFI	> .90	> .95 but less than 1	**.944**
TLI	> .90	> .95 but less than 1	.924
RMSEA	< .08	< = .05	.043
IFI	> .90	> .95 but less than 1	**.946**

The CFI and IFI values were .944 and .946 (close to .95), indicating a good model fit (see Hu & Bentler, 1999). However, the module was modified by removing item 36 (How important is social media) in Factor F5, which had low factor loadings. This improved the model fit. The improved module is shown in Figure 4.



Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status
Figure 4: The confirmatory factor model 2 after modification

The standard regression weight is shown in Table 5.

Table 5: Standard regression weight (SRW)

			SRW	SE	CR	P	Label
Q37	<---	F1	.784				
Q27	<---	F1	.692	.051	10.848	***	par_1
Q30	<---	F1	.485	.058	7.563	***	par_2
Q35	<---	F1	.694	.077	10.882	***	par_3
Q28	<---	F1	.534	.067	8.360	***	par_4
Q21	<---	F2	.767				
Q23	<---	F2	.747	.066	11.704	***	par_5
Q13	<---	F2	.644	.082	10.136	***	par_6
Q24	<---	F2	.517	.102	8.097	***	par_7
Q17a	<---	F3	.697	.141	8.039	***	par_8
Q17b	<---	F3	.770	.148	8.127	***	par_9
Q14	<---	F5	.536				
Q15	<---	F5	.618	.231	6.658	***	par_10
Q43	<---	F5	.338	.100	3.553	***	par_11
Q11	<---	F4	.271	.335	1.449	.147	par_12
Q41	<---	F4	.715				
Q17c	<---	F3	.602				

Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status; SRW = standardised estimate or factor loading

All the factor loadings, except for two items, are greater than .5, which is desirable (Field, 2018). The CR, square root of the AVE and AVE values were then calculated to determine the convergent and discriminant validity of the constructs using the standardised estimates in Table 6.

Table 6: Convergent and discriminant validity

	CR	AVE	F1	F2	F3	F4	F5
F1	.778	.419	**.647**				
F2	.767	.457	.696	**.676**			
F3	.733	.480	.453	.415	**.692**		
F4	.292	.407	.225	.151	.341	**.637**	
F5	.733	.480	.547	.882	.400	.196	**.692**

Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status

The CR values exceed 0.7, except for F4, and the AVEs are close to 0.5, signifying some convergent validity (Hair et al., 2006). The square root of the AVE (bolded diagonal) is bigger than its inter-construct correlation for F3, F4 and F5, indicating some good discriminant validity.

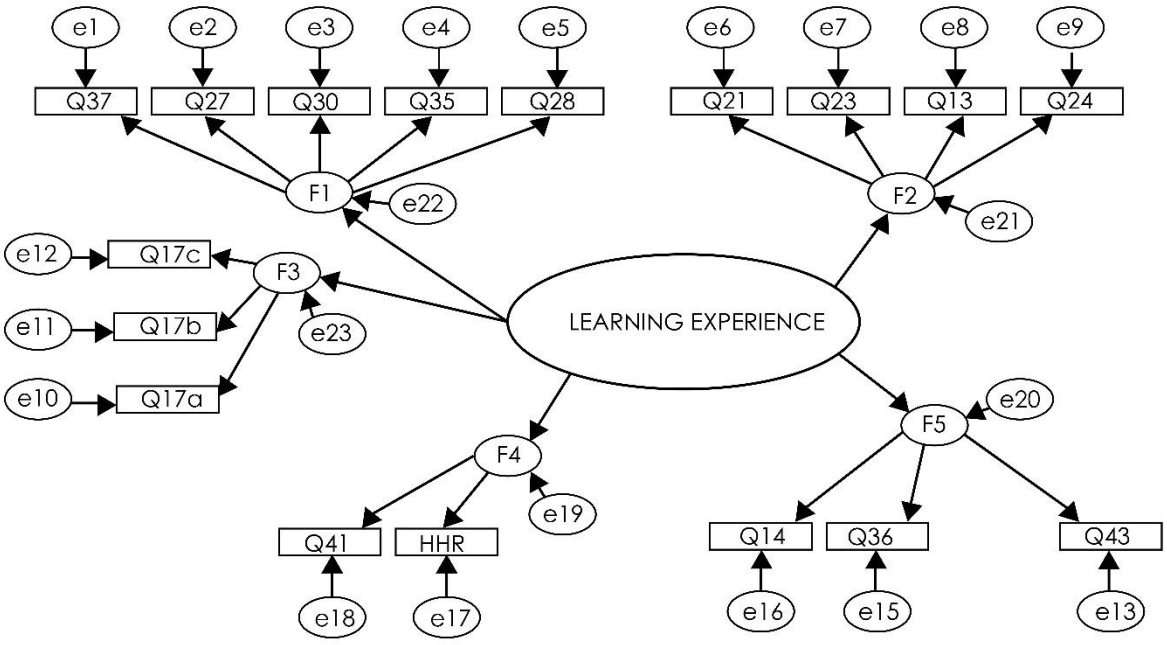
However, the inter-construct correlation for F2 and F1 is greater than the square root of the AVE, therefore signifying some poor discriminant validity between the two constructs (Fornell & Larcker, 1981). Table 7 shows the goodness-of-fit indices of the final model (model 2).

Table 7: Model fit indices after modification

Suggested index	Threshold value	Excellent values	Obtained value
CMIN/DF	< 3	> 1	**1.519**
CFI	> .90	> .95 but less than 1	**.956**
TLI	> .90	> .95 but less than 1	.939
RMSEA	< .08	< = .05	.040
IFI	> .90	> .95 but less than 1	**.958**

The CFI is equal to .956, which is greater than .95, the RMSEA is equal to .04, which is less than .08, and the TLI is .939, which is greater than the threshold value of .90. These values indicate that a pleasing model fits the data (see Hu & Bentler, 1999), and therefore, the measurement model was confirmed.

