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Contents

Volume 16 (2)   *2021*

1

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Editorial

Dolina Dowling

Learner achievement and attainment are central in the measurement of both schools' and tertiary education institutions' performance. At all levels of education, it is important to track student progress and show their achievement – year on year, module on module. This not only motivates learners but also contributes to their attainment journey where their knowledge, skills and competences are measured against pre-set, external standards and for which they receive acknowledgement of their success, typically in the form of certification. Learner attainment is deemed by many societies to be one of the main goals of formal education. (Needless to say, there is a proliferation of philosophies about the purpose of education.)

Much effort is expended by academics, educationists and education ministries to ensure learner success. However, as can be seen in comparative studies such as the Trends in International Mathematics and Science Study (TIMSS), and the Progress in International Reading Literacy Study (PIRLS), data on achievement show that South Africa does not fare well. Regarding the former, in the study of 2019, South Africa performed considerably lower than the TIMSS centrepoint of 500[1]; regarding the latter, PIRLS 2016, the country came last.[2] In higher education institutions, graduate throughput rates are the measure of students' attainment; unfortunately, success here is all too often missing. Throughput rates were 31.8%[3] at Technical, Vocational and Education Training (TVET) colleges in 2017, whilst in higher education institutions, these were 36.0% over four years of study at undergraduate level and 58.1% when taken over six years.[4] Analyses of data collected and maintained in places such as *inter alia* the South African Department of Basic Education and the Department of Higher Education and Training show that high-level achievement and attainment at all levels of education remain evasive for a large proportion of learners.

Since 1994, equality and inclusivity of education opportunities have been central tenets of government policy as evidenced in enacted legislation and regulations. New curricula have been developed and introduced for schools, and, in higher education institutions, the transformation of curricula has been high on the agenda with varying results. Furthermore, teachers, principals, academics, policymakers and the like continue to seek new methods, approaches and tools to enhance learner outcomes in education institutions across the country. Desiderata are high-quality teaching and learning, good and well-used resources, a well-functioning and caring learning environment, and effective school and tertiary leadership. All of these are necessary although not sufficient conditions for learner achievement and attainment.

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1   https://www.timss-sa.org/download/TIMSS2019_Briefing_DBE_8Dec2020_final_2.pdf

2   https://www.up.ac.za/media/shared/164/ZP_Files/pirls-literacy-2016_grade-4_15-dec-2017_low-quality.zp137684.pdf

3   https://www.dhet.gov.za/SiteAssets/APPs/DHET%20Amended%20APP%202020-2021.pdf

4   https://africacheck.org/fact-checks/factsheets/factsheet-how-many-south-african-students-graduate

It is worth noting a further challenge that presented itself in the past 18 months, i.e., the crisis of the COVID-19 pandemic. This has affected all learners who have had to deal with physical school closures and a switch to remote learning as an emergency measure to maintain the teaching and learning process in accord with the Commonwealth *Guidelines for Remote Learning during COVID-19* (2020)[5]. However, not all institutions, in particular rural and township schools, and learners had the technological resources for online learning. Some schools were able to provide other forms of support, such as hardcopy resource materials, so that learners could work at home, but this was necessarily with limited teacher guidance. And, sadly, some children had no access to education at all during school closures, which compounds their already existing disadvantage. As elsewhere in the world, the pandemic has had a negative impact on learners' growth and development. Similarly, teachers at all levels of education have experienced hardship and distress. As well as coping with health worries for themselves, their families and the learners under their care, they have had the additional stress of having to adopt new approaches to teaching and learning at pace and many have done so with few resources; all of which has led to teacher fatigue.

Taking together the performance of educational institutions prior to COVID and the impact of the pandemic on education delivery, and thereby achievement and attainment of learners, the challenges facing the South African education system have been magnified considerably.

It is timely that in this second edition of volume 16 of the IJTL, the thread that runs through the articles is: how to ensure that students/learners have an education experience that enables them to achieve and to attain success. This is tackled in different ways. In the first two articles, the role of school principals is explored. The first in how principals support both high and low teacher performance. It was found that there is less consistency in support of the latter. This needs to be addressed. In the second article, a quantitative study with open-ended questions was carried out regarding perceptions of teachers and principals on the school climate; a good climate is necessary to support learner success and thereby school performance. While perceptions of teachers and principals varied, there was concord on a range of factors that impact school climate.

In the next cluster of articles, the training of schoolteachers and continuing professional development are explored. This is of high importance. Teachers need to qualify with the necessary knowledge, skills and tools to meet the multiple learning needs of students. Continuing professional development is needed to support teachers to provide high-quality education that meets the needs of 21st-century learners. It would be difficult to find anyone who refuted that reading literacy is the foundation for academic success. However, the premise in the next article is that pre-service teacher training does not prepare teachers well enough to teach reading to learners in their early years. The authors explored whether in-service training could address this weakness. They found that, while such training helped, it was not sufficient; they recommend that coaching be added to the professional development programme. Another author explored how secondary school teachers use social networking tools to enhance teaching and whether there are supportive mechanisms to integrate social networking tools in teaching.

The following two articles deal with blended learning as a strategy to support student learning and achievement, as well as teacher continuing professional development, respectively. In the first, the authors explored definitions and models of blended learning and synthesised these in a new model, which, if implemented, would contribute to fostering the characteristics of self-directed learning in teachers. In the second, the authors were concerned that current teaching strategies in mathematics are not adequate in helping learners to understand mathematical concepts. In an attempt to address this, a quantitative research project was conducted on the use of blended learning. The authors found that this methodology

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5   https://www.dhet.gov.za/SiteAssets/Guidelines%20on%20DE_COVID%2019.pdf

enhanced learner understanding and performance in mathematics. They recommend that primary school mathematics teachers be trained in the use of blended learning. In the last article in this cluster, the authors explored tutor experiences of facilitating online learning. They found that tutors need to have online training so that they can effectively facilitate student online learning.

The next articles are focused on the student learning experience. In the first, the authors conducted a study in which they found that factors such as students' irrational beliefs negatively impact on their learning of mathematics. The authors suggest that teachers need to have the tools to challenge such learner beliefs and find ways to replace them with rational beliefs that will positively impact success in mathematics. Perceptions of students were investigated in the following article. The authors found that perceptions of postgraduate Management Accounting students were that Individual Learning Programmes increased their marks. However, when compared with actual performance gains, there was no significant benefit found. Both articles demonstrate the importance of the subjective experience of students, which needs to be considered when planning programme delivery.

In the Practitioners' Corner, the author used a mixed methods approach through the lens of critical discourse analysis theory to investigate and further define the role of a Writing Centre in a university of technology in supporting students in their academic development. The findings are useful for other Writing Centres to consider.

School principals' leadership in managing low and high performing teachers: a South African case study[1]

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ABSTRACT

There is a plethora of literature on what makes schools high performing, on what reduces the performance of schools, and on the causes of teacher ineffectiveness. However, little is known about how school principals manage low- and high-performing teachers to ensure and sustain high learner performance. In this paper, I focus on the role played by the principal in leading and managing low- and high-performing teachers. I draw from the findings of a study on eight primary school principals from Limpopo Province in South Africa. This multiple-site, case study design used semi-structured interviews to generate data. The analysis of the findings shows the 'hands-on' and 'hands-off' approaches of the principals in managing low-performing teachers, while high-performing teachers were recognised, motivated and encouraged to both develop leadership skills and work collaboratively to improve the performance of low-performing teachers. The paper argues that school principals need to develop transformational leadership characteristics, as is evident in this study, to lead and manage low- as well as high-performing teachers, and it concludes by suggesting a collaborative, professional development relationship between principals and teachers.

Keywords: transformational leadership, low-performing teachers, high-performing teachers, professional development, accountability, collaboration

INTRODUCTION

Internationally, there is increasing concern among educational stakeholders about the quality of education and accountability. Quality education is related to both high and low performance. The concept of high- and low-performing schools is used internationally to categorise schools based on the performance of their learners (Stronge, Ward & Grant, 2011; Wilson, 2011; Tschannen-Moran & Gareis, 2015; Wilcox & Angelis, 2012). Some of the common characteristics of high-performing schools identified in the literature include (i) creating a culture that supports a shared vision of high academic achievement, (ii) relationships based on respect and trust among the stakeholders, (iii) teacher motivation and (iv) common expectations (Wilcox & Angelis, 2012). In a South African study, Aploon-Zokufa (2013) highlighted that certain pedagogical strategies encouraged by the school principal can have a positive impact on

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learner achievement and the performance of the school. Likewise, Kondakci and Sivri (2014) affirm the crucial role of the leadership of the principal in ensuring high school performance. School principals in high-performing schools are often friendlier, and more approachable and open to input from teachers as compared to their counterparts in low-performing schools (Tschannen-Moran & Gareis, 2015). Such literature suggests a distinctive difference in the relationship between the principals and the teachers in high- and low-performing schools.

Low performance is a concept that is perceived in different ways based on factors such as social interactions, the context in which the school exists and the expectations of its stakeholders (Rhodes & Beneicke, 2003). Weak pedagogies, such as poor lesson plans, weak teaching pace, low cognitive demands on the learner and a lack of effective evaluation criteria, are factors that result in poor learner performance in low-performing schools (Aploon-Zokufa, 2013). In Amsterdam, The Netherlands, De Witte and Van Klaveren (2014) describe low-performing schools as schools that have mismanaged funds, low-quality education, and poor student performance. Wilson (2011) is of the opinion that successful educational leadership can transform low-performing schools to high-performing schools and that leadership is an art that can be learned from past experiences that have proven to work well.

In this paper, I agree with Wilson (2011) by highlighting the leadership role of the principal, and I further state that low-performing schools can be uplifted by the leadership of the principal in improving the performance of teachers. The principal can also sustain and motivate the high-performing teachers through certain leadership characteristics. I am interested in the role played by the principal in leading and managing low- and high-performing teachers and the influence the principal has on the performance of teachers. I begin with the discussion of low- and high-performing teachers followed by transformational leadership as the theoretical framework underpinning this study. I then explain the research methodology and discuss the findings of the study, which are based on (i) how principals identify low- and high-performing teachers, (ii) how the principals help low-performing teachers, and (iii) how they work with high-performing teachers. I conclude the paper by discussing the implications of the role that the principal plays in transforming the performance of the school through leading and managing low- and high-performing teachers. I argue that transformational leadership characteristics play a role in managing low- and high-performing teachers.

LITERATURE REVIEW

The process of identifying low- and high-performing teachers is complex and not straightforward. In an earlier study by Jacob and Lefgren (2008), school principals identified effective and less effective teachers using learner achievement as a standard measure. In a more recent study, Stronge, Ward and Grant (2011) clarify that, although learner achievement is often used to determine the effectiveness of a teacher, it is but one educational outcome, among others. There are indeed other criteria that can be used to measure high or low teacher performance. In their study, Stronge et al. (2011) did not find a significant difference between effective and less effective teachers in instructional delivery, assessment and years of experience. Elsewhere in the literature, low teacher performance is perceived as (i) the inability to manage disruptive learner behaviour and establish a positive relationship, which includes teamwork; (ii) poor learner examination results; (iii) complaints from parents and other teachers; and (iv) poor results from teacher appraisal and counterproductive behaviour of the teacher (Ouweland, Vanhoof & Van den Bossche, 2019; Stronge et. al, 2011). The next section shows how selected school principals in South African schools identify low-performing teachers.

Low-performing schools and low-performing teachers
The concepts 'low-performing' or 'poor performance' are perceived from different perspectives based on the school environment and the expectations of the stakeholders (Rhodes & Beneicke, 2003). This means

that poor performance can be abstracted in different ways in different school contexts, and that there is no single criterion that defines the concepts. Teacher performance is one element that contributes to school performance. It is, therefore, crucial in determining the causes of poor teacher performance in order to provide effective support strategies in terms of relevant training to address the identified problems and uplift the performance of the school (Rhodes & Beneicke, 2003).

From the literature, it appears that the causes of the low performance of teachers can be categorised as the ability of the individual teacher and the leadership of the school principal. For example, a lack of classroom management skills, poor relationships with learners, and an inability to prepare and implement lesson plans have been identified as causes of low performance of the teacher (Torff & Sessions, 2005; Jacob & Lefgren, 2008; Aploon-Zokufa, 2013). Stronge et al. (2011) also found that, although teacher preparation programmes focus more on content knowledge, pedagogical knowledge proves itself to be more problematic as it poses challenges, such as instructional and classroom management skills, resulting in low teacher performance. In another study, principals ascribed the low performance of teachers to a misalignment between teacher competency and teaching demands (Donaldson & Mavrogordato, 2018). It means that the causes of the low performance of teachers are multiple and intricate – some of which are individual, while others are caused by contextual issues.

Apart from the individual characteristics of low-performing teachers, the leadership of the principal may also contribute to the low performance of teachers. In a study by Orr et al. (2008), the principals did not portray the characteristics of instructional leadership such as classroom observation, curriculum delivery, and improvement of teaching and learning. Their performance was based on avoiding penalties and non-compliance. The principals had limited capacity and were able neither to articulate the vision of their schools nor to establish a collaborative school culture that supports teaching and learning (Orr et al., 2008). Such principals were not able to improve the performance of their teachers, unlike the principals in the study by Torff and Sessions (2005) who identified lesson planning and implementation, classroom management skills, and teacher-student interaction as what makes teachers ineffective. The principals in the study were involved in helping their teachers make effective lesson plans followed by class visits to observe the participation and interaction of the learners and teachers during the lesson (Torff & Sessions, 2005). In a more recent study, Donaldson and Mavrogordato (2018) found that teachers were of the opinion that the principal has a legal as well as a moral obligation to work meticulously with low-performing teachers, through supervision, to improve their practice. In this paper, I provide insight into how principals identify and help low-performing teachers, which is an identified gap in the literature that I reviewed for this paper.

The participants in the study by Kondakci and Sivri (2014) affirmed the crucial role of leadership in ensuring school effectiveness in general. Elsewhere in the literature, Donaldson and Mavrogordato (2018) found that principals as instructional leaders can transform low-performing schools by motivating low-performing teachers, establishing a trust relationship, and supporting the teachers. Transforming low-performing schools into high-performing schools through the work done by the teachers requires attention and certain attributes of the principal, such as being patient, persistent, and dedicated to instructional matters, as well as having optimism, honesty, and the ability to celebrate the achievement of goals (Wilson, 2011). In a study of the leadership of principals in transforming low-performing elementary schools in Chicago, Finnigan and Stewart (2009) found that setting goals, developing teachers' knowledge and skills, and articulating high expectations for learner achievement were the strategies used to turn schools around. This means that the principal ought to have specific knowledge and skills to be able to lead the school towards high performance. This implies that the leadership capacities of the principals need to be developed so that they can create a productive and enabling school culture for students and staff through their instructional leadership (Orr et al., 2008). This means that principals also require professional development so that they can effectively communicate their vision and expectations, thereby establishing

a culture of trust and respect, as well as one of support (Finnigan, 2012). There are principals who involve other teachers to monitor the work done by low-performing teachers in the teaching of subject content and assessing learners for whole-school improvement (Ouweland et al., 2019). In addition to the whole-school improvement discussed in the literature, this paper contributes towards rethinking the role of the principal in South African schools in transforming the performance of individual teachers.

High-performing schools and high-performing teachers

Studies show that high-performing schools share high expectations among the stakeholders where relationships are based on trust, respect, and collaborative support in curriculum delivery (Wilcox & Angelis, 2012). In Turkey, Kondakci and Sivri (2014) identified multiple characteristics of high-achieving elementary schools, which included effective instructional leadership, positive school climate, monitoring of learner behaviour and academic progress, physical and educational resources, and parental engagement and support. In South Africa, Aploon-Zokufa (2013) found that pedagogical practices that include a certain pace of curriculum delivery, well-planned lessons, high expectations, and effective feedback contribute to the high performance of the school despite a deprived context. Trust among stakeholders seems to facilitate collaboration, a shared vision, and an interpersonal relationship that is based on respect, which contributes to success in high-performing schools (Wilcox & Angelis, 2012). In high-performing schools, there are also effective teachers, who are better able to manage their classrooms in terms of the use of time, making learning materials available, managing learner behaviour, and creating routine (Stronge et al., 2011). Such teachers are often emotionally involved in their students' work and have a passion for excellent teaching, which could increase the risk of burnout if not monitored (Barber, 2015). It, therefore, means that support structures for the capacity building of the high-performing teachers and the ability to deal with the workload should be part of the responsibility of the leadership role played by the principal (Wilcox & Angelis, 2012).

The leadership of the principal necessarily plays a role in high-performing schools because successful educational leaders are change agents who know what should be done to ensure high academic achievement of every learner (Wilson, 2011). A study that investigated how teachers in high-performing schools in Malaysia perceived the trust relationship with their principals revealed that their principals were open to suggestions, shared information, and enjoyed mutual interaction, which contributed to achieving the vision and objectives of the school (Tahir et al., 2015). The principals whose leadership styles are open, and who communicate expectations and can engage in the instructional programmes are able to create conducive conditions for teaching and learning (Tschannen-Moran & Gareis, 2015).

Another aspect of the success of principals in high-performing schools is that they empower their teachers by giving them an opportunity to grow and take initiative in doing their work (Wilcox & Angelis, 2012). Such principals have high expectations from teachers, encourage effective instruction, and establish a variety of support systems for teachers with the aim of enhancing learner performance (Masumoto & Brown-Welty, 2009). In the study by Tahir et al. (2015), teachers in high-performing schools expected their principals to be reliable in terms of encouraging and supporting them. Such expectations show mutual performance expectations from the principals as well as from the teachers.

In this paper, I present the literature that highlights the important role played by the school principals in the process of turning around low-performing schools through effective leadership. Although there are several studies that have explored the causes of low-performing teachers and schools, as well as the characteristics of high-performing teachers and schools, I have identified a gap in the literature regarding how principals lead and manage low- and high-performing teachers, especially in the South African context. How do the principals influence the behaviour of low- as well as high-performing teachers? This paper presents the findings and discussion of what the principals in this case study did to help low-performing teachers and how they managed high-performing teachers.

THEORETICAL FRAMEWORK

In this paper, I used transformational leadership style as a lens to explain how the principals in this study influenced the behaviour of their low- and high-performing teachers to improve the achievement of learners. The transformational leadership framework is about building capacity that leads to change. Transformational leadership focuses on the relationship between a leader and their followers in terms of empowering, inspiring, intellectually stimulating, motivating, and individualising consideration, which, individually as well as collectively, facilitate change (Bass, 1999; Arokiasamya et al., 2016). Transformational leaders are concerned with the growth and development of their followers in general and as individuals (Arokiasamya et al., 2016). The leader has consideration for the individual differences of their followers and treats them in ways that takes their strengths and weaknesses into consideration. New learning opportunities can be created successfully when an individual's strengths and weaknesses are taken into consideration. Transformational leaders appreciate individual differences and listen to the needs of the individual follower (Arokiasamya et al., 2016). Transformational leaders also change the goals of the organisation through the beliefs that they have of individual employees (Bass, 1985).

The leader who adopts a transformational leadership style enables and encourages their followers to be innovative and creative. Such influence is grounded in the personal values and beliefs of the leader, which may include justice and integrity (Kuhnert & Lewis, 1987; Bass, 1985). According to Kuhnert and Lewis (1987), a successful transformational leader articulates organisational goals, demonstrates confidence as a leader and motivates followers to achieve set goals. It shows that transformational leaders are able to inspire and motivate the behaviour of their followers as well as build a team spirit through clear communication, and that they are committed to achieving the goals of the institution (Arokiasamya et al., 2016). This means that transformational leadership is not only about the influence that the leader has in changing their followers, but also about the ability of the leader to develop knowledge and skills that influence change.

METHODOLOGY

The purpose of this qualitative research was to provide in-depth knowledge and understanding of the leadership style of principals in influencing the behaviour of teachers with different levels of performance. In this paper, I specifically explored how primary school principals identify low- and high-performing teachers, and how the leadership of principals influences the behaviour of low- as well as high-performing teachers in rural primary schools. Primary school is the entry level of education, and exploring the leadership influence of the school principal on teacher competency is crucial in establishing high-quality teaching and learning from grassroot level. The motivation for focusing on primary schools is based on my assumption that principals are in a position to play a dynamic leadership role in laying a foundation that focuses on teacher competency for high-quality education. I acknowledge, however, the fact that there is room for exploring the experiences of secondary-school principals as research participants to establish the role they play at this education level. The research design was a multiple-site case study, which enabled me to obtain rich, in-depth data on the real-life context of the phenomenon (Yin, 2009; Cohen, Manion & Morrison, 2011; Creswell, 2012). I purposefully selected a homogeneous sample of eight school principals, four male and four female, with the capacity to provide rich information relevant to the study. The sample size enabled a deep, case-orientated analysis, which produced data that provided in-depth understanding that furthers knowledge about principals as transformational leaders. Convenient and purposive sampling strategies were used to select the participants who had at least three years' experience as school principals. Newly appointed principals were excluded from the study because of a possible inability to provide in-depth information based on their limited experience as principals. I gained access to the eight schools and their principals through the assistance of the circuit managers who were the gatekeepers. The circuit managers gave me access to the schools by giving me permission as well as by notifying the principals that I would be visiting their schools to collect data. The selected schools were

within a 100 km radius of the Pretoria Central Business District (Gauteng Province). Although reference is made to Gauteng Province, the schools are near the boundary of the Gauteng and Limpopo Provinces (Bela-Bela Municipality, Limpopo Province).

Semi-structured interviews were used to generate data from the schools' principals in Limpopo Province in South Africa. The research questions that guided the study were:

- How do primary school principals identify low- and high-performing teachers?
- How do the principals help low-performing teachers in their school?
- How do the principals manage high-performing teachers in their schools?

During the data-collection process, the interviews were digitally recorded and transcribed (Kvale & Brinkmann, 2008). I also recorded field notes and journal entries during the data-collection process. I sorted the data, and I coded, categorised and identified themes that were related to the three research questions that I asked during the interviews. I was able to triangulate the different experiences of the participants (Yin, 2009) in order to obtain knowledge about leadership and management of low- and high-performing teachers. The participants were given the opportunity to read the transcripts to ensure accuracy of the data (Creswell, 2012).

I obtained ethical clearance to do the research from the University of Pretoria's Ethics Committee, after which I obtained permission from the Limpopo Department of Education. I established rapport with the principals by visiting them and telling them about the study before making appointments for the interviews. The participants are identified as Principal A to Principal H so as to ensure anonymity. I treated the information that the participants shared with me as anonymous. All the other ethical protocols, such as informed consent and participants' right to withdraw from the study if the participants choose to do so, were observed (Kvale & Brinkmann, 2008). I obtained consent from the participants to record their interviews. The interview duration was about 45 minutes and the interviews were held after school hours, and the venues were in the offices of the principals.

FINDINGS AND DISCUSSIONS

The first research question in this study sought to determine *how the principals in the study identified low- and high-performing teachers*. This study found that one of the indicators used by the principals to identify low- and high-performing teachers was examination results. One of the principals noted:

> We discuss the performance in a meeting like analysing the results per subject. We do it per subject and they ask questions like you have 40 learners rating 2 why are they not performing and what are you doing about it? I have to address this with the teacher. I ask them to put up their work – check the question paper where did most of the learners fail? And how can we assist the low performing teachers? (Principal A)

This finding is consistent with literature that identified learner achievement as one of the indicators for teacher effectiveness and a criterion for determining low- and high-performing teachers (Rhodes & Beneicke, 2003; Jacob & Lefgren, 2008; Stronge, et al., 2011). In the current study, some principals also used classroom visits to identify low- and high-performing teachers, based on their interaction with the learners during the lesson. The principals explained:

> I talk with the HoD and bring members of the SMTs[3] when I do class visits. This is how we identify the problems and the teachers who need training. (Principal C)

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3   SMT: school management team

My SMT identifies the teachers who need professional development in certain areas during class visits and then we help them to develop. (Principal D)

After class visit, I demonstrate to the teachers who are struggling on how to deal with the content. I sometimes outsource to seek help from other experts to help the teacher in subject matter. (Principal B)

It seems that, in this study, while some principals used end products (test scores or examination results), or a summative evaluation technique, to identify high- and low-performing teachers, other principals used formative strategies, which involved directly observing the actual process of teaching and learning. This finding means that the principals also evaluated the content-based knowledge of the teachers and the ability of the teacher to manage learner behaviour during the class visits. It is consistent with Torff and Sessions (2005), who also reported that principals regarded lesson planning and implementation, classroom management skills, and teacher-learner interaction as factors that can be used to identify ineffective teachers.

Apart from test scores or examination results and class visits, the principals in this study identified low- and high-performing teachers through their ability to perform 'other' tasks that the principal delegated to them.

You look at the core business of the school and you say, 'I cannot leave this work on dead hands', then you look at the next teacher and you say again that 'I cannot leave this work on dead hands.' So where do you take the work? You take the work to the teachers at the top, those who are doing well. (Principal C)

When you ask them to help you with other tasks, they start looking on the floor, when nobody volunteers it is the same people who volunteer, then they say that it is that one all the time, while you provide them with opportunity and they do not take it. (Principal F)

It appears that the principals expected the teachers' duties to go beyond their formal responsibility of classroom instruction. The principals identified low-performing teachers by their inability to perform the delegated task. This finding is unique in that most studies distinguish between high- and low-performing teachers using learner performance as a reflection of the competency of the teacher (Stronge, Ward & Grant, 2011; Wilson, 2011; Tschannen-Moran & Gareis, 2015; Wilcox & Angelis, 2012). The willingness or ability of the teacher to perform the task delegated by the principal is not a commonly used criterion for identifying high- and low-performing teachers. This finding also implies a lack of trust in teachers who are unable or unwilling to perform the delegated tasks, and greater confidence and trust in the teachers who can perform the delegated task. This finding is of importance and relates to the findings that highlight trust as well as respectful and collaborative relationships as factors that make schools successful (Rhodes & Beneicke, 2003; Wilcox & Angelis 2012). This finding on teachers' ability to perform other tasks adds another evaluation criterion to that of previous studies identifying the characteristics of poor performance (Rhodes & Beneicke, 2003; Torff & Sessions, 2005; Jacob & Lefgren, 2008; Stronge et al. 2011).

The second research question was about how principals help low-performing teachers
I analysed the principals' responses to this question and identified two different approaches they used to transform low-performing teachers. While some principals used more direct approaches, others helped the teachers indirectly. Some of the principals used a 'hands-on' approach, which included direct involvement in the school-based development of low-performing teachers. In this approach, the principals worked collaboratively with the SMTs to identify the developmental needs of low-performing teachers and trained the teachers based on the identified needs. The principals said:

I work with the SMT to determine where the teachers need improvement and then we agree to help the teachers in terms of the development plan. We draw a year plan, but quarterly we identify teachers who need to be assisted and I take part in helping them. (Principal D)

… if, at this stage, I experience it as a discipline problem, then I get involved myself and go to the class and discipline the children. When it's a problem with the subject, then I ask the subject head to assist this specific teacher and also look at the subject meeting… I help them in the subject meetings. (Principal E)

We focus on the problematic areas. What we do is that we meet every Monday 10 o' clock to go over the challenges in their departments. We interact because there are certain things that they have to do as HoDs and there are some things that I can assist in like in some areas. (Principal A)

The quotations above show some aspects of transformational leadership. Transformational leaders pay attention to the needs of an individual, which leads to growth and development (Bass et al., 2003). The current study found that the change of teachers from low-performing to high-performing involves professional development that is based on targeted needs that are relevant to the individual teacher. The 'hands-on' approach of the principals strives to address the identified needs. The individualised consideration that is evident in this finding is one of the elements of transformational leadership (Bass, 1999; Arokiasamya et al., 2016). It means that identifying the individual needs of low-performing teachers is crucial for their professional growth, and for improving their professional effectiveness. The role of managers ought to be empowering the performance of the employee through providing constructive feedback (Rhodes & Beneicke, 2003). Principals in this study seem to have provided such feedback in the 'hands-on' approach. In this study, it also seems that there was a collaborative effort in conducting the analysis of the developmental needs and planning for how to improve the performance of the teachers as in the quotations above. This finding affirms the conclusion made in an earlier study (Rhodes & Beneicke, 2003), which states that collaborative relationships based on trust are important in identifying the support needs of low-performing teachers and in implementing strategies to uplift these teachers.

Other principals used a 'hands-off' approach to transform low-performing teachers. Such principals indirectly influenced the performance of the teachers using structures such as policies or by delegating the responsibility of developing the teachers to Heads of Department (HoDs). The principals said:

… if the teacher is struggling as an individual, I will bring the teacher in my office and give him the policies. You see, at first you must provide the teacher with the tools to work with. When the HoD gets to class he or she must get all these things and the HoD will tick them. (Principal B)

There are heads of departments, there are subject heads… so very practically, if I do experience an educator struggling with the content of a specific subject, I ask the subject head to give guidance… so I am not trying to solve these problems on my own, I will only interfere or I will get involved if I have the time… (Principal F)

Another principal added:

I also advise them to go to other schools to get information if possible. Yeah, we talk and try to assist them in their work by involving other people. We have Curriculum Implementers who we involve in helping the teachers. (Principal H)

The 'hands-off' approach suggests empowering the teacher through self-development by using policy documents to guide the teachers on what is expected of them. This approach can be interpreted as

intellectual stimulation (Bass, 1985) in which the principal gives the low-performing teacher the space to be creative and innovative in self-development, as observed in this study. The 'hands-off' approach also suggests a detached relationship between the principal and the low-performing teachers. In the 'hands-off' approach, the principal also delegates the responsibility of developing teachers based on the identified needs. In this study, some of the principals seem to involve HoDs to support teachers in the form of guidance or mentorship. The reason for this could be that HoDs are regarded as middle managers who are responsible for curriculum implementation in schools. HoDs can act as mentors in guiding the low-performing teachers on instructional matters since they are more experienced in pedagogy and subject content (Nel & Luneta, 2017). Such support strategies from the principals are indirect – hence, the 'hands-off' approach –, which could result in empowering both the HoDs and the teachers. It implies that, for such delegation of the responsibility of developing teachers to be successful, the HoDs as mentors and supporters of low-performing teachers need to be committed to taking up such responsibilities. This finding is consistent with the study by Taylor and Tyler (2012), which shows that teachers responded more positively to peer evaluation, feedback and support when compared to assessment done by the principal.

Although the principals in this study shared various strategies that they use to transform low-performing teachers, they also highlight some challenges that they experienced, such as the low-performing teachers' denial of the need for professional development and these teachers resisting change in their performance. One principal commented:

> … weak teachers would say – why pick on me? I do class visits casually on occasion to help them and I ask them don't you have this page, I just want them to get use of me going to their class to observe what they are doing. (Principal C)

This excerpt shows that the process of identifying and communicating the need for professional development of low-performing teachers is challenging, especially in cases where the teachers perceive the intention of the process as victimisation, and do not understand it to be part of professional development. The quotation above suggests that some teachers perceive being identified as low-performing teachers as lowering their self-esteem. Such attitudes towards professional development work against the strength of the principal as a transformational leader and change agent in the performance of the teachers.

In this study, I also found that some principals attempt to use external structures to develop low-performing teachers. The principals said:

> In the first place you must find out where the problems lie… if it's a problem with the subject, then I as the principal send the teacher to specialist meetings to assist and help them with the subject problems. (Principal F)

> … I can't develop them and I can't be part of their development if I am not aware of areas in which they must be developed, so for me is very important that I am not doing this alone… the system of the school includes… the structure… the deputy principal, the heads of departments are all working together with the teachers who also attend workshops organized by the Department. (Principal C)

> Nowadays since the new government and because of democracy, I have to say 'there is a workshop this afternoon on this and that and I was thinking that you two should go. There is a need for you because this is where you are lacking most.' (Principal B)

The quotations above suggest the use of internal as well as external support systems to develop low-performing teachers. What was surprising in this study is that the principal perceived Democratic Leadership as an ineffective approach to managing the performance of the teachers because this leadership style

seems to reduce the power and authority of the principal in facilitating the development of low-performing teachers.

Apart from the attitude of the individual teachers, it seems that there are also external forces, such as teacher unions, that have an influence on the professional conduct of the teacher and their performance as alluded to in the following quotations.

> When you ask them to go for training… Now is when they will say that 'my union says that I must be given a three weeks' notice or my family comes first, I am sorry, I cannot'. I have to negotiate and consult with the teachers. (Principal D)

> Schools can perform better if teacher unions can be scrapped in interfering with teaching and learning in schools as well as professional development. Poor learner performance and teacher performance is attributed to interference by unions. Literally, teacher unions run schools in Limpopo province. Job ethics of teacher unions members is questionable. (Principal A)

The quotations above imply that teachers have the power to refuse to go for professional development programmes based on the support from their union. This finding also implies that there could be a power struggle between the role of the principal and the role of the union regarding the professional development of teachers and their performance. The behaviour of the teachers also shows a lack of positive and self-driven initiative for professional development. This finding also suggests a lack of motivation for as well as an appreciation and understanding of the need for professional development. Such a gap in managing teacher performance could be the result of an absence of clear, set performance standards, or the lack of ability to strengthen the professional development of teachers. It is important for the SMTs to set a commonly agreed-upon, clear and acceptable standard of performance, as well as to provide the support needed by teachers to achieve the set standards (Rhodes & Beneicke, 2003; Masumoto & Brown-Welty, 2009). All these strategies can only work well if there is buy-in from teachers themselves.

The third question was about how principals work with high-performing teachers
The approach that the principals used in their engagement with high-performing teachers was recognising and empowering the teachers through delegated leadership responsibilities, which included the professional development of other teachers. This study found that the work done by high-performing teachers was appreciated collaboratively in a public space as well as in an individual, private space. The principals said:

> We acknowledge the good teachers in our staff meeting and when we have parents' meetings… If it is good results sometimes all the staff members are called for a cup of coffee for their hard work. That is how we deal with the performance of the teachers so that they feel acknowledged. (Principal A)

> I write them a letter saying well done, you have done this work wonderfully so thank you keep the good work. I would go around and say good work, keep it up. (Principal B)

It is likely that the acknowledgement of the work done by high-performing teachers could contribute to a feeling of being appreciated and may also encourage the teachers to continue to strive for high performance. The recognition also seems inspirational and could create an opportunity for high-performing teachers to demonstrate commitment to develop themselves and others. This finding is consistent with the characteristics of transformational leadership, which highlights the ability of the leader to inspire and motivate others through working as a team (Arokiasamya et al., 2016).

Apart from recognising and appreciating high-performing teachers, other principals empowered the teachers by giving them extra work, which seems to have both positive and negative effect on the high-performing teachers.