However, the poor discriminant validity suggested that a second-order factor analysis was necessary to explain the latent variables: F1, F2, F3, F4, F5 and F6 (see Brown, 2006). The resultant second-order factor was named learning experience. The results of the second-order analysis are shown in Figure 5. F1, F2 and F5 have factor loadings of .72, .97 and .88, indicating that they contribute the most to the learning experience.



Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status
Figure 5: The second-order analysis

Learning Experience

The values in Table 8 further confirm the validity and reliability of the learning experience construct. The learning experience factor has CR and AVE values greater than .6 and greater or equal to .5, respectively, indicating some convergent validity (Hair et al., 2006).

Table 8: Results for the measurement model for all sub-constructs and the main construct

	Construct	**SRW**	CR (above .6	AVE (above .5)
	F4	.188		
	F5	**.877**		
F6	F2	**.966**	.804	.495
	F1	**.716**		
	F3	.473		

Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status; F6 = learning experience; SRW = standardised estimate or factor loading

The Conception of the Online Experience

Table 9 shows that the conception of the online learning experience (main construct) on all sub constructs is significant.

Table 9: The regression path coefficient and its significance for the learning experience

	SE	**SE**	**CR**	**P**	**Results**
F4 <--- F6	.188				Reference point
F5 <--- F6	.877	1.066	2.334	.020	Significant
F2 <--- F6	.966	1.732	2.395	.017	Significant
F1 <--- F6	.716	2.021	2.384	.017	Significant
F3 <--- F6	.473	.997	2.248	.025	Significant

Note. F1 = online learning challenges; F2 = access to connectivity; F3 = learning support; F4 = use of library e-resources; F5 = socio-economic status; F6 = learning experience

Results

The student's conception of online learning comprises five constructs: online learning challenges, access to learning e-resources/internet, support, socio-economic factors and the use of library e-resources.

The results indicate that students' conception of the online learning experience loads well on three sub constructs (F1, F2 and F5) with factor loadings greater than 0.5 and poorly on sub constructs F4 and F3, with loadings less than .5. However, all the loadings are statistically significant (the *p*-value is lower than .05). All the model fit indices achieved the required level.

Effect of Moderators on the Online Experience

Age, gender, and a quiet place to study were used as the moderators for F1, F2, F3, F4 and F5.

Influence of Age on F1, F2, F3, F4 and F5

The analysis of variance (ANOVA) test indicated that age had no statistically significant effect on socio-economic status (p = .855), learning support (p = .776), access to connectivity (p = .971), use of library e-resources (p = .312), and online learning challenges (p = .142).

Influence of Gender on F1, F2, F3, F4 and F5

The ANOVA test indicated that gender had no statistically significant effect on socio-economic status (p = .053), learning support (p = .122), access to connectivity (p = .382), use of library e-resources (p = .451), and online learning challenges (p = .431).

Influence of the Subject Studied on F1, F2, F3, F4 and F5

The ANOVA test indicated that the subject studied had no statistically significant effect on socio-economic status (p = .588), learning support (p = .446), access to connectivity (p = .998), use of library e-resources (p = .880), and online learning challenges (p = .751) for $p < .05$.

Influence of a Quiet Place to Study on F1, F2, F3, F4 and F5

The ANOVA test indicated that a quiet place to study had a statistically significant effect on online learning challenges (p = .001) for $p < 0.05$. The Tukey post hoc test indicated a statistically significant result between those students who chose yes (mean score 16.8846) and those who chose sometimes (mean score 15.9558).

The ANOVA test indicated that a quiet place to study had a statistically significant effect on access to connectivity (p = .000). The Tukey post hoc test indicated that there was a statistically significant result between those students who chose yes (mean score 13.9615) and those who chose no (mean score 12.2619), and between those students who chose yes (mean score 13.9615) and those who chose sometimes (mean score 12.8230).

The ANOVA test indicated that a quiet place to study had a statistically significant effect on learning support (p = .000). The Tukey post hoc test for learning support indicated that there was a statistically significant result between those students who chose yes (mean score 11.0000) and those who chose no (mean score 8.0238), and between those students who chose yes (mean score 11.0000) and those who chose sometimes (mean score 9.8526).

The ANOVA test indicated that a quiet place to study had a statistically significant effect on socio-economic status (p = .000). The Tukey post hoc test for socio-economic status indicated that there was a statistically significant result between those students who chose yes (mean score 11.38466) and those who chose no (mean score 9.0476), and between those students who chose yes (mean score 11.38466) and those who chose sometimes (mean score 9.6018). This result resonates with several authors (Chaturvedi et al., 2021; Giurge et al., 2021) who indicated that students from low socio-economic status faced distractions that probably affected their online experiences.

The ANOVA test indicated that a quiet place to study had no statistically significant effect on the use of library e-resources (p = .593) for $p < 0.05$, perhaps since it is always quiet in the library.

Discussion

The results suggest that the students' learning experience at this university comprised socio-economic status, learning support, access to connectivity, the use of library e-resources, and online learning challenges. Access to connectivity was ranked first, followed by socio-economic status, online learning challenges, learning support, and finally, the use of library e-resources.

Access to connectivity involves stable internet, internet connecting devices, data and electricity, which are not always available in developing economies, especially in South Africa (see Dube, 2020; Mpungose, 2020). Access to connectivity was ranked first, and this is consistent with the findings from many studies (Adarkwah, 2021; Allo, 2020; Chaturvedi et al., 2021; Coman et al., 2020; Dube, 2020; Flack et al., 2020; Giray, 2021; Mpungose, 2020; Muftahu, 2020; Muthuprasad et al., 2021; Oyediran et al., 2020; Rotas & Cahapay, 2020; Safta-Zecheria et al., 2020) which revealed that access to connectivity was essential to online learning. Furthermore, the results are consistent with findings from several authors (Abdillahi, 2020; Chung et al., 2020; Giray, 2021; Muthuprasad et al., 2021) where the students ranked access to connectivity as the most crucial factor for an excellent online experience.

Socio-economic status was ranked second by the students. The finding is in line with findings from several authors (Azubuike et al., 2021; Aguilera-Hermida, 2020; Fishbane & Tomer, 2020; Dost et al., 2020; Faize & Nawaz, 2020; Giurge et al., 2021; Rotas & Cahapay, 2020) who posited that there was a strong correlation between low socio-economic status and the digital divide with poor students having limited access to online learning materials and connectivity. The result was that some students could not afford to buy internet data (Allo, 2020) and internet connecting devices (Simamora, 2020). This result also resonates with several authors (Chaturvedi et al., 2021; Giurge et al., 2021) who indicated that students from low socio-economic status had household responsibilities and distractions that probably affected their online experience.

Online challenges were ranked third. This result is in line with findings from Mpungose (2020), who posited that computer /internet efficacy was not a barrier to online learning but "the affordability and availability of those physical resources for e-learning" (p. 7) since students were already digital natives and knew how to transverse the digital spaces. In the study by Chung et al. (2020), students rated the lack of technical skills in online learning last (8/8), indicating that online challenges were not a significant problem. However, on the contrary, other students had poor computer efficacy, affecting their online experience (Abdillahi, 2020; Chinyamurindi et al., 2017).

Learning support was endorsed in fourth place. The result is consistent with findings from authors who posited that during the COVID-19 pandemic, students experienced limited instructional scaffolding, communication, feedback and encouragement from their lecturers (Chaturvedi et al., 2021; Chung et al., 2020; Coman et al., 2020; Dost et al., 2020; Giray, 2021; Muthuprasad et al. 2021; Rotas & Cahapay, 2020). For instance, in the studies by Giray (2021) and Muthuprasad et al. (2021), interaction with the instructor was ranked 3 out of 10 and 4 out of 8, respectively, indicating that it did not significantly contribute to the online experience.

The use of library e-resources was ranked fifth. This result aligns with findings from some authors (Abdillahi, 2020; Nelson and Tugwell, 2022) who indicated that the library information-seeking strategies for undergraduate students did not change during the COVID-19 pandemic. However, it was a problem for the postgraduates who had problems using databases and failed to access full content (Nelson & Tugwell, 2022). Nonetheless, library e-resources use depends on connectivity availability and related factors such as power cuts and internet connecting devices (Tsekea & Chigwada, 2020).

Contribution to Theory

In this study, we adapted Malik's (2010) framework for e-learning satisfaction and extended it to include library support, socio-economic factors and online learning challenges. In this study, socio-economic factors emerged as an important element of the e-learning satisfaction framework.

Implications

The low socio-economic status of students must be considered when designing online programmes during a pandemic so that they are not left behind. In addition, libraries must implement innovative intervention measures that are more effective in times of pandemics.

Limitations

This study's target population was limited to the students at this university and could be expanded to other South African universities and beyond. The sample size of 285 participants was not large enough to increase the results' validity and reliability. In addition, self-reported surveys tend to have some degrees of bias.

Recommendations

For socio-economically disadvantaged students to have satisfying online experiences, universities must provide learning resources such as laptops and financial aid to ensure that their students have access to connectivity and equal access to learning resources. Since data is expensive in South Africa, universities must encourage their lecturers to use social media platforms such as WhatsApp, which does not use lots of data, to complement their learning management systems, which use lots of data when students access learning materials.

Conclusion

Access to connectivity and socio-economic status are critical factors for students' online experience. This is evident from the factor loadings, which were .966, and .877, respectively, for access to connectivity and socio-economic status. Online learning challenges loaded third with a standardised estimate of .716. Several authors have indicated that online challenges are not permanent since the students are digital natives who can quickly learn how to traverse the online space. Lecturers and librarians can learn with time to support students with the proper online pedagogies, but for this to happen, access to connectivity must be available to include poor students.

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THE USE OF GEOGEBRA IN ENHANCING GRADE 10 LEARNERS' UNDERSTANDING OF PROBABILITY

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Abstract

This study explored the impact of the use of GeoGebra on Grade 10 learners' understanding of probability. The theory of semiotic mediation (TSM) was used to explain how the interaction between a class of Grade 10 learners and the GeoGebra artefact in a probability learning activity could lead to mathematical knowledge creation. A mixed methods design was adopted to collect data from 36 students through a pre-test, individual semi-structured interviews and a post-test. Findings indicate that using GeoGebra positively affected learners' understanding of probability. It particularly reduced item difficulty and error frequency while improving the incidence of correct methods in probability problem-solving and performance scores. Furthermore, using GeoGebra created an active learning environment where learners' errors and misconceptions were addressed. This study highlights a pedagogical framework for harnessing the semiotic affordances of GeoGebra to leverage the potential of errors and to support learners' understanding of probability.

Keywords: Probability; ICT; Semiotic Mediation; GeoGebra; Mathematics teaching; Mathematics learning.

Introduction

In high school, teachers and learners often perceive probability as a challenging and demanding topic (Department of Basic Education (DBE), 2019, 2020, 2021; Batanero, Chernoff, Engel, Lee, & Sánchez, 2016). A detailed question-by-question analysis of the National Senior Certificate (NSC) Mathematics Paper 1 examination reveals a contrasting performance in probability questions as compared to other topics. While average scores for topics like equations, inequalities, number patterns, finance and calculus exceeded 50%, the average score for probability questions was below 39% in 2014 and below 28% in 2015 (DBE, 2014, 2015). This pattern is not unique to South Africa. Globally, students' understanding and performance in statistics and probability are consistently low (Chiesi & Primi, 2010; Kazemi, Shahmohammadi & Sharei, 2013).

Probability is a challengimg topic to learn and to teach, not only due to its abstract concepts, but also due to the learners' intuitive and informal ideas that are brought to the classroom (Batanero & Diaz, 2012). Other reasons that are cited include inadequate knowledge base and misuse of representations (Mutara & Makonye, 2016), the irreversibility of probability experiments and the representativeness heuristic bias (Batanero et al., 2016).