> I motivate them highly. I give them extra work. They contribute to the success of the school and they are happy to be leaders in the school. (Principal D)

> The ones who are doing well are overworked, because they carry the burden of others. The point is that it boils down to abuse of the good teachers. (Principal C)

Although the recognition of the work done by high-performing teachers could be motivating and inspiring, giving the teachers additional work to do if the workload is not well monitored and balanced could have negative effects on the performance of the high-performing teachers. A study done in Korea showed that the administrative workload carried by teachers limits their teaching and instructional duties (Kyung-Njun, 2019). Likewise, an increase in teacher workload as a result of an inadequate number of teachers to perform certain tasks has negative effects on instruction and learner performance (Ayeni & Amanekwe, 2018). Given the potential risk of overloading teachers, it seems that the strengths and weaknesses of high-performing teachers ought to be taken into consideration while allocating additional tasks.

High-performing teachers are also involved in transforming the low-performing teachers through professional development.

> They have helped me to build these ones they have workshop them. (Principal C)

> I want them to assist other educators with learner discipline for effective teaching and learning to take place. (Principal H)

This finding shows that the knowledge and skills of high-performing teachers are used by the principals to improve curriculum delivery and the environment in which teaching and learning takes place. High-performing teachers are also involved in cultivating teacher effectiveness when they are mentors for low-performing teachers. Mentorship in this discussion includes the guidance and support that high-performing teachers give to low-performing teachers on subject content, pedagogy and classroom management as suggested in the quotation above. This strategy suggests two-way, personalised interaction between the low- and high-performing teachers, which aligns with transformational leadership abilities (Arokiasamya et al., 2016). The interaction between high- and low-performing teachers creates opportunities for empowering and inspiring each other as well as motivating and paying attention to individual consideration aimed at improving the performance of the teachers, which are the characteristics of transformational leadership as indicated by Bass (1999).

Other principals seem to boost the morale of high-performing teachers by giving them the opportunity to be leaders and develop their own leadership skills.

> I put them in a leadership position, whether it's as subject head or phase head or organiser of activities, but you must give that person the opportunity to expand their positive… positive-ness towards the school. (Principal E)

> … I will make use of their skills and knowledge… I am going to be very practical – I am so privileged to have the head of the department for the foundation phase and the head of department for the senior phase are two excellent, excellent ladies, and regarding curriculum matters. (Principal F)

Delegating leadership responsibilities to high-performing teachers gives them an opportunity to grow as individuals and to contribute to the growth of the school. In another study, Masumoto and Brown-Welty (2009) found that shared leadership and distribution of responsibilities among the teachers result in instructional improvement. The delegation of tasks is also an example of the individual consideration approach used by transformational leaders (Bass et al., 2003). The importance of individual consideration is that it focuses on developing the person based on their unique needs, meaning that the principal needs to be able to identify such needs, and be accountable for the professional development of teachers under their aegis.

In this study, the principals used both 'hands-on' and 'hands-off' approaches to develop low-performing teachers. All the principals in this study strove to identify specific developmental needs of the individual teachers. They were also accountable in the approach they chose to use. This finding is in accordance with an earlier study by Rhodes and Beneicke (2003), which showed that one of the key considerations in improving the poor performance of teachers is to establish the cause of poor performance, and to provide relevant training to address the identified problem.

CONCLUSIONS AND RECOMMENDATIONS

Although this study only focused on the views of a few primary school principals regarding how they lead and manage low- and high-performing teachers, the findings of this study provide some insights that can stimulate more interest in exploring both the role of the principal in transforming low- and high-performance teachers in secondary schools and the perspectives of other stakeholders. I suggest that future studies explore how secondary school principals address the issue of high- and low-performing teachers in their school to identify common trends as well as the different leadership styles at the two levels of education. Some of the findings reported in this paper could also be applicable to secondary schools. Furthermore, it is evident from the context of this study that primary school principals have a transformational leadership role to play in leading and managing low- and high-performing teachers. The two distinct leadership approaches of principals identified in this study for the professional development of low-performing teachers are 'hands-on' and 'hands-off'. Both approaches embrace some of the key characteristics of transformational leadership. The high-performing teachers are recognised as well as encouraged to develop leadership skills and to work collaboratively to improve the performance of the other teachers. The low- as well as high-performing teachers are intellectually stimulated, inspired, motivated, and their individual needs and abilities are taken into consideration.

I recommend that more research be done to incorporate the views and the experiences of other stakeholders regarding the ways in which the principal can lead and manage low- and high-performing teachers. The voices of the teachers, and their ideas on how to improve the pedagogical practices of low-performing teachers and how to sustain and further develop high-performing teachers, ought to be heard and recognised. Research on the strategies for creating a school culture that encourages positive teacher attitudes towards professional development can ease some of the challenges identified by the principals in this study.

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School climate: Perceptions of teachers and principals[1]

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ABSTRACT

School climate is experienced differently by various stakeholders at a school; it is also affected by different perceptions, behaviours and social identities. This research set out to contribute to the knowledge of the perceptions of teachers and principals about the organisational climate of their schools. A quantitative study was conducted in one of the provinces in South Africa. The Organisational Climate Description Questionnaire – Rutgers Secondary (OCDQ-RS) was distributed among teachers and principals at 72 public secondary schools in KwaZulu-Natal. A range of statistical analyses was used to analyse the data. Open-ended questions allowed teachers and principals to express their perceptions regarding the factors that played a positive or a negative role in their relationships. The open-ended questions indicated that the perceptions of teachers and principals with regard to the climate in their school differed. Nevertheless, there was some agreement between the teachers and principals regarding particular factors that have an impact on the school climate, such as poor human relations, disrespect, poor work ethics and competitiveness among teachers. The results showed that, although the perceptions of teachers and principals differed, there was no clear evidence that these differences in perceptions had any direct impact on the school climate.

Keywords: school climate, perceptions, attribution theory, social identity, communication, principals, teachers

INTRODUCTION

The circumstances in which teachers have to teach at schools in South Africa are difficult (Cornelissen, 2016; Maddock & Maroun, 2018; Segalo & Rambuda, 2018). Various reports of attacks on teachers have appeared in newspapers over the past few years (for example, News24, 2018; Daily Maverick, 2019; Mail & Guardian, 2019). Apart from the violence in schools, teachers often question the behaviour of the principal. It is the duty of school principals to create an environment that is conducive to teaching and learning. However, perceptions regarding the necessary support for teachers often differ, which results in a questionable perception of school climate.

The term 'social perception' refers to how an individual 'sees' other people and how other people see the individual. Individuals perceive others in ways that reflect their own attitudes and beliefs (Pickens, 2005; Grèzes & De Gelder, 2009; Finne & Svartdal, 2017; Krueger, 2018). The principal plays an important role in achieving the goals of the school. Principals have day-to-day interaction with the teachers as part of a vision and support (Cohen, 2015). The roles of teachers and principals influence their perceptions of the responsibilities of both. Principals regard themselves as responsible for the entire school system and try to create transparency in an effort to exert a positive influence on teachers (Newman, 2014; Klieger, 2016). This transparency does not apply everywhere, which might be why teachers question the behaviour of their principals (Hill, 2013). Teachers also believe that principals can affect learner achievement (Hardman, 2011). The main research question in this article is: To what extent do the perceptions of principals with regard to school climate differ from those of teachers?

The rest of this article is structured as follows. First, the key concepts that guide this study are explained, followed by a description of the theoretical lens that is used to frame this investigation. Thereafter, the authors provide an in-depth explanation of the empirical methods utilised in the study, followed by a discussion of the results. Then, the limitations of the study are discussed, after which the article concludes.

KEY CONCEPTS THAT FOREGROUND THIS INVESTIGATION

Perceptions

Humans perceive data, but it is not known precisely how they do it. Visualisations present data that are then perceived, but *how* these visualisations are perceived is unknown. For this reason, whether or not our visual representations are interpreted differently by different viewers is not known. In addition, whether or not the data presented are understood is also unknown. There are many definitions of and theories about perception. Most define perception as the process of recognising (being aware of), organising (gathering and storing) and interpreting (binding to knowledge) sensory information.

Johns (2008) claims that perception is the procedure of understanding a message in order to understand the environment. Perceptions help to make meaning of what our senses experience and observe. The focus is on *interpreting*. People frequently base their actions on the interpretation of reality that their perceptual system provides, rather than on reality itself (Johns, 2008). The perception that members in the organisation have plays an important role when collaboration is involved. Perception consists of three components: (i) a perceiver (e.g., teachers or a principal); (ii) a target (e.g., a school principal or teachers); and (iii) a context (e.g., a school) in which the perception is happening. The perception that an individual has about a target (that is, another human being, e.g., the principal or a peer teacher) is influenced by these three components (Johns, 2008).

The perceiver's understanding, needs and feelings can influence their impression of a target. Past encounters lead the perceiver to create desires, and these desires influence current discernment. Unconsciously, the needs that we have are influenced by our perceptions. Furthermore, feelings such as antagonism, pleasure or anxiety can influence one's perceptions. Johns's statement is in line with Tzeni, Ioannis, Athanasios and Amalia's (2019) view that teachers' perceptions are different, depending on, for example, their demographic characteristics. Taking this clarification into account, it is obvious that teachers can, for example, change their perception of the school principal as their experiences, motivation and emotional state change. The same could be applicable to the principal.

As far as the target is concerned, perception includes translation and the expansion of importance to the target. It can be said that more information about the target will provide a better perspective of the target. It is important that principals maintain a good relationship with learners, teachers and parents, as it will affect the learners', teachers' and parents' perceptions of the principal. It is important for school principals

to know how they are perceived by other people. Therefore, school principals must be transparent (Kadi & Beytekin, 2017). Teachers and principals may change their perceptions regarding one another if they receive more information about each other. However, this is not always the case. Teachers and principals may work together for many years and still have particular perceptions of one another (Johns, 2008).

Studies have shown that differences in perceptions are a common phenomenon. Klieger (2016) postulates that when goals are discussed, teachers and principals often misunderstand one another. The main problem seems to be the lack of what is perceived as 'ours'. In this regard, transparency is of the essence. Clear descriptions of what exactly is meant by reaching particular goals are essential. Ifat and Eyal (2017) focus on assessments, especially the principals' involvement in the assessment process. In another study, Swanepoel (2008: 50) reveals that 'teachers and principals have negative perceptions of each other when it concerns teachers' involvement in responsibility-sharing'. Misunderstandings between teachers and principals often result in a negative climate (Bellibas & Liu, 2016; Kor & Opare, 2017; Pratami, Harapan & Arafat, 2018).

Organisational (School) Climate
Organisational (school) climate can be defined as

> a measurable quality, which is identified depending upon the common perceptions of people living and working together in a specific place and affects the behaviors of individuals of the working environment (Hoy & Miskel, 2008: 185).

In line with this definition, Cohen et al. (2009: 182) postulate that school climate is a multidimensional construct that refers to the

> quality and character of school life […] based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures.

In yet another explanation of school climate, Hoy and Miskel (2008) focus on the uniqueness of climate in schools. In this regard, they argue that school climate is a combination of inner appearances that distinguishes one school from another. School atmosphere is a wide idea that incorporates the impression of the educators with respect to the workplace, the authority of the school and the community. Zehetmeier et al. (2015) agree with Hoy and Miskel and view school climate as a particular 'atmosphere' created in the school. From another point of view, Barkley (2013) states that school climate is synonymous with an environment in which teaching and learning occur and that it is characterised by a set of norms and expectations within the school. Typically, the climate of the school can be said to be the collective experience of stakeholders in the school.

A positive climate refers to the environment in which employer and employee support each other (Cardina & Fegley, 2016). On the other hand, Cohen and Keren (2010) note that school climate is a psychological experience situated in their work situation and environment that teachers are all a part of. Teachers consider the degree of trust and respect with which they are treated as essential for a positive climate. This reinforces the principal-teacher relationship and means that teachers enjoy more freedom to express their opinions (Hendricks, 2011). Malinen and Savolainen (2016) contend that a positive school atmosphere is seen as associated with less stress as well as higher efficacy and employment fulfilment among teachers. It is clear that school climate has an influence when instructional and distributed leadership practices (Bellibas & Liu, 2016), relationships (Browning, 2014), teachers' performance (Pratami et al., 2018) and teacher support (Silva, Amante & Morgado, 2017) are involved.

THE THEORETICAL LENS UTILISED IN THIS STUDY

In this part of the article, the theoretical framework is discussed. Perceptions of people and attribution theory are related to each other.

> Attribution theory deals with how the social perceiver uses information to arrive at causal explanations for events. It examines what information is gathered and how it is combined to form a causal judgment (Gailey & Lee, 2005: 338).

Attribution theory addresses how the behaviour of a person can be explained. As Harvey and Martinko (2010) note, the cause explains the behaviour of a person. Heider (1958) makes two distinctions with regard to behaviour, namely (i) whether a behaviour is seen as intentional or unintentional and (ii) whether a behaviour is seen as caused by something about the person (e.g., culture) or by something about the situation. Heider (1958) elaborates on this distinction and refers to internal and external attributions, respectively. The cause of the behaviour can be attributed to internal personality traits. With reference to external attribution, Heider (1958) claims that a particular action can be attributed to an external circumstance. In this regard, Johns (2008) refers to situational attributions – that is, the outer circumstance or condition wherein the targeted individual exists, whether they have command over their own conduct. In light of this discussion on attribution theory, the behaviour of the principal in a given situation plays an important role when it comes to the perceptions of the teachers with regard to the principal.

In view of this investigation regarding principals' and teachers' perceptions of school climate, the authors interrogated three issues pertinent to the research question:

- Are teachers and principals regularly and consistently part of the behaviour that contributes to the school climate?

- Is this behaviour limited to one person, or extended to other people who behave in the same particular way?

- Is the behaviour influenced by one incident, or does it arise from or is a result of other behavioural incidents as well?

The perceiver's interpretation of the target is influenced by their 'answers' or responses to these questions. People do not stand independently of one another. For this reason, people have certain perceptions about one another. In line with this, the perception of 'the self' plays just as important a role. Based on this statement, the choice of social identity theory is important in this study.

As per *social identity theory*, individuals structure a view of themselves dependent on their qualities and participation in social classifications (Johns, 2008). One's feeling of self is made up of an individual character and a social personality. Our own personality depends on our one-of-a-kind, individual attributes, for example, our interests, capacities and characteristics. Social character depends on our observation that we have a place in different social gatherings. As people, we expect from ourselves, as well as from others, to comprehend the social condition. The perception that an individual has about themselves forms the perception they have about other people in society (Johns, 2008). Islam (2014: 1782) contributes to this argument by suggesting that 'social identity effects are based on protection and enhancement of self-concepts, threat to the self-concept would intuitively be related to the strongest identity effects'. In line with this, Bochatay et al. (2019) argue that, depending on the situation, individuals may identify with different relevant groups based on their position in the social hierarchy in a school. For example, each teacher forms a perception of themselves. Teachers belong to a specific social group (that is, staff members of a school) and form perceptions about the other staff members as well as about the school principal.

Individuals will, in general, see individuals from their own social classification in increasingly positive and favourable ways as individuals who are unique and have a place with different classes. Thus, teachers could perceive principals in a particular way, while they perceive their own colleagues in a different way.

According to Craig (2012), the principal is seen as the person who determines the school climate, whether positive or negative. Therefore, principals need to be aware of both their influence on school climate and the fact that they can improve or weaken the climate. However, teachers and principals categorise themselves according to social groups to make sense of their social environment. Furthermore, teachers and principals behave differently within the social environment (school), and, as a result, their perceptions of one another differ as well. Kliegler (2016) notes that there is a gap between teachers' and principals' perceptions regarding a positive school climate. It is, therefore, evident that school climate is perceived differently by teachers and principals. In addition, Hayes (2013) claims that male principals view their schools as being more positive and inviting than female principals do. Gülşen and Gülenay (2014) declare that principals in an open climate are supportive, listen to teachers and respect teachers' professionalism. They encourage teachers not only to perform but also to act as leaders themselves. As a result, a more open and positive climate is experienced. Gülşen and Gülenay (2014) continue their argument and emphasise that the school principal is the person who determines the climate of the school. In this regard, they postulate that the school principal is responsible for the administrative process, which includes persuading teachers to arrange their work. Pulleyn (2012) supports Gülşen and Gülenay's (2014) view and adds that, through school principals, a climate of collaboration, collegiality, recognition and respect can be created. This creates a climate in which both teaching could succeed and a learning culture could be created by the learners.

It is notable that school principals have a more positive perception of a positive school climate than teachers do (Duff, 2013). Transparency and openness are, therefore, important to create a joint vision of school climate. Hendricks (2011) found that the availability and visibility of the principal contributed to a positive school climate as teachers experienced this as supportive. Furthermore, teachers experience that daily interaction with the principal, colleagues and learners strengthens relationships. This leads to mutual respect, trust and support, which are important in creating and enabling a climate conducive to teaching and learning.

School climate is regularly estimated from the perspective of learners; however, considering educators' observations is essential (Huang et al., 2015). In this regard, Lim and Eo (2014) argue that clear knowledge of the performance of a school, teacher efficacy and support are essential as they are factors that contribute to establishing a positive school climate. Teachers influence school climate by encouraging learners, establishing a supportive environment and authorising school rules (Huang et al., 2015).

Babu and Kumari (2013) concur and believe that school climate contributes to the perceptions of teachers regarding their own potential. The effectiveness and success of teachers relate to a climate in which good relations, collegiality and participation are of interest. This can be achieved when (i) teachers are allowed to be creative, (ii) regular communication and cooperation exist between them, (iii) they are allowed to be flexible, (iv) opportunities for development are created for them, and (v) sufficient resources are available to them (Chang, Chuang & Bennington, 2011). Furthermore, teachers associate school climate with their own morale at the school. When teachers see the school climate as a positive experience, it strengthens their relationships with the principal, learners and even parents (Barkley, 2013).

As explained, attribution theory is about how individuals perceive one another and how they use that information to explain individuals' behaviour. In addition, social interdependence theory focuses on how individuals see themselves within a social hierarchy. These two theories were used to examine the perspectives of teachers regarding their principals and the principals' perspectives of their staff. It is

important that the workers in an organisation (a school) understand one another so that they can work together to achieve goals.

EMPIRICAL INVESTIGATION

Purpose

The purpose of the research was to gain more insight into the perceptions of teachers and principals with regard to school climate.

Research Design

The research is embedded in a quantitative approach within a post-positivist paradigm. Numerical measurement and the observation of the behaviour of individuals are the most important features of the post-positivist paradigm. Because post-positivism allows limitation, contextual factors and the use of multiple theories within the interpretation of the research findings, it is an appropriate paradigm for the study, specifically for quantification but also to unite subjectivity and meaning. According to Creswell (2012), knowledge gained through a post-positivist lens is based on the measurement of targeted reality that focuses on the support of and search for valid and reliable evidence with regard to the phenomenon. This approach leads to a measurement of how the perceptions of teachers and principals differ with regard to the climate of a school.

Population and Sample

The population in this study was the secondary schools in KwaZulu-Natal. A systematic random cluster sampling of 98 schools was drawn by means of statistics from the data list, sorted by quintile and region, so that the selected sample was representative with respect to the region. Eighty schools were identified to take part in this study. The 2013 Grade 12 mathematics results of the National Senior Certificate were used to calculate percentages of mathematics achievement per province in order to distinguish between poorly and well-performing schools.

Data Collection

The OCDQ-RS (34-item, 5-point Likert scale) was used to determine the climate of particular schools (Vos, 2010; Martin, 2012; Van Jaarsveld, 2016). The scale used is represented as follows: 0 = Not at all; 1 = Occasionally; 2 = Sometimes; 3 = Quite often; 4 = Often, if not always.

Teachers and principals had the opportunity to give their opinion on the climate of their schools in these questionnaires. Open-ended questions were posed in the questionnaire with regard to positive and negative factors influencing the relationship between the principal and the teachers and among the teachers themselves. Teachers and principals had to indicate their perceptions separately.

Validity, Reliability and Ethical Issues

The OCDQ-RS has been used in numerous international and national studies and has been proven to be a valid and reliable questionnaire (Antonakis, Avolio & Sivasubramaniam, 2003; Hinkin & Schriesheim, 2008; Schriesheim, Wu & Scandura, 2009; Leong & Fischer, 2011; Martin, 2012). The following statistical analysis techniques were used: statistical significance (p-values) and effect size (d-values). The researchers obtained ethical approval from their institution of employment. Permission was also obtained from the Department of Education in KwaZulu-Natal as well as from the principals of the participating schools. The researchers provided the participants with information on the research and the ethical issues of the study (cf. McMillan & Schumacher, 2010; Creswell, 2012; Leedy & Ormrod, 2013). In the written consent letters, the respondents were informed about their privacy, anonymity, integrity and professional qualities. They were also ensured that they could withdraw from the study at any time. Anonymity was ensured in every respect.

Data Analysis

The data collected were analysed by means of different statistical techniques, namely descriptive statistics. Averages for the different subscales were determined as well as the standard deviation, p-value and effect size of differences.

RESULTS

The results of the OCDQ-RS questionnaire are displayed by means of tables and the results of the open-ended questions by means of graphs. The OCDQ-RS, compiled by Hoy and Miskel (2008), was used to determine how the actions of the principal and the teachers mutually influence the climate in the school. Dimensions to determine school climate are as follows: (i) supportive behaviour; (ii) directive behaviour; (iii) engaged behaviour; (vi) frustrated behaviour; and (v) intimate behaviour (Hoy & Miskel, 2008).

Results of the OCDQ-RS Questionnaire

Table 1:
Perceptions of teachers and principals with regard to school climate

	Average	N	Standard deviation	p-value	Effect size
Supportive (teachers)	2.91	51	.419		
Supportive (principals)	3.24	51	.645	.001	0.50
Directive (teachers)	2.19	51	.365		
Directive (principals)	1.98	51	.479	.007	0.44
Engaged (teachers)	2.73	51	.347		
Engaged (principals)	2.93	51	.519	.007	0.38
Frustrated (teachers)	1.91	51	.360		
Frustrated (principals)	2.00	51	.577	.291	0.15
Intimate (teachers)	2.25	50	.314		
Intimate (principals)	2.36	50	.663	.269	0.16

There were statistically significant differences ($p < 0.05$) between the views of the teachers and views of the principals for various reasons, as discussed below.

Principals' supportive behaviour

The effect size ($d = 0.50$) indicates a medium difference between teachers' and principals' perceptions with regard to support. According to the average scores, the principals in the study believed that their support was very good (average = 3.24), whereas the teachers did not necessarily agree with them (average = 2.91).

Principals' prescriptive behaviour

The effect size ($d = 0.44$) indicates a medium difference between teachers' and principals' perceptions about prescriptive behaviour. The average scores made it clear that the teachers thought their principals were prescriptive (average = 2.19), while the principals did not necessarily agree with that (average = 1.98).

Involved behaviour of teachers

The effect size (d = 0.38) indicates a small difference between the teachers and the principals with regard to teachers' behaviour. According to the average scores, the principals were of the opinion that the teachers were involved with one another (average = 2.93), while the teachers did not necessarily agree with that (average = 2.73).

Table 2 presents the perceptions of the teachers and the principals with regard to the school climate in poorly and well-performing schools.

Table 2:

Perceptions of teachers and principals in poorly and well-performing schools with regard to the school climate

		Average	Standard deviation	p-value	Effect size
Supportive	Poor	2.84	.42	.546	0.18
	Well	2.92	.38		
Directive	Poor	2.23	.36	.772	0.09
	Well	2.35	.31		
Engaged	Poor	2.80	.28	.636	0.15
	Well	2.76	.29		
Frustrated	Poor	2.09	.31	.303	0.31
	Well	1.93	.26		
Intimate	Poor	2.37	.31	.073	0.56
	Well	2.16	.38		

No factor in the organisational climate showed statistically significant differences (p < 0.05) between the poorly and well-performing schools. Nonetheless, it appeared that the relationships between the teachers in the well-performing schools were not that intimate. It can be an indication that these teachers concentrate more on their learners than on associating with one another, and, as a result (d = 0.56), the learners perform better.

Analysis of Open-Ended Questions

Interesting results for the open-ended questions came to the fore. Principals and teachers differ remarkably with regard to influential factors in a positive relationship between teachers and principals. This finding corresponds with the results of the findings set out in Tables 1 and 2. Teachers prioritised communication as the main factor that contributed to a positive relationship between them and their principals. On the other hand, the principals perceived honesty and respect as the main contributing factors with regard to a positive relationship. However, the principals agreed with the teachers that respect was a contributing factor in a positive relationship. It was clear that the perceptions of the teachers and principals played a role in the school climate. Where the teachers and principals understood each other and the behaviour of the principal was explained, a positive school climate prevailed. The opposite was visible when teachers did not understand the principal's actions. In this case, a negative school climate prevailed.

The perception of the teachers was that teamwork and respect were the two main factors that contributed to a positive relationship between them. On the other hand, the principals perceived respect as the main

contributing factor to a positive relationship between teachers. Thus, the principals and the teachers agreed that respect and teamwork were the two main contributing factors to a positive relationship between teachers. Respect and teamwork contribute to a positive school climate.

With regard to negative factors influencing the relationship between teachers and principals, it was notable that the principals felt that poor ethical behaviour was the main factor that influenced the relationship between them and teachers. Typically, from the viewpoint of the principals, work has to be done, and, if teachers do not follow ethical practices, it could ruin the relationship between them. However, teachers' perceptions indicated that autocracy was the main factor influencing the relationship between them and the principals. The teachers also perceived poor management as a factor that negatively influenced the relationship between them and the principals, while the principals perceived poor human relations as a factor that influenced the relationship between them negatively.

The results for the negative impact on the relationship between teachers were remarkable. Both the principals and the teachers perceived poor human relations, disrespect, poor ethics and competitiveness in the same way. It was clear that, in this instance, the principals and the teachers agreed on the negative factors influencing the relationship between teachers. From this discussion, it is clear that ethical behaviour, democratic leadership, effective management and human relationships are crucial elements for a conducive school climate.

DISCUSSION OF RESULTS

As envisaged, the results of this study were interpreted through the lens of perceptions, attribution theory and social identity theory. Perceptions are unique to people. Each person experiences situations and behaviour in their own way and forms their own perception regarding another person. In this study, it was clear that the perceptions of the respondents with regard to the school climate differed.

The teachers interpreted the behaviour of the principals in their own way and, therefore, acted according to the interpretation of the behaviour. Because individuals' perceptions differ, each individual will interpret an action differently and act accordingly. The principals indicated that they were supportive of teachers, whereas the teachers disagreed with that. The results of a favourable school climate are strengthened relationships, better interaction and improved performance. These relationships and interactions are established by the behaviour of the principal and the teachers. Robinson (2010) placed emphasis on the importance of support and engagement in her studies in the United States of America. Yet perceptions with regard to principals' support in order to get teachers more involved differed. The participants' indications varied in terms of how supportive the principals and how involved the teachers were. All of the principals indicated that they were supportive of the teachers. In accordance with the principle of attribution theory that explains how the social perceiver uses information to arrive at causal explanations for events, the teachers felt that the principals did not support them. The principals felt that the teachers were engaged, but it seemed as though the teachers did not agree with the principals.

The fact that there was a discrepancy in the principals' and the teachers' perceptions, especially with regard to support and engagement, corresponds with the findings of Osman (2012), who placed emphasis on the mediation and transmission of information and expectations to enhance a positive school climate. It is important for school principals to support teachers in order to ensure effective teaching and learning. By being friendly and encouraging, praising teachers and having empathy for them, a school climate conducive to teaching and learning can be created (Sirisookslip, Ariratana & Ngang, 2015). Although the principals indicated that they were supportive of the teachers, the teachers disagreed. In fact, the teachers indicated that the principals were prescriptive, while the principals disagreed with this perception of the teachers. Gedifew (2014) argues that successful principals are prescriptive and supportive, which results

in teachers and management being effective. In the study, the principals and the teachers agreed that a poor work ethic among teachers was one of the negative factors influencing a school climate conducive to teaching and learning. Poor work ethic among teachers could result in ineffective teaching. With regard to the involvement of teachers, the principals' perceptions were that the teachers were involved with one another, but the teachers disagreed with the perceptions of the principals. Robinson (2010) claims that when teachers are involved with and know one another, it contributes to a positive school climate. In this study, it was clear that the teachers disagreed with the statement that they were involved with their colleagues.

When the open-ended questions regarding school climate were taken into consideration, it was again clear that the perceptions of the teachers and the principals in the study differed. With regard to a positive relationship between the principals and the teachers and between the teachers themselves, the results showed a different perspective on what was important with regard to a positive school climate. The teachers' perception was that communication and teamwork were the two main factors contributing to a positive relationship. The principals indicated that support contributed to a positive school climate. In their opinion, honesty and respect contributed to a supportive relationship.

With regard to negative relationships between the principals and the teachers and between the teachers themselves, the principals and the teachers differed in their perspectives on which factors influenced a positive school climate. The teachers' perceptions were that autocracy and poor human relationships could create a negative school climate, while the principals' perceptions were that poor ethics could create a negative school climate. It was notable that the teachers and the principals agreed that poor human relations were the main factor that contributed to a negative school climate.

It is clear that the perceptions of the principals and the teachers differed. As mentioned earlier, attribution theory is concerned with the question of how ordinary people explain human behaviour. The perceptions of both the principals and the teachers should be seen in light of their behaviour: (i) Is the behaviour intentional or unintentional? and (ii) Is the behaviour a result of the person or the situation at hand? If the teachers experienced the behaviour of their principals as not supportive, it simply implied that it was their perception and not necessarily true. It could be possible that the principals did not behave in a supportive manner due to circumstances. Thus, internal and external attributions should be taken into consideration. The behaviour of the principal, therefore, must be monitored over a period to determine whether the behaviour is an internal attribution, for example, the personality of the principal, or an external attribution, for example, the principal's environment. Furthermore, the perceptions of the teachers and principals should be seen in light of the social identity of each individual. Teachers tended to perceive individuals who fall into the same social class as themselves as similar to them. For the teachers, there was a social difference between teachers, administrative personnel and other workers. Therefore, teachers experienced more supportive behaviour from their colleagues than from their principals.

When teachers or principals experience the school climate as one where there is a lack of involvement, membership in different social categories should be taken into account. Thus, staff members might see themselves as a group that is positively involved in school matters, but principals might see themselves as belonging to a different hierarchy and, therefore, experience the involvement of the teachers differently. It is a matter of concern that there is a discrepancy between teachers and principals regarding issues that affect the relationship between them. This discrepancy can be ascribed to the strict hierarchical structure that is found at most schools, where principals are viewed as managers and representatives of the Department of Basic Education. The gap between these two groups should be narrowed in the interest of both. According to attribution theory, individuals use information to explain events. For this reason, perceptions should be aligned to explain particular events. In addition, as social identity theory argues,

individuals' personalities should be taken into consideration, and, therefore, individuals' perceptions should be considered.

LIMITATIONS

A mixed-methods research approach, including the perceptions of the learners regarding their school climate, could be of value in further research. A larger sample could have added to the value of the study; that is, more provinces could be investigated to gain a clearer picture of the climate in schools in the country.

CONCLUSION

The study focused on the perceptions of teachers and principals regarding their school climate. As a school consists of various individuals with different beliefs, ideas and perceptions, different behaviours are expected. Within different social identities, it is clear that teachers and principals have their own perceptions of a school climate that is conducive to teaching and learning. Particularly concerning is the finding that principals view themselves as being very supportive, while teachers, in general, do not agree. As indicated above, this can be ascribed to a gap in management, where principals are seen as unapproachable. However, to create a school climate conducive to teaching and learning where teachers and principals agree upon the factors that influence the school climate, open and transparent communication must be maintained. Some schools in South Africa are struggling to maintain a school climate conducive to teaching and learning, which influences the teaching and learning process. In addition, teachers and principals should attempt to align their perspectives and to understand why an individual behaves in a particular way. Further investigation should be conducted into school climate in South Africa. The actions of the principal and the teachers affect school climate. Transparent actions can create a favourable climate within which the principal, teachers and learners can achieve their goals so that the school as a whole performs better. Ways of how to improve school climate should be explored, not only on school level but also by the Department of Basic Education. Teachers, principals, learners, the community and the Department of Basic Education must collaborate to build a positive school climate in South African schools.

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Added benefits: Is additional training sufficient to maximize effectiveness for teachers of reading?[1][2]

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ABSTRACT

Research in South Africa indicates that the current pre-service teacher-training syllabus is inadequate to prepare teachers to effectively teach reading in the earlier grades. This lack of preparedness results in teachers who continue to use outdated, traditional teaching methods with their learners. As a result, additional, in-service teacher training becomes important. As part of a larger research project, observing and recording detailed classroom practice in the Midlands area of KwaZulu-Natal between 2015 and 2017, involving two schools and eight teachers, this paper reports on whether additional training in the teaching of reading was sufficient to enable teachers to lead learners from decoding to comprehension across grades 3 and 4. Findings were that, in light of inadequate teacher preparation in initial teacher training institutions, additional training for teachers of reading is necessary yet insufficient to change entrenched, embedded teaching styles. It is recommended that mentoring, in the form of coaching, be considered in addition to training.

Keywords: coaching, literacy, mentoring, pedagogy, teaching of reading, teacher training

INTRODUCTION

This paper will discuss aspects of a mixed-method, descriptive, multiple case study that examined the effects of pedagogical content knowledge (PCK) on the teaching of reading across grades 3 and 4. As the study is discussed in detail in Steinke and Wildsmith-Cromarty (2019), this article focuses on another area of the research that examined whether additional, in-service training for teachers of reading is sufficient to increase their effectiveness in enliterating learners in grades 3 and 4. The research took place at two primary schools in the KwaZulu-Natal province, South Africa, with eight participating teachers. The purpose was to facilitate literacy skills acquisition at the foundation and intermediate grade levels in South Africa.

Children who do not learn to read well in the early grades are unlikely to make up the deficit if they have not achieved adequate reading levels by age 9 (Rasinski, 2017). As early as 1990, the Threshold Project revealed that grade-5 children were reading at a grade-3 level. The situation has not improved post-1994 (Macdonald, 2002). In a 2007 report outlining an evaluation of grade-6 learners, 75% were below the required benchmark for literacy competence (Department of Education, South Africa, 2007). The most recent Progress in International Reading Literacy Study (PIRLS) results from both 2011 and 2016 showed that South African learners continue to perform poorly in terms of international benchmark scores for literacy and numeracy (Van Staden & Zimmerman, 2017). The reasons for this failure are varied, but prominent explanations are (i) a lack of reading culture amongst poorer communities, (ii) a lack and poor use of resources, and (iii) the failure of Outcomes Based Education (OBE) (Taylor, Fleisch & Shindler, 2019). In addition, Taylor (2016: 18) identifies what he refers to as 'inefficient pedagogies' as a major weakness in the South African education system. Newly qualified teachers are required to identify and remedy reading problems in over half the class in the intermediate- as well as senior-grade levels, yet they are inadequately prepared to do this during pre-service teacher training.

In the Initial Teacher Education Research Project (ITERP), Taylor (2016) compared the initial teacher education (ITE) syllabus across five universities in South Africa in order to investigate whether the skills being taught to prospective new teachers meet the requirements of the school system. The following was noted (Taylor, 2016): In a Government Gazette of 2000, consisting of norms and standards for educators, teachers were required to play seven broadly defined educator roles (Department of Education, South Africa, 2000). These were

- learning mediator
- interpreter and designer of learning programmes and materials
- leader, administrator and manager
- scholar, researcher and lifelong learner
- community, citizenship and pastoral role
- assessor
- learning area/subject/discipline/phase specialist.

While these roles are still valid, more recent developments have seen the issue of the Minimum Requirements for Teacher Education Qualifications (MRTEQ). In the MRTEQ, the listed educator roles are now included in the appendices, as the document seeks to move closer to providing the knowledge and skills teachers need (Department of Higher Education and Training, 2015).

This syllabus, as outlined in the MRTEQ, requires that all teachers specialise in Home Language (HL) and English First Additional Language (FAL), as well as two other subjects. In addition, those who do not specialise in mathematics must at least have a good understanding of the subject in intermediate phase (IP) up to NQF-level 5 (Department of Higher Education and Training, 2015). However, conspicuous by their absence are reading and writing. There is no training in literacy teaching specified for IP, which is of concern considering the results of recent findings on the deficit of reading skills of grade 4s and 5s (Spaull et al., 2016).

The consequences of the lack of effective ITE training in the teaching of reading are that newly graduated teachers tend to continue to teach as they have been taught, and have, for example, poor understanding of the importance of both reading and content knowledge (Rule, 2017; Taylor, 2014). A brief history of South Africa's education system and an explanation of the Department of Education's current syllabus, the Curriculum Assessment Policy Statement (CAPS), follows.

PAST AND PRESENT: SOUTH AFRICA'S EDUCATION SYSTEM

South Africa has undergone numerous changes in its education system since the dawn of democracy in 1994. In 1997, the government introduced OBE (Department of Education, South Africa, 1997), based on natural approaches. The Natural Approach was developed in the 1980s as a form of language teaching, and it is based on the premise that language will emerge spontaneously as long as learners are provided with large amounts of suitable language input (Mason & Krashen, 1997). In the teaching of reading, this can take the form of the Whole Language approach, which focuses on meaning, and eschews direct instruction of phonics and decoding (Merriam-Webster, 2020). As predicted, OBE was a failure, causing confusion among teachers and overloading them with administrative tasks (Jansen, 1998; Naidoo, 2019). Attempts were made at revisions, such as the Revised National Curriculum Statement (Department of Education, South Africa, 2002), until, finally, the curriculum was repackaged into the current version: CAPS. CAPS is designed to be more teacher friendly. However, the syllabus is still based on OBE principles and the outcomes for learners remain the same. In CAPS, it is envisaged that learners become effective readers who are able to perform the following tasks (Department of Basic Education, 2016):

- Collect, analyse, organise and critically evaluate information

- Read for both information and enjoyment

- Select and interpret information for necessary purposes

- Use science and technology effectively and critically

- Solve problems effectively.

However, despite the good intentions underlying CAPS, the mentioned outcomes are still not being realised (Wildsmith-Cromarty, 2012). In addition, the syllabus contains no specific definition of reading and no official benchmarks for reading in indigenous languages in South Africa, although research is progressing rapidly in this area (Ardington et al., 2020; Spaull, Pretorius & Mohohlwane, 2020). The lack of mother-tongue instruction is an important factor in the literacy skills deficit, as learners are taught in their HL only up until the end of grade 3 and must then switch to English as the language of learning and teaching (LoLT) from grade 4 onwards (Pretorius, 2015). However, it is not the only factor, as pre-service teacher training forms a vital component of effective literacy teaching. In light of this, a brief discussion of the research involving the efficacy of pre-service teacher training in preparing teachers for effective teaching of reading in South Africa follows.

TEACHING PRACTICES AND TEACHER TRAINING

Across grades 2 and 3, various researchers have investigated the PCK and the reading instruction methods of teachers of reading as well as why they may choose these methods. General findings are that teachers lack adequate teacher training and tend to be more influenced by their personal beliefs as a result. They lack understanding of teaching strategies, how to plan reading comprehension, and how to teach reading for meaning. In addition, their lack of resources mean that they are often forced to rely on traditional methods (Mudzielwana, 2012; Nkosi, 2011).

After the implementation of the new CAPS, a large-scale study began in 2012 in the form of Schools Performing against Demographic Expectations, or SPADE (Hoadley, 2012). Its intention was to explore the correlation between certain aspects of schooling and educational achievement. As part of this larger SPADE research project, Hoadley (2017) investigated whether or not pedagogy contributes to differential learner outcomes. The study involved 46 grade-3 teachers at 14 better-performing schools located in poorer socioeconomic areas. Each participating teacher was observed over three lessons in Mathematics, HL and FAL.

Hoadley (2017) created an ideal pedagogy, and participating teachers were then each given a pedagogic score. Findings included that there was no clear correlation between teacher pedagogical practice and learner outcomes. Implemented changes in teacher practice appeared to be at the surface level as well as in form, not substance (Hoadley, 2017). Teachers may have relinquished some control to learners in the area of evaluative criteria, but teachers still appeared to hold power over knowledge distribution. Among the teachers who achieved 'good' and 'moderate' pedagogic scores, Hoadley found some positive features of classroom practice, such as lessening of choral chanting, greater individualising and more text-based activity. However, these 'good' teachers were not creating a space where learners could more effectively grasp ordering, concepts, content and knowledge. Learners still did not partake in making the rules, for example, how to behave, what to learn, and how to learn it (Hoadley, 2017).

Studies with grade-4 learners in South Africa have also found that teachers lack effective reading training in various areas. For example, in her study on the home literacy practices of grade-4 learners, Mkhize (2016) conducted a qualitative case study with three bilingual learners and their families in rural KwaZulu-Natal. Using interviews, observations, and limited artefacts, she found that, in their home environments, learners made use of a wide range of literacy and communicative practices. She calls for teachers to develop an understanding of how the knowledge that learners bring to the classroom, as well as their home languages, can provide rich resources for improving teaching and learning (Mkhize, 2016).

Another area of concern with research in pre-service teacher training is that reading still does not appear to take precedence as a teaching focus in classrooms. In a larger-scale investigation across grades 4 to 6, involving 159 respondents across 30 schools in three provinces, Pretorius and Klapwijk (2016) made use of a quantitative questionnaire to establish what teachers believed they were teaching regarding reading comprehension, as well as their beliefs and attitudes towards the teaching process. Even though all participating teachers in the schools felt that their learners struggled with reading, they did not appear to make teaching of reading the priority it should be. Teachers need a high level of content knowledge as well as pedagogical knowledge to achieve this goal. It is also vital that teachers be skilled enough to prevent reading problems before they occur, rather than trying to fix them afterwards (Pretorius & Klapwijk, 2016).

Similar to Mudzielwana (2012), Pretorius and Klapwijk (2016) also found that, in the absence of effective teacher training, teachers tend to be affected by sociocultural factors. For example, teachers that are not strong readers themselves tend not to develop these reading habits in their learners. It is not enough, however, to simply tell teachers that they need to improve their teaching effectiveness without providing the 'how'. For this reason, the researchers call for more explicit reading-instruction strategies to be included in teacher-training courses and for effective comprehension intervention programmes in South African classrooms, developed specifically for either in-service or pre-service teachers. In addition, they recommend that these programmes be implemented for both HL and FAL teaching (Pretorius & Klapwijk, 2016).

In summary, the research cited above indicates that the current South African pre-service teacher-training syllabus does not adequately prepare teachers to effectively teach reading in the foundation and intermediate grades (Kotze, Fleisch & Taylor, 2019). This lack of preparedness results in teachers who use outdated, traditional teaching methods with learners who may have already entered formal school at a disadvantage due to their socioeconomic situation. As a result, additional, in-service teacher training becomes not only desirable but necessary. However, this article goes further by asking the following research question:

Is additional, in-service training of teachers of reading sufficient to move learners from decoding to comprehension across grades 3 to 4?

An answer to this question can ultimately help to improve the teaching of reading in the foundation and intermediate grades in South Africa, particularly in the light of the ongoing, critically low literacy levels of learners (Van Staden & Zimmerman, 2017). A description of the research site and context of the study follows.

RESEARCH SITE AND CONTEXT

The research took place at two schools in the KwaZulu-Natal Midlands area between 2015 and 2017. Eight teachers participated, four from each school, with School 1 using English as its LoLT and School 2 using isiZulu as its LoLT until the end of grade 3. The schools are both situated in poorer socioeconomic areas and draw the majority of their learners from local informal settlements.

Participating schools and teachers were chosen as a convenience sample, based on the similar socioeconomic status of the schools, and the principals allowing their schools to be opened to the researchers for the duration of the study. The schools were within a 5 km radius of each other. There were tight controls over data collection times and visits to the schools, which amounted to approximately once a week for each school. There was a total of 35 video-recorded classroom lessons, each with a duration of 20 minutes. A detailed discussion of how the video data were recorded and analysed is provided in Steinke and Wildsmith-Cromarty (2019). The recorded lessons were in (i) English HL, (ii) isiZulu FAL, (iii) Mathematics, (iv) isiZulu HL and (v) English FAL. All lessons were recorded and observed by the researchers during morning sessions and all within the classroom of the teacher concerned. All participating teachers in the schools had been trained in CAPS, but three had received additional training in Reading to Learn (R2L), and one had been trained in the READ programme (Read Educational Trust, 2015; Rose, 2015). As a result, the researchers ultimately made the decision to divide the study into two groups for comparison: Group 1, which consisted of teachers who made use of only CAPS training in the classroom; and Group 2, which consisted of teachers who had both received and made use of additional training. Even though some participating teachers had additional training in reading beyond CAPS, the study was not a deliberate comparative design. A description of the form of additional, in-service training teachers received, namely R2L and READ, follows. The teachers in Group 2 had all completed their additional training within the 15 years preceding the study. In the case of R2L, intervention is ongoing as workshops and conferences are held annually.

Three of the teachers in Group 2 used the R2L approach in addition to CAPS. R2L is a form of scaffolded literacy teaching (Bernstein, 1990; Halliday, 1994; Vygotsky, 1978) and is a practical approach that can be used to teach learners to read at any grade level. It was originally developed in Australia at the University of Sydney for marginalised Aboriginal learners, and it uses illustrated story books, or texts, in the case of older learners, to improve comprehension, word recognition, spelling, letter formation, sentence construction and writing skills (Reading to Learn, 2020). R2L also works across the curriculum, and it is claimed to increase the reading skills levels of learners between two and four times the expected growth rates of learners across one year (Culican, 2006; Steinke, 2012).

An important component of R2L is what is known as 'meaningful interaction' (Rose, 2016). This refers to the initiation-response events that occur between teacher and learner in the classroom that can actually bring about learning, as opposed to traditional, chanting responses. As Rose (2011: 8) states: '… adults direct children's attention, or follow their attention to things and activities, then name them, evaluate, demonstrate, explain and so on. … shared emotion is critical as adult and child exchange evaluations of things and actions.' This classroom interaction is known as the 'Initiation-Response-Feedback (IRF) Cycle' and is usually begun by the teacher asking the learner(s) an open question. This is similar to a storybook reading cycle between parent and child, and its purpose is to prepare learners for the task, enable them to successfully complete it, and then follow it up with affirmation or feedback. This then prepares learners

to complete the next step. In addition, the teacher can elaborate on the task and so extend learning (Rose, 2011).

Elaboration, together with Affirmation, both of which are categories in the FORT (Steinke & Wildsmith-Cromarty, 2019), support and scaffold learners to complete tasks. They also encourage and elicit responses from weaker learners that may not feel comfortable actively participating (Rose & Martin, 2012). Affirmation, or positive reinforcement, is a research-based best practice that has been shown to be beneficial (Hay et al., 2013).

Training in R2L was available for all teachers at both participating schools. However, at School 1, only one teacher who received the training was actively using it. In School 2, most of the teachers had received training or were attending training in R2L. Only a few chose not to use it and said that they felt that it took up too much time to implement in their teaching. The remaining teacher in Group 2 was using the READ programme.

The READ Education Trust facilitates teacher training in literacy teaching. Comprehension is taught through extensive reading and the use of various reading strategies, for example, individual reading, reading out loud and group reading. Learners must be provided with a large volume of different reading materials and must be able to read both in context and for meaning (Read Educational Trust, 2015).

The programme has three main components: (i) whole school training; (ii) ongoing monitoring and support; and (iii) supply of reading materials and books to learners (Schollar, 2001). The teacher training is based on the 'balanced approach', in which different reading strategies are combined with language, content teaching, and learning. For example, Schollar (2001) reports on how all the Big Book lessons in his study tended to end in language exercises, such as scanning the text for examples of tenses, followed by teacher-made worksheets and sets of exercises. The term 'balanced approach' in READ is, therefore, different in meaning from the balanced approach used to teach explicit decoding and comprehension skills, combined with a more natural approach, such as exposure to reading materials and encouraging oral fluency through communication (Wildsmith-Cromarty & Gounden, 2006). Rather, in READ, literacy is viewed as a social construct and focuses on the critical- and creative-thinking processes of learners, consistent with natural approaches discussed earlier in this paper. READ does not have as its focus explicit teaching and it, therefore, differs from R2L, which has its focus on explicit teaching of comprehension strategies (Nazaryan, 2014). A discussion of data collection and analysis follows.

DATA COLLECTION & ANALYSIS

The data were collected between May 2016 and June 2017, with the researchers sitting in on lessons in each school approximately once a week. Data were collected by means of

- recorded video lessons of language and reading teaching, mainly in English, but some were in isiZulu
- semi-structured interviews with all eight teachers
- observations of teaching activities and strategies
- personal journal notes
- pre- and post-reading assessments.

The research instruments, as well as the development, implementation and analysis of the FORT, are discussed in detail in Steinke and Wildsmith-Cromarty (2019). This paper, therefore, focuses on the data and findings relevant to the possible benefits and sufficiency of additional, in-service teacher training.

FINDINGS

After extensive analysis, the researchers organised the captured FORT data into a set of four graphs, which will be presented and analysed below (Steinke & Wildsmith-Cromarty, 2019). Each of the four graphs contains the data for Group 1 and Group 2. Group 1 represents the CAPS-only teachers of reading, while Group 2 represents the data from the additionally trained teachers of reading. Part A of the FORT contains the data for Reading Teaching and PCK, as well as Management. Part B includes classroom interaction, firstly, from learner to teacher, and, secondly, from teacher to learner. The first graph, Figure 1 below, illustrates the data from Part A of the FORT, Reading Teaching and PCK.

Figure 1:
Part A: Reading teaching and PCK
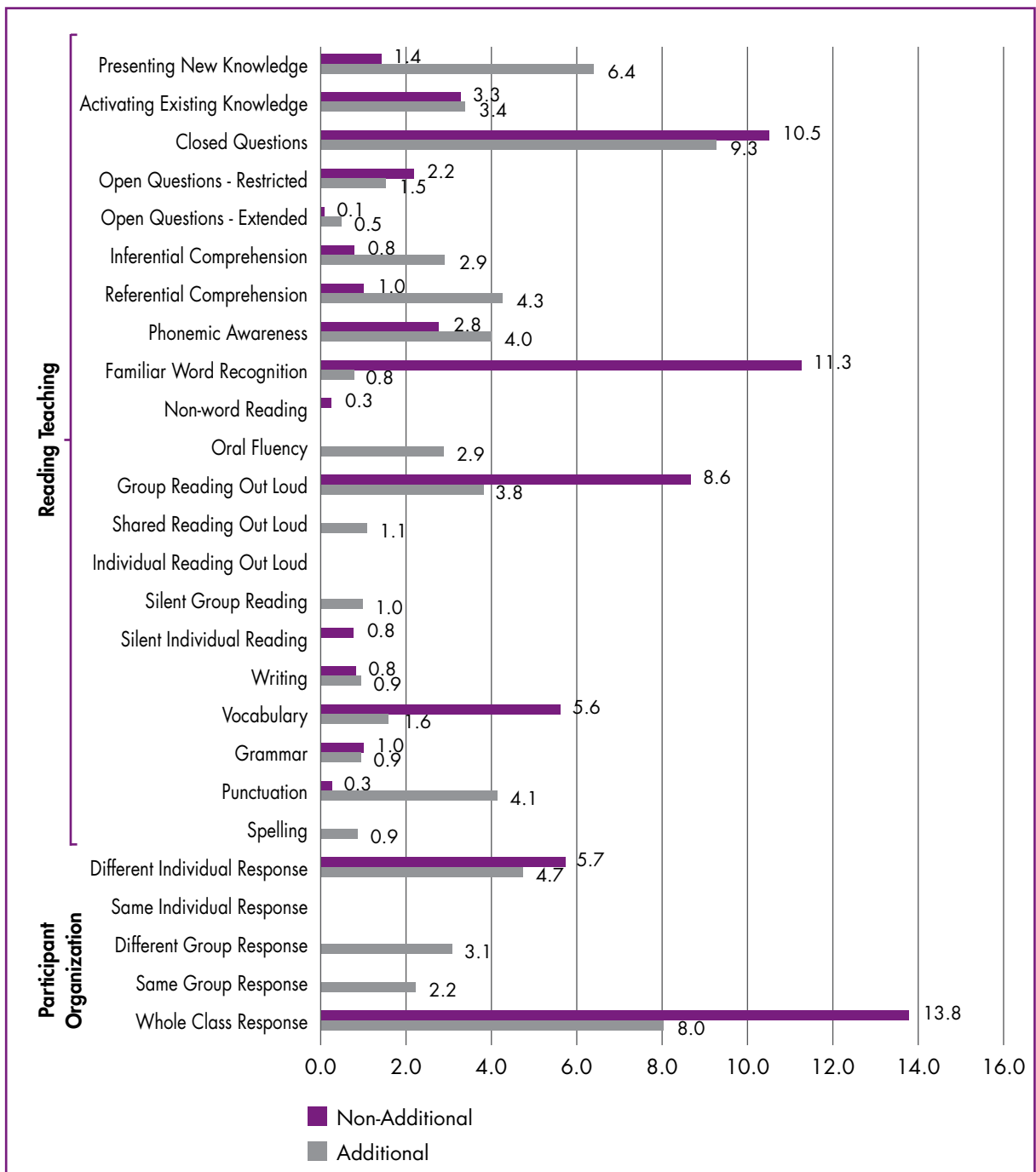
ANALYSIS OF FIGURE 1

The data for Figure 1 indicate that the teachers in Group 2 do appear to have advantages in their teaching practice. For example, it can be seen that they have higher averages of research-based best practice, such as

- Presenting new knowledge
- Extended open questions
- Integration between language and reading teaching
- A greater focus on both inferential and referential comprehension
- Decoding categories such as oral fluency and phonemics.

The benefits of including the above in teaching practice are that presenting new knowledge allows learners to integrate existing knowledge with new information and so construct meaning more easily (Xie, 2017). Furthermore, extended open questions tend to require more reflection and creativity on the part of the learners than restricted open questions, and the former can be linked to inferential questions (Rose & Martin, 2012). Integrating language components with the teaching of reading has been shown to increase reading skills (Rose, 2018).

As comprehension is the ultimate goal of reading, the low rate of focus on inferential and referential comprehension by Group 1 could be restrictive, as it indicates that these teachers may be continuing to rely on decoding alone (Klapwijk, 2015). Evidence for this is in the high rate of familiar-word recognition and vocabulary building obtained by Group 1, perhaps because of their observed tendency to use repetition and rote learning to teach new words. Decoding is undoubtedly an important part of the teaching of reading, but it remains insufficient by itself to teach reading (Pretorius & Klapwijk, 2016). From this data, it would appear that the additionally trained teachers in Group 2 are more effective in the teaching of reading.

However, in Steinke and Wildsmith-Cromarty (2019), if one examines the scores for both Groups 1 and 2 in the subcategory of Modality under Reading Teaching that contains different types of reading strategies, one can gain a more nuanced view. The data show the following:

- Both groups have the highest score for Group Reading Out Loud, with Group 1 scoring the highest by some margin
- In contrast, rates for Shared Reading Out Loud and Silent Group Reading are low, and only used by Group 2
- Rates for Silent Individual Reading are also low, and it was used by Group 1
- There was no use of Individual Reading Out Loud at all by either Group 1 or Group 2.

The lack of use of other beneficial reading strategies is concerning as their use could provide much-needed balance to the high rate of whole class reading (Harvey & Goudvis, 2013). To reiterate, the reading strategy most used by teachers was the Group Reading Out Loud, or whole class reading. If one analyses the activities that underlie this reading, one notes both teacher groups were generally doing the following:

- Using materials such as a big book, or a poem
- Reading a story and asking the class to read along as a group
- Allowing the class to read the story out loud as a group
- Writing words on the board and asking learners to repeatedly read them out loud
- Holding up a sentence and asking the learners to read it out loud.

While the benefits of reading out loud are recognised, there are limitations when it is relied upon at the expense of other reading strategies. For example, silent reading forms a vital component of reading development (Reutzel & Juth, 2017). In addition, it is difficult to monitor the individual learner's reading progress when they are using collective responses. According to Pretorius (2014), when learners who were using collective responses were individually assessed, they had serious reading deficits. Chorusing can result in teachers assuming that learning is taking place when it is not (Pretorius, 2014). The next section of data to be discussed is that of learner responses, which falls under the heading of Participant Organisation.

Participant Organisation indicates the mode and possible patterns of learner responses, and it is important in providing an illustration of who does the talking in the classroom and what form that talking may take. The importance of these data is that, when placed alongside Part B of the FORT, which shows interaction between teachers and learners (Steinke & Wildsmith-Cromarty, 2019), it can reveal who holds the power in the classroom, i.e., the level of learner agency (Hoadley, 2017).

The relevant categories under discussion are

- Same Individual Response
- Different Individual Response
- Same Group Response
- Different Group Response
- Whole Class Response.

These categories indicate which of the learners in the class are either selected or volunteer to provide responses to the teacher's cues or requests for information. Most of the time, a learner, or a group of learners, will raise their hands to indicate that they wish to respond, and the teacher will choose who is allowed to respond. This can be, for example, a different learner every time, or the teacher may perhaps choose the same learner to respond more than once. The data in Figure 1 indicate that, in all observed cases, teachers chose a different learner every time. There is no indication on the FORT that teachers chose an individual more than once during the lesson. The choice of different or individual responses from learners by the teacher is not necessarily problematic; however, a high rate of whole class responses would be concerning, as it tends towards the well-known staple of South African classrooms, chorusing (Hoadley, 2017; Moats, 2016).

In cases where the class was divided into groups for groupwork, teachers chose or asked certain groups to respond to cues. Scores for group responses are lower than that of Individual Learner Response, and it was only used by Group 2. In addition, Group 2 made use of both Same and Different Group Response. From observations and the related activities, the Group Response categories were used only when learners were performing a groupwork task at their table, and this may indicate a higher rate of groupwork on the part of Group 2. Groupwork is known to be an important aspect of teaching, in general, as well as of the teaching of reading, specifically (Tsui, 2001).

Finally, Whole Class Response refers to all the learners in the class responding at the same time. This would include incidents of chorusing or chanted answers. The data indicate that the highest rate of responses from learners were in the form of whole class responses, or chorusing, and that Group 1 had a significantly higher rate than Group 2.

It appears, then, that both groups received choral responses from the learners, regardless of whether they have had additional, in-service training, although Group 1 had a higher rate of this category than

Group 2. It must be noted here that all participating teachers expressed, in their semi-structured interviews, that they understood the value of two-way communication in the classroom. Despite this, the FORT data indicate that the majority of lessons were still teacher led. If one links Parts A and B of the FORT here, and if one places the overall low-response scores from learner to teacher (see Figure 3) alongside the tendency for whole class responses indicated in Figure 1, one gains a clearer picture of this (Steinke & Wildsmith-Cromarty, 2019).

It should be noted that the underlying theory and purpose of the classroom interaction by the two teacher groups may differ. For example, the R2L approach that the Group 2 teachers used is a form of reconceptualised teacher fronting, where the interaction cycle is designed to encourage weaker learners to participate and engage critical thinking (Rose & Martin, 2012). However, despite this, both Group 2 and Group 1 teachers tended to retain tight class control. Although a scaffolding cycle is inherently designed to relax the sequencing and pacing boundaries and, thereby, to allow weaker learners to be able to catch up should they have fallen behind (Rose, 2004), in these observed lessons, there was no differentiation of task, or of allowing faster learners to work on other activities or individually, which would have been beneficial (Logsdon, 2018). The next graph, Figure 2, shows the data for classroom management, defined here as the techniques teachers use to keep their classrooms organised, attentive and focused (Great Schools Partnership, 2017).

Figure 2:
Classroom management
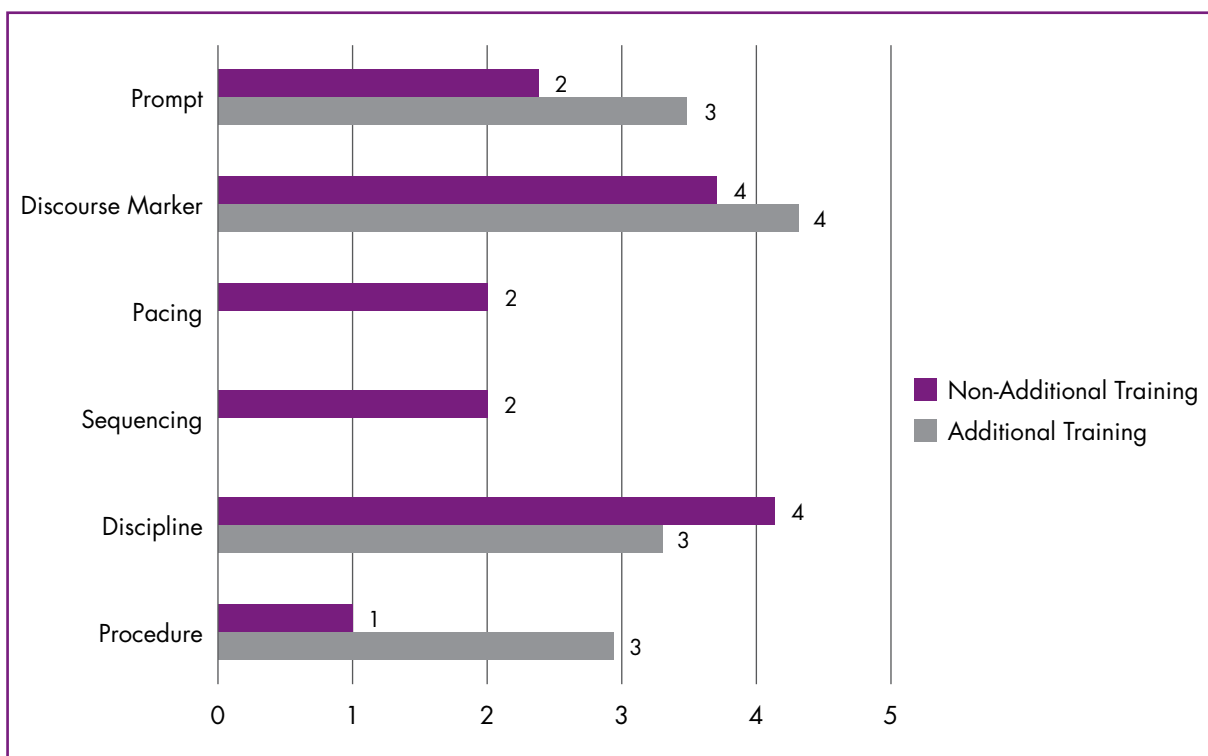
ANALYSIS OF FIGURE 2

Again, the analysis and categories of Management were discussed in detail in Steinke and Wildsmith-Cromarty (2019), so the focus here is on the categories where the two groups differ in their scores. The importance of classroom management for interaction between teachers and learners lies in its function of

providing an optimum learning environment, keeping disruptions to a minimum, and allowing a respectful space for both teacher and learner to interact (Duong et al., 2019).

The Management section of the FORT originated initially from the Communicative Orientation to Language Teaching (COLT), which utilised the categories of Discipline and Procedure (Spada & Fröhlich, 1995). When designing the FORT, additional categories were added to Management that could incorporate PCK and the teaching of reading. The categories of sequencing and pacing originated from Bernstein's (1990) Pedagogical Discourse, while Prompting and Discourse were added by the researchers as their use in the classroom has important implications for learning, such as the organisation of time, learning materials, and assisting the learners to achieve a particular goal (Government of Alberta: Education, 2017).

Figure 2 indicates that both Groups 1 and 2 shared the first three categories and have similar scores. The differences between the groups lie in

- Sequencing and Pacing, which only Group 1 used
- Procedure, which was used by both groups although Group 2 has a higher score.

'Sequencing' refers to the order in which new concepts or items are taught, and this is usually set either by the curriculum or the syllabus, while 'Pacing' refers to the rate or speed at which the concepts need to be covered to complete the syllabus (Richards & Schmidt, 2002). 'Procedure' refers to the teacher's understanding of what needs to occur for learning to take place. This can be as basic as handing out materials to complete the task, such as scissors and paper, or writing the day's date on the board (Cox, 2017).

The graph indicates that only one teacher in Group 1 made overt use of relaxing the sequencing and pacing. This meant that she perceived, at a certain point in the lesson, that the learner(s) had not understood something, so she returned to an earlier section of the lesson in order to give the learner(s) an opportunity to grasp the concept. However, scaffolding contains an intrinsic component of relaxing of the sequencing and pacing boundaries to allow weaker learners to catch up (Klapwijk, 2015; Martin & Rose, 2005). This component is not captured in the Management Category but in Activity, Part A of the FORT (Steinke & Wildsmith-Cromarty, 2019).

The category of Procedure, on the other hand, was used by both groups, although slightly more by Group 2. Classroom observations and the underlying activity indicated that the procedures consisted mostly of the teacher handing out items, such as worksheets, or learners retrieving items, such as rulers and pens, from their suitcases at the start of a task. Seeing as the scaffolded lessons tended to involve more items, such as chalkboards, scissors and paper sentence strips, such increased activity may indicate a greater level of engagement by the learners in the lesson (Pinter, 2017). A discussion of the teacher and learner interaction data contained in Part B of the FORT follows. Figure 3 contains the data for the interaction from learner to teacher.

Figure 3:
Learner-to-teacher interaction

Legend:
- ■ Non-Additional Training
- ■ Additional Training

Category	Non-Additional Training	Additional Training
Other	3.4	3.3
Responds to Difficulties	2.5	0.4
Emotional Response	0.3	1.5
Recast		
Affirmation	2.0	0.5
Response to Cue	22.3	11.1
Elaboration	0.1	1.7
Clarification		0.3
Explanation		1.0
Paraphrase		
Instruction		
Repetition	0.4	0.7
Correction	0.3	2.3
Evaluation Questions		0.3
Feedback	0.3	0.5
Requesting	0.3	1.1
Code-Switching		0.3

ANALYSIS OF FIGURE 3

Figure 3 indicates that the learners used every category except Recast, Paraphrase and Instruction. However, the categories that learners did use were used at a low rate, with the exception of Response to Cue. 'Response to Cue' refers to the learners' responses to the teachers' initiations or requests, and it stands out sharply in contrast to the rest of the graph as its scores are high for both groups, particularly for Group 1.

The data from learner-to-teacher interaction indicates a low level of learner engagement. This is confirmed when one considers the high rate of Whole Class Response scores from Participant Organisation in Figure 1, as well as the large volume of teacher-to-learner interaction that will be examined in Figure 4. While it is noted, from the data in Figure 3, that the learners had, overall, higher rates of responses to the teachers in Group 2 than those in Group 1, frequency of interaction alone is not sufficient as it does not necessarily indicate quality (Stuck, Kammermeyer & Roux, 2016). If, for example, there is a situation where the teacher controls the flow of interaction tightly, and does not make use of elaboration, or inferential, open questions, the learning process may be restricted (Ness, 2016).

The low level of engagement from the learners illustrates the tendency of both teacher groups to retain tight control over classroom discourse, with the majority of lessons being teacher led (Spaull & Hoadley, 2017). In such cases, even the scaffolded teaching and additional, in-service training of the Group 2 teachers may not be sufficient compensation to make up for the lack of learner agency and engagement (Casey, 2018). The final graph, Figure 4 below, provides data on the interaction from teacher to learner.

Figure 4:
Teacher-to-learner interaction
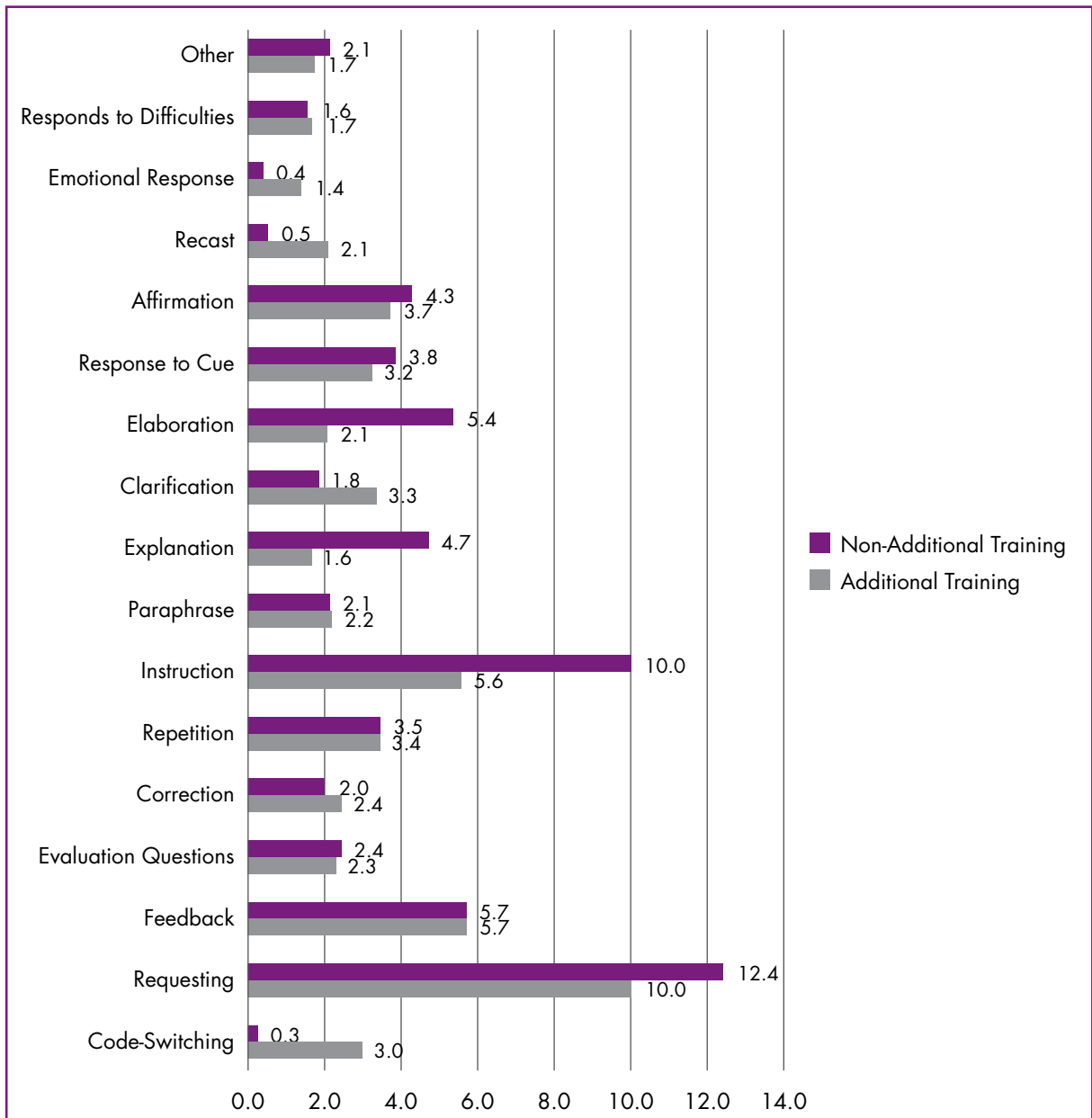
ANALYSIS OF FIGURE 4

The value of quality teacher talk in the classroom, which allows space for learners to reciprocate, has been recognised for many years (Ramey et al., 1979; Vygotsky, 1962). Figure 4 data indicate that both Groups 1 and 2 had a high rate of teacher-to-learner talk and that both covered the majority of the discourse

categories in their interactions. This analysis focuses on the highest scoring categories for teacher talk, which are Instruction, Feedback and Requesting.