Learners' performance in probability assessments is impacted by the errors they make and the misconceptions they have. These errors and misconceptions require careful analysis and targeted intervention. Misconceptions are beliefs, conceptions or knowledge that are inconsistent with accepted disciplinary interpretations. According to Keeley (2012), misconceptions need not be considered bad. However, teachers should use them to plan their teaching and learning activities. Literature reveals that errors indicate learners' reasoning patterns (Herholdt & Sapire, 2014). They may occur in probability when learners hold certain probability misconceptions such as equiprobability, outcome approach, compound approach (Jun & Pereira-Mendoza, 2002), representativeness heuristics bias, and outcome orientation (Khazanov & Prado, 2010).

Despite these challenges, probability is vital for everyday use, commercial enquiry and scientific enquiry, justifying its inclusion in the school mathematics curriculum. For this reason, the use of technology to enhance deeper understanding of mathematical concepts is receiving increasing attention worldwide. According to the National Council of Teachers of Mathematics (NCTM, 2000), classroom practices should embrace technological tools to promote student-centredness, critical thinking, collaboration, communication and problem-solving. The use of technology, particularly GeoGebra, can provide interactive and dynamic learning experiences for students to explore mathematical concepts in an engaging way. This requires the teacher's knowledge of both mathematics and the methodology with which to teach it.

Extensive research on teaching mathematics shows that technology-enhanced instruction positively impacts educational outcomes (Istenic Starčič, Cotic, Solomonides, & Volk, 2016). GeoGebra exemplifies an artefact that can be integrated into teaching to enhance students' understanding of mathematical concepts. The potential of GeoGebra lies in its computer algebra systems (CAS) and dynamic geometry software (DGS) functionalities, which provide a rich learning experience for students to discover mathematical relationships (Hohenwarter & Jones, 2007). According to Prodromou (2014), GeoGebra can generate huge quantities of data in a short time, allowing students to analyse the data for conceptual understanding. Studies also show that GeoGebra can be integrated into the curriculum to address specific learning outcomes. Prodromou (2014) examined how GeoGebra can be used to engage students in investigations, while Aizikovitsh-Udi and Radakovic (2012) explored how the use of GeoGebra can support high school students' understanding of probability. They found that the learning environment created by GeoGebra, through its interactive visualisations, enabled students to apply critical thinking and develop a deep conceptual understanding of probability. In another study of mathematics teachers' views on using GeoGebra, Kuzu (2021) found that GeoGebra can be useful for developing mathematical problem-solving skills.

Statement of the Problem

The persistent difficulty in understanding probability concepts and the resulting low performance scores in probability examinations highlight the need for effective instructional strategies. While many studies have explored the impact of Information Communication Technologies (ICTs) on learners' conceptual understanding, there is limited research specifically examining the effects of GeoGebra on specific learning outcomes, such as item difficulty and the use of methods in probability problem-solving. Additionally, in the South African context, the use of technology in classrooms is still limited due to various barriers, including inadequate ICT resources (Graham, Stols, & Kapp, 2020), a lack of necessary ICT skills, and insufficient technological pedagogical teacher training (Mishra & Koehler, 2006; Koehler & Mishra, 2009; Padayachee, 2017). This study investigates how the use of GeoGebra, a dynamic mathematics software, can enhance Grade 10 learners' understanding of probability. It aims to explore the impact of GeoGebra on Grade 10 learners' understanding of probability, specifically focusing on identifying and addressing common errors and misconceptions. The study proposes a pedagogical approach that leverages the affordances of GeoGebra to enhance students' problem-solving skills and conceptual understanding in probability.

The Aim and Objectives of the Study

The overarching aim was to explore how using GeoGebra as an alternative ICT intervention tool could impact Grade 10 learners' understanding of probability. The study had three objectives:

- To identify errors and misconceptions that Grade 10 learners make when modelling and solving probability problems.
- To explore how using GeoGebra can support the learning of probability concepts.
- To explore how GeoGebra can be used to address Grade 10 learners' errors and misconceptions in probability problem-solving.

The Theoretical Framework

This study adopted the theory of semiotic mediation (TSM) (Vygotsky, 1978) to highlight the interaction between the learner and the GeoGebra artefact in the activity of learning probability. According to Vygotsky (1978), knowledge is constructed when learners interact with other people using mediating cultural tools (e.g., computers) and psychological tools (e.g., signs, language, and symbols) to evoke specific mathematical knowledge (Mariotti & Maffia, 2018). The potential of an artefact is exploited through the orchestrating role of the teacher and realised when learners complete mathematical tasks using the artefact.

This study considered the key TSM constructs that support learning when organising learning activities and assigning learner and teacher roles. First, Vygotsky argued that learning occurs through social sources of individual thinking (Kalina & Powell, 2009). This implies that individuals learn through interaction in a sociocultural setting using available tools. Second, learning occurs at the zone of proximal development (ZPD), implying that a child will learn mathematical concepts with the necessary help in the classroom (Kalina & Powell, 2009). Third, language is used as a cultural tool to construct meaning. As learners use language to accomplish a task, how they think about the activity is shaped, and signs begin to emerge, which develop into acceptable mathematical meanings.

Materials and Methods

Research Design

This study adopted a mixed methods approach within an interpretive paradigm. Quantitative and qualitative data strands were mixed for purposes of triangulation and complementarity (Creswell & Plano Clark, 2011). This helped offset each strand's weaknesses and enhanced the research design. The research methods were grounded within the interpretive paradigm to "yield insight and understandings of behaviour and explain actions from the participant's perspective" (Scotland, 2012, p.12).