Firstly, one sees both groups scored highly on Instruction, with Group 1 being the highest. As with many aspects of teacher talk, instruction can vary in its content and quality. It can be as simple as asking learners to take out their books, or it can be explicit instruction, which means that teachers will directly explain, model, and then scaffold learners in learning to read (Reutzel, 2011). Explicit instruction is extremely important for effective literacy development as children are left to pick up the rules of written language by themselves in its absence (Nazaryan, 2014).

Secondly, both groups scored equally for Feedback. The value of feedback is well documented (Baxter & Williams, 2010), but, again, there are different types. For example, the affirmative feedback provided in the IRF cycle mentioned earlier scaffolds learners in completing their task and also allows the teacher space to elaborate and extend learning (Rose, 2011).

Finally, the highest scoring category for both groups was Requesting. Group 1 scored considerably higher in its use of this than Group 2. The requests used by the two teacher groups, however, may differ in their form and underlying function. For example, Group 1 teachers tended to use mainly evaluation and assessment questions, while Group 2 teachers used more comprehension-based, referential and inferential questions, as per a scaffolding approach. The latter would support the data in Figure 1, which show the Group 2 focus on comprehension (Pretorius, Jackson, McKay, Murray & Spaull, 2016).

Thus, from the interaction from teacher-to-learner data, the additionally trained teachers in Group 2 again appear to be stronger. However, teacher talk cannot take the place of reciprocal classroom interaction and the lack thereof remains a restricting factor in learning (Nag, Chiat, Torgerson & Snowling, 2014). The picture gained overall from the FORT data is that both groups tend towards a traditional, restricted teaching style that limits learner agency.

FINDINGS AND CONCLUSION

The findings discussed in this article lead to the conclusion that in-service training for teachers of reading is beneficial but not sufficient to lead learners from decoding to comprehension. While the scaffolding used in the classrooms by teachers in Group 2 conveys advantages for learners, such as the focus on comprehension, the use of open-ended and inferential questions, and elaboration, it appears that all the teachers, in both Groups 1 and 2, appear to make use of traditional teaching styles. Teacher talk is vital in the learning process, but this talk needs to be reciprocal to create effective classroom interaction and extend learning (Rose, 2018). The FORT data show that the participating teachers who have received, and make use of, additional training in the teaching of reading appear to be more effective teachers of reading. In spite of this, the lack of learner participation and agency is restrictive and suggests that the additional, in-service training alone has not transformed the traditional teaching styles (Pretorius et al., 2016). It is suggested that the teachers in this study may, in addition to in-service training, also benefit from coaching.

It is noted that in-service training in READ contains a component that provides ongoing monitoring and support for teachers. However, the duration of this is not specified. The coaching recommended in this paper is not necessarily narrowly focused but is rather more closely aligned with what is suggested in the Early Grade Reading Study (EGRS) study. This form of coaching goes beyond additional, in-service training as it aims to support and provide on-site training for teachers within their classroom environments in the form of specialised coaches who visit and observe classrooms – that is, a one-on-one partnership that is tailored to the individual needs of the teacher (Reid, Cook, Viedge & Scheepers, 2020). In the case

of the EGRS, it also included small, cluster training sessions and on-site training (Taylor, Cilliers & Prinsloo, 2017). The advantages of coaching are that it allows the teacher to gain critical insight and reflectivity into her own teaching practices (Walsh, Matsumura, Zook-Howell, Correnti & Bickel, 2020). Coaching can be used to assist the growth and development of teachers of reading in areas of their PCK that may be resistant to change. It can also provide support and continuous exposure to new ideas and methods so that the teacher becomes willing to consider using different strategies.

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Social networking as teachers' innovative mode to enhance teaching: A case study of teachers in Bojanala District North-West Province[1]

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ABSTRACT

Social networking is increasingly becoming a popular platform that helps teachers connect with their colleagues, learners and other professionals globally. This tool enables communication and strengthens ties by sharing information over the internet. The purpose of this research was to explore secondary-school teachers' experiences of using social networking tools as an innovative mode to enhance teaching. This paper is founded on a qualitative research approach to understand teachers' experiences of using social networking tools in their teaching. Drawing from Vygotskian social constructivist theory, the account for the use of social networking tools was understood. Eight secondary-school teachers were purposefully sampled to share their practical experiences of using these tools. Data were generated using semi-structured interviews and document analysis. The thematic data-analysis process was suitable for this study. The data coding led to the formation of themes. The research questions used to guide this study were (i) How do secondary-school teachers use social networking tools to enhance teaching? and (ii) What support do secondary-school teachers receive for integrating social networking tools in teaching? The findings revealed secondary-school teachers' limited knowledge of using social networking tools to enhance teaching. It is recommended that teachers be provided with undisrupted internet connection. That would enable them to interact and share information using social networking tools. Teachers should be trained on the use of social networking tools, and this training should include the three components of Vygotsky's zone of proximal development: more knowledgeable other, social interaction and scaffolding.

Keywords: connectivism, experiences, innovative, internet, social networking tools, secondary-school teachers

INTRODUCTION

The emergence of social networking represents a paradigm shift in terms of how teachers engage with and use technology to collaborate and share knowledge in everyday life (Ractham & Firpo, 2011). The context of teaching is moving away from face-to-face interaction to virtual (online) interaction by using social networking tools in teaching. These tools have rapidly become popular as the vehicles used to share knowledge in a generated environment that fosters collaboration and cooperation (Li et al., 2012). Social

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networking tools allow communication between users and strengthen the ties between them in the space of the internet (Zaidieh, 2012). It is becoming increasingly important for teachers to explore the existing opportunities provided by these new technologies (Seaman, 2013). Learners are unique individuals in a teaching and learning environment. Therefore, teachers as agents of educational transformation should accommodate their uniqueness by transforming content delivery using various technological devices. In the context of this study, social networking is important for teachers and learners as its use can encourage collaboration and active learning (Dany, 2017).

Learners in the 21st century can multitask in a teaching and learning environment that is not confined to the four walls of a classroom but in an environment that enables them to see representations of real-life situations. According to Alabdulkareem (2018), social media plays a major role in widening the limits of teaching from class walls to being within a community of practice (COP).

While the use of social networking tools has made learning easier and faster (Dany, 2017), teachers need to understand the magnitude of this new style of learning. However, Alabdulkareem (2018) claims that teachers are more likely to embrace social networking if their use connects with pedagogical strategies that improve the delivery of subject content. It is teachers' responsibility to facilitate the learning environment, and this could be done by employing social networking tools, but, at the same time, they should provide learners with the necessary skills in the context of social learning (Gorghiu et al., 2018).

Ideally, the power of using social networking tools is reflected in interactions: the more learners communicate, the more they become innovative and accountable for their learning, and, most importantly, take ownership of their learning. As learners navigate social networking tools, they develop 21st-century skills, which, according to Shelly, Gunter and Gunter (2015), include critical thinking, problem-solving, communication, collaboration, creativity and innovation. These skills enable them to face challenges in rich, technological learning environments. Hence, teachers' knowledge of social networking would assist to develop learners' 21st-century skills. This study provides an overview of how secondary-school teachers use social networking tools as an innovative mode to enhance the delivery of subject content.

Following the above introduction, this article is organised as follows: firstly, the problem statement explains the motive for writing this article; secondly is the literature review, which embraces other authors' opinions about the use of social networking tools as innovative tools to enhance the delivery of lessons. The research methodology is discussed in section three. Fourthly, Vygotsky's social constructivist theory is discussed, followed by research findings in section five. This article ends with recommendations section and a conclusion. The term 'social networking tools' in this study is used interchangeably with 'social media' to describe communication undertaken via the internet.

PROBLEM STATEMENT

Teachers in the 21st century have varying perceptions about the use of technology in teaching and learning. In my experience as a former Computer Application Technology teacher, I noted that teachers in the district where this study was conducted used laptops and desktop computers to enhance teaching and learning. The computers were not connected to the internet, and so the use of social networking tools was sacrificed. Teachers showcased computer literacy, which, according to Shelly et al. (2012), entails knowledge of computers and how to use them in teaching and learning. Conversely, they lacked integration literacy, which implies the ability to use modern technology to help reinforce core strategies of the curriculum (Gunter & Gunter, 2015). I noticed teachers did not engage with social networking tools in teaching and learning but rather used computers that were not connected to the internet in their everyday classroom activities. For example, most of the teachers created slides and used Microsoft PowerPoint to deliver their lessons. I cannot deny that using slides eases the flow of the lesson presentation, but its

drawback is that learners simply absorb information passively and are not actively involved in learning. Unfortunately, they may not benefit from this teacher-centred approach as it is limited to the information transmission mode of delivering content. This study explored secondary-school teachers' experiences of using social networking tools as an innovative mode to enhance teaching. Abe and Jordan (2014) assert that social media provide educators with the exciting new opportunity to connect with students in a manner that continues to provoke thought and discussion outside of the classroom setting.

In addition, the South African Education e-Education policy (2004) mandated teachers to integrate technology in teaching and learning and assist learners in becoming technologically informed by 2013. This is a cause for concern in South African schools. Integration of social networking tools in teaching and learning is mandatory as with all other digital technologies. The use of social networking tools would undoubtedly be an added, innovative teaching mode that assists teachers in augmenting their delivery of subject content. This article draws on a major study that investigated secondary-school teachers' information and communication technology (ICT) competencies in teaching and learning.

LITERATURE REVIEW

The use of social networking tools in teaching and learning

Learners' reliance on social networking tools is undeniable (Sacks & Graves, 2012). They are constantly active on social media, transmitting information to peers and families and other connections (Fuglei, 2014). Teachers should take cognisance of learners' reliance on these tools and develop lessons that suit learners' learning styles. Veletsianos and Navarrete (2012) found that learners enjoyed and appreciated the social learning experience provided by social networking tools: supporting one another, and enhancing their own experiences and those of others. For Burns (2017), using social media is an easy way for teachers to integrate technology in teaching and learning. Teachers can create a collaborative learning environment and post learning activities that would encourage learners to share knowledge and skills. Burns (2017) demonstrated that the integration of social media in teaching and learning is a great way to interact with learners and parents wherever they may be. Moreover, social media can provide learners with a better understanding of the interconnected nature of the 21st-century world. Fuglei (2014) shared the same sentiments. She indicated that teachers could use social networking to help their learners connect and collaborate at a deeper level. These networks provide shy learners a comfortable space to interact with their peers (Fuglei, 2014). If teachers do not use social networking tools to deliver lessons, who will do it? It is worth trying because 21st-century learners are self-taught when it comes to operating technological devices. If used appropriately by teachers, social networking tools can pave new ways of learning and learners' career paths.

Teachers can create and post information about study materials, examinations, and other scholastic information to learners. They can share a wealth of study information that they would not have had access to in the 20th century. It is also ideal if a teacher initiates collaboration by posting a threaded discussion in a platform; this would stimulate an interactive learning environment.

Table 1:
Illustration of some examples of social networking tools highlighted by different authors

Social networking tool	Usage
Blogs	Teachers can use blogs to enable the collaboration and sharing of information (Foroughi, 2015). Learner-learner interaction works well in blogging. Learners get the opportunity to experiment with connecting their thoughts and ideas across this platform (Knight & Rochon, 2012).

Social networking tool	Usage
LinkedIn	Teachers can be encouraged to participate on LinkedIn to pursue their professional development by sharing in-depth information, making comments and guiding each other. They can engage with other teachers globally (Liu, 2010).
Podcasts	This tool offers the opportunity to easily broadcast using audio content, which learners can listen to anytime, wherever they are (Gray, 2017). A teacher can use this platform to clarify some key concepts included in lesson delivery. It can be downloaded to mobile devices for ready accessibility and learning can take place anytime 24/7.
YouTube	A teacher can explain the key concepts of a subject by using this tool (Oxford University Press, 2011). YouTube videos can also be utilised when learners conduct a project and have been asked to present their findings through it.
Facebook	A teacher can ask the learners to post photos to augment their findings on a particular topic (Edudemic Staff, 2015). Then learners can amend or make some inputs to the topic. This device enables collaborative learning and the sharing of scholastic content (Bouhnik & Deshen, 2014). The users also experience a fluent conversation (Bouhnik & Deshen, 2014).
Twitter	Hashtag-driven chats on Twitter encourage learners' interactions and a teacher can ask them to collaborate on matters pertaining to real-time data collection, class field trips and other related scholastics tasks (Fuglei, 2018). Announcements and reminders can be done through Twitter. Learners can also be tasked with posting their favourite study pictures or comments on this platform. It is doable and enables collaborative learning and the sharing of scholastic content (Bouhnik & Deshen, 2014).
Instagram	A teacher can ask learners to do artwork through Instagram (Edudemic Staff, 2015) and display evidence thereof by posting their work. This platform enables learners to showcase their creativity.
WhatsApp	Learners can access learning materials. It enables collaborative learning and the sharing of scholastic content (Bouhnik & Deshen, 2014). In addition to chatting, this platform has voice calls, voice recording and status updates that can be used to augment learning. A WhatsApp group also allows fluent conversation (Bouhnik & Deshen, 2014).
Email	A teacher can instruct learners to use it to contact a subject specialist to ask for clarity on a particular concept. In addition, participants are enabled to collaborate and share scholastic content (Bouhnik & Deshen, 2014). This platform can be used to facilitate interaction and information sharing among teachers and learners.

Table 1 illustrates how learners and teachers can engage with each other by sharing information outside classrooms and how learners are provided with the opportunities to learn on their own. They are excellent platforms for sharing information and resources. The common element in all these tools is that they are designed for collaboration and discussion. Learners, in most instances, use social media tools for their personal lives, but it is the responsibility of a teacher to shift their mindset and let them know that these same tools can be used to augment their learning. Hence, teachers should recognise that these devices are suitable for teaching and learning. Alabdulkareem (2018) noted that both teachers and students use social media to interact with others in their personal capacity and not for educational purposes.

Interaction plays a major role in the use of social media tools. In support of interaction, the use of social media tools assists teachers in becoming competent connectors of information. The more teachers know about the effective uses of social media tools for teaching, the better and more fruitfully teaching takes

place. However, they need to use social media tools wisely and assess their impact carefully. Otherwise, they may find learners failing to make connections between the intended learning outcomes and their social media activities (Seaman, 2013). Teachers who wish to embrace social media tools to enhance their teaching are advised to follow the steps listed below (Bell, 2009: 7):

- Follow the blogs of those who innovate with educational technologies
- Experiment (within your comfort zones) with web services and tools that might enrich teaching and learning in your practice
- Use, publish and share resources through blogs, wikis, and photo- and video-sharing sites
- Encourage students to use the web for scholarly resources – being critical and selective, and attributing sources
- Assign student activities that enable the effective use of media to report processes and, where appropriate, outcomes.

The bulleted information above illustrates that the use of social networking tools has made teaching and learning more open in the 21st century than in the 20th century. Teachers should tap into the distribution of content knowledge and skill, which is made possible by social networking tools. The sharing of thoughts now strengthens ties in teaching, without boundaries. A teacher's experience in a COP would assist in motivating learners to connect and learn with peers worldwide.

RESEARCH METHODOLOGY

An interpretive research paradigm was used in this study to explore teachers' experience in the use of social networking tools as an innovative mode to enhance teaching. A qualitative research method was used as knowledge was acquired from a natural setting (Bertram & Christiansen, 2020). Creswell (2007) maintains that the problem in a qualitative research process is studied in its natural settings. In the context of this study, the participants shared their experiences of using social networking platforms in the natural environment of four secondary schools. I used a multiple case study research design in order to develop a more extensive description of the issue being explored. These multiple case study locations were two secondary schools, which had computer laboratories fully furnished with computers, and another two schools, which were under-resourced in terms of ICT infrastructure. One school was situated in an urban area and the three others were in rural areas. Geographical proximity was the key criterion which led to the selection of the secondary schools.

Sample selection

The data sources were eight secondary-school teachers who were purposively sampled. The selection was based on their knowledge of using technology in teaching. Convenient sampling was also applied as the principals of the selected secondary schools assisted by requesting teachers who were available and who would share the most information about the phenomenon under scrutiny to take part in the study. I explained to them the purpose of the research and their roles in the study. Upon agreement, they signed informed consent forms. All eight teachers participated voluntarily. For Creswell (2007), sampling works well when participants are willing to share their experiences about the phenomenon being studied. The participants ranged between 30 and 40 years of age. They were six males and two females. Their ICT qualifications varied widely. One of them had no ICT-related qualification; the use of ICT in teaching and learning was driven by passion. Two received Computer Application as a course; one acquired ICT skills at a university; one had an Honour's degree in Multimedia Integration Program (MIP); one obtained a Bachelor of Technology in Information Technology (BTech-IT); one had a Bachelor of Science in Information Technology (BSc IT); and one had a certificate, an Advanced Diploma in Information Technology (AD

IT). As the focus was on the exploration of the use of social networking platforms, there was no specific reason intended on the subject offered by the participants. *The purpose of this study was to explore their experiences of using social networking tools as an innovative mode to enhance teaching*. One participant offered Computer Application Technology, three of them taught Mathematics, one Accounting, two Physical Sciences, and one Life Orientation.

Data collection

Data were generated using semi-structured interviews and document analysis. Semi-structured interviews were conducted face to face with participants at their respective schools. Individual participants were interviewed for approximately 45 minutes, but the duration depended on the deliberation. The first section of the interview guide elicited demographic information, which was limited to gender and age, from the participants. The last section was guidance on asking open-ended questions. The participants responded to nine open-ended, semi-structured interview questions. Prompting was applied which gave room to draw in-depth data about *how secondary-school teachers use social networking tools to enhance teaching*. The opinions unearthed were recorded with the permission of the participants.

Document analysis was used to address the question: *What support do secondary-school teachers receive for integrating social networking tools in teaching*? The following documents were requested from four principals: staff-meeting minutes, a policy on integrating technology in schools and the participants' lesson plans. The participants were requested to submit their technology-integrated lesson plans. The participants' lesson plans were requested to find out if they included the use of social networking tools in their lesson plans and how they use these tools. The teaching and learning activities would assist in this regard. The purpose of requesting the staff-meeting minutes was to find out whether the use of social networking tools in a school was discussed in their staff meetings. It was also important to find out the availability of the schools' ICT policies, which could have been used as a guide to implementing social networking tools in teaching. The aforementioned documents played an essential role in the study as they contextualised the practical experience of social networking tool usage in schools.

Data Analysis

Data analysis was done using Creswell's (2007) process of data analysis. The semi-structured interview allowed the researcher to gather data and to manually transcribe document analysis data. Participants' responses were organised and sorted in tabulated form to facilitate analysis. 'In this process the researcher looks for categories, themes and patterns in the data' (Bertram & Christiansen 2020: 133). This process was followed by code formation through noting the relationships between the categories. The themes emerged. Then the reporting and the interpretation of information were displayed, which consisted of verbatim quotes from interviews.

Ethical considerations

McMillan and Schumacher's (2010) guidelines on ethics were adopted. These included voluntary participation, informed consent, anonymity and confidentiality. From the outset, the participants were informed that participation in the study was voluntary and that they could be exempted from participation if they so wished. They were informed of the purpose of the study and the roles they were being asked to fulfil. Upon agreement, each participant was requested to complete an informed consent form. Anonymity was maintained by using letters of the alphabet instead of their names; they were designated as Participants A to H. In terms of confidentiality, the participants' names were kept secret and were not published.

Validity

Babbie and Mouton's (2012) credibility measure to ensure trustworthiness was used. Member checks were used to address credibility. This was done by requesting that the participants verify whether information

63

gathered tallied with what transpired in the fieldwork. Triangulation of sources was employed using different data sources. The same questions were used to interview participants at their respective schools at different times.

heading

SOCIAL CONSTRUCTIVIST THEORY

Vygotsky's social constructivist theory was applied in this study as it stresses the fundamental role of social interaction in the teaching and learning environment. This theory is called 'social constructivist' because learners benefit from social interaction in the learning process with the assistance of other people (McLeod, 2019). This study aligns with Vygotsky's social constructivist theory to investigate teachers' experiences as they interact with learners in the platforms using social networking tools.

Vygotsky's (1896-1934) theory was based on the fundamental aspect of the zone of proximal development (ZPD). The ZPD, according to McLeod (2019), is the difference between what a learner can do without help and what the learner can achieve with guidance and encouragement from a more skilled person. Vygotsky believed that, when a learner is in the ZPD for a particular task, providing the appropriate assistance will give that learner enough of a boost to perform the task (McLeod, 2019).

Three important components of ZPD are noted: (i) the more knowledgeable other (MKO), (ii) social interaction and (iii) scaffolding (McLeod, 2019). According to (McLeod, 2019), the 'MKO' refers to the assistance provided by a person who is more knowledge about and more skilled in a task than a learner. The MKO, in the context of this study, was the expectation of the participants to assist learners with content knowledge and to initiate discussions as experts in the subject they offered using social networking tools.

'Social interaction' refers to technological knowledge displayed by someone for learners to practice the same skill (McLeod, 2019). Within this study, the participants were expected to get the collaboration off the ground by using verbal cues and prompts to assist learners (Gunter & Gunter, 2015), when the need arose. Furthermore, they were expected to be technologically savvy in terms of navigating a platform and facilitating a collaborative learning environment using social networking platforms.

'Scaffolding', according to (McLeod, 2019), is referred to as supportive activities provided by a teacher to learners as they are led through the ZPD. Scaffolding is proposed in this study as teachers were expected to provide learners with subject activities that would enable and support learners to achieve the learning outcomes.

THE FINDINGS

In an effort to determine whether secondary-school teachers used social networking tools as an innovative mode to enhance teaching, I presented the empirical findings with the participants' verbatim extracts supported by the literature. Teachers' experiences were explored using semi-structured interviews, an open-ended question guide and a document analysis checklist to gather data. The discussion section was based on the themes that emerged from the findings, and these included (i) unfamiliarity with social networking tools, (ii) sharing of information and (iii) internet inaccessibility.

Semi-structured interviews

Unfamiliarity with social networking tools

Reporting on the research follows below and is based on the following questions: (i) How do secondary-school teachers use social networking tools as an innovative mode to enhance teaching? and (ii) What support do secondary-school teachers receive to integrate social networking tools in teaching? To make it more focused, the participants were provided with the following examples of social networking tools:

The Independent Journal of Teaching and Learning - Volume 16 (2) / 2021
Formerly *The Journal of Independent Teaching and Learning*

Twitter, Facebook, Mxit, WhatsApp, chat rooms, wikis, mailing lists, email and the Thutong portal. They were expected to share their knowledge of selecting the appropriate tools for their lessons and how to use those tools.

The findings revealed that most of the participants were unfamiliar with the use of the social networking tools. However, some of them mentioned the use of email. Email was used as a communication tool between secondary schools and the circuit managers' offices. The following excerpt demonstrates the use of emails:

> Yes, we receive e-mails daily from the Area Office or send information to them, in terms of teaching and learning, no. (Participant A)

From the empirical findings above, it is evident that the majority of the participants were unfamiliar with the use of social networking tools but could use email to communicate with district officials on issues pertaining to their work. The use of email could have been an innovative way used by teachers to reach learners and make learning stimulating in the teaching process. This revelation is confirmed by social interaction led in ZPD of Vygotsky' social constructivist theory. The theory emphasises that important learning occurs through social interaction with a skilful tutor (McLeod, 2019). The participants could have used emails to interact with learners or send them information as attachments and further deliberate on the attachment as learning enrichment for an activity. Bouhnik and Deshen (2014) declare that email has become an educational tool that enables collaborative learning to take place beyond confined time.

Sharing of information

The findings revealed that three out of eight participants used the Thutong portal as the available platform for sharing information. The following comments evidence the use of this platform:

> We use it frequently like searching for question papers. (Participant B)

> Download questions from item bank to get support material. (Participant D)

The Thutong portal platform was created to share scholastic information and skills among South African teachers (Isaac, 2007). However, according to the findings above, only three participants accessed this platform. They had found it very helpful as they were able to download scholastic information or sources for their subjects. They could also share their teaching experience with colleagues. Accessing the Thutong portal to download online pedagogic sources appears to be advantageous as the participants could provide learners with relevant information about various activities included in their subjects. Be that as it may, scaffolding evidences the support provided by teachers to enable learners to achieve tasks that may be beyond their current capability.

Internet inaccessibility

Moreover, the participants unanimously indicated internet shortage as the most challenging barrier for them in accessing social networking tools. They further indicated that they had to buy data to use email and search engines. One participant from School A indicated that they received data-bundle assistance from a neighbouring mine. The following excerpt evidences assistance from the mine:

> The mine also assists us with the connectivity. They have given us a router and we bought a SIM card but the data bundles, we had to buy those ourselves. (Participant B)

According to the findings above, internet inaccessibility frustrated the participants as, without the internet, sharing of information through social networking tools would not be possible. The use of social networking

tools is impossible without internet connectivity (Pichette, 2011); hence, schools must be committed to keeping internet services up and running for teachers to engage learners in social networking tools.

Hardman (2018), in addition, affirmed that the use of social networking tools requires the internet to create online accounts. In essence, this explains the participants' technological knowledge aligned to MKO: a teacher should possess relevant knowledge in order to guide learners on how to create a platform account and let them navigate a platform to become acquainted with it. The use of the internet makes it possible for teachers and learners to engage with various social networking tools that sustain the sharing of knowledge and technological skills. Limited internet connectivity, in the context of this study, prevented the participants from exploring social networking tools and interacting with learners as they might have modelled their expertise and led learners effectively through the ZPD. Vygotsky's social interaction confirms this as there is no interaction without the internet. The literature also evidences this concern as Zaidieh (2012) posits that internet connectivity plays an essential role in a space that allows interaction between users.

Document analysis

Staff meetings

With regards to document analysis, the following documents were read and studied: staff-meeting minutes, ICT policy and the participants' technology-integrated lesson plans. When reading and studying the documents submitted by the participants, the findings indicated that, in the staff meetings, the discussion centred around the use of ICTs in general. The site managers encouraged staff members to use technology to enhance teaching and learning and to attend ICT workshops. The findings showed support and a positive attitude displayed by the site managers at schools. However, the use of social networking tools remains a cause for concern as teachers still do not deliver content using them.

ICT policy

The findings have shown that all the schools have neither the department's ICT policy nor their schools' ICT policy. It is ideal for a school to have a policy that can be used to bring about the desired goal or objective concerning the use of technology in a school. The availability of an ICT policy at the selected schools could have provided teachers with information on how to plan and implement ICT usage in their classroom activities. Similarly, the department's ICT policy might have assisted the participants in mapping their way to using social networking tools. According to the South African e-Education policy (Department of Education, 2004), learners in South Africa were supposed to have been knowledgeable about technology by 2013. Surprisingly, the selected schools did not receive this support in terms of explaining and outlining the important issues pertaining to the use of platforms.

Lesson plans

The findings from the lesson plans indicated a weakness in terms of planning or preparing technology-integrated lessons. Most participants used readymade lesson plans provided by their subject advisors. Lesson planning is a highly professional skill that a teacher should acquire to enable facilitation of technology-integrated content. The use of a readymade lesson plan may compromise participants' expertise of selecting the relevant social networking tool to enhance teaching and learning. When planning to deliver technology-integrated lessons, teachers should have technological knowledge that would enable them to select the appropriate ICT to enhance their teaching. Koehler, Mishra and Yahya (2007) emphasised the importance of possessing technological knowledge: in-depth knowledge of selecting the appropriate ICT device to augment teaching and the ability to navigate such a device are important. In the context of this study, the participants were expected to have identified particular social networking tools that could have been used to enhance lesson delivery. In light of this view, teachers are expected to adopt new teaching strategies in the 21st century; otherwise, they will not be able to facilitate online learning using social networking tools (Seaman, 2013).

Figure 1:
A lesson plan used by one of the participants

In Figure 1, the lesson plan template consists of two pages (used by Participant C). The second page of this lesson plan included various technological tools from which a participant was expected to choose. A tick was used to select what was appropriate for a lesson. However, the participant did not select any tool for the lesson. Despite the use of social networking tools, no learner support material was selected. For Gorghiu et al. (2018), the use of social networking tools may enhance learners' collaboration involved in various teaching and learning activities.

RECOMMENDATIONS

The findings reveal that teachers should take cognisance of the fact that the 21st-century learners' reliance on technology is undeniable (Sack & Graves, 2012). Teachers do not have a choice and are expected to assist learners in adopting new forms of delivering content (Dany, 2017). In light of this, I recommend that teachers be provided with continuous internet connection which would enable them to interact and share information using social networking tools. Thus, their pedagogical skills would be improved as they would interact and guide learners on platforms' functionalities, providing them with online sources and information to attain the learning outcomes.

In the findings, the site managers showed support by encouraging teachers to attend ICT workshops. With this revelation, I recommend ongoing training on the use of social networking tools for teachers. Training should include the three components of Vygotsky's ZPD. Acquiring knowledge of the three components will help teachers to model the MKO as content experts and scaffolding that lead to the attainment of task outcomes. The lack of ICT policies impacted negatively on the use of social networking tools as teachers had no guides to which they could refer.

CONCLUSION

The purpose of this study was to explore secondary-school teachers' experiences of using social networking tools as an innovative mode to enhance teaching. Examples of social networking tools have been identified and an illustration of their uses in teaching and learning has been made. The discussion has shown how teachers can use social networking tools as an innovative mode of delivering lessons. Vygotsky's social constructivist theoretical framework enabled clarification of a teacher's role in a teaching and learning space in terms of MKO, social interaction and scaffolding.

The findings revealed limited use of social networking tools in enhancing teaching. Nonetheless, the participants demonstrated a keenness to use technology to enhance teaching. But the use of social networking tools as an innovative mode to enhance teaching was compromised. The fact that schools struggled with data (internet connectivity) attested to the limitation of teachers' usage of social networking tools. The findings also revealed that internet inaccessibility was a barrier to the adoption of social networking tools. Furthermore, the document analysis revealed that there was no ICT policy that can guide teachers on how to use technology to enhance teaching available. The discussions of the use of technology in staff meetings showed an interest in engaging technology by the staff members; however, ICT potentiality needs to be exploited.

The findings have also shown flaws in the inclusion of social networking tools in lesson plans. The inclusion of social networking tools plays an essential role, as lesson plans indicate how a teacher could make content delivery more interesting and fruitful. Regardless of how challenging integrating social media tools in teaching and learning might be, teachers will never embrace them unless they know how to use them, as this study emphasises.

Within the South African context, teachers are encouraged to use digital resources in innovative ways to enhance teaching. Teachers who choose not to adopt social networking tools in teaching would lag

behind and not be on par with the developments brought by the 4th Industrial Revolution's technologies. The learners' use of social networking tools mirrors that of personal purpose. It is the duty of a teacher to assist them in changing the focus. The findings of this study necessitate research on how social media can develop teachers' pedagogical practices.

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71

Blended learning as an approach to foster self-directed learning in teacher professional development programmes[1]

INTRODUCTION

New technological developments offer immediate access to more people and information, while smartphones, laptops and tablets allow their users to purposefully 'blend' digital and physical experiences, as explicated by Stein and Graham (2014). Similarly, blended learning is gaining popularity in the education sector (Graham, Woodfield & Harrison, 2013; Porter et al., 2014). However, despite the increasing prominence of blended learning as an approach in education, it is essential to note that this should not be regarded as the only possible and effective solution in all contexts. This aspect is especially true in contexts where resources are limited.

Although a number of international publications on teacher training and professional development (PD) exists (Ganz & Reinmann, 2007; Matzat, 2013; Osburg & Todorova, 2009) and extensive research has been conducted on blended learning in the South African higher education sector (Bosch, Mentz & Reitsma, 2019; Petersen & Mentz, 2016), little research has been done on the possibilities they offer for South African teacher PD programmes (Boitshwarelo, 2009). The lack of research on blended learning in teacher PD is especially apparent in the field of German SAL. In 2013, Mbohwa-Pagels and Rode (2014) conducted and published on a nationwide survey among teachers of German in South Africa, which mentions certain challenges teachers of German SAL in South Africa face (Mbohwa-Pagels & Rode, 2014). Annas (2016a) and Laurien (2006) examined the role of German at South African universities, while Von Maltzan (2009) examined South African language politics and the role German plays as a foreign language in South Africa. However, the above-mentioned studies remained descriptive and had a strong focus on the higher education sector. More recently, Wittmann and Olivier (2019) published a theoretical study on further PD opportunities to foster the self-directed learning (SDL) of practising German SAL teachers in South Africa. This article utilises the proposition made by Wittmann and Olivier (2019), but also proposes exploring the possibilities blended learning offers teacher PD while focusing on SDL for practising teachers of German SAL. The main research question that drives this research is: How can blended learning be utilised to foster SDL in teachers of German SAL for professional development?

In order to answer this research question, this conceptual article involved an in-depth literature review regarding the relevant aspects of blended learning and SDL within the context of teacher PD.