Research Setting and Sample

The research site was a co-educational high school in Gauteng (South Africa), with enrolled learners from Grades 8 to 12. Participants were conveniently recruited from Grade 10 learners in the Further Education and Training (FET) phase. The grade was convenient since the probability concepts that were studied are introduced in Grade 10. Two mixed-ability classes were assigned to the control group (n = 22) and the treatment group (n = 14). The groups were well-matched in terms of ability, as evidenced by their average scores in their Grade 9 results. This minimised pre-existing differences, which could jeopardise the reliability of the results.

Data Collection

Qualitative data were collected through semi-structured individual interviews, while a pre-test and post-test collected quantitative data. In the first phase, both classes were taught probability for three weeks in February/March before writing a pre-test in July. The pre-test was quantitatively analysed using error analysis which focused on item difficulty, using correct methodologies and the most commonly occurring errors (Herholdt & Sapire, 2014). In the second phase, interviews were conducted with learners from whom permission was obtained to better understand their pre-test responses. The third phase commenced with four intervention lessons taught three weeks before the post-test in November.

GeoGebra intervention was given to the treatment group, while the control group was taught without using ICT. The researcher planned all the lessons and discussed them with a colleague who taught the control group to ensure uniformity and adherence to the teaching standards set by the school. The colleague was a qualified teacher with more than ten years of teaching experience and was also the head of mathematics at the school. Both groups also wrote a post-test which was quantitatively analysed using error analysis. In the final phase, five participants from the treatment group were interviewed to solicit their perspectives and experiences of learning probability using GeoGebra. All interviews were audio-recorded and transcribed verbatim by the researcher.

GeoGebra Activities

Probability models were constructed through GeoGebra simulations of tossing coins and rolling dice. The simulations developed by Sturr (2014a, 2014b) and Lindenmuth (2016) were accessed by learners through their respective URLs. The activities were designed to assist learners 1) in comparing the relative frequency with theoretical probability, 2) in drawing Venn diagrams and 3) to conceptualise the rule $P(A\ or\ B) = P(A) + P(B) - P(A\ and\ B)$. GeoGebra's interactive CAS and DGS functionalities provided feedback in the form of numerical data and animated visualisations. These enabled learners to find patterns in the data to answer posed questions.

Data Analysis

Quantitative data were analysed using error analysis. The pre-test's error analysis results were compared with those of the post-test to determine the impact of GeoGebra intervention. Paired Samples *t* Test statistics were calculated to explain the impact of GeoGebra intervention on the prevalence of learner errors, levels of difficulty of question items and use of methods and strategies in probability problem-solving (Herholdt and Sapire, 2014). To address the different group sizes between the control and treatment groups, the researchers used proportion/rates to report the results. For example, item difficulty was obtained by calculating the proportion of learners who had the item correct using the following formula: $difficutly\ index\ (d) = \frac{number\ of\ correct\ answers}{number\ of\ students}$. An item was considered difficult if d ≤ 0.5, moderate if 0.51 ≤ d ≤ 0.84 and easy if d ≥ 0.85. Similarly, the average rate of error occurrence and prevalence of the use of correct methods between the pre-test and post-test for each group were compared to determine the impact of GeoGebra use. The Difference-in-Differences (DD) estimate was also used to measure the impact of the GeoGebra intervention. Goodman-Bacon (2021, p. 1) describes DD as "the difference between the change in outcomes before and after a treatment in a treatment versus a control group."

Interview data were qualitatively analysed using coding to identify underlying themes in the dataset (Leech & Onwuegbuzie, 2007). According to Saldaña (2009), coding is an interpretive act which requires the researcher's ability to summarise what the participant says using descriptive words. As suggested by Leech and Onwuegbuzie (2007), transcripts of interview data were read and divided into meaningful parts, which were labelled using the same code. The themes that emerged from these codes were identified and used to answer the research questions.

Ethical Considerations

The British Educational Research Association (2011) offers guidelines regarding the voluntary informed consent of participants, the guarantee of anonymity, openness and disclosure, the right to withdraw and many other issues. These guidelines were followed to ensure that the research met all the standards of ethics. Permission was sought from the research site to conduct the study. The purpose of the research was discussed with the school authorities and the participants, assuring them that participation in the study would not compromise the quality of their learning. This helped to ensure that participants made informed decisions. Permission from the participants' parents to participate in the research was also sought. Participation was voluntary, and participants were assured that any data collected from them would be kept anonymous and confidential. Participants were also assured that they could withdraw from the research at any stage, and the researchers guaranteed their safety and comfort during data collection.

Results

The error analysis framework proposed by Herholdt and Sapire (2014) was adopted to analyse the pre-test and post-test. The results were used to determine the impact of GeoGebra intervention on item difficulty, the use of correct methods, the incidence of errors in learners' work and performance scores.

Item Difficulty Indices

Table 1 shows that item difficulty indices for all questions increased for the treatment group, suggesting that participants found the post-test questions easier than the pre-test questions. An independent sample *t*-Test showed that the reduction in the difficulty levels of questions for the treatment group was statistically significant ($t(3) = 2.644$, $p = .039$, $d = 1.322$). The mean item difficulty index for the post-test was .42 while the mean item difficulty index for the pre-test was .16. The mean item difficulty index for the control group decreased from .43 in the pre-test to .33 in the post-test, indicating that the group found the post-test more difficult than the pre-test.

Table 1

Pre-test and Post-test difficulty indices (d) for the treatment and control groups

Question	Control Group (n = 22)		Treatment group (n = 14)	
	Pre-test difficulty indices	Post-test difficulty indices	Pre-test difficulty indices	Post-test difficulty indices
1	.00	.27	.07	.50
2	.18	.025	.21	.25
3	.73	.68	.21	.64
4	.81	.36	.14	.29
Mean	.43	.33	.16	.42

Note: Questions were easy if $d \geq .85$, moderate if $.51 \leq d \leq .84$ and difficult if $d \leq .50$

It was unclear what the average item difficulty would look like for the control group if they had also received GeoGebra intervention. However, the Difference-in-Differences (DD) estimate of .36 between the two groups showed that GeoGebra intervention provided a positive treatment effect in item difficulty for the experimental group.

Use of Strategies/Methods

Some test questions required the use of a strategy or method. A Venn diagram strategy was considered correct if the data of the question, namely elements, number of elements or probabilities, were shown in their correct regions of the Venn diagram. An analysis of students' use of methods revealed four categories of results. Table 2 shows the category of results.

Table 2

Category of results showing the use of Venn diagram strategies

Category	Results
A	A correct Venn diagram was drawn and correctly interpreted, leading to a correct answer.
B	A correct Venn diagram was drawn and incorrectly interpreted, leading to a wrong answer.
C	An incorrect Venn diagram was drawn and correctly interpreted to get some answer.
D	An incorrect Venn diagram was drawn and incorrectly interpreted to get some answer.

Table 3 shows the percentage of cases that were found under each category.

Table 3

Number of cases found in each category of students' use of methods in the pre-test and post-test

Test	Group	Category A		Category B		Category C		Category D	
		No. of Cases	%	No. of Cases	%	No. of Cases	%	No. of Cases	%
Pretest	Treatment	5	36	9	64	3	21	11	79
PostTest	Treatment	10	71	4	29	0	0	14	100
PreTest	Control	8	36	7	32	4	18	25	114
PostTest	Control	9	41	10	45	1	5	5	23

Treatment group (n = 14). Control group (n = 22).
(Pretest = 2 items; Posttest = 2 items).
Number of cases = total number of times all students used a correct method.

Results indicate that the use of GeoGebra effectively improved the proportion of the use of correct methods leading to the correct answer (Category A). The frequency of Category A methods for the treatment group improved from 36% in the pre-test to 71% in the post-test, while the frequency of Category B methods dropped from 64% in the pre-test to 29% in the post-test. On the other hand, the frequency of Category A for the control group increased from 36% in the pre-test to 41% in the post-test, while Category B methods increased from 32% in the pre-test to 45% in the post-test.

Incidence of Errors in Learners' Work

Learners made factual, procedural and conceptual errors in the written tests. Despite the intervention, learner errors persisted in the post-test for both groups. Table 4 shows that errors for the treatment group decreased from 35.2% in the pre-test to 33.6%. The incidence of errors for the control group increased from 64.8% in the pre-test to 66.4% in the post-test. The results indicate that GeoGebra use had no negative impact on the incidence of errors in students' written work.

Table 4
Total number of errors made by both groups in the pre-test and post-test

	Number of errors in the pre-test		Number of errors in the post-test		Total number of errors	
	n	%	n	%	n	%
Treatment Group (n =14)	58	35.2	44	33.6	102	34.5
Control Group (n = 22)	107	64.8	87	66.4	194	65.5
Total	165	100	131	100	296	100

Performance Success Rate

The mean scores in the pre-test and post-test were calculated to determine learners' success rates. The average success rate for the treatment group in the pre-test and the post-test were 49% and 52%, respectively, while the respective rates for the control group were 45% and 44%. Table 5 provides a summary of the success rate of learners in the pre-test and post-test. The improvement in scores for the treatment group was not statistically significant (Paired Samples *t* Test, $t(13) = .372$, $p = .716$, $d = .099$). However, the results showed using GeoGebra had no negative impact on scores.

Table 5
Success rate of learners in the pre-test and post-test

	Success rate in the pre-test	Success rate in the post-test	Difference
	%	%	%
Treatment Group (n =14)	49	52	+3
Control Group (n = 22)	45	44	-1
Difference	+4	+8	+4

Students' Challenges when Solving Probability Problems

Analysis of pre-test responses identified the following challenges: 1) students had difficulty in drawing or interpreting Venn diagrams to solve problems, 2) students confused probability concepts, 3) students failed to apply probability rules correctly in context (e.g., some students used $P(A \cup B) = P(A) + P(B)$ when A and B were not mutually exclusive), and 4) some students found probability content difficult. GeoGebra intervention was aimed at remediating these challenges. An analysis of interview data led to the discovery of themes which summarised the potential of GeoGebra in addressing some of these challenges. The results are reported below.

Learning Barriers Due to Language/Communicative Registers

Some students had difficulty understanding certain probability terms (e.g., bias). This forced them to skip some questions or to give incorrect solutions. Students admitted in the interviews that their learning difficulties were caused by the difficult nature of the language used in probability problems. As a result, the misunderstanding of words led to reduced levels of motivation to learn probability. GeoGebra remediation helped boost learners' confidence. Some students' interview responses revealed a positive gain in understanding due to using GeoGebra. One student stated: "Yes, relative frequency. I didn't understand it initially, but you made it clear for me to understand it."

GeoGebra's Potential for the Development of Mathematical Competencies

Interview responses showed that learners perceived GeoGebra usage to be effective in providing opportunities for developing necessary competencies for overcoming challenges in probability. First, students pointed out that using GeoGebra gave them more time to analyse raw data, thus providing them with opportunities to develop their mathematical thinking and reasoning. One learner stated: "It [GeoGebra] definitely gave us a lot of time to work with the numbers. It gave us time to work with unrealistically high numbers. It's a tool that makes us do things that would otherwise be very impossible." In order to build probability models, raw data is needed. However, much time would be needed to get raw data using physical artefacts such as coins and dice. Since GeoGebra simulations efficiently provided the raw data, learners spent less time on this aspect. The available time was then used to make sense of the data, thus providing opportunities for learners to develop their mathematical thinking and reasoning. Second, interview responses showed that students perceived GeoGebra as a useful digital platform for conceptual understanding and probability knowledge acquisition. One student stated: "For me, the lessons opened me up, … it [GeoGebra] lit a light bulb." This indicates that GeoGebra's use enhanced learners' cognitive processes and led to a better understanding of probability and its related concepts. Third, the artefact allowed learners to exchange ideas based on individually held opinions.