The then Department of Education (DoE) in South Africa, currently named Department of Basic Education (DBE), outlined its expectations of teachers regarding e-learning in its Draft White Paper on e-Education Transforming Learning and Teaching through information and communication technologies (ICT) (DoE, 2004) and in its Guidelines for Teacher Training and Professional Development in ICT (2007). While one of the main principles of the White Paper on e-Education Transforming Learning and Teaching through ICT is the achievement of national education goals by 'providing modern technologies to schools in order to enhance the quality of learning and teaching' (DoE, 2004: 6), the Guidelines for Teacher Training and Professional Development in ICT and Training (DoE, 2007: 3) calls for teacher development programmes that provide teachers with 'the necessary knowledge, skills and understanding to successfully integrate ICT into everyday educational practices in a meaningful way'. Teachers, in turn, are required to enhance the problem-solving and critical-thinking skills of their learners by advancing their learners' ability to

- apply ICT skills to access, analyse, evaluate, integrate, present and communicate information

- create knowledge and new information by adapting, applying, designing, inventing and authoring

- function effectively in a knowledge society by using appropriate ICT and mastering communication and collaboration skills. (DoE, 2007: 3)

Policies clearly outline the requirements for teacher PD programmes to develop ICT skills in teachers and for teachers so that they can transfer such skills to their students; however, an additional need for a form of education that provides the skills and predispositions for continual learning was identified (Harber & Mncube, 2011). Universities and teacher PD providers have, therefore, started experimenting with courses that utilise a combination of online and face-to-face instruction, better known as blended learning. These courses are an attempt to not only satisfy learners' learning needs regarding what the current syllabus requires learners to know (Dziuban, Moskal & Hartman, 2005), but also to equip teachers to utilise content knowledge, which is the actual content area of the subjects that are being taught (Doering et al., 2009), as well as pedagogical knowledge, which is the knowledge of how to teach content (Doering et al., 2009), to effectively reach their learners.

As knowledge in today's world changes and accumulates rapidly (Guglielmino, 2013), it is important to cultivate self-directedness in teachers, which they can, in turn, foster in their students to enable them to be lifelong learners. When fostering the characteristics of SDL in teachers, it is still important to not only focus on the external learning management process but also consider internal monitoring and motivational issues. As such, we subscribe to Garrison's (1997: 18) definition of SDL as being

> an approach where learners are motivated to assume personal responsibility and collaborative control of the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful and worthwhile learning outcomes.

Garrison (1992) rightly wonders how the learner (in this case, the teacher as participant of the PD activity) can assume responsibility for their own learning while simultaneously accepting external support and direction (i.e., control). Garrison (1992) concludes that, if SDL were assumed to be freedom from influence, it would be a meaningless concept. Instead, SDL should be centred around continuous dialogue between the learner (in this case, the teacher) and the teacher (in this case, the facilitator):

> The balance of control will properly shift depending upon the context and the proficiency of the learner. However, through sharing control there is an increased probability of students reaching desired and worthwhile learning goals which, in turn, would result in improved intrinsic motivation, ability to learn, and self-directedness. (Garrison, 1992: 144)

To propose a model for a teacher PD programme that does not only assist teachers in fostering the above-mentioned characteristics of self-directed learners in their pupils but also equips teachers to adhere to the e-learning requirements outlined in government policy (DoE, 2004), both the existing theories on blended learning and SDL must be carefully considered. In this article, we propose a suitable model for such a teacher development programme by means of an in-depth literature analysis. We strive not only to provide a theoretical overview of definitions and theories around blended learning but also to consider various models of blended learning in order to propose the synthesis of existing selected models into one model – adapted and suitable to foster the characteristics of SDL in teachers. Furthermore, we highlight the need for a stronger focus on blended learning in South African teacher development and the opportunities blended learning can offer while fostering SDL.

UNDERSTANDING BLENDED LEARNING

Little research has been conducted on blended learning in teacher PD (Boitshwarelo, 2009). Nonetheless, in the last decades, universities and other educational institutions in general have regarded blended learning as promising (Garrison & Vaughan, 2013; George-Walker & Keeffe, 2010; Osguthorpe & Graham, 2003) and are increasingly moving towards instructional models of blended learning (Dziuban et al., 2005). This shift can largely be ascribed to the fact that universities and teacher-training institutions have witnessed rapid technological and socioeconomic changes, leading them to rethink their educational practices (Garrison & Kanuka, 2004). Blended learning does not only offer increased flexibility to students but can also potentially offer students a wider variety of quality learning experiences as compared to pure face-to-face instruction (George-Walker & Keeffe, 2010) Blended learning also engages students in active collaborative learning (Garrison & Vaughan, 2013). Furthermore, blended learning offers significant advantages over pure online learning, as blended learning still allows for face-to-face engagement with the instructor and, therefore, does not lead to as much estrangement as pure online teaching does (Hew & Cheung, 2014). Similarly, Garrison and Kanuka (2004) posit that blended learning is an effective and low-risk strategy for overcoming the challenges caused by transformational changes that technological developments bring to higher education institutions. Furthermore, they highlight how blended learning offers students the opportunity to form communities without having to be in the same place simultaneously.

However, while being widely lauded for the possibilities it offers, there is little consensus on a precise definition of blended learning (Driscoll, 2002; Graham, 2006; Launer, 2011; Picciano, 2009). According to Clark (2003: 4), '[l]ike many learning terms, 'blended learning' has the illusion of being a concrete concept. In practice it is a flexible term that means different things to different people'. Generally, it seems that definitions of, or rather approaches to, blended learning can be classified into three categories (Graham, Allen & Ure, 2003; Kim, 2013) (of which the third category is the most widely followed), namely (i) blending instructional modalities (Driscoll, 2002; Singh & Reed, 2001); (ii) blending instructional methods (Clark & Mayer, 2016); and (iii) blending face-to-face instruction with computer-mediated instruction (Garrison & Kanuka, 2004; Graham, 2006; Sahare & Thampi, 2010; Staker & Horn, 2012). The last approach applies to this article.

For the purposes of this article, however, it is imperative that blended learning be seen as more than a mere combination of face-to-face and digital instruction and that this approach not be deemed to be a definition in itself. Various, more concrete definitions of blended learning exist, of which the most important pedagogical principles will be highlighted. Vaughan (2007: 82) stresses that blended learning is about more than 'bolting' technology to a traditional course. Instead, he emphasises the concept of hybridisation, as part of which online and face-to-face classroom segments are merged in order to encourage active learning, reduce classroom time and create an environment that is highly conducive to student learning (Garrison & Vaughan, 2008). Being conducive to student learning would entail that the environment is highly transformative in order for students to develop critical thinking and complex learning skills (Garrison & Kanuka, 2004). Singh and Reed (2001: 2) place similar value on pedagogical principles in their definition:

> Blended learning focuses on optimizing achievement of learning objectives by applying the 'right' learning technologies to match the 'right' personal learning style to transfer the 'right' skills to the 'right' person at the 'right' time.

Poon (2013) adds to existing definitions that the aim of the delivery methods should always be to complement each other. She is of the opinion that blended learning should significantly 'influence students' perceptions of the learning environment and, subsequently, their study approach and learning outcomes' (Poon, 2013: 271). She, therefore, sees a strong correlation between blended learning, student learning experience and, ultimately, achievement (Poon, 2013). Staker and Horn (2012: 3), on the other hand, define blended learning as

> a formal education program in which a student learns at least in part through online delivery of content and instruction with some elements of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home.

The above definitions are undoubtedly valid, they complement each other to a large extent, and they are very focused on the teacher (Oliver & Trigwell, 2005). Oliver and Trigwell recognise that many definitions of 'blended learning' rather refer to 'blended teaching', and they suggest shifts in focus from the teacher to the student, content to the experience, and technologies to pedagogy. As part of the student-centredness advocated by Oliver and Trigwell (2005), this article focuses on how fostering the characteristics of SDL could not only achieve a truly student-centred blended learning model, but, in line with South African government regulations requiring teachers to be lifelong learners (DHET, 2014), could assist teachers to develop characteristics of self-directed learners, which they, in turn, can foster in their own students. Before considering how blended learning could support student-centredness and lifelong SDL, certain classifications of blended learning are considered.

Classification of blended learning models

As much as definitions of blended learning differ, so do their presentation models and forms. There are various forms of blended learning, which Staker and Horn (2012) categorise into four models, namely the 'rotation model, the flex model, the self-blend model, and the enriched virtual model' (Staker & Horn, 2012: 2). Rotation models are characterised by the fact that participants rotate between learning modalities, either at the teacher's discretion or by following a fixed schedule (Staker & Horn, 2012). At least one of these modalities should be online learning, while other examples of modalities include individual paper-based assignments, conventional instruction, either in small groups or as a full class, and individual tutoring. Examples of rotation models include the 'station-rotation model, the lab-rotation model, the flipped-classroom model, and the individual-rotation model' (Staker & Horn, 2012: 2).

In comparison to rotation models, flex models offer the participant more individual freedom. The content and instruction are delivered online, while students follow an individually customised, flexible schedule between learning modalities. The instructor stays on site (Staker & Horn, 2012). Similarly, self-blend models offer students much personal choice and freedom in that students follow one or more online courses to supplement their traditional courses (Staker & Horn, 2012). This category of models was renamed by Christensen, Horn and Staker (2013) as the 'a la carte model'. This name change is ascribed to the fact that the term 'self-blend' might be misleading, as it could be interpreted to mean that students have the authority to blend the methods of instruction themselves. Consequently, the definition has been amended. The a la carte model, therefore, is

> a program in which students take one or more courses entirely online with an online teacher of record and at the same time continue to have brick-and-mortar educational experiences. Students may take the online courses either on the brick-and-mortar campus or off-site (Christensen et al., 2013: 3).

Finally, the enriched virtual model offers students the greatest autonomy by allowing them to divide their own time between face-to-face and online learning (Staker & Horn, 2012). Time division between online and face-to-face instruction is dependent on the course and varies greatly. When conceptualising a blended learning teacher PD programme focusing on fostering the characteristics of SDL, it would thus make sense to employ a model falling into the enriched virtual model category. However, the pedagogical approach used in conceptualising the model must be considered separately.

Pedagogical approaches towards and models of blended learning

In Staker and Horn's (2012) classification of blended learning models, the authors attach a certain value to students' self-directedness by expressly mentioning that each student has a certain amount of control over their learning (time, place, path, pace). Their definition, however, remains rather teacher centred. While accepting their classification, models and pedagogical approaches that do fall into Staker and Horn's (2012) classification are investigated and proposed in this article, and more depth is added to the mere classification. From an extensive literature review of published and unpublished research on blended learning, it was found that, in this context, both Staker and Horn's (2012) enriched virtual model and Picciano's (2009) multimodal model are regarded as highly relevant and appropriate within the context of this article. If the enriched virtual model is chosen, teachers would have the benefit of mostly working online and at their own pace, having supplementary face-to-face encounters with the instructor.

Several blended learning environment models exist, which all fall on a certain point of the continuum between pure online and pure face-to-face instruction. Mishra and Koehler (2006), for example, have developed the so-called technological pedagogical content knowledge (TPCK) model. This model assumes that TPCK is an emerging form of knowledge that goes beyond its components: content, pedagogy and technology. Therefore, to develop good and meaningful content, one should carefully interweave

these three key sources of knowledge (Mishra & Koehler, 2006). In comparison, Puentedura (2012) has developed the SAMR model, which consists of four levels of technology integration: 'substitution, augmentation, modification and redefinition'. This model provides a framework for educators to create learning experiences using mobile devices. The model has been suggested as a framework especially suitable for evaluating m-learning, which Romrell, Kidder, and Wood (2014: 2) understand as 'learning that is personalised, situated, and connected through the use of a mobile device'.

While scholars deem both of the above models to be useful, Picciano's (2009) multimodal model seems to offer an added dimension, which might be particularly useful in fostering the characteristics of SDL, as, in his model, he introduces pedagogical objectives and activities that should drive the approaches used in instruction. In comparison to the above-mentioned models, Picciano (2009) places less emphasis on the content of teaching and more on the emotional and social support participants should receive, be it through dialectics or questioning – through which students can refine their own knowledge –, or through collaborative learning. By blending objectives, activities and approaches within multiple modalities, instructors should be able to satisfy most students' learning needs.

By focusing on the multimodal model, while drawing from the TPCK and SAMR models, a blended learning model for teacher PD to foster the characteristics of SDL is subsequently suggested.

BLENDED LEARNING IN SUPPORT OF SELF-DIRECTED LEARNING

Even though the relevance of blended learning for SDL has been shown in literature (Olivier, 2019), merely establishing blended learning environments for teacher PD opportunities will not in itself promote self-directedness in participants, or, as put by Wang (2010: 189), 'the meaning of ICTs depends entirely on how they are used within any cultural setting'. The blended learning model should not only be designed around the preparation of the content but should essentially be based on insights relating to students' character and nature (Bosch & Pool, 2019). The success or failure of a PD activity in fostering characteristics of SDL would, therefore, be largely dependent on the approach and content used in the activity.

Following a learner-centred approach to blended learning, as suggested by Picciano (2009), corresponds with Bonk, Kim and Zeng's (2005) prediction that blended learning will be increasingly determined by participants themselves as blended learning options proliferate. Reinmann et al. (2009) view the great potential of blended learning to encourage SDL as one of its main benefits. Oliver and Trigwell's (2005) demands towards blended learning to focus on students' experiences, in comparison, tie in closely with andragogy as postulated by Knowles (1973). The underlying basic assumptions of andragogy are (i) as persons grow and mature, their self-concept changes; (ii) their experiences play a greater role in their learning; and (iii) their readiness to learn is increasingly determined by the developmental tasks necessary to fulfil their social role (Knowles, 1973: 45-46). Similarly, Ranieri, Giampaoplo and Bruni (2019) published a study in which they investigated educators' professional learning ecologies in a blended learning environment. They concluded that formal education seems to play a less significant role in shaping their participants' professional identity as compared to factors such as personal or work experiences and colleagues (Ranieri, Giampaolo & Bruni, 2019). In addition, according to Knowles (1973), an adult has a more problem-centred approach to learning than a child. Therefore, when thinking about a blended learning teacher PD model, it would make sense to choose a blended learning model that takes the experiences and the individual differences and learning needs of teachers into account. Following this approach, one would have participants who learn because they genuinely want to develop an understanding and mastery of the material (Ross et al., 2002). Although motivation has been found to be a central aspect of learner autonomy in distance learning, it remains imperative to enhance those components of motivation that actually contribute to autonomy – most notably the participants' belief in their own ability and goals (Lynch & Dembo, 2004).

In adaptive learning theory, which holds as an underlying principle that personalising instruction improves learning (Murray & Pérez, 2015), participants with a strong belief in their own abilities and goals would be classified as being motivated by task or achievement goal orientation (Ross et al., 2002). It seems significant that these participants have been found to display high levels of self-efficacy (Anderman & Young, 1994), attach a high intrinsic value to their learning, and are more likely to make attributions to effort (Ames, 1992). Masie (2006: 25), furthermore, describes how learners naturally add learning elements:

> They add what is missing, they mix it with what they need, and they subtract what is not valuable. They socialise it. They find context. And they transform training and instruction into learning.

Therefore, it would make sense to develop a blended learning teacher PD programme that focuses on learning and dialogue rather than on teaching content. In this case, there would be a continual shift of dependence and control. The participant would have to be neither dependent nor independent. The interdependence of the participant will dynamically shift in balance between the facilitator and fellow learners (Garrison, 1992). To achieve fostering achievement goal orientation as part of a blended learning PD programme, one should carefully consider the most appropriate model and strategy.

Bath and Bourke (2010) have focused on the blended learning design process and suggest that designing a blended learning environment should be done systematically by planning for integrated learning, then designing and developing the blended learning elements, followed by implementing the blended learning design, reviewing (evaluating) the effectiveness of the blended learning design, and improving the said design for the next course (Bath & Bourke, 2010). While designing the model, close cooperation with the participants is required to ensure that it is set in a community of inquiry (CoI) framework as postulated by Garrison and Vaughan (2008). A CoI is a collaborative-constructivist process model that integrates three elements, or so-called presences, which are required for successful online learning: (i) cognitive presence (CP), (ii) social presence (SP), and (iii) teaching presence (TP) (Castellanos-Reyes, 2020: 557; Garrison & Vaughan, 2008). The model proposed in this article will, however, go beyond the social, cognitive and teaching presence, traditionally associated with the CoI framework, and focus on participants' self-directed learning skills as demanded by Bosch and Pool (2019). Expanding on the CoI framework in this manner should not only assist participants to influence their own learning outcomes but will also encourage them to 'reflect on the effectiveness of their current learning strategy, as well as to interpret and reflect on their achievement' (Lubbe & Mentz, 2019: 352). Ensuring that emphasis is placed on the participants and their experiences will situate the activity well within adaptive learning, as described by Howard, Remenyi and Pap (2006: 1):

> the use of what is known about learners, a priori or through interactions, to alter how a learning experience unfolds, with the aim of improving each learner's success and satisfaction.

By not only having self-determination in influencing their own learning aims but also a space where they can shape their practice and reflect on their learning, participants should be highly motivated to master their goals (Ross et al., 2002). However, as demonstrated by Hofmann (2006), blended learning designs have to be carefully crafted so that true curricula are weaved to facilitate effective learning.

Keeping in mind the above-mentioned importance of pedagogically sound, carefully interwoven blended learning designs, suggestions are made in the next subsection regarding the opportunities to foster characteristics of self-directed learners in teacher PD programmes.

Blended learning to enhance self-directedness in teacher professional development programmes

When designing and developing a blended learning PD activity[4] focusing on SDL for South African SAL teachers, it is imperative to place emphasis on participant experience and individual differences between participants' learning needs, preferences and styles. Situated within Staker and Horn's (2012: 15) enriched virtual model, participants divide their own time between face-to-face and online instruction. While all material is made available online, participants have an initial and a closing face-to-face meeting with the instructor in order to plan and structure the online phase initially, and to reflect upon it afterwards. Participants are also encouraged to activate and assess their pre-existing knowledge, not only on content but also on learning processes (Bolhuis, 2003), in order to develop their metacognitive thinking. Throughout the online phase, participants can schedule additional face-to-face meetings. The PD activity itself should be based on Picciano's (2009: 11) multimodal model and can be represented by Figure 1 below.

Figure 1:
Teacher professional-development opportunity in the 'virtually enriched' spectrum of Staker and Horn
(2012)

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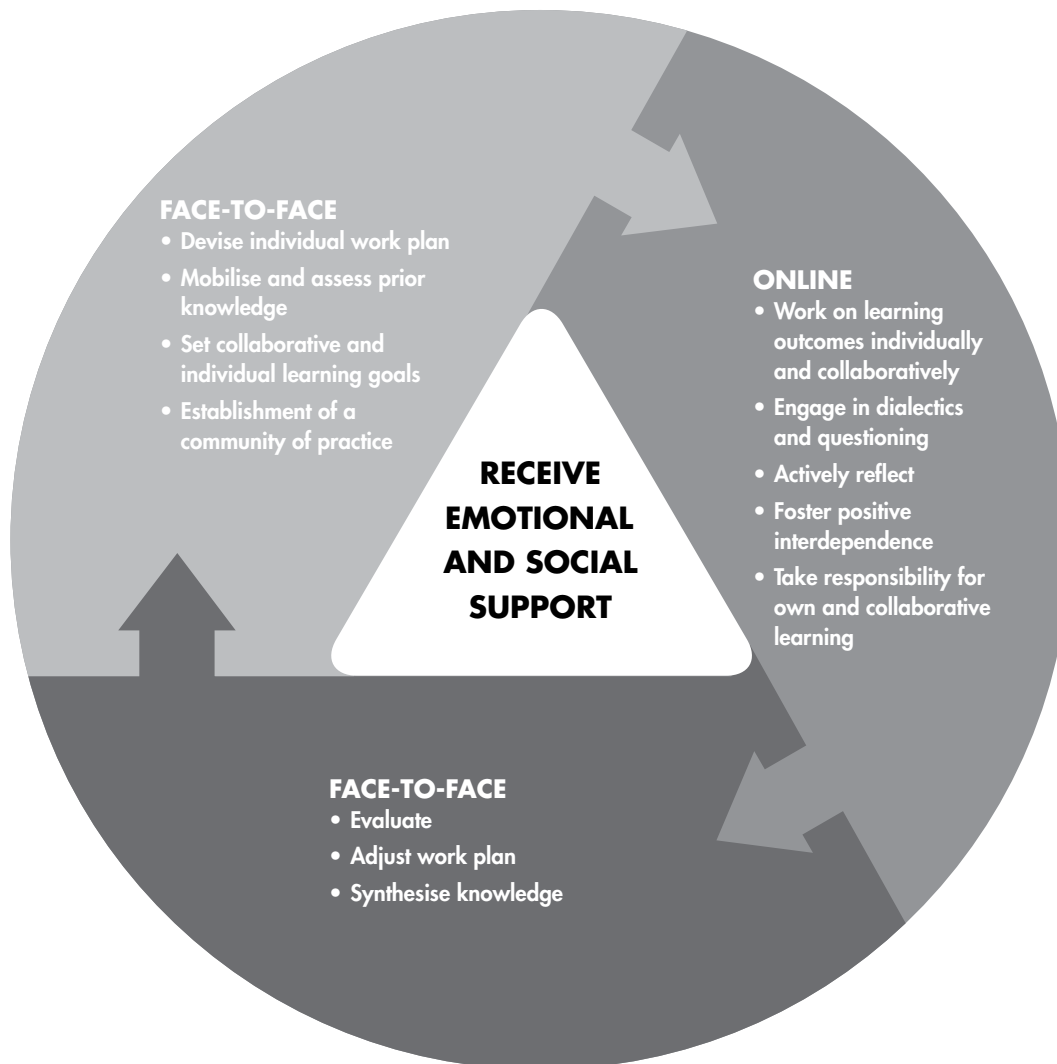
4   As this article relates to South African teachers, the phrase 'professional development activity' as used in the Department of Basic Education policies like the 'Draft White Paper on e-Education Transforming Learning and Teaching through ICT' as well as the 'Guidelines for Teacher Training and Professional Development in ICT' will be used when referring to any programme or course designed to further South African teachers' education.

During the initial face-to-face meeting, the participants collaboratively determine their overarching group learning goals while setting smaller individual goals within this setting. The facilitator assumes the responsibility to design a learning environment that enables participants to take active responsibility (Bosch & Pool, 2019). In this context, it is important to note that participants will not be left to their own devices when making their choices but that they will be assisted to make appropriate choices, as MacDonald (2008) warns that certain participants arrive equipped to make their own choices, while others may be overwhelmed by the possibilities. Group decisions and goals are also set, as collaborative learning is not only one of the pillars of Picciano's (2009) multimodal model but also one of the key elements of SDL (Garrison, 1997). Learning is treated as a social phenomenon, thereby creating positive interdependence (Bolhuis, 2003). After the learning goals have been set, the instructor and participant cooperate in assessing the participant's learning aims and the content to be covered. In line with Picciano's multimodal model, multiple technologies and media are used (Picciano, 2009). The instructor, therefore, supports the participant in establishing their learning goals and the choices they have when learning. Setting up such a collaborative learning environment in which the participants have an input in shaping their own and collaborative learning goals will be conducive to constructing meaningful knowledge (Garrison, 1997). Furthermore, throughout the learning process, the participant is supported in developing the necessary skills of reflection, self-direction and self-management (George-Walker & Keeffe, 2010) by journaling as well as by constantly evaluating the course and learning. Developing these skills will ensure that not only the external contextual elements but also the internal cognitive processes that precipitate and shape the participant's thinking are taken into account, thereby assisting each participant to develop a cognitive presence, which Garrison (2003: 4) defines as 'the process of both reflection and discourse in the initiation, construction and confirmation of meaningful learning outcomes'.

After the initial meetings, the instructor designs a learning environment focusing on collaboration (Picciano, 2009) online in which participants work on achieving their individual learning outcomes, while forming part of a community that is united by its academic purpose and interest, and that works collaboratively towards attaining intended learning goals and outcomes (Garrison & Vaughan, 2008). A CoI is established in which participants are cognitively engaged, ideas are supported and critically analysed, and meanings negotiated (Garrison, 2003). Furthermore, positive interdependence is established between participants by means of group goals in order to encourage them to display appropriate behaviour and to engage and achieve group outcomes (Bosch & Pool, 2019). Discussions and questioning form a large part of the group activities, as they allow the instructor to follow the participants' progress and assist them in refining their knowledge (Picciano, 2009). Participants are encouraged to complete regular reflections, both individually in journals and as a group in discussion forums, and participants are requested to share their reflections with the instructor and the group to further enrich their reflections (Picciano, 2009). By modelling reflective enquiry, students develop the ability to manage and monitor their own learning. This allows them to develop the ability, as well as the confidence, to be self-directed learners (Garrison, 2003). Conceptualising these interactions is imperative, as Garrison and Kanuka (2004: 97) regard one of blended learning's most promising opportunities to be the 'quality and quantity of the interaction and the sense of engagement in a community of inquiry and learning, achieved through the effective integration of Internet communication technology'. Moreover, participant reflections and feedback enable the instructor to respond to the individual learner's situation as the learner progresses through a learning activity and to adapt either the activity itself or the technology to be used in order to support the participant's learning if necessary (Howard et al., 2006).

Towards the end of the programme, students submit an assignment that synthesises and assesses (Picciano, 2009) their learning. Learners evaluating their learning outcomes is another cornerstone of SDL (Merriam, 2001). In the second face-to-face meeting, participants can evaluate both the programme and their own learning. They then formulate new goals, based on the achievement of the goals set in the first face-to-face

meeting as well as their own continuous and summative reflections, and, in cooperation with the instructor, they develop new strategies to attain these new learning goals.

CONCLUSION

When developing a blended learning teacher PD programme, it is important to not only focus on the content to be taught, but also on the skills to be learned in order for participants to develop into lifelong self-directed learners. By fostering the skills of the self-directed learner in participants, one can hope that participants would gradually learn to identify their own learning needs and make appropriate choices to satisfy their needs by being encouraged to set and assess their learning aims, initially mostly collaboratively but increasingly individually.

It is important to note that, in terms of limitations, this article has not and does not intend to cover all the possible scholarship around blended learning, SDL and teacher PD. From the extensive literature review, the authors then had to be selective in terms of specific literature in order to answer the research question.

The aim of this article was to fill a gap in the scholarly discourse by focusing on teacher PD – an area currently under-researched in South Africa. A PD model strongly aligned with Picciano's (2009) multimodal model was proposed and firmly placed within the enriched virtual model of Staker and Horn (2012), focusing primarily on fostering the skills of self-directed learners and on participants improving their pedagogical knowledge, which is in contrast to the more traditional teacher PD models focusing on content knowledge. Should this model be implemented in practice, it is hoped that participants would improve their pedagogical and technical knowledge of digital media while improving their SDL skills and assisting their own learners in doing the same.

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Using blended-learning strategy in mathematics to strengthen the teaching of geometric 2D shapes and their properties to primary 6 learners[1]

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ABSTRACT

Mathematics remains an indispensable pivot for technical and analytical skills that are relevant to other fields and everyday living experiences. Most learners experience challenges in comprehending mathematical concepts due to teachers' teaching strategies; hence, this paper focuses on the use of blended learning as a strategy. The study aimed to enhance learners' mathematical knowledge using the blended pedagogical strategy in two different private primary schools in Imo State, Nigeria. A quasi-experimental research method was chosen, and it incorporated the pre-test, post-test non-equivalent control and experimental groups. Three research questions and three hypotheses were formulated as guides in this study. 165 learners were randomly selected from the two private primary schools to participate in the study. The Mathematics Achievement Gain Test (MAGT), which consisted of 30 item-objective test questions on the topic '2D shapes and their properties' with a reliability coefficient of 0.85, was used as the statistical tool, determined through Pearson's Product Moment Correlation method. The research questions were answered using mean and standard deviation while the hypotheses were tested using the ANCOVA with 0.05 as level of significance. The research results show that the blended-learning approach enhanced learners' understanding and performance in mathematics. Based on these results, the researchers recommend that primary school mathematics teachers be well trained and encouraged to use blended-learning strategies to achieve improved understanding, knowledge and appreciation of the subject.

Keywords: mathematics, learners, geometric 2D shapes, blended-learning strategy, properties

INTRODUCTION

The importance of mathematics in fields of professional practice such as science, technology, commerce and economics is non-negotiable. Its principles are widely applied in all spheres of life and in the ever-evolving, ground-breaking technological advancements that are gaining popularity across the globe (Sullivan, 2011). The field of mathematics is the hub of the technical and analytical skills relevant to other fields. It is regarded as the mother of arts and sciences, hence an international language represented in

all walks of life. Senthamarai-Kannan, Sivapragasam and Senthikumar (2015) reported that mathematics forms the basis upon which the critical-thinking, analytical and problem-solving skills of children develop. The undeniable importance of mathematics will not be complete if there are no learners who are interested in learning its principles and applications (Senthamarai-Kannan, Sivapragasam & Senthikumar 2015; Wanner, 2015). Nevertheless, the understanding of mathematics vis-à-vis learners' performance has been truncated in many ways resulting in a high failure rate and generally very poor performance in the subject (Department of Basic Education, 2011a). The high failure rate in mathematics is greater when compared to other subjects because the subject is considered an abstract and intricate one; since much of its language is made up of signs and symbols (Department of Basic Education, 2011b).

This matter does not exclude the teachers whose understanding of the subject content and teaching methods do not effectively convey knowledge to the learners. In 2009, the Nigerian National Mathematics Centre reported that the obvious poor performance of learners in mathematics examinations has more to do with methods of teaching than shortcomings in the curriculum. Bature and Bature (2005) recorded that learners who fail in mathematics blame teachers' poor teaching methods. Teachers, on the other hand, have chosen to stick to traditional, chalk-and-talk teaching methods that make learners passive in the learning of mathematics (Anaduka & Okafor, 2013). Furthermore, teachers lack the creativity in their chalk-and-talk methods to stimulate learners' interest in learning and understanding the subject as is expected (Anaduka & Okafor, 2013). The researchers consider the blended pedagogical strategy as a possible solution in mediating teachers' poor teaching methods, especially because of its use of technology.

The dawn of technology and its continuous improvement have given birth to the need to adapt to innovations in teaching and learning. Facilitation of learning through technology can take various forms, such as online learning, computer-assisted learning, web-based distance learning, the use of the internet and blended learning, which is significantly advancing the teaching and learning space (Venketsamy & Wilson, 2020). Facilitating learning through the use of technology in mathematics was recommended as an outcome of research on the effect of e-learning and traditional learning (Annie Kavitha & Sundharavadivel, 2012). The effective use of technology and skills in designing its curriculum provides an advantage to mathematics teachers in the achievement of computer-assisted blended learning. According to Wilson (2018), the integration of interactive learning objects for instruction with the aid of information and communication technology (ICT) enriches the learning experience as abstract concepts become more real. The advantage of using blended learning is that it accommodates different learning styles such as visual, auditory and kinaesthetic (Annie Kavitha & Sundharavadivel, 2012). Therefore, mathematics teachers are advised to adopt spontaneous teaching approaches, such as blended-learning methods, that are learner friendly to spur learners' interest in appreciating the subject. This learning approach that incorporates technological devices (audio and visual aids) has increased academic performance due to its effectiveness in teaching and learning (Abdon, 2014).

The blended or hybrid learning approach entails a learning environment that involves teaching or delivery methods through a combination of media (audio or visual) formats, online sessions, face-to-face methods, or all of these (Saritepeci & Cakir, 2015). This teaching strategy is scarcely used in some Nigerian private primary schools due to teachers' inability to use or lack of knowledge and understanding of technology for teaching and learning. The blended-learning approach is a combination of the traditional teaching approach and the use of technology in fostering learning (Wilson, 2018). This approach fosters effective rapport between the teacher and the learners as it employs the use of audio, visual and online aids to enhance the process of learning (Krauss, 2007; Poon, 2013). Blended learning employs tools of interactive learning in an environment that synchronously and asynchronously serves both the teacher and learners (Abdon, 2014).

Omer (2012) investigated and reported that blended-learning approaches have a highly positive impact on the learners who were used to lecture-based instructional approaches. His results show that the differences in the learners' learning aptitude are not due to individual differences, but rather to the learning environment provided by the blended-learning approach. In 2014, Abdon surveyed and found that the effect of using the blended-learning methods in teaching algebra in Malayan colleges in Laguna showed that students who learned with blended methods received better grades than those taught using the conventional chalk-and-talk method. Alruwuch (2015), Saritepeci and Cakir (2015) avow that there is evidence in research that indicates significant differences in results among learners taught using the blended-learning approach, regardless of gender. Furthermore, the economic and technological needs of Nigeria require individuals who are taught and well-equipped with such critical-thinking and problem-solving skills as embedded in the study and application of mathematical principles. Therefore, the need to apply innovative strategies in teaching and learning mathematics cannot be overemphasised (Serdyukov, 2017).

STATEMENT OF THE PROBLEM

The traditional chalk-and-talk approach of facilitating learning is predominant in the Nigerian school system. This method of teaching and learning, as noted by Alruwuch (2015) and Saritepeci and Cakir (2015), has impacted negatively on learners' academic gains. This is because learners become passive in the learning process; hence, they do not understand the concepts being taught. Over the years, Nigerian students have performed poorly in mathematics (Krauss, 2007; Poon, 2013). Evidence shows that, in addition to the unconducive learning environment, teachers' approach to lesson delivery is also a reason for the low performance of students in mathematics (Krauss, 2007; Poon, 2013). Due to these problems in Nigeria, the teaching strategy of mathematics teachers requires a review.

The priority in contemporary Nigerian society to improve learners' understanding and performance in mathematics requires the effective use of modern technological tools, resources and devices. To palliate the limitations of the traditional teaching methods that are responsible for learners' lack of interest, and the associated poor achievement in the subject, a learning approach that advocates for a combination of various learning strategies is inevitable. Therefore, the thrust of this study is to enhance young learners' learning in mathematics using the blended-learning pedagogical strategy.

PURPOSE OF THE STUDY

The purpose of this study is to explore the learning gains of young learners in 2D geometric shapes and their properties in mathematics using the blended-learning strategy. The study sought to determine whether

- there will be any noticeable difference in learning gains in the topic '2D geometric shapes and their properties' between learners taught using the blended pedagogical strategy and those taught in the traditional chalk-and-talk method

- there will be any appreciable difference in the learning gains of male and female learners in the topic '2D geometric shapes and their properties' using the blended pedagogical strategy

- learners who achieve low and high scores in the topic '2D geometric shapes and their properties' using the chalk-and-talk method will show any significant difference when taught 2D geometric shapes and their properties using the blended pedagogical strategy.

RESEARCH QUESTIONS

For this study, the following research questions were formulated:

1. What is the difference in learning gains in the topic '2D geometric shapes and their properties' of learners taught using the blended pedagogical strategy and those taught in the conventional chalk-and-talk method?

2. Is there any appreciable difference in the learning gains of male and female learners who were taught 2D geometric shapes and their properties using the blended pedagogical strategy?

3. Do learners who achieve low and high scores in 2D geometric shapes and their properties using the chalk-and-talk method show any significant difference when taught 2D geometric shapes and their properties using the blended pedagogical strategy?

HYPOTHESES

Using a 0.05 level of significance, the following hypotheses were formulated for this study:

1. The mean learning gains of learners taught 2D geometric shapes and their properties using the blended pedagogical strategy and those taught using the chalk-and-talk method showed no significant difference.