For example, when a die was tossed, the number of heads and tails obtained were displayed both numerically and visually as animated bar graphs. Initially, after a small number (n) of tosses (e.g., n = 20, n = 80), there was no clear pattern to conclude how the outcomes (head or tail) would look. Some learners argued that heads would outnumber tails. However, they changed their mind after observing the outcomes after many tosses (e.g., n = 6739). Thus, some preconceived ideas that were held were either refuted or validated through the help of GeoGebra.

GeoGebra's Potential to Enhance Learners' Problem-Solving Strategies

Interview data attested to the potentiality of GeoGebra to develop problem-solving strategies. Some questions in the pre-test and post-test were answered using Venn diagrams or probability rules. Raw data were obtained using GeoGebra simulations and represented in different modes such as Venn diagrams or outcome tables. This is consistent with Lesh's translation model (Suh & Moyer, 2007), which argues that deeper mathematical understanding is developed when students are able to translate information into different forms. For example, when two dice were rolled, Events A and B were defined as A = {sum of numbers on the dice is 7} and B = {at least one of the dice shows a 2}. Learners used a GeoGebra simulation of rolling two dice to generate several possible sample spaces for the experiment. The outcomes were then represented in outcomes tables or Venn diagrams. The potential for GeoGebra to probe students' understanding of probability methods was evident in the questions students asked. One student asked, "When we draw the Venn diagram, do we have to put all the other outcomes that don't fit in A and/or B outside the circles?"

GeoGebra's Potential to Support Active Learning

Students were observed working through planned GeoGebra activities in class. The technology stimulated their active engagement and interest. One learner described their experience as fun, and another linked the experience to that of playing a game. GeoGebra lessons also initiated valuable conversations among students. Thus, using GeoGebra supported learner interaction, leading to information sharing and collaboration.

Discussion

The study explored the impact of the use of GeoGebra on Grade 10 learners' understanding of probability. The findings indicate that the use of GeoGebra had a positive effect on probability problem-solving. The impact was evident in item difficulty, performance scores, use of strategies/methods and occurrence of errors in students' work. The results also show that opportunities for developing probability thinking and reasoning were provided through active learning.

The above findings are consistent with results from studies by Aizikovitsh-Udi and Radakovic (2012), Kuzu (2021), Shadaan and Leong (2013), Saha, Ayub and Tarmizi (2010), and Zulnaidi and Zakaria (2012). They found that the use of GeoGebra was effective in achieving specific learning outcomes in mathematics. In their investigation of students' understanding of circles using GeoGebra, Shadaan and Leong (2013) found that GeoGebra effectively enhanced performance. In another study, Saha et al. (2010) found that the experimental group's use of GeoGebra in learning coordinate geometry resulted in improved mathematical achievement. Zulnaidi and Zakaria (2012) determined the effect of GeoGebra on conceptual and procedural knowledge of functions. Their study found that participants who received GeoGebra treatment gained more knowledge than those who did not. This study's findings provide a pedagogical framework which exploits the potential of GeoGebra to support probability learning. In the era when technological solutions are needed, the results go a long way in finding answers around the development of mathematical skills that learners need in order to participate in a global community (DBE, 2011).

The probability topic is among many others examined in the Further Education and Training (FET) phase. Studies confirm that students perform differently in these topics depending on the extent to which they experience difficulty with each of them (e.g., Jacobs, Mhakure, Fray, Holtman & Julie, 2014). This study found that the use of GeoGebra had a positive effect on item difficulty and performance. This is significant considering that, according to the FET subject assessment guidelines (DBE, 2011), examination questions are posed to test cognition at various levels. Reduced difficulty levels suggest moderate and difficult questions were accessible to more students due to GeoGebra use. This is in line with the suggestion of Jacobs et al. (2014) that mathematics teaching should focus on complex questions in preparing students for examinations. The GeoGebra CAS and DGS functionality, which simultaneously yields numerical and visual feedback, offers an opportunity for learners to develop conceptual understanding, a requisite to coping with higher-order questions.

This study also found that students made factual, procedural and conceptual errors in their written work, even after the GeoGebra intervention. However, the prevalence of these errors decreased in the post-test for the treatment group. Brodie (2014) argues that errors are conceptual structures constructed when students make sense of the world around them. For this reason, errors are not easy to eradicate since they become "truths" in the mind of the learner. For this reason, errors in probability should be expected in students' work, regardless of teaching or even re-teaching. Misconceptions about some aspects of probability caused errors in this study, such as the confusion between $A \cup B$ and $A \cap B$. The researchers argue that errors should be viewed as opportunities for learning in which students can be guided through planned didactical activities to restructure their misconceptions and fit them in their current cognitive domain.

The use of an ICT artefact such as GeoGebra can be a valuable intervention to identify improved results.

The interactive functionality of the GeoGebra tool created an active learning environment which enabled students to apply critical thinking. Thus, GeoGebra allowed students to develop their conceptual understanding of probability. This was evidenced by a significant improvement in the treatment group's use of correct strategies and methods. The above findings are consistent with findings from previous studies. Aizikovitsh-Udi and Radakovic (2012) and Kuzu (2021) found that using GeoGebra helped students develop problem-solving skills and improve their conceptual understanding. Some questions in the pre-test and post-test modelled real-life situations, which could be represented in various forms such as Venn diagrams and probability rules. According to Suh and Moyer (2007), representing information in different modes can enhance conceptual understanding. Learners used numerical and visual data produced through GeoGebra to create possibility spaces and Venn diagrams.

Necessarily, effective teaching of mathematics should provide learners with opportunities to acquire problem-solving skills and conceptual understanding. A pedagogical framework (Figure 1) for ICT mediation in resolving learner misconceptions in probability is recommended based on the findings of this study. It comprises four components which interact to support probability learning using GeoGebra, namely diagnostic teaching and feedback, learner and teacher decisions, probability content and knowledge of GeoGebra affordances.