2. The mean learning gains of male and female learners who learned 2D geometric shapes and their properties using the blended pedagogical strategy showed no significant difference.

3. The mean learning gains showed no significant difference between low learning gains and high learning gains for achievers who were taught 2D geometric shapes and their properties using the blended-learning instructional approach.

RELATED LITERATURE

The researchers conducted a review of related literature. This review included (i) the conceptualisation of blended-learning strategy, (ii) the teacher factor in the blended pedagogical strategy, (iii) the integration of GeoGebra in the blended-learning approach, (iv) an ideal environment for the blended pedagogical strategy and (v) a theoretical framework that anchors in Vygotsky's theory of social constructivism. The literature assisted the researchers to situate their augment for the use of a blended-learning approach to facilitate geometric 2D shapes and their properties for primary 6 learners in Nigerian private schools.

The conceptualisation of blended-learning strategy

In the available literature, various scholars outlined definitions of blended learning; however, the most prominent among the definitions is that blended learning acknowledges a combination of the virtual and physical environments (Picciano, Dziuban & Graham, 2013). In 2013, Picciano et al. avowed that the integration of a face-to-face setting, human interactions, ICT (synchronous and asynchronous settings) and text-based, independent learning are all embedded in the blended-learning strategy. In support of Picciano et al. (2013), Hrastinski (2019) opined that blended learning comprises the inclusion and infusion of various technological dimensions of online and face-to-face approaches as well as the traditional learning approach in a learning environment that allows for hands-on reflections by the learner and teacher. However, in this study, the authors adopted the ideological concept of blended learning as described by Hrastinski (2019). The combination of online and classroom settings simplifies the complex concept that is taught in the traditional learning setting and meets the needs of several learners. Furthermore, the use of blended learning advocates for a learning environment wherein the learner is in control of the learning process, and in which the teachers are considered facilitators of learning (Alammary, Sheard & Carbone, 2014; Hockly, 2018).

The use of blended learning accommodates different blends of learning programmes, pedagogy and technologies in different learning environments (Bower et al., 2015). This is evident in the use of e-portfolios, podcasting, vodcasting, internet-based video and audio, and blogs, among many others. Anecdotal evidence shows that blended learning is suitable for learners with various cultural backgrounds because of its inclusivity. It is, therefore, noted that blended learning, which is now rapidly substituting the chalk-and-talk teaching method, implies integration of technology into teaching and learning (Bower et al.,

2015). The attainment of learning objectives using blended learning has shown to be profitable, especially considering the characteristics that surround 21st-century dynamics. Learning in itself is a continuous process, hence the concept of blended learning being rooted in the idea of learning dynamics (Slevin, 2008). As teachers facilitate learning, they are expected to provide guidance, a variety of examples and a high level of interaction with the learners (Allen, Seaman, Lederman & Jaschik, 2012).

The teacher factor in blended pedagogical strategy

Facilitating learning using the blended pedagogical strategy provides enormous benefits to both the learner and the teacher, and even more so when the teacher incorporates technology in the learning process (Anderson, 2008). However, teachers are reluctant in the use of technology possibly because of their inadequate skills in integrating technology into the learning process (Anderson, 2008). Research by Shrestha, May and Burke (2009) posits that students are more enthusiastic in the use of technology to learn than their teachers. This further confirms the position of both Anderson (2008) and Venketsamy and Wilson (2020) who noted that teachers are reluctant in the use of technology because of their inadequate skills in integrating it into the learning process. Furthermore, a report by Allen, Seaman, Lederman and Jaschik (2012) maintains that there is low motivation for the use and integration of technology in the learning process worldwide by academics. Inadequate support and training, fear of failure and time constraints on the development of learning materials were among the identified challenges that demotivate teachers in the use of technology in the blended-learning process (Venketsamy & Wilson, 2020).

Mansvelt et al. (2009) note in their research that management support, different beliefs and time allocation predisposed the confidence of teachers in their use of technology in teaching. Annie Kavitha and Sundharavadivel (2012) assert that teachers claim that their reluctance in the use of technology stems from the apprehension for the educational wellbeing of their learners. In their claim, they noted that the use of technology in blended learning decreases teachers' interactions with their learners, hence socially isolating learners, which has an impact on teachers' job security (Annie Kavitha & Sundharavadivel, 2012). Teachers who do not recognise the benefits of blended learning are not likely to implement it when facilitating learning. It is for this reason that the researchers of this study have provided guidance to enable teachers to facilitate learning using the blended-learning approach.

Integration of GeoGebra in blended-learning approach

With the evolution of technology comes the integration of some mathematical software such as GeoGebra, Geometer's Sketchpad, and Mathematica into the classroom space. GeoGebra, according to Arbain and Shukor (2015), is a programmed software application directed at facilitating learning in geometry, algebra and calculus. Similarly, Abramovich (2013) affirms that GeoGebra is an online software learning tool for the study of geometry, algebra and calculus at various teaching education levels. Zulnaidi, Oktavika and Hidayat (2020) noted that the use of GeoGebra is central to the creation of meaningful learning experience for teachers and learners of mathematics.

Furthermore, Zulnaidi, Oktavika and Hidayat (2020) acknowledge that a significant number of educators agree that the software is appropriate for a vivid explanation of concepts and procedures in mathematics. This is due to the accessibility of the software, which allows for interaction between learners because it is participatory and engaging. Furthermore, it captures the visual appreciation of learners through its graphics, images and symbols. The software is learner centred and learner friendly as it allows learners to carry out practical exercises as they follow the procedures shown in the learning exercise (Abramovich, 2013). The researchers considered the use of GeoGebra in this study as they applied it to the experimental group that was sampled for the study. Its use created an ideal environment that characterised blended learning among learners.

An ideal environment for blended pedagogical strategy

There are considerations that teachers need to acknowledge when planning to use the blended-learning pedagogical approach. Among these considerations are the organisation of the learning environment. The learning environment needs to be inviting and free from psychological and physical harm, hence promoting interaction and collaboration among learners (Hockly, 2018; Precel, Eshet-Alkalai & Alberton, 2009; Slevin, 2008). Establishing a friendly teacher-student relationship, equipping the physical environment in a way that elicits and encourages discussions, and engaging learners in projects are ways to create this environment (Venketsamy, Sing & Smart, 2020). Teachers need to have a strong grip on their subject content and the different methods that can be used to facilitate content to the understanding of their learners (Ní Raghallaigh & Cunniffe, 2013). Schools and learning centres that desire to implement the blended-learning strategy need to provide for digital and print text materials as the provision of both solve difficulties some students may have with reading digital texts (Precel et al., 2009).

Another consideration is the use of audiovisual aids in lesson delivery. Learners grasp concepts easily from what they see and hear. A blend of audio and video positively help to sustain and motivate learners' interest in the learning process. To attain the learning outcomes in the blended-learning strategy, the assessment needs to be adapted (Slevin, 2008). Assessments, such as portfolios, projects, regular class activities, observation schedules and essays, among many others, should be adapted to assess learners' progress in the use of blended learning (Omer, 2012). In arranging the learning environments, teachers should keep in mind learners' characteristics and learning context while planning for learning (Venketsamy et al., 2020). A community of practice (COP) among learners and teachers helps to create a stimulating learning environment that aims at developing the potentials in both teachers and learners (Luguetti, Aranda, Enriquez & Oliver, 2018). Furthermore, such a COP allows learners to connect and collaborate with their peers and to create a learning environment that integrates social, cognitive and teaching elements in a way that will precipitate and sustain critical reflection and discourse (Ekeh & Venketsamy, 2020). Another benefit of creating a COP environment among learners and teachers is that it fosters healthy relationships beyond the school and classroom environments (Ekeh & Venketsamy, 2020). Luguetti, Aranda, Enriquez and Oliver (2018) maintain that creating a COP environment helps learners to investigate, confirm, analyse and construct knowledge. In this study, learners progress from basic learning to in-depth and meaningful learning experiences as teachers approach learning through a COP among learners while using the blended-learning approach.

As evidenced by the review of literature, in the conceptualisation of blended learning, the teacher and the environment are key factors the researchers focused on. The concept of blended learning is seen from various perspectives by different scholars, but for the purpose of this study, the researchers adopted the definition proposed by Hrastinski (2019). This definition maintains that blended learning comprises the integration of ICT, face-to-face settings and human interactions, and that it is text-based. The implication is that teachers who facilitate learning are expected to utilise technology in a face-to-face, interactive, human setting (Venketsamy & Wilson, 2020). The teacher as an important factor in the blended pedagogical process needs to be abreast of their learning content and of different methods of facilitating learning whilst considering the characteristics and context of their learners. Lastly, a learning environment that promotes blended learning has to be psychologically and physically conducive. Creating a COP environment wherein learners and teachers in their groups collaborate among themselves in the learning process is very important (Venketsamy et al., 2020). Considering that the present study was both socially and cognitively demanding, the researchers opted for Vygotsky's theory of social constructivism as a theoretical framework to support the study.

Theoretical framework

Vygotsky's theory of social constructivism explains that interactions that emanate from teachers, peers, parents and others all lead to the development of cognitive functions. The implication of this is that

learning emerges as the learner interacts and collaborates with the people in the context of their learning environment or in an educational community (McInerney & McInerney, 2002; Schunk, 2012). For Vygotsky, learning is not just the assimilation of new knowledge into the head (cognitively) but also the ability of learners to adapt with others in the learning environment in which they find themselves (socially), hence social constructivism. This makes the learner a balanced fellow in society and the world at large. Using a blended-learning approach vis-à-vis social constructivism in this study was significant in that it allowed learners to interact with their peers, teachers, and technological devices, such as computers, audiovisual aids, cell phones, and other learning resources. Furthermore, learners were able to gain knowledge and understanding as they experienced the construction of 2D shapes and their properties during the lesson.

Social constructivism asserts that nothing is learned from scratch; whatever needs to be learned has existed and what is considered new knowledge is the expansion of a body of knowledge that has existed before. This, therefore, means that new knowledge is only integrated into an existing network of knowledge for clearer understanding (Hyslop-Margison & Strobel, 2008). A learner is, therefore, considered to be successful in learning when the learner is able to integrate a new idea into an already existing body of knowledge, hence expanding the existing body of knowledge while accommodating new experience. Therefore, a social constructivist learner will always remain subjective in their views because the individual interpretation of experiences depends on different pre-existing frameworks of understanding, which helps the learner to develop their own, unique view of the world (Draper & Macleod, 2013; Hyslop-Margison & Strobel, 2008). In this study, learners' prior experience of 2D shapes was of immense advantage. This prior knowledge provided the basis for their understanding, and they could relate what they already knew about 2D shapes and apply this knowledge in the new learning context.

Social constructivism upholds that learning is grounded on shared experiences among learners in a social manner. Such experiences show the perspectives of individual learners' ability to solve problems and how they are able to integrate their newly found knowledge into the existing body of knowledge (Amineh & Asl, 2015; Samson, 2015). Learners, therefore, show dexterity in how sensible their new ideas are and how best their ideas can be adapted into the world around them. Every individual learner, in the social constructivist paradigm, is considered as a part of a social group and not as an isolated learner. This implies that learning emerges as a result of social interactions in the group in which learners find themselves (Amineh, & Asl, 2015; Samson, 2015). Therefore, learning takes the form of active engagement in a social setting rather than a passive response in the learning process (Ní Raghallaigh & Cunniffe, 2013; Wanner, 2015). To social constructivists, the significance or meaning of learning lies in the experiences which individual learners share in social learning settings. Therefore, social constructivism recognises the distinctiveness and intricacies of different learners, the values they share and utilise, and the reward it brings as a fundamental part of the learning process (Amineh & Asl, 2015).

Figure 1:
The blended, online, face-to-face pedagogical strategy

Online Teaching

- Electronic instuctional delivery
- Pre-developed digital content
- Some scheduled synchronous
- Flexible time teacher-student and student-student
- Learning options and multiple pathways
- Requires structured time management
- Delayed feedback
- No lecture

Blended Teaching

- Student centered
- Interactive digital learning
- Online asynchronous communication
- More student-student interaction
- Use of Web 2.0 tools
- Requires Internet
- Use of LMS

- Teacher
- Communication
- Student engagement
- Curriculum and assessments
- Differentiation

Face-to-Face Teaching

- Teacher centered/ Direct Instruction
- Time limited to regular school day
- Absent students miss instruction
- No learning on computer/Internet
- Limited 1-1 student

- Face-to-face and digital instruction
- Integrated assessment mechanisms
- Some flexibility

- Immediate Feedback
- f2f and electronic instruction
- Verbal/body language cues
- Whole & small group instruction
- Physical meeting space

Source: https://sites.google.com/site/wagnerkarend/designing-a-class-discussion

The use of social constructivism in this study supports the premise that teachers who view blended learning as a relatively new pedagogical approach in facilitating learning can gain its skills and add to their pre-existing body of pedagogies. The assimilation of this pedagogical approach for teachers who were used to the traditional chalk-and-talk method is much easier because Hrastinski (2019) had earlier noted that blended learning comprises the inclusion and infusion of various technological dimensions of online, face-to-face and the traditional learning approaches in a learning environment, which allows for hands-on reflections by the learner and teacher. Furthermore, learners in their COP do not only stand to benefit cognitively as they collaborate with their peers in their learning spaces, but also develop their social perspectives as they interact with others in the learning process. Blended learning in the social constructivist nature of learning provides learners with opportunities to relate abstract concepts into real-life situations more easily. This is because of the use of technology and different forms of learning opportunities that are blended into the learning process.
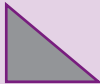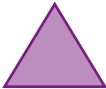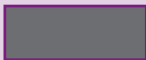
METHODOLOGY

The research paradigm used for this study was quantitative while a quasi-experimental design was used. In this study, a pre-test, post-test non-equivalent control type was adopted to examine the data collected. The

total population of primary 6 learners (aged 9-10) from nine different private primary schools in Owerri West local government areas of Imo State, Nigeria was 3 266. In selecting the research participants, a sample size of 165 learners, made up of 75 males and 90 females from two randomly selected private primary schools, was used for the study. From each of the selected schools, two classes were chosen at random and further classified into experimental and control groups, respectively. The experimental group was made up of 81 learners (47 females and 34 males) while the control group had 84 learners (43 females and 41 males). The instrument for data collection was a test made by the researchers. The researchers formulated 30 item-objective test questions titled: 'Mathematics Achievement Gain Test' (MAGT). It was drawn from the topic '2D shapes and their properties'. The learners were taught the basic concept in identifying a 2D shape. Thereafter, the properties of 2D shapes were taught. Among the 2D shapes that were taught are circle, right-angle triangle, equilateral triangle, Isosceles triangle, scalene triangle, square, rectangle, rhombus, parallelogram, trapeze, pentagon, hexagon, heptagon, among many others. The objectives of the lesson were, cognitively, for learners to (i) correctly detect properties in each variety of 2D shapes, (ii) correctly recognise the different types of angles and their shapes, and (iii) become familiar with how lines form angles. The construction of the test instrument was guided by a table of specifications endorsed by two experts, one in mathematics education and the other in measurement and evaluation. An example of the test items is shown in the table below.

Table 1:
Instruction: correctly provide an answer to the missing shape, name of shapes, number of sides of shapes and their angles, an example has been provided for you

S/N	Shapes	Name of shapes	Number of sides	Number of angles
Example		Circle	0	0
1				
2				
3			5 sides	
4		Hexagon		
5				

The reliability of the instrument was piloted on a group of 20 learners outside the study group but with the same characteristics, within a two-week interval using the test-retest method. A reliability coefficient of 0.85 was derived through the Pearson Product Moment Correlation coefficient formula. The two groups were administered with a pre-test to ensure equity in their cognitive backgrounds.

The experimental group was taught by their usual mathematics teachers trained in the use of the blended pedagogical strategy in teaching. Mathematics software (GeoGebra) on 2D shapes was projected on the board for the learners after the normal introduction of the topic. The teacher guided them through

step-by-step tutorial sessions on the features of 2D shapes. In addition, solutions to problems on area and perimeter of shapes were projected on the board. The software could reverse the solutions to problems on 2D shapes displaying the steps for the learners to follow suit. Learners were also allowed to present mathematical problems that were solved by the software and compared with their book solutions.

The control group was taught the same topic by their regular mathematics teacher through the conventional chalk-and-talk approach. The process lasted for two weeks, after which a post-test assessment was done on both groups using a rearranged version of the pre-test instrument. The data were analysed using the mean and standard deviation formats to answer the research questions, while the hypotheses were tested using the one-way ANOVA with $P < 0.05$ level of significance as the statistical tool.

The University of Pretoria's ethical principles were applied throughout the study. Voluntary participation was secured through letters of consent. Parents and school authorities gave their consent to conduct the research using their children, and their learners and schools, respectively. Creswell (2014) maintains that ethical principles must include honesty, privacy, confidentiality and avoidance of harm on participants. These principles were upheld during the research process.

RESULTS

Research Question 1: What is the difference in the learning gains in the topic '2D geometric shapes and their properties' of learners taught using the blended pedagogical strategy and those taught in the conventional chalk-and-talk method?

Results from Table 2 below reveal that the experimental group had 20.86 as the mean achievement gain unlike the control group which barely gained 0.57. This result shows that the experimental group was 20.29 higher than the control group.

Table 2:
Learners' learning achievement gains using mean and standard deviation

Group	Test	N	Mean	SD	Mean gain	Diff. in mean gain
Expt.	Post-test	81	59.40	15.53		
	Pre-test		38.54	12.22	20.86	20.29
Control	Post-test	84	40.13	13.42		
	Pre-test		39.56	12.45	0.57	

Research Question 2: Is there any appreciable difference in the learning gains of male and female learners who were taught 2D geometric shapes and their properties using the blended pedagogical strategy?

Table 3:
Summary of male and female learners' mean achievement gains

Group	Test	N	Mean	SD	Mean gain	Diff. in mean gain
Male	Post-test	34	59.69	15.52		
	Pre-test		38.51	21.42	21.18	

Group	Test	N	Mean	SD	Mean gain	Diff. in mean gain
Female	Post-test	*47*	59.82	15.56		0.99
	Pre-test		39.50	20.50	20.19	

In Table 3, it is shown that males in the group had a mean achievement gain of 21.18, whereas the females in the group had 20.19 mean achievement gain. With a very slight mean difference of 0.99, the males in the group learned better than the females.

Research Question 3: Do learners who achieve low and high scores in 2D geometric shapes and their properties using the chalk-and-talk method show any significant difference when taught mathematics using the blended pedagogical strategy?

Table 4:
Summary of low and high achievers' post-test achievement gains

Group	Test	N	Mean	SD	Mean Diff.
High Achievers	Post-test	30	60.24	15.63	
Low Achievers	Post-test	51	58.65	15.26	1.59

Table 4 shows that high-achieving learners had 60.24 as their mean score in the post-test of the experimental group, whereas the mean score of low achieving students was 58.65. The high-achieving students fared better with a slight mean difference of 1.59.

HYPOTHESES

H0: No significant difference was recorded between the mean achievement scores of learners taught 2D geometric shapes and their properties using the blended-learning instructional and the chalk-and-talk method.

Table 5:
Summary of learners' achievement gains from the ANOVA analysis

Source	Type in sum of squares	DF	Mean square	F	Sig.
Corrected model	26640.797	6	4440.133	75.353	.000
Intercept	1078.154	1	1078.154	18.297	.000
Covariate	2008.091	1	2008.091	339.553	.000
Method	461.316	1	461.316	7.829	.006
Sex	137.027	1	137.027	2.325	.129
Achievers	47.924	1	47.924	.813	.369
Method sex	9.681	1	9.681	.164	.686

Source	Type in sum of squares	DF	Mean square	F	Sig.
Method achievers	110.425	1	110.425	1.874	.173
Error	9310.112	158	58.925		
Total	509025.000	165			
Corrected total	3590.909	164			

Table 5 gives 7.829 as the calculated f-value for method, and this is greater than the table value which stood at 93.847. Also, the p-value is 0.006 and it is less than the 0.05 oc-value. Therefore, the null hypothesis is rejected and the alternative accepted following from the result. The implication of this is that the mean achievement scores of the learners taught mathematics using a blended-learning instructional method and those taught conventionally show a significant difference.

HO2: No significant difference exists in the mean achievement scores of the male and female learners who learned 2D geometric shapes and their properties using the blended-learning instructional approach.

In Table 5, it is shown that the achievers had a calculated f-value of 0.813. It is also less than the table value, which stood at 93.847. The p-value stood at .369, which is greater than the oc-value of 0.05. The null hypothesis is also upheld from the above result. Hence, the implication is that the male and female learners who were taught mathematics using the blended-learning instructional method show no significant difference in their mean achievement scores.

HO3: No significant difference is seen in the mean achievement scores of the low learning gains and high learning gains achievers who were taught 2D geometric shapes and their properties using the blended-learning instructional approach.

Table 5 presented .813 as the calculated f-value for the achievers, and it is less than the table value 3.847. Similarly, the p-value stood at .369, which is greater than oc-value of 0.05. The null hypothesis is upheld following this result. It, therefore, draws the implication that the high and low achievers who learned mathematics using a blended-learning instructional method show no significant difference in their mean achievement scores.

DISCUSSION OF FINDINGS

Given the findings of this study for research question 1 and H0I, it can be said that the mean achievement gain scores of learners who learned mathematics using the blended pedagogical strategy in the experimental group were better than their counterparts who were taught using the conventional chalk-and-talk approach. This finding is a pointer to the teaching methods teachers used in facilitating 2D shapes and their properties. Having noted earlier that the experimental group that was taught using the GeoGebra mathematical software, the findings, therefore, corroborate the opinions of Zulnaidi, Oktavika and Hidayat (2020), who noted that the use of GeoGebra is central to the creation of meaningful learning experience for teachers and learners of mathematics. The findings further affirm the views of Bature and Bature (2005), who assert that learners fail mathematics as a result of inappropriate teaching methods used by teachers. Furthermore, the findings show that the learners' understanding and interest in 2D shapes and their properties were deepened and better enhanced by the blended pedagogical strategy than by the conventional chalk-and-talk approach of the same topic. It also reveals that the use of a blended-learning approach allowed the learners to participate freely in the subject and even appreciate it because it is learner centred (Zulnaidi, Oktavika & Hidayat, 2020). Similarly, the findings of the present

research confirmed the findings of Saritepeci and Cakir (2015), who recorded a positive effect on the use of a blended-learning instructional approach and environment on the learning engagement of students in middle school. Findings from their study showed that there was a meaningful impact and an increase in the average learning gains of students taught in the blended-learning environment, unlike the learners who were taught in a traditional face-to-face learning environment.

The findings for research question 2 and H02 revealed that male and female students who were taught 2D shapes and their properties using the blended instructional teaching method and learning process achieved similar results and showed no statistically significant difference in their mathematics gains. This is partly due to different rates of individual assimilation, which are not dependent on the teaching method – since the teaching method gave them all an equal learning opportunity. This report aligns with the findings of Alruwuch (2015) where he asserted that male and female students who had access to blended instructional packages did not significantly differ in their performance but had very similar results. Additionally, these results corroborate the findings of Abdon (2014), who surveyed the effect of using blended-learning methods in teaching algebra in Malayan colleges in Laguna and found that the students who learned with blended methods achieved better grades than those taught using the conventional chalk-and-talk method.

Finally, for research question 3 and H03, this research revealed that there was no marked difference in the learning gains or learning ability of the high-gaining and low-gaining mathematics learners in 2D shapes and their properties (above- and below-average learners) because they all had equal opportunity to partake in the multimedia instructional approach adopted in the blended instructional teaching method. As noted by Annie Kavitha and Sundharavadivel, (2012), the use of blended learning accommodates different learners, such as visual, auditory and kinaesthetic learners. In the case of this study, blended learning presents a fair and level learning ground for learners with different levels of learning abilities.

RECOMMENDATIONS

From the findings of this research, it is pertinent to make the following recommendations:

1. Teachers who teach mathematical contents such as geometry should be given proper in-service training and orientation on how to effectively use GeoGebra in the blended pedagogical strategy in teaching learners in primary schools.

2. Educational stakeholders should provide ICT facilities in primary schools so that teachers can use them in teaching to enhance the learning gain of learners in mathematics.

3. Teachers of mathematics in primary schools should ensure that they are proficient in the use of modern technology so that they can freely use ICT facilities in their teaching process and environment.

CONCLUSION

This research investigated the use of a blended-learning approach to facilitate the learning of geometric 2D shapes and their properties for primary 6 learners who were aged 9-10 years. Results from this study explicitly revealed that the learning gains of learners in geometric 2D shapes and their properties can be greatly enhanced across all genders and levels of learning abilities when they are taught using GeoGebra in a blended-learning pedagogical approach.

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Tutor experiences of online tutoring as a basis for the development of a focused tutor-training programme[1]

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ABSTRACT

Online tutorials (e-tutorials) have the potential to address challenges that higher education has grappled with for many years, and even more so in the context of the COVID-19 pandemic. In South Africa, increased access to higher education by members of previously disadvantaged groups has caused severe strain on existing infrastructure and posed new challenges for lecturers in the classroom. E-tutorials do not only address infrastructure challenges related to the shortage of physical learning space in universities but also create a platform where students can engage with learning content outside the classroom. This study seeks to investigate the experiences of tutors engaged in an online tutorial programme at a rural university campus in South Africa. We deploy a qualitative approach to make sense of the experiences of the tutors for purposes of developing a focused online tutorial training programme. Data were gathered from selected participants using structured questionnaires. The questionnaires were analysed using the five stages of Salmon's e-moderating framework. The limitations of the study include the limited population sample and the rural context in which the study was conducted. As a result, the findings of the study may not be generalisable to other, non-rural contexts. The findings indicate that tutors need specific training to effectively facilitate learning in an online environment.

Keywords: e-tutorials, tutors' experiences, online tutor training

INTRODUCTION AND BACKGROUND

Higher education institutions (HEIs) globally are faced with challenges of massification, student retention, large classes, and student engagement, and a lack of resources to accommodate rapidly increasing numbers of student enrolments (Jawitz, 2013; Ayeni & Oluwantoyin, 2016). In addressing these teaching and learning challenges, many HEIs, including those in South Africa, have resorted to online tutoring and blended learning approaches, depending on their needs. In South Africa's higher education sector, tutoring is perceived as a key strategy for facilitating student engagement (Faroa, 2017). However, for the purposes of this article, we focus specifically on online tutoring, which has the potential to transform old and open up new trajectories for teaching and learning in higher education, especially in the context of the COVID-19 pandemic. Online tutoring is different from traditional, face-to-face tutoring because it takes place in a virtual environment, and, therefore, it does not necessarily require physical infrastructure. Many

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HEIs around the world are gravitating towards online learning because of various contextual challenges which include, among others, limited venues, timetabling challenges and inadequate computer labs (Reimers, Schleicher, Saavedra & Tuominen, 2020). The outbreak of the COVID-19 pandemic has also forced HEIs around the world to administer teaching and learning online (Dube, 2020; Govender, 2020) in order to ensure social distancing.

Broadly speaking, the online tutorial design falls into two categories, namely asynchronous and synchronous. Synchronous e-tutorials take place in real time, and students and tutors are expected to be online simultaneously (Sabatino, 2014). On the other hand, asynchronous e-tutorials do not take place in real time and students 'are able to work at a pace consistent with [their] rate of learning' (Sabatino, 2014: 23). While synchronous tutorials create a platform for students to learn from each other and receive feedback in real time, asynchronous tutorials give students more time to reflect and familiarise themselves with the learning process as well as to interact in ways that promote individual growth and self-intellectual enrichment (Metz & Bezuidenhout, 2017). In a study conducted in Nigerian universities, Ogbonna, Ibezim and Obi (2019) found that both approaches have varying benefits. However, the asynchronous approach resulted in better understanding of content among students than the synchronous approach.

The benefits and challenges of e-tutorials differ depending on the contextual circumstances of implementation. E-tutorials allow students to study in their own time, even in the comfort of their homes. They reduce timetable clashes, improve writing skills for both students and tutors, foster time-management skills, and develop communication and computer literacy skills as well as problem-solving and critical-thinking skills (MacDonald, 2008; Goold, Coldwell & Craig; 2010; Peacock & Cowan, 2016; Metz & Bezuidenhout, 2017). Bean et al. (2019: 3) state that 'online tutoring creates supplemental opportunities for students enrolled in all types of courses: face-to-face, hybrid, and online', while Lewin and Mawoyo (2014) intimate that e-tutorials are accessible at anytime and from anywhere, thus allowing for a more flexible and relaxed approach to learning. Chappell et al.'s (2015) study of the effects of e-tutorials on academically weak middle-school students found that online tutoring contributes to better student grades. Similarly, Vasquez and Slocum (2012) found that students who engaged in synchronous tutorials significantly improved their reading proficiency and communication skills.

Although e-tutorials have numerous advantages, especially in the context of the Fourth Industrial Revolution, some scholars, such as Chi-Sing and Beverly (2008), argue that students require detailed guidance to manoeuvre in e-tutorials, and, if there is no guidance, that the tutorials may not be ideal for students who find it difficult to pay attention, lack self-discipline and communication skills, struggle with independence, or have poor computer and time-management skills. Online learning may cause social alienation due to a lack of social interaction (Hameed, Badii & Cullen, 2008). As a result, e-moderators should learn to use their skills to ensure that participants develop a sense of community in the medium (Salmon, 2004b).

Stenbom, Jansson and Hulkko (2016) identified three challenges of e-tutorials, namely (i) the tendency for tutors to lecture instead of probing students to think critically, (ii) not allowing student sufficient time to reflect on what was learned and (iii) the general tendency among students to read posts without replying (lurking). Bean et al. (2019) reported that e-tutors often find it challenging to control their emotions online while Salmon (2004b: 85) notes that 'helping trainee tutors to control their frustration is a key aspect of learning to learn online'. In asynchronous tutorials, students may take longer to respond, causing some participants to lose interest in e-tutorials. A lack of resources to undertake e-tutorials may also pose a challenge to the smooth running of e-tutoring.

Online learning is effective when participants socialise with each other, share experiences and exchange ideas; however, it is not uncommon for students to work in social isolation and shun collaboration with other students. Dixson (2010) affirms that student engagement is crucial in the process of student

learning, particularly in virtual learning environments where tutees can sometimes experience feelings of alienation and disassociation. Available literature seems to suggest that e-tutorials can either be successful or unsuccessful depending on the way e-tutors manage the online learning process. Against this background, the role of the tutor in an online tutoring environment is critical in achieving high levels of student engagement and success.

In the UK, Lowe, Mestel and Williams (2016) conducted a study on how mathematics and computer science students perceived e-tutorials. Results showed that the lack of technical knowledge and interest, limited internet access and low self-esteem in using online learning tools caused low participation. In the Chinese context, Feng, Xie and Liu (2017) found that timely feedback, provision of summaries after discussions, and commending and praising students can boost student engagement. Ahmad and Chua's (2015) study of the experiences of pre-service teachers in Malaysia revealed that, during online discussions, students were able to think critically and share ideas.

This study sought to answer two questions:

- How do e-tutors experience online tutoring at a rural university campus in South Africa?
- How can the experiences of e-tutors be harnessed to develop a focused e-tutor training programme?

LITERATURE REVIEW

Although much has been written about new technologies and their potential, little has been written about the kind of training that e-tutors/lecturers require. Available literature focuses on the roles of tutors and the strategies they can use to facilitate online learning, but very little information is available on the actual training of online tutors (Garrison, Anderson & Archer, 2000; Salmon, 2002; Rickard, 2004). Although increasing numbers of learners are working online, 'few lecturers have themselves learned this way, [thus], e-[tutoring] is not a set of skills most lecturers [tutors] have acquired vicariously through observing teachers whilst they themselves were learning' (Salmon, 2004: 56). Studies by Boylan, Bliss and Bohnam (1997) and Bernath and Rubin (2001) show that the success of an online tutoring programme depends on its tutor-training methods. In addition, Barker (2002) states that one of the most important skills required by online tutors is knowledge of the tool used to facilitate e-learning, namely the Learning Management System (LMS). E-tutors need to be familiar with specific tools within an LMS to enable students to interact effectively in a virtual environment. A lack of knowledge of how the system works is likely to frustrate both tutors and tutees. However, it is important to emphasise that e-learning is less about 'learning new software or computing skills' (Salmon, 2004: 56) than it is about learning to learn through virtual platforms.

Bernath and Rubin (2001) posit that untrained tutors may resort to practices that are highly detrimental to levels of engagement and success. Bean et al. (2019: 3) identified seven common competencies for successful online learning instructors namely, (i) ability to use technology, (ii) provision of timely and constructive feedback, (iii) communication and administrative skills, (iv) ability to deal with problems timeously, (v) monitoring the learning process, (vi) subject knowledge and (vii) supporting students in need. McFarlane (2016) further contends that tutors who are not trained become broadly confused and often indicate a lack of understanding of their roles and responsibilities. Many researchers are in agreement that e-tutors play an important role in virtual learning environments and that e-tutors require a set of specific and appropriate competencies in addition to their module and its content-specific knowledge (McPherson & Nunes, 2009).

Other researchers have noted that students who work together in face-to-face setups could work best in an online environment since they have built rapport among themselves, which could lead to better achievement of learning outcomes (Wright, D'Alba & Jones, 2016; Nathan, 2018). According to Karimi

(2016), there is a need to shift the focus of e-tutor training from training tutors how to deliver content to training tutors how to ask questions that help to keep the discussion alive and encourage students to think critically. Given the absence of human-to-human social contact in e-tutorials, it is important, when designing online tutor-training programmes, to consider how the online platform can simulate face-to-face social interactions. Social interaction can advance the learning process because knowledge is often shared through interaction. Engaging with a knowledgeable tutor can resolve unforeseen difficulties that emerge in the course of the online learning process.

O'Hare (2011) provides a guide that online tutors can use to ascertain whether students have the maximum opportunity to interact and engage effectively. Firstly, tutors ought to establish the purpose, context and intended outcomes of the tutorial. Secondly, students should be given adequate induction into the effective use of relevant tools on the discussion board. Thirdly, the topic of discussion and the learning outcomes should be connected so that students can appreciate the importance of the debate and what it seeks to achieve. Fourthly, feedback on the discussion should be given in the form of summarised posts that focus the learning on the desired outcomes. Lastly, the tutor should not allow a discussion to lose steam or get boring. When tutors see that the discussion has gone flat, they should immediately create a new discussion thread and steer the conversation in a new direction. O'Hare's (2011) study found that students need tutor guidance to interact with each other effectively. According to Salmon (2004b), the role of the e-moderator is to prompt, encourage and enable openness, thus creating a conducive environment for everyone to contribute. Similarly, Stickler and Hampel's (2007: 82) study on designing online tutor-training programmes reveals that providing 'technical training' to online tutors could possibly increase their self-esteem.