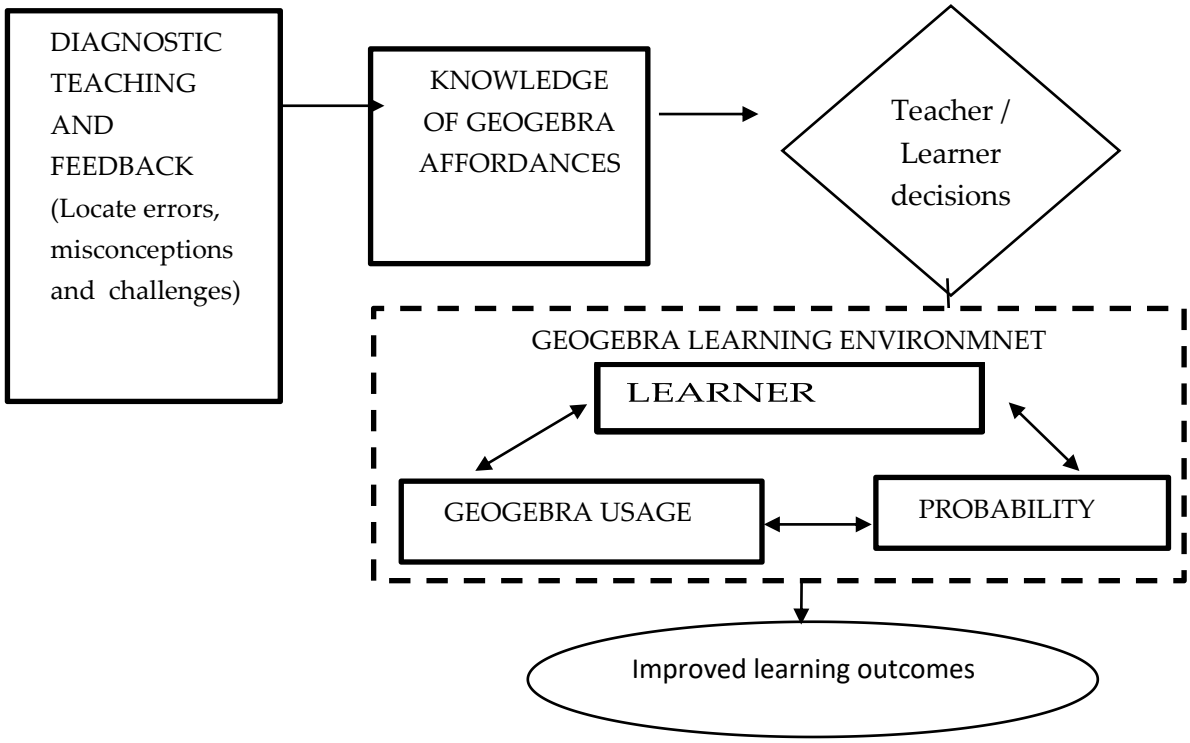

Figure 1: A pedagogical framework for teaching probability with GeoGebra

Diagnostic Teaching and Feedback: Diagnostic teaching and testing are essential to locate existing knowledge gaps. For Bray (2013), some teachers may not communicate learner errors openly for fear of embarrassing the learner. However, an open analysis of students' errors can promote conceptual understanding. This is supported by Makonye and Khanyile (2015), who recommend that teachers probe learners on errors in their work to overcome them.

Learner and teacher decisions: Piaget (1952) argues that mental disequilibrium occurs when individuals encounter new information. It causes them to make some adjustments in their thinking to resolve the conflict. The researchers opine that students who are aware of their knowledge gaps should feel the urge to take appropriate action to fix the problem. Thus, both the teacher and the student have important decisions to make in order to address existing challenges. Awareness of learning gaps and the knowledge of GeoGebra affordances to address those gaps can potentially motivate both the teacher and the learner to intentionally use the tool.

Probability content/knowledge: The researchers argue that probability content should be learnt through discovery. This requires that the selected learning activities should not be too easy. Otherwise, learners will get bored or find it difficult to avoid anxiety and unnecessary perceived difficulty.

GeoGebra learning environment: GeoGebra integration in probability teaching should be an intentional decision by the teacher and the learner. This decision should be driven by the teacher's pedagogical content knowledge and understanding of how GeoGebra supports knowledge creation. The constructivist theory of semiotic mediation (TSM) (Vygotsky, 1978), which underpins this study, provides useful guidelines for organising GeoGebra-supported intervention.

Implications and recommendations

This study provided a foundation for mathematics teachers to rethink their classroom practice. The CAPS curriculum is clear about exposing learners to "mathematical practices that give them many opportunities to develop their mathematical reasoning and creative skills" (DBE, 2011, p.10). These skills are essential for a successful transition into the technology-driven global economy. Based on the findings, the following recommendations are made:

1. Curriculum planners should consider revising the number of topics taught to create sufficient time for technology integration. Currently, teachers' attempts to deliver technology-based instruction are frustrated by the demands of the curriculum. Teachers are expected to complete a lengthy syllabus in a short space of time. This leaves them with little choice but to adopt poor teaching strategies.

2. Educators should rethink teaching and assessment to emphasise mathematical understanding over and above performance scores. This study argues that integrated technology in a student-centred learning environment is needed to teach well. Teachers will be encouraged to integrate technology into their teaching by placing more emphasis on mathematical understanding.

Conclusion

This study aimed to explore the impact of the use of GeoGebra on Grade 10 learners' understanding of probability. Understanding how probability can be organised to support technology integration is critical for effective mathematics teaching. GeoGebra integration in probability teaching potentially creates a student-centred environment which supports active learning. When students use GeoGebra to model probability situations, they engage in discussions and information-sharing, which results in a deeper conceptual understanding of the object of learning. The researchers argue that a pedagogical framework for teaching probability using GeoGebra should clarify the interacting roles of the learner, the teacher, the object of learning (probability content), and the mediating artefact (GeoGebra). On its own, GeoGebra, like any other ICT tool, cannot bring about any change. Therefore, a deliberate decision to use it to teach and learn is a critical starting point for harnessing its potential.

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