It is in light of this that we seek to investigate how tutor experiences can be appropriated to develop an effective online tutoring programme. Bjørke (2014) intimates that challenges faced by tutors on virtual platforms include a lack of discipline from the students and the fact that students prefer to be taught by lecturers rather than learning from their peers. In an exploratory study of challenges experienced by e-tutors, Joubert and Snyman (2017) found that e-tutors faced a number of challenges such as low participation and lack of commitment from the students, a sense of disassociation, inadequate training, unclear roles of e-tutors, and intermittent internet access. These challenges exist in many contexts where online learning takes place. McGuiness and Fulton (2019: 16) found that minority students faced technological glitches such as with internet connectivity and the inability to navigate the relevant tools. This was also confirmed by Loh, Wong, Quasi and Kingshott (2016), who singled out flexibility as the pillar for online learning. According to Dube (2020), some of the challenges experienced by learners in rural areas in South Africa include the high cost of data to connect to the internet as well as power outages that affect network connection. However, some scholars have also identified a lack of motivation on the part of students as a major challenge. Motivation determines the level of engagement that can be expected from students. Given that a lack of motivation can be detrimental to the learning process (Hartnett, 2016), Davis et al. (2019) suggest that motivation can be maintained by not letting go of personal interaction between teachers and students. Other researchers suggest that 'students may require adaptive motivation to stay engaged' (Francis, Wormington & Hulleman, 2019: 3).

THEORETICAL FRAMEWORK

This paper adopts Salmon's five stages of e-moderation as a theoretical framework to understand how the experiences of e-tutors can be appropriated to curate a focused, online tutor-training programme. Salmon's framework is based on social constructivist theories that postulate that knowledge is created by individuals through their own experiences and with the support of their cognitive framework (Salmon, 2007). Social constructivism sees learning as 'an active process in which learners engage with and build new ideas or concepts based upon their current or past knowledge' (Salmon, 2007: 39). The

theory asserts that learners can construct knowledge and learn through social interactions with their peers, but that they must engage in an authentic task and have meaningful conversation about the task or topic (Reigeluth et al., 2017). Group work and discussion can facilitate this process and put this theory into practice (Majola, 2020). Salmon's e-moderating framework is 'a structured developmental process' (Salmon, 2002: 10) that consists of five stages, namely (i) access and motivation, (ii) online socialisation, (iii) information exchange, (iv) knowledge construction and (v) personal development (Salmon, 2002, 2004). The first stage (access and motivation) involves the initial processes of interacting with e-learning technologies, such as setting up the computer, logging in and gaining access to the system. At this stage, the responsibility of the e-moderator is to welcome and encourage participants to interact and ensure that the system is ready for use (Salmon, 2004).

The second stage (online socialisation) involves interaction among participants as they send and receive messages. At this stage, the responsibility of the e-moderator is to familiarise themselves with the student body and provide links between cultural, social and learning environments (Salmon, 2004). The e-moderator should also encourage participants to 'identify and share their own beliefs and values, and acknowledge that they are different from those of others', thus developing 'a sense of community in the medium' (Salmon, 2004: 66) among the participants. In the third stage (information exchange), participants search and personalise the relevant software while the e-moderator facilitates tasks and supports the use of learning materials. 'Information exchange' refers to the sharing of information which is possible when e-moderators/tutors facilitate small groups using collaborative, active learning strategies that ensure scaffolding of the learning material (Tshuma, 2012; Salmon, 2004). E-moderators should avoid information overload by reading and responding only to what is important.

In the fourth stage (knowledge construction), participants construct new knowledge by sharing experiences on the online platform. The role of the e-moderator/tutor at this stage is to facilitate the knowledge construction process by probing, redirecting and changing the direction of the discussion, a process that is often referred to as 'weaving'. Weaving 'describes the flow of discussion and how it can be pulled together', often by 'collecting statements and relating them to concepts and theories from the course' (Salmon, 2004: 67-68) Salmon's idea of 'knowledge construction' underscores the social constructivist view that knowledge is generated in social interaction. Therefore, it is important for discussions to culminate in the building and sharing of expertise between e-tutors and tutees (Salmon, 2004). Knowledge construction occurs when participants explore issues, take positions, discuss their positions in an argumentative format, and reflect on and re-evaluate their positions (De Smet et al., 2008). At stage five (personal development), the e-moderator's role is to provide links outside the closed-conference setup while participants 'start to build on the ideas acquired through the e-tivities and apply them to their individual contexts' (Salmon, 2004: 33). At this stage, participants also develop metacognitive skills, and the e-moderator can take advantage of this to develop more challenging e-tivities.

Ultimately, stage five (personal development) is concerned with the academic growth of students, which is demonstrated through the ability to reflect, think critically and question their own views. Salmon (2002, 2004) conceptualised online learning as a gradual process (a ladder) that starts off with the acquisition of elementary skills (how to use the relevant technology) to the acquisition of high-order skills, such as critical thinking and reflexivity. Although Salmon's model has been adopted by many institutions, especially in the UK and Australia, scholars such as Moule (2007) have raised concerns about the dominance of the model in online teaching and learning discourse, which tends to stifle other ideas. In some instances, the model is 'seen as a template for the design of all online teaching' in all 'learning environments regardless of the context', thus neglecting contextual differences and the individual learning styles of students. In this study, we adopt this model because it 'provides a framework with clear progressive stages that can support the design and facilitation of online courses' (Moule, 2007: 38); however, we are aware that the stages are

not necessarily applicable to all online learning contexts. The framework is useful because it covers the different aspects of the online learning process, from access and motivation to personal development.

RESEARCH METHODOLOGY

The study set out to investigate the experiences of tutors engaged in an online tutorial programme at a rural university for the purpose of developing a focused tutor-training programme. We adopted a qualitative research approach, which allowed us to 'gain an understanding of the underlying reasons and motivations for actions and establish how people interpret their experiences and the world around them' (Taherdoost, 2016: 3).

Research design

Qualitative research is a form of 'social inquiry that stresses the way that people interpret and make sense of their experiences to understand the social reality of individuals' (Mohajan, 2018: 2). We adopted the interpretivist paradigm to make sense of the data relating to the experiences of e-tutors who facilitate tutorials at a rural university campus. Interpretivism is a worldview that assumes that reality is socially constructed (Creswell, 2011). We approached tutors' experiences as experiential knowledge, which has the potential to generate new ways of doing e-learning in rural contexts. The participants consisted of 15 online tutors who passed the relevant module with good grades (at least 65%).

Procedure

We collected data from 15 participants (online tutors) who were selected through purposive sampling. Purposive sampling is a strategy in which particular settings, persons or events are selected deliberately in order to provide important information that cannot be obtained otherwise (Taherdoost, 2016). Purposive sampling was preferred because tutors were already involved in an online tutorial programme and were likely to offer important reflections based on their experience. Although the objective was to solicit views from all tutors who were part of the online tutorial programme (the target population), only 9 responded to the structured questionnaire, which translated to a 60% response rate. We did not include students enrolled in the module because we wanted to reflect on facilitating rather than learning experiences. The participants responded to the following questions:

(i)   How did you experience e-tutorials with your tutees?

(ii)   How comfortable have you been engaging with tutees online?

(iii)   How did the tutees contribute to discussions during e-tutorials?

(iv)   What were the challenges that you faced while facilitating e-tutorials?

(v)   What do you think needs to be done to address the challenges you highlighted in question 4 (if any)?

The tutorial programme that this study reflects on was introduced in an English Literature module at a rural South African university campus in 2018. The initiative was inspired by a number of challenges that the University faces, such as timetable clashes, limited venues and poor student attendance in traditional physical tutorials. The objective of the programme was to find ways of facilitating academic discussions among students using the Blackboard LMS. Before tutors commenced their duties and responsibilities, they attended a mandatory, generic tutor-training program, which equipped them with skills on how to conduct effective e-tutorials. Thereafter, each tutor was allocated one group consisting of 17 students. The e-tutorials ran for 12 weeks per semester.

Each week, tutors facilitated a discussion based on a given topic. The questions were usually formulated as essay type and were based on prescribed literary texts. The discussions ran from Monday, at about nine o'clock in the morning, to Sunday at noon. We decided to include weekends because some students

had no time to effectively participate in the discussions during the week. Moreover, weekends also helped manage the connectivity challenges that students often experienced during the week when the majority of students needed access to the internet. The core responsibilities of online tutors included, among others, posting the discussion topic every Monday, reading student contributions, guiding the discussion and providing timely feedback. At the end of each discussion, e-tutors were expected to provide a summary of the discussion, which students could use as notes in preparation for tests.

Data collection

The study used a structured questionnaire to solicit data from tutors who worked on an e-tutorial programme. Abawi (2013) defines a questionnaire as a data-gathering tool that consists of a sequence of questions with an intention to collect data from participants. The questionnaires were distributed to tutors via the Blackboard LMS. We chose a questionnaire because it is 'relatively quick and easy to administer and may be of particular use if clarification of certain questions is required' (Gill et al., 2008: 291). Mathers et al. (2009) posit that questionnaires can be useful research instruments in cases where contextual circumstances cannot allow for face-to-face interviews. In our case, a structured questionnaire was appropriate because the study was conducted during the COVID-19 pandemic when gatherings and meetings were not allowed. The study utilised direct, self-report measures that analyse engagement through the affective (perceptions, attitudes), behavioural (activities) and cognitive (interest, active understanding) aspects of the tutors' facilitating experience (Jennings & Angelo, 2006). Direct self-reporting allowed us to delve into the attitudes and experiences of the online tutors.

Ethical Considerations

This study took a principle-based approach to ethics (Wiles et al., 2005), which stipulates that (i) participants should be free to participate in research without feeling intimidated, (ii) research must not cause harm to participants, (iii) research should be valuable and beneficial to others, and (iv) participants should be treated fairly and equally during the research process. We provided the participants with information on the objectives of the study and made them aware that they were free to withdraw from the study at any time if they so wished. In line with the principle of anonymity and confidentiality, participants were identified through pseudonyms and data were not shared with anyone who was not directly involved in the study. Ethical clearance was obtained through the University's Research Ethics Committee.

Data Analysis

Before data analysis, all responses were categorised into themes through a process that Miles et al. (2014) call 'coding'. Codes are labels that assign symbolic meaning to the descriptive or inferential information compiled during the study (Miles et al., 2014). In qualitative data analysis, a code is a researcher-generated construct that symbolises and, thus, attributes interpreted meaning to each datum for later purposes of pattern detection, categorisation, theory building, and other analytic processes (Saldaña, 2013). Miles et al. (2014: 72) characterise coding as a process that involves 'deep reflection about and, thus, deep analysis and interpretation of the data's meanings'. The purpose of coding is to capture a datum's primary content and essence and to generate themes. In the context of this study, coding involved assigning labels that categorised the participants' responses into themes, which were later analysed in relation to the conceptual framework. We used codes to 'retrieve and categorise similar data chunks so that we could quickly find, pull out, and cluster the segments relating to a particular research question, hypothesis, construct, or theme' (Miles et al., 2013: 72). We assigned codes, such as 'rapport', 'flexibility' and 'challenges', based on recurring patterns. After the data were coded and patterns were identified, we analysed the data using thematic analysis. Thematic analysis 'is a form of pattern recognition within the data, where emerging themes become the categories for analysis' (Fereday & Muir-Cochrane, 2006: 4). We preferred thematic analysis because it is flexible, and it provides both rich and detailed data (Braun & Clarke, 2006).

RESULTS AND DISCUSSION

The majority of the tutors who participated in the study (6) were female while only three participants were male. This was mainly because female tutors (12) constituted the majority on the tutorial programme. Of the fifteen tutors who worked on the programme, only three were male. However, the findings do not show any differences between female and male tutors in terms of how they experienced the online tutorial programme. In fact, findings indicated that all tutors, regardless of gender, encountered various challenges and that a number of areas needed attention to improve the quality of e-tutorials. We identified five themes that emerged from the tutors' experiences of the programme, namely (i) building rapport, (ii) flexibility, (iii) student engagement, (iv) technological challenges, and (v) lack of motivation.

Building rapport

Online socialisation is critical in online learning. It is through social interaction that tutees find their identities and know their abilities in relation to the skills of their peers. In responding to the first question on how tutors experienced e-tutorials, many tutors reported that e-tutorials helped them understand the prescribed learning material better. They also mentioned that e-tutorials made them realise the importance of developing relationships with students. This finding confirms results from studies by Wright, D'Alba and Jones (2016) and Nathan (2018) which found that rapport between tutors and tutees is important because it helps turn the virtual space into an interactive community of learning. Building relationships with students makes them feel that they belong. Salmon (2004b: 66) submits that, in an online environment, 'the contributor needs to be acknowledged in order to be heard' and 'it is important that the e-moderator avoids the temptation to discount the experience [of a student] in any way or to counter it and enter into argument'. Students are not likely to participate in a platform where they feel lonely and isolated. Often, students need to trust their peers before they can start sharing their ideas and opinions. Below are some of the responses that emphasised the importance of student-tutor rapport:

> The experience is good, and I am developing a mutual relationship with my tutees as I learn the texts prescribed for the module conveniently. I also enjoy the discussions because they give me an insight of what the texts analysed actually aim to teach. (Tutor 9)

Tutor 9 makes a connection between establishing a mutual relationship with tutees and understanding the prescribed texts. In an online platform, students learn better when they feel acknowledged by both the tutor and their peers. This response suggests that establishing rapport on an online platform precedes the learning process. Similarly, Tutor 2 indicates that active and interactive tutees make online learning an 'excellent experience' for tutors.

Flexibility

Tutors also indicated that e-tutorials are an effective way of engaging with students because of their flexibility. This confirms Lewin and Mawoyo's (2014) findings that e-tutorials are flexible and can be accessed at any time. In their own study, Loh, Wong, Quasi and Kingshott (2016) indicated that tutees described flexibility as the pillar for online learning. The asynchronous approach allows both students and tutors to access the discussion board in their own time. Hence, tutors and tutees had sufficient time to go through contributions and thoroughly reflect on them. Tutors also reported that setting ground rules for e-tutorials was crucial both in maintaining respect within the group and in ensuring that the discussion remained focused and relevant. Tutors also indicated that e-tutorials provided them with a platform to explore new ideas and share their experiences. This finding corroborates Ahmad and Chua's (2015) findings regarding virtual learning tutorials as a pedagogical tool in Malaysian HEIs. The following response emphasises flexibility as one advantage of e-tutorials.

> E-tutorials are very fascinating why because you can work even at home in bed it was very nice working with my tutees online, I got to learn new skills but tutees are a lot of work when it comes to discussions. (Tutor 8)

What is evident in the above response is that tutors enjoyed the informal nature of e-tutorials where learning ceases to be limited to the four walls of the classroom but continues even when students are in the comfort of their homes. This is an important point, especially given that the 21st-century student has many things that demand their time. The idea of taking the classroom to their personal space is likely to provide students with more time to engage in learning.

Student engagement

Student engagement is one of the difficult elements to achieve in higher education, in either in face-to-face or online learning environments. However, when asked about tutee contributions, tutors indicated that tutees used the online platform not only to seek clarity from the tutor but also to engage with their peers. This is probably an indication that tutors applied effective collaborative learning strategies that motivated tutees. In some groups, students asked probing questions and made follow-ups with the tutors on issues they did not understand. This is in contrast with Feng, Xie and Liu's (2017) findings in China where students did not prefer working in groups, reasoning that it was time consuming. The following comment highlights the interactive atmosphere that some tutors noticed.

> I found that tutees which were engaged would make the effort to actually read what their colleagues have posted, recognise either their mistakes or the correct arguments that the discussion thread would be asking and then act and in some cases expand on what the question demanded. (Tutor 5)

Although tutees also faced some difficulties, tutors observed information exchange among tutees that is only possible when collaborative learning strategies are used to facilitate discussion. Collaço (2017) intimates that interaction among students helps them create knowledge and achieve their learning outcomes. Salmon (2004) notes that connectedness with time and place as well as connectedness with others contribute to online socialising.

Technological challenges

Reflecting on the challenges they encountered, some tutors stated that they had difficulties with internet access, especially off campus (Joubert & Snyman, 2018). They also reported that they could not consistently engage with students when off campus because of data costs. This confirms findings from other studies that have investigated challenges faced by students in virtual learning environments (Dube, 2020). Tutors also reported that power outages affected their work. South Africa has, for several years, experienced power challenges that affect technology-enhanced learning in institutions of education. Tutors indicated that, in some instances, the internet would shut down while they were busy with tutorials. This finding is consistent with McGuiness and Fulton's (2019: 16) study at the University College Dublin in Ireland, which reveals that unreliable internet connectivity poses a serious challenge to effective online learning. Below is a response from a tutor in relation to poor internet connectivity:

> I will say Blackboard must try to be always working during weekdays and in order to help students who have problems with grammar maybe each tutee must create another blog for those who need kind of help so that they will be familiar with. (Tutor 6)

It is evident from the excerpt above that access to online learning is vastly impeded by technological glitches such as poor connectivity. Tutor 4 (an off-campus student) also highlighted high data costs, which made it difficult for him to work from home over weekends.

Lack of motivation

Many tutors were concerned about the level of plagiarism in students' contributions. Some students did not show the motivation to learn as they simply copied and pasted responses from online sources. Joubert and Snyman (2018) listed a lack of commitment from students as one of the challenges faced by e-tutors. Tutors also reported that some students posted contributions late or on the last day of the discussion, which made it difficult for the tutors to give feedback. Others reported that students treated e-tutorials as a submission drop box instead of a discussion. Some students submitted contributions, but they never responded to comments from other students. Tutors also reported cases of unresponsive students whose behaviour compromised student engagement and peer learning. In their own studies, Hartnett (2016) and Stenbom, Jansson and Hulkko (2016) identified student unresponsiveness as a major challenge in online learning. The responses below highlights challenges related to lack of motivation:

> Some just post for the sake of just posting they do not care to engage with the reading materials. Like I said in my previous response, there are also those that really take the initiative of doing their work. (Tutor 1)

The responses show that a lack of motivation manifests in different ways, such as plagiarism, posting meaningless contributions and treating the online learning platform as a submission drop box where they dump contributions without interacting with others. Since the discussions were graded, some students were simply concerned about marks, hence they focused on submitting 'something' rather than engaging in a discussion.

Possible solutions to identified challenges

Findings in this study confirm Stickler and Hampel's (2007) observation that online tutors face both pedagogical and technological challenges. Both tutors and tutees need training on how to use Blackboard tools, particularly the discussion board. In this study, findings suggest that many students did not know how to manoeuvre on the Blackboard platform. Dube (2020) indicates that it is imperative for online teachers to be trained before they facilitate online learning. As highlighted in the discussion above, students need to understand the difference between online and face-to-face tutorials. E-tutorials are only beneficial if they are interactive. To deal with unresponsive students, one of the tutors suggested that early warning systems need to be developed to inform students about the need to participate in the discussions. Tutors also indicated that the University needs to build more computer labs to ensure that all students have access to the internet when they need it. The response below highlights some of the main challenges that tutors faced:

> Tutees must be thoroughly inducted on the e-tutorials and conscientious that discussions are just like face to face tutorials which do not carry a grade with them so that students do not treat online discussions like they are assessments. (Tutor 9)

One of the major challenges with e-tutorials is that students expect all their contributions to be graded. If discussions do not contribute to a mark, students tend to lose motivation. Given the preoccupation with marks, some students simply ignore the interactive aspect of the virtual classroom and continue to treat it as a submission (rather than a discussion) forum. To deal with this problem, Tutor 9 recommended some form of training for students before they engage in e-tutorials. However, scholars such as Moule (2007) have recommended peer assessment as a possible solution.

Tutor-training framework for a focused e-tutorial programme

Although Salmon's e-moderating framework is a useful model for online learning, it does not apply to all learning contexts. In fact, the model does not address some of the challenges faced by students in

rural communities, such as poor internet connectivity and limited knowledge of an LMS. In developing the e-moderating framework, Salmon (2011) identified three forms of knowledge that are critical in online learning platforms, namely (i) declarative knowledge, (ii) procedural knowledge and (iii) strategic knowledge. Declarative knowledge involves technical knowhow about how certain tools function, which implies that e-tutors need to know how to operate the relevant LMS. Procedural knowledge entails knowledge about the steps that a tutor needs to follow in operating the system. Lastly, strategic knowledge involves knowledge about how to apply e-moderating skills. This encompasses skills related to how to respond to student contributions and how to redirect discussions and prompt debate. An effective tutor-training programme should focus on inculcating and developing these three types of knowledge among e-moderators. Salmon's conceptualisation of e-learning as a ladder is somewhat problematic because it presupposes that students ought to follow a set of predetermined steps in order to succeed. The notion of a 'ladder' can be interpreted as exclusionary because it creates the impression that those who are at the bottom of the ladder are less 'cool' than those at the top. Students who perceive themselves as being at the bottom of the ladder may feel excluded and shun participation. Given that technological literacy is often associated with being modern or civilised, students often do not want to be seen as technologically illiterate. We, therefore, propose a model that conceptualises online learning in terms of phases rather than steps that students need to scale. Figure 1 shows the proposed tutor-training model that identifies three phases of the tutor-training process, namely (i) the familiarisation phase, (ii) the engagement phase and (iii) the knowledge construction phase.

Figure 1:
Pyramid tutor training model
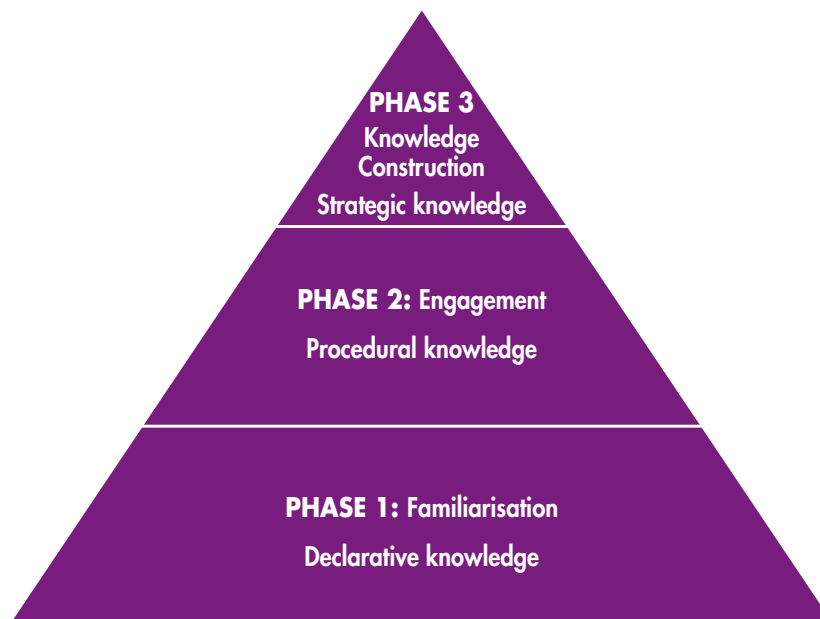
The tutor-training model focuses on equipping tutors with technical knowhow, communication or interaction skills, and developing the critical thinking skills required to produce new knowledge. In Phase 1, tutors are equipped with basic computer literacy skills such as identifying relevant icons and learning how to use them to navigate the system. In Phase 2, tutors acquire knowledge about the online learning process with a particular focus on how to handle diversity in discussions. This includes knowledge about how to send positive or motivating messages, how to keep the discussion lively, how to redirect the discussion and how to assess student contributions. Phase 2 is the 'how-to phase' because it focuses on developing knowledge about appropriate procedures. Phase 3 involves explaining to tutors what they can do with the e-moderating skills that they have acquired in Phase 1 and Phase 2. Phase 3 develops skills such as

creativity, critical thinking and reflexivity. At this phase, tutors use their knowledge of both the software and technical procedures to facilitate e-learning. This model is different from Salmon's (2002) framework because it focuses on developing knowledge rather than prescribing a specific procedure for e-learning. Unlike Salmon's five-step model, we prefer to think of online learning as consisting of phases that are flexible, overlapping and elastic.

CONCLUSIONS AND RECOMMENDATIONS

E-tutorials require creativity and the ability to adjust facilitation methods to the needs of tutees. It is vital for the tutors to create a dynamic, online platform by asking probing questions that promote dialogue and to discourage tutees from using the online discussion platform as a dumping site where they post contributions without engaging with others' contributions. Tutees need to be inducted into the online learning environment before they can even begin e-tutorials.

Findings from this study show that e-tutors ought to be prepared for e-tutorials through training. E-tutors should familiarise themselves with the relevant software and tools (icons) so that they can deftly navigate the system. It is evident from the findings that institutions of learning should build additional computer labs and provide data to ensure access to the online learning platforms. The study also established that system breakdowns affect engagement between tutors and students negatively.

However, we recognise that e-tutorials have the potential to allow students to collaborate and share ideas rather than them having to work in isolation. While face-to-face tutorials tend to marginalise introverted students, e-tutorials provide a safe platform for all students to contribute without feeling intimidated. Since our online tutorial programme was asynchronous, students could contribute to the discussion in their own time, far from the intimidating eyes of tutors and other students. E-tutorials can thus be effective if both tutors and students understand their roles. Findings show that e-tutorials require creativity and the ability to adjust facilitation methods to the context and needs of tutees. Clearly, e-tutorials have the potential to become vibrant peer-learning spaces, especially in the context of the COVID-19 pandemic that requires students to learn in socially distanced environments. This study will contribute to the field of online teaching and learning by developing a framework that can be used to provide training to online tutors. We, therefore, recommend that tutors should receive relevant training before they facilitate and moderate online tutorials.

LIMITATIONS AND AREAS OF FUTURE RESEARCH

This study is based on a small sample of 15 tutors who were involved in an online tutoring programme at a rural university campus in South Africa. As a result, the findings cannot be easily generalised to other contexts. The study could have generated more generalisable results if it had used a larger sample size. Moreover, a mixed-methods approach could have probably highlighted different reflections based on gender, race, class and other variables. Future studies should include a bigger sample size, apply different research methods, and focus on institutions in different socioeconomic and cultural contexts.

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The relationship between irrational beliefs, socio-affective variables and secondary school learners' achievement in mathematics[1]

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ABSTRACT

Theoretically, the study was based on ten irrational beliefs that Ellis identified as part of his ABC-model. Activating events (A) in a mathematics context can trigger certain beliefs (B) that may have affective consequences (C), which, in turn, can have an influence on achievement in mathematics. The main objective of the research was to investigate how these irrational beliefs and affective consequences relate to one another and to achievement in mathematics. A sample of 306 secondary school learners was selected. The learners completed questionnaires on irrational beliefs and socio-affective variables. Their achievement scores in Mathematics were also obtained. The analysis of the data showed that irrational beliefs correlate negatively with mathematics achievement. Self-concept and teacher-learner relationship had a partially mediating effect on the relationship between irrational beliefs and achievement in mathematics. The direct and indirect effects of irrational beliefs explained as much as 40% of the variance in mathematics achievement. Most teachers of mathematics will at one stage or another be confronted with learners' irrational beliefs, and it is, therefore, recommended that teachers know how such beliefs should be disputed and replaced with rational beliefs as a way of enhancing academic performance in mathematics.

Keywords: irrational beliefs, mathematics achievement, stress, anxiety, motivation, self-concept, teacher-learner relationships, parental involvement

INTRODUCTION

One of the most well-known psychologists that explored the phenomenon of human beliefs was Albert Ellis (Austad, 2009). Ellis was strongly inspired by the ancient Greek philosopher Epictetus, who reasoned that the view people take of events in their lives has far greater implications for their well-being than the events themselves. Ellis labelled two major categories of beliefs, namely (i) irrational and (ii) rational beliefs (Mpofu, 2006). Rational beliefs are characterised by objective information which people apply in order to achieve personally chosen goals (Feldman, 2009). In contrast, irrational beliefs relate to people's own, subjective approach to life as well as to their wishes and demands (Ellis, 2004). Irrational beliefs focus on ideal experiences and, since those cannot always be accomplished, these beliefs cause emotional setbacks and behavioural difficulties (Austad, 2009). The most prominent irrational beliefs identified by Ellis are listed below, with an abridged form in brackets:

- It is a dire necessity to be accepted and admired by others (*demand acceptance*)

- One should always be competent to be recognised (*demand for competency*)

- Inappropriate behaviour should consequently be punished (*rigid punishment*)

- It is catastrophic when things do not happen as planned (*non-adaptability*)

- Human misery is caused by external factors you cannot control (*external control*)

- One has to be constantly worried about possible dangers in life (*constant worries*)

- Avoid problems instead of facing difficulties (*problem avoidance*)

- Without the help of others, you will never succeed (*dependence mentality*)

- It is impossible to overcome difficulties of the past (*captured by the past*)

- It is catastrophic if problems in your life cannot be solved perfectly (*perfectionism*).

Irrational beliefs has been an active research field, but only a few studies have investigated the possible relationship between irrational beliefs and achievement in mathematics. Tsui and Mazzocco (2007) focused on perfectionism which can be associated with the irrational belief that everything should be done in a correct and flawless way. Perfectionism and anxiety correlated negatively with achievement in mathematics, and both explained a significant proportion of the variance in mathematics achievement. However, the study by Tsui and Mazzocco did take other irrational beliefs into consideration. Boehnke (2008) found that the irrational belief that one should always be accepted and respected by others can influence learners' performance in mathematics. Again, no other irrational beliefs were considered in the present study.

In his ABC-model, Ellis explains the implications of beliefs for a person's psychological functioning (Khaledian et al., 2013). The 'A' represents an activating stimulus within the person or within the person's environment (Zionts & Zionts, 1997). Writing a test in mathematics would be a typical example of an activating event. 'B' symbolises a person's beliefs which are applied to interpret the activating event. These beliefs can be rational or irrational, and, consequently, people differ in the ways they interpret a particular event. If a learner in the mentioned example fails the test, but displays rational beliefs, failure might be viewed as a temporary setback. That will be in contrast with a learner who irrationally believes that failure in mathematics will indefinitely occur. 'C' represents the consequence of a person's beliefs which manifests in certain emotions and behaviour. The learner who considers failure in mathematics as inevitable will most probably be unmotivated to study for a test, whereas the learner who demonstrates rational beliefs might be motivated to overcome the situation. If a person demonstrates rational beliefs, the discomfort or disappointment that originates from the activating event is treated in a balanced and sensible way. If the beliefs are irrational, the emotions are usually incongruous and self-defeating, accompanied by maladaptive behaviour (Rosner, 2011).

Theoretically, the ABC-model of Ellis suggests that beliefs, both rational and irrational, may relate to socio-affective variables. Socio-affective variables happen to be an integral part of the teaching and learning process in mathematics. Earlier research, for example, Mellet (1986), has shown that socio-affective variables, such as self-concept, motivation, teacher-learner relationship and anxiety, are generally associated with mathematics achievement. It is, therefore, possible that learners' beliefs in a mathematics context may relate to the above-mentioned socio-affective variables which will, in turn, relate to mathematics achievement.

SOCIO-AFFECTIVE VARIABLES, IRRATIONAL BELIEFS AND MATHEMATICS ACHIEVEMENT

In general, studies that analysed the relationship between the self-concept of learners and their achievement in mathematics obtained a positive correlation between the two variables (see e.g., Wang, Osterlind & Bergin, 2012). Research results also suggest a relationship between irrational beliefs and the self-concept of learners. Arai (2001) found that the impact of irrational beliefs intensifies if a discrepancy exists between learners' actual and ideal self-concepts, while a study by Ferla, Valckle and Cai (2009) revealed that learners' beliefs regarding their academic self-efficacy relate to their academic self-concept. The results of Tella (2007) showed that learners with different levels of motivation differed with regard to their academic performance, and a study by Md. Yunus and Ali (2009) identified significant positive correlations between motivation, effort, self-efficiency and academic achievement. It is possible that some of the irrational beliefs previously mentioned may also relate to motivation, for example, the irrational belief regarding *problem avoidance*. Learners who avoid doing challenging academic tasks and are reluctant to act responsibly in an academic context are usually characterised by low achievement motivation (Eccles & Wigfield, 2002). With regard to stress, Byrne, Davenport and Mazanov (2007) presented a list of possible stressors to school-going adolescents and conducted a factor analysis with the data obtained. Four of the 10 factors that were identified could be associated with academic work. According to Sulaiman, Hassan, Sapian and Abdullah (2009), the climate in a school, the education level of parents and their parenting styles are possible variables that might have an effect on the stress that adolescents experience. A number of studies investigated the relationship between stress and academic achievement, though not necessarily in mathematics. Kauts and Sharma (2009) showed that learners who experience stress at a low level outperformed those who experience stress at a high level. Irrational beliefs, for example, that 'one has to be constantly worried', might create stress in a learning context, which will then have a negative influence on academic achievement. This is confirmed in a study by Beilock (2008), who indicated that self-sustaining worries relate to high-stress situations which increase the failure rate in mathematics. Thompson and Henderson (2007) drew attention to Ellis's statement that anxiety cannot be considered irrational but rather that anxiety emanates from irrational thinking. Anxiety should, therefore, be seen as an emotion that is unnecessary and one that can be prevented. Mathematics learners who, for example, irrationally believe that 'something that once affected them in the past will indefinitely affect them in future' may experience anxiety. In general, negative correlations have been obtained between mathematics anxiety and achievement in mathematics (Sherman & Wither, 2003). Zakaria and Nordin (2008) obtained a negative correlation as high as -0.72.

Teacher-learner relationships and parental involvement are two social relationships that may relate to achievement in mathematics and irrational beliefs regarding mathematics. According to Orton (2004), teachers are an important factor in the entire teaching and learning process. In most instances, adolescents want to receive approval from their teachers. Some adolescents might irrationally demand such approval, and, if teachers criticise their schoolwork or behaviour in class, they may experience it as catastrophic (Thompson & Henderson, 2007). Another irrational belief of learners, which involves teachers, is the belief that external factors cause misery and unhappiness since one cannot control these. Learners with such beliefs blame curriculum implementers (who happen to be teachers) for the difficulty level of mathematics content, which is subsequently interpreted as a form of suffering enforced upon them (Osler, 2010). Besides teacher-learner relationships, Gonzalez and Wolters (2006) found that parental involvement also has an effect on academic achievement. Adolescents whose parents participate in school functions and are involved in their learning activities at home adopt achievement goals, not only to outperform their peers, but also the standards set by their parents. If learners are aware that their parents maintain regular contact with the school, they often surpass their parents' expectations in order to ensure a positive report from the school's side. However, not all parental involvement is supportive in nature. Levpuscek and Zupancic (2009) showed that parents can have a negative influence if they put extensive pressure on their children to perform well in mathematics or when they distrust the efficiency of the study methods of their children.

RESEARCH OBJECTIVES

Since multiple types of variables relate to achievement in mathematics, a noticeable gap exists in the sense that previous research did not consider irrational beliefs as possible variables in this regard. To obtain information on learners' perceptions of mathematics as a subject and how they perceive themselves as students of mathematics, the relationship between irrational beliefs and other socio-affective variables which relate to achievement in mathematics should be analysed jointly. This is what the current study attempted to establish, guided by the following three objectives. The first objective was to determine if any of the well-known irrational beliefs (Ellis, 2004) relate to achievement in mathematics. The second objective was to establish if socio-affective variables, such as self-concept, motivation, teacher-learner relationships, parental involvement, anxiety and stress, relate to achievement in mathematics. The third objective was to determine whether socio-affective variables have a mediating effect on the relationship between irrational beliefs and achievement in mathematics.

RESEARCH METHODOLOGY

Sampling procedure and ethical considerations

The population comprised form 3 and form 4 learners (Ordinary-level learners) in the Masvingo Province of Zimbabwe who took mathematics as a school subject. Before the study commenced, ethical clearance was obtained from the University, under whose supervision the study was conducted. Permission to conduct the research was then granted by the Education Department in Zimbabwe. A list of schools within the Masvingo Province was provided by the Education Department. From this list, using a table of random numbers, five schools were randomly selected. Letters were sent to the School Governing Bodies of the selected schools to obtain permission to conduct the study at the respective schools. Three secondary schools agreed to participate in the investigation. Letters were then sent to the parents of learners in forms 3 and 4 of the three schools that volunteered to participate. In the letter that parents received, the aim of the research project as well as the voluntary nature of participation in the study were explained. Ethical principles, such as privacy, anonymity and confidentiality, were assured. In total, the parents of 306 learners granted their children permission to participate in this study. The number of respondents from school 1 was 72, 177 from school 2, and 57 from school 3. The sample consisted of 124 male and 182 female learners. The respondents had a mean age of 15.79 years with a standard deviation of 0.814.

Measuring instruments

Irrational beliefs

Jones (1968) used the 10 irrational beliefs, originally identified by Ellis, to develop the Irrational Belief Test (IBT). Each irrational belief is measured by 10 items. There are 100 items in total. This test was used in the current investigation, but since the study focused on irrational beliefs in mathematics, the wording of the items of the original test was adapted. The items were responded to by using a six-point Likert scale ranging from 6 (definitely the case) to 1 (not the case at all). Due to item changes, an item analysis had to be done. For this purpose, an item-total correlation was calculated. An item was omitted if the item showed a low or a negative correlation with the total and if the omission of the item increased the Cronbach's alpha reliability coefficient. A reliability coefficient of 0.91 was obtained for the final test with 88 items.

Socio-affective variables

Socio-affective factors were measured using a questionnaire initially developed by Bester (2003) to measure socio-affective variables in a drama context. Since the current investigation focused on learning activities in a mathematics context, the wording of the items was adapted. Learners had to respond to 122 items using a six-point Likert scale similar to that of the IBT. The items measured socio-affective variables in a mathematics context, such as self-concept, motivation, teacher-learner relationships, parental involvement, anxiety and stress. The changing of the original items required an item analysis as well as a recalculation

of the reliability coefficient of each construct. As in the case of the irrational belief test, an item was omitted if it correlated low or negatively with the total and if the omission of an item resulted in a significant increase in the Cronbach's alpha reliability coefficient. The reliability coefficient for each variable was as follows: self-concept 0.83 (18 items); motivation 0.79 (18 items); anxiety 0.85 (20 items); stress 0.79 (18 items); teacher-learner relationship 0.84 (20 items); and parental involvement 0.76 (10 items).

Mathematics achievement

The mathematics achievement scores of the respondents during the written examination in June were obtained. The mathematics syllabus is structured in such a way that learners write two examination papers. The duration of each of the two examination papers is 2 hours 30 minutes, and both papers total 100 marks. The content of one of the examination papers focuses on algebra (e.g., factorisation and equations). In the other examination paper, the focus is on geometry and elementary trigonometry. The examinations were conducted under formal examination conditions. The final score for each candidate is obtained by averaging the scores of the two examination papers. The average mathematics achievement for the sample was 50.25 per cent with a standard deviation of 16.61.

Procedure of the investigation

The questionnaires were distributed to the respondents, who were guided through the instructions that accompanied the questionnaire thereafter. The Likert scale and how it should be interpreted were explained to the respondents. The respondents were required to respond to each item by expressing their personal experience and how they feel about the circumstances related to a particular item. The completion of the questionnaires took place during the morning, and most of the learners completed it in 55 to 65 minutes.

RESULTS

The first objective was to determine if any of the well-known irrational beliefs relate to achievement in mathematics. Correlation coefficients between the measured irrational beliefs and mathematics achievement were calculated. These coefficients appear in Table 1.

Table 1:
Correlation coefficients between irrational beliefs and mathematics achievement

Irrational Belief	Mathematics Achievement
Demand for acceptance	-0.15
Demand for competency	-0.01*
Rigid punishment	-0.09
Non-adaptability	-0.29
External control	-0.29
Constant worries	-0.29
Problem avoidance	-0.27
Dependence mentality	-0.22
Captured by the past	-0.26
Perfectionism	-0.04*

N= 306.
*$p>0.05$. For all the other correlation coefficients, $p<0.01$

Significant negative correlation coefficients were obtained between eight of the irrational beliefs and mathematics achievement. Three irrational beliefs, namely (i) non-adaptability, (ii) external control and (iii) constant worries, showed the highest negative correlations. In all three instances, the correlation coefficients were -0.29. To determine the importance of a particular irrational belief, the underlying relationships among the irrational beliefs had to be taken into account. For this purpose, a forward, stepwise regression analysis was performed. In a regression analysis, the independent variable that shows the highest correlation with the dependent variable enters the model first. After the first variable is taken up in the model, the order of the remaining variables depends on their correlation with the dependent variable as well as their correlation with the variable(s) already in the model. The independent variable that explains the largest significant proportion of the remaining unexplained variance of the dependent variable enters next. In the current analysis, all the irrational beliefs were used as independent variables and mathematics achievement as the dependent variable. The results appear in Table 2.

Table 2:
Proportion of the variance in mathematics achievement explained by irrational beliefs

Dependent variable	Independent variables	R^2	F	df	P
Mathematics achievement	1. External control	0.08	28.07	(1,304)	p<0.01
	2. Problem avoidance	0.11	7.42	(2,303)	p<0.01
	3. Perfectionism	0.12	4.72	(3,302)	p<0.05
	4. Constant worries	0.13	4.81	(4,301)	p<0.05

The first irrational belief to enter the model was external control, explaining 8% (R^2=0.08) of variance in mathematics achievement. This proportion was significant: $F_{(1,304)}$ = 28.07; p<0,01. The second irrational belief to enter was problem avoidance which explained an additional 3% of the variance in mathematics achievement. This additional proportion was significant: $F_{(2,303)}$ = 7.42; p<0.01. The next irrational belief to enter was perfectionism, which explained a further 1% of the variance in mathematics achievement with $F_{(3,302)}$ = 4.72; p<0.05. Constant worries entered the model last explaining 1% more of the variance already explained by the previous variables; $F_{(4,301)}$ = 4.81; p<0.05. In total, external control, problem avoidance, perfectionism, and constant worries explained 13% of the variance in mathematics achievement.

The second objective was to determine how socio-affective variables relate to achievement in mathematics. For this purpose, correlation coefficients between self-concept, motivation, anxiety, stress, teacher-learner relationships, parental involvement and mathematics achievement were calculated. These coefficients appear in Table 3.

Table 3:
Correlation coefficients between socio-affective variables and mathematics achievement

Socio-affective Variables	Self-concept	Motivation	Anxiety	Stress	Teacher-learner Relationship	Parental Involvement
Mathematics Achievement	0.40	0.34	-0.29	-0.26	0.34	0.13

N= 306. For all the correlation coefficients p<0.01

The strongest correlation was between learners' self-concept and achievement in mathematics ($r = 0.4$). Motivation and teacher-learner relationships also correlated positively with mathematics achievement. In both instances, the correlation coefficient was 0.34. Anxiety and stress correlated negatively with mathematics achievement ($r = -0.29$ and $r = -0.26$ respectively), while parental involvement showed a low positive correlation ($r = 0.13$). To identify the variables that explain the largest proportion of the variance in mathematics achievement (controlling for the relationships among the socio-affective variables), a forward, stepwise regression analysis was performed using all the socio-affective variables as independent variables and mathematics achievement as the dependent variable. The results appear in Table 4.

Table 4:
Proportion of the variance in mathematics achievement explained by self-concept and teacher-learner relationship

Dependent variable	Independent variables	R^2	F	df	P
Mathematics achievement	1. Self-concept	0.16	58.04	(1,304)	p<0.01
	2. Teacher-learner relationship	0.18	5.83	(2,303)	p<0.05

The first variable to enter the model was self-concept, explaining 16% of variance in mathematics achievement. This proportion was significant: $F(1,304) = 58.04$; p<0,01. The second variable was teacher-learner relationship, explaining an additional 2% of the variance in mathematics achievement; $F(2,303) = 5.83$; p<0.05. No other variable made a significant contribution to the variance in mathematics achievement. In total, self-concept and teacher-learner relationship explained 18% of the variance in mathematics achievement.

According to Ellis's ABC-model, irrational beliefs in a mathematics context (B) will have affective consequences (C), and these affective consequences may relate to achievement in mathematics. Irrational beliefs can thus directly or indirectly relate to achievement in mathematics. If indirectly related to achievement in mathematics, the two prominent socio-affective variables (self-concept and teacher-learner relationship) will mediate the relationship between irrational beliefs and achievement in mathematics. The third objective of the research project was to investigate such a possibility.

Two regression analyses were performed. In the first instance, mathematics achievement was used as the dependent variable and all the irrational beliefs as well as the two socio-affective variables (self-concept and teacher-learner relationship) as independent variables. A R_a^2-value = 0.1962; p<0.01 was obtained. In the second analysis, an R_b^2-value = 0.1340; p<001 was obtained with only the irrational beliefs as independent variables. $R_a^2 - R_b^2 = 0.0311$ was significant with $F(2,293) = 11.35$; p<0.01. Since the inclusion of self-concept and teacher-learner relationship in the first analysis contributed to a significantly larger proportion of the variance in Mathematics achievement, the partial mediating effect of self-concept and teacher-learner relationship is supported.

To analyse the mediating role of learners' self-concept and their relationship with teachers, two regression analyses were performed. In the first analysis, self-concept was used as the dependent variable and the irrational beliefs as independent variables. The results appear in section A of Table 5. Problem avoidance was the first irrational belief to enter the model, explaining 31% of variance in the self-concept of learners [$F(1,304) = 134.69$; p<0,01], followed by constant worries, which explained 7% more of the variance [$F(2,303) = 35.18$; p<0.01]. Rigid punishment entered next, explaining an additional 1% of the variance with $F(3,302) = 6.42$; p<0.05. The last irrational belief to enter was non-adaptability, which also

explained an additional 1% of the variance; F(4,301) = 4.79; p<0.05. In total, four irrational beliefs, that is (i) problem avoidance, (ii) constant worries, (iii) rigid punishment and (iv) non-adaptability, explained 40% of the variance in the self-concept of learners. In the second regression analysis, teacher-learner relationship was used as the dependent variable and the irrational beliefs as independent variables. The results appear in section B of Table 5.

Table 5:
Proportion of the variance that irrational beliefs explained for self-concept and teacher-learner relationship

Dependent variable	Independent variables	R^2	F	df	P
A. **Self-concept**	1. Problem avoidance	0.31	134.69	(1,304)	p<0.01
	2. Constant worries	0.38	35.18	(2,303)	p<0.01
	3. Rigid punishment	0.39	6.42	(3,302)	p<0.05
	4. Non-adaptability	0.40	4.79	(4,301)	p<0.05
B. **Teacher-learner relationship**	1. Non-adaptability	0.16	57.09	(1,304)	p<0.01
	2. Problem avoidance	0.19	10.67	(2,303)	p<0.01
	3. Demand for acceptance	0.21	8.03	(3,302)	p<0.01
	4. Dependence mentality	0.22	4.15	(4,301)	p<0.05

The first irrational belief to enter the model was non-adaptability, explaining 16% of variance in teacher-learner relationship with F(1,304) = 57.09; p<0,01. The second irrational belief to enter was problem avoidance, explaining an additional 3% of the variance [F(2,303) = 10.67; p<0.01]. The next irrational belief to enter was demand for acceptance, which explained an additional 2% of the variance with F(3,302) = 8.03; p<0.01. Dependence mentality entered the model last, explaining an additional 1% of the variance already explained by the previous variables; F(4,301) = 4.15; p<0.05. In total, (i) non-adaptability, (ii) problem avoidance, (iii) demand for acceptance and (iv) dependence mentality explained 22% of the variance in teacher-learner relationship.

Due to the intervening role of self-concept and teacher-learner relationship, the effect of irrational beliefs on mathematics achievement can be either direct or indirect as portrayed in Figure 1. The different correlation coefficients are also presented in Figure 1, and, in each instance, the proportion of the variance explained appears in brackets. The direct effect is represented by the Multiple correlation coefficient between the irrational beliefs and mathematics achievement which is R=0.36 (R^2=0.13; Table 2). To determine the size of indirect effect, two correlation coefficients were calculated. In the first instance, a Canonical correlation was calculated [R_c=0.64, F(14,594)=16.53; p<0.01] between the irrational beliefs and the two prominent socio-affective variables – that is, self-concept and teacher-learner relationship. In the second instance, the Multiple correlation coefficient between the two socio-affective variables and mathematics achievement was used; R=0.42 (R^2=0.18; Table 4).

Figure 1:

The direct and indirect effects of irrational beliefs on mathematics achievement (the proportion of the variance is provided in brackets)
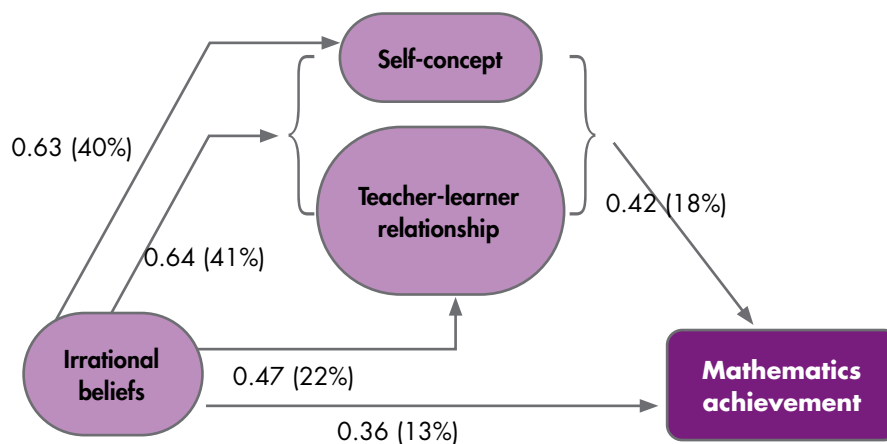
The size of the indirect effects can be obtained by multiplying the Canonical correlation coefficient between the irrational beliefs and the two socio-affective variables with the Multiple correlation coefficient between the socio-affective variables and mathematics achievement (Hair et al., 2006). That will be 0.64 x 0.42 = 0.27. The size of the direct effect is 0.36 (the Multiple correlation coefficient between the irrational beliefs and mathematics achievement). The total effect of irrational beliefs on mathematics achievement is the sum of the direct effect and the indirect effects, which is 0.36 + 0.27 = 0.63. It seems, therefore, that 40% (0.63^2) of the variance in mathematics achievement can be explained by the direct and indirect effects of irrational beliefs.

DISCUSSION OF THE RESULTS

To reduce the complexity regarding the number of variables used as independent variables in the regression analyses, the discussion will mainly focus on those variables that contributed more than one percent to the variance of a particular dependent variable.

Eight of the 10 irrational beliefs measured in this investigation showed significant negative correlation coefficients with learners' achievement in mathematics. This suggests that the more learners apply irrational thinking in a mathematics context, the lower their achievement in mathematics tends to be. The results support the opinion that irrational beliefs prevent people from obtaining their goals in life (Bermejo-Toro & Prieto-Ursua, 2006) and foster a sense of hopelessness (Ullusoy & Duy, 2013). Based on the results of the regression analysis, two notable irrational beliefs that relate to mathematics achievement emerged, namely (i) external control and (ii) problem avoidance. The two irrational beliefs explained 11% of the variance in mathematics achievement. If learners believe that misery in mathematics is caused by external factors they cannot control, there will be little effort on their part to improve their performance. The opposite is true of learners with an internal locus of control. Bishara and Kaplan (2018) indicated that a high level of internal locus of control can be associated with increased use of metacognitive knowledge in mathematics. They also found that mathematics achievement was enhanced by both variables – that is, the internal locus of control and the use of metacognitive knowledge. A second notable irrational belief that relates to achievement in mathematics was problem avoidance. Some learners believe it is better to avoid problems related to mathematics than to face difficulties and responsibilities associated with the subject. Such an approach may result in frequent postponement of home assignments, which can have a detrimental effect on mathematics achievement (Asikhia, 2010). Due to the hierarchical structure of

mathematical content, certain content must be mastered before new content can be introduced. Learners who avoid their responsibilities or postpone them will not be able to develop a proper basis of existing knowledge and will, therefore, find it difficult, if not impossible, to understand new content. Their learning experiences in a mathematics context will also be affected in a negative way. Skaalvik (2018) found that an avoidance perspective predicted lower grades in mathematics and higher levels of anxiety.

The finding of Skaalvik (2018) corresponds with Ellis's ABC-model. Activating events (A) in a mathematics context will result in certain beliefs (B) which may have affective consequences (C). These affective consequences, in turn, can relate to achievement in mathematics. In this investigation, the most important variables in this regard were the self-concept of learners and their relationship with teachers. The correlation coefficient between the self-concept of learners and mathematics achievement was 0.4, which corresponds with the 0.42 that Perry, Catapano and Ramon (2016) found between the self-concept of learners and their achievement in mathematics. Self-concept development has a strong social component since the feedback that learners receive from significant others is often used as a criterion to judge their own behaviour. For learners, 'significant others' may include teachers, parents and friends; therefore, researchers have found that teachers can have an effect on a learner's academic self-concept (Perry, Catapano & Ramon, 2016). This might explain the results of the regression analysis in the current investigation. The self-concept of learners on its own explained 16% of the variance in mathematics achievement and, when the relationship with teachers entered the model, an additional 2% could be explained. The correlation coefficient between teacher-learner relationship and mathematics achievement in the current investigation was 0.34. It corresponds with the results of Mikk, Krips, Säälik and Kalk (2016), who investigated the relationship between teacher-learner relationship and mathematics achievement in different countries. They found significant positive correlation coefficients that varied between 0.35 (Estonia) and 0.11 (Brazil) with a median correlation coefficient of 0.20. Briede (2016) found that learners relate positively to teachers who follow an advisor role and encourage cooperation, while Mikk et al. (2016) concluded that teachers who are warm and supportive create a secure environment where learners feel free to actively participate in learning events.

Irrational beliefs relate directly to mathematics achievement; they also relate to mathematics achievement indirectly due to the relationship between irrational beliefs and socio-affective variables (the self-concept of learners and their relationship with teachers). With regard to the self-concept of learners, the results of the regression analysis indicated that the irrational belief problem avoidance explained 31% of its variance. According to Skaalvink (2002), learners' ego orientations activate them to compare their abilities and achievement to other learners, and they are preoccupied with how other learners perceive them. Such an orientation can manifest in two ways. It can either be self-enhancing or self-defeating. Self-enhancing-orientated learners take part in certain activities to demonstrate their abilities, whereas self-defeating-orientated learners will rather avoid participation because of a fear for being negatively evaluated. Skaalvink (2002) found that a self-defeating ego orientation in a mathematics context correlated negatively with the self-concept of learners. It can, therefore, be assumed that an irrational belief which reinforces avoidance, instead of facing difficulties and responsibilities (problem avoidance), will most probably strengthen a self-defeating ego orientation, resulting in a lower self-concept. In the current investigation, constant worries explained 7% more of the variance in the self-concept of learners not already explained by problem avoidance. 'Worries' is characterised by concerns over evaluation and expectations and, consequently, relates to negative thoughts and self-doubts (Eysenck et al., 2007). In a mathematics context, 'constant worries' refers to the belief that it is expected of one to brood, on a continuous basis, over the demands and requirements that accompany the study of mathematics. Lauermann et al. (2017) found that learners' worries were the strongest when they perceived mathematics as a valuable subject but rated their own abilities and expected success relatively low. As in the case with the self-concept of learners, irrational beliefs also relate indirectly to mathematics achievement due to the relationship between learners' irrational beliefs and their relationship with teachers. From the results of the regression analysis, 16% of

the variance in learners' relationship with teachers can be explained by the irrational belief that it is catastrophic when things do not happen as planned (non-adaptability). For some learners, it is catastrophic if mathematics content cannot easily be understood or if mistakes are made when homework is done, since it jeopardises their relationship with teachers. Some teachers of mathematics reinforce such an irrational belief because of their teaching approach. Maulana, Opdenakker, den Brok and Bosker (2012) found that most mathematics teachers follow a directive teaching approach. The classrooms of these teachers are task-oriented, well-structured and efficiently organised. They complete lessons on time, dominate class discussion and are very demanding. These teachers are not very close to students, occasionally friendly and not very cooperative. Learners who find themselves in such a milieu may believe that it is disastrous if mathematics cannot be done faultlessly. To avoid mistakes, some learners may avoid studying some content or doing homework that appears to be difficult. Therefore, it is not surprising that the irrational belief problem avoidance was the next variable to enter the regression model accounting for an additional 3% of the variance in learners' relationship with teachers. Over and above non-adaptability and problem avoidance, the irrational belief that it is a dire necessity to be accepted and admired by others (demand acceptance) explained 2% more of the variance in teacher-learner relationship. Learners who experience challenges in their mathematics studies will occasionally also experience tension in their relationship with teachers. Martin and Collie (2019) found that lower engagement of learners related to a negative teacher-learner relationship in a mathematics context. Experiencing a negative relationship with the mathematics teacher might intensify the necessity of learners to be accepted. Such a desire for acceptance will only be fulfilled if learners act more responsibly with regard to their studies and if teachers become more socially and emotionally supportive in the classroom. According to Prewett, Bergin and Huang (2019), concrete prosocial behaviour of mathematics teachers, such as scaffolding instruction and a sensitivity to learners' needs, are indicators to learners that teachers 'like' them.

Most learners sustain irrational beliefs over time through self-talk and by indoctrinating themselves (Prout & Brown, 2007). In a mathematics context, the teacher is primarily the person that can overturn the situation. Teachers should dispute learners' irrational beliefs on a continuous basis to prevent them from indoctrinating themselves. The results of this investigation provide guidelines with regard to specific irrational beliefs that can be expected in a mathematics context. Teachers should prepare themselves to challenge these beliefs and to create a classroom environment which prevents the onset of such beliefs. For example, to address the irrational belief that problems should be avoided instead of facing difficulties, the teacher should convince learners to do homework assignments despite the difficulty level of the content and the possibility of mistakes being made. However, if homework is done, learners should be supported and not criticised for the mistakes they might have made. The same would apply to the irrational belief that mathematics achievement is a result of external factors one cannot control. Teachers should convince learners that hard work and not luck is the key to success in mathematics. At the same time, reasonable tests and examination papers should be set. If a well-prepared learner struggles because of an extremely difficult assessment, the disputing arguments of the teacher will be doubted. As in the two examples above, appropriate counterarguments for each of the irrational beliefs identified in this investigation should be formulated. The more prepared a teacher is to deal with these irrational beliefs, the more successfully they can be disputed.

There are limitations to this study that open possibilities for future research. Firstly, the current study did not focus primarily on age; the chosen sample only involved form 3 and 4 learners. However, learners from all levels of the secondary school phase can in future be approached to establish whether age differences contribute to irrational thoughts about mathematics. For the same reason, primary school learners can also be considered to verify the onset of irrational beliefs. Secondly, the gender phenomenon was not dealt with in this investigation. However, there are indications that such differences may exist, which necessitates future research. For example, external control, which was identified as an irrational belief directly related to mathematics achievement, may differ between boys and girls. Many people wrongly

believe that mathematics is a subject that falls in a male domain (Haylock & Thangata, 2007). When girls are compelled by their parents and teachers to study mathematics, they may, in comparison with boys, be more inclined to believe that their misery is externally caused by factors beyond their control. Thirdly, in this investigation, ten irrational beliefs were measured and some of them were identified as beliefs that directly or indirectly relate to mathematics achievement. The 10 beliefs used in the investigation were the well-known irrational beliefs identified by Ellis, but they may not be the only ones that operate in a mathematics context. The possibility to identify and investigate other irrational beliefs that exclusively manifest in a mathematics context should be considered.

CONCLUSION

Irrational beliefs affected mathematics achievement directly and indirectly. With regard to the direct effect, negative correlations were obtained between irrational beliefs and achievement in mathematics. With regard to the indirect effect, two intervening variables were identified, namely (i) the self-concept of learners and (ii) their relationships with teachers. Irrational beliefs relate to the self-concept of learners and to teacher-learner relationship which, in turn, relate to mathematics achievement. In this regard, the results offer support for Ellis's ABC-model. The direct and indirect effects of irrational beliefs accounted for 40% of the variance in mathematics achievement, which is a substantial proportion. It is reasonable to assume that every mathematics teacher will at some stage have to deal with irrational beliefs of learners. Therefore, teachers should take note of typical irrational beliefs that learners hold in a mathematics context and proactively think of suitable means to dispute such beliefs. Disputing irrational beliefs and replacing them with empowering rational beliefs can be very supportive in a learning context (Austad, 2009). The irrational belief that one should rather avoid problems instead of facing difficulties and responsibilities not only showed a direct effect on mathematics achievement, but the threat of such a belief also had implications for the self-concept of mathematics learners and for teacher-learner relationship. It should be considered a prominent irrational belief that manifests in a mathematics context, and teachers should be able to deal with learner beliefs in this regard.

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Perceptions of Management Accounting students at postgraduate level about 'lectorials'[1][2]

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ABSTRACT

Perceptions have become increasingly important in the determination of whether a learning tool meets the needs of its intended audience. This study explored the perceptions of postgraduate students in Management Accounting and found that most students were of the perception that attending Management Accounting Individual Learning Programmes (ILPs) (lectorials) resulted in an increase in their marks. These perceptions were compared to their actual performance, and it was discovered that only students who achieved 60% and above on average in their third year received a marginal benefit from attending ILPs at postgraduate level. The students perceived having academic trainees (junior lecturers) present the ILPs as a benefit, primarily for the relational element that academic trainees brought to the sessions. Lastly, the objectives of providing examination technique and a better understanding of the work were met, even though they do not necessarily result in an increase in marks. This article also examines the performance of different focus groups such as Thuthuka students and repeat candidates against the backdrop of the above context.

Keywords: perceptions, academic performance, lectorial benefits, Management Accounting, academic trainees

INTRODUCTION

The Individual Learning Programme (ILP) is a tutorial-based initiative that was founded in 2005 to assist students who may be struggling with key concepts or who would like to potentially improve their marks within the School of Accountancy at Stellenbosch University, South Africa. The assistance focuses on examination technique and fostering lateral thinking to solve problems within the context of a question.

Extensive research has been conducted in the past regarding the statistical relationships between attendance (of classes, tutorials, and other similar resources) and the academic performance of students. The results of research of this kind are particularly important to scholars as they indicate whether their efforts are translated into students' success, which is their main purpose. It was noted that literature surrounding students' perceptions of ILP attendance is limited; however, interest in this field has recently increased, as

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seen in the work of Steenkamp, Baard and Frick (2009), López-Pérez, Pérez-López and Rodríguez-Ariza (2011), and Owston, York and Murtha (2013).

With the aim of understanding the effectiveness of academic support structures, the researchers decided to analyse the ILP with a specific focus on the Management Accounting module as this is a subject area that has recently drawn increased Initial Test of Competence (ITC)[3] focus (College of Accounting: University of Cape Town, 2018). As Ambrose and Schminke (1999) illustrated the importance of analysing perceptions, this study narrows the scope of the research to student perceptions.

Considering that many resources, such as time and money, are invested into the ILP sessions, it is presumed that the School of Accountancy would find it beneficial to study its students' perceptions. Von Konsky, Ivins and Gribble (2009) identified that perceptions have a large bearing on the motivation of students to engage and participate in any task. Their work further justifies the importance of studying people's perceptions. The evaluation of other research articles provided a basis on which the following research questions were built:

1. Are Management Accounting 778 students of the perception that attending ILPs will improve their academic performance?

2. Are Management Accounting 778 students materialising an improvement in academic performance by attending the ILPs (in comparison to their perceptions)?

3. Are Management Accounting 778 academic trainees contributing positively to the improved academic performance of the students?

The purpose of the study was to evaluate students' perceptions of the ILP in order to understand the impact it has on students' academic performance in Management Accounting. Furthermore, the research hypothesis is that there is a positive relationship between attending ILPs and improved academic performance. The researchers' expectation is that students are under the impression that ILP attendance improves their academic performance in the Management Accounting course based on the results analysed.

The research objectives of this study are categorised as follows:

1. To obtain an understanding of the general characteristics of the respondents

2. To analyse the respondents' attitudes towards ILPs and the effects thereof

3. To analyse the respondents' expectations regarding ILPs

4. To analyse the effect of ILP attendance on the respondents' academic achievements

5. To evaluate the respondents' critique of the current ILP structure.

After the research was conducted, it was discovered that there were many contradicting perceptions on whether attending ILPs improved academic performance. This stems from the variety of experiences within the group, ranging from respondents who had compulsory attendance to those whose attendance was voluntary, members who only started attending ILPs at postgraduate level, and those who had previously studied at different universities. The contradicting perceptions resulted from the respondents having different tutorial structures and experiences.

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3 The ITC is the first qualifying examination that is written after the completion of an accredited postgraduate accounting programme and is an assessment of core technical competence. To be eligible to write this examination, a candidate must hold a postgraduate accounting qualification that has been accredited by the South African Institute of Chartered Accountants (SAICA, 2019).

LITERATURE REVIEW

No studies that specifically address student perceptions on whether attendance of the ILP initiative (for Management Accounting) has a bearing on their academic performance could be found. Numerous studies, however, have addressed the relationship between lecture attendance and academic performance, as well as the relationship between tutorial attendance and academic performance.

Lecture attendance

Thatcher, Fridjhon and Cockcroft (2007) studied the relationship between lecture attendance and academic performance. It was found that students who regularly attended lectures performed substantially better than their poorly attending counterparts. The study acknowledged that attendance dropped substantially when certain events, such as tests and assignment due dates, occurred. The researchers considered raw data via attendance registers as opposed to student perceptions, which represents a gap this study aimed to fill.

Subramaniam, Komattil and Hande (2013) also attempted to discover whether there is any correlation between class attendance and academic performance. These researchers found that there was a significant relationship between class attendance and the students who passed the Melaka-Manipal Medical College examinations. The researchers also discovered that an attendance policy that made attendance compulsory contributed to students' success, to an extent, because it reduced absenteeism and thus encouraged students to engage with the work. Marburger (2006) observed a decrease in attendance from 85% to approximately 76% when the mandatory attendance policy was removed. The high attendance rate after the policy was removed was sustained by habits and routine, since people tend to be homeostatic and will revert to old habits out of fear or resistance to change (Pillai et al., 2017). Subramaniam et al. (2013) considered compulsory attendance in their study as opposed to voluntary attendance, which represents a gap this study aimed to fill.

Tutorial attendance

There is a positive association between tutorial attendance and academic performance (Rodgers, 2002). This is supported further by the findings of Horn, Jansen and Yu (2011). These researchers found that both tutorial and class attendance improved students' marks; however, tutorial attendance had a greater positive impact on whether students qualified for the examination. This study was conducted on second-year Economics students at Stellenbosch University and thus allows for the performance of a similar study on ILPs. Rodgers (2002) also found a few other factors that could have an influence on students' marks, such as whether they stayed in a university residence, marks achieved on the predecessor to the module in question, and the motivation to reach a certain goal.

Academic trainees[4] presenting ILP sessions

Although literature on academic trainees is widely available, such as the work of Warffemius, Kruger and Steenkamp (2015) and Malan (2014), no studies that have evaluated the benefit (if any) that SAICA academic trainees bring to the learning process of Certificate of Theories in Accounting (CTA)[5] students could be found. Studies on 'near-peer'[6] teaching programmes (a similar concept to academic traineeship,

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4   CTA graduates of the previous academic year who spend the first year of their training at a SAICA-accredited institution of their choice where they lecture and tutor students, and prepare and mark assessments.

5   'CTA' is a broad term for the postgraduate qualification that comes after the Bachelor of Accounting/Bachelor of Commerce in Accounting degree, with the aim of building students' technical knowledge of the four main disciplines (namely Financial Accounting, Management Accounting, Auditing and Taxation) in preparation for the ITC board examination that is administered by SAICA. At Stellenbosch University, the CTA equivalent is called Bachelor of Accounting Honour's. In other institutions, it is also called a Postgraduate Diploma in Accounting.

6   Students teaching other students.

without the lecturing and marking exposure) have found that junior students benefit greatly from senior students teaching them because the senior students are more sensitive to the level of understanding and current experiences of junior students (Naeger et al., 2019).

How perceptions affect/influence attendance

Von Konsky et al. (2009) observed that students who have a positive perception regarding the usefulness of lectures had better overall attendance. They concluded that students tend to use something that they perceive to be of value (particularly to their learning). If students perceive Management Accounting ILPs to be valuable to their academic performance, they are, therefore, more likely to attend them. It is, therefore, useful to determine whether students perceived ILPs to be of value as this would affect how and to what extent the learning tool is used.

Recommendations to the Individual Learning Programme (ILP) structure

Rodgers (2002) studied the impact of incentivised attendance and discovered that there was a slight improvement in actual attendance when students were given an incentive. The specific incentive in this study was penalising students by subtracting a certain percentage from their mark if they failed to attend tutorials. It would have to be investigated whether students are more likely to attend Management Accounting 778 ILPs if they are incentivised.

When the above was considered, it was evident that, in previous cases and at other universities, attendance of academic support structures was found to play a large role in students' academic performance. This prompted the researchers to investigate whether these findings translate into Stellenbosch University's CTA Management Accounting module.

BACKGROUND OF ILPs

ILPs for CTA students at Stellenbosch University are presented directly after the mainstream CTA lectures. The ILP is based on the topics that were covered in the previous day's lectures, and attendance is voluntary (except for Thuthuka[7] students, who may be compelled to attend because of bursary requirements).

The ILPs are presented in both English and Afrikaans to mirror the parallel medium offering of the degree and to adhere to the university's language policy (Stellenbosch University, 2019). The sessions are presented by a designated academic trainee who is responsible for that module and for that language group in terms of marking and consultations. ILPs at Stellenbosch University follow a 'lectorial' approach, with no assessments written at the end of the sessions. ILPs for undergraduate studies and CTA follow the same structure.

Lectorials are, as the name suggests, a combination of lecture and tutorial teaching modes, and are designed to improve opportunities for student engagement in larger cohorts. These integrate the student-centred elements of a tutorial in a lecture setting (Student Central, 2019).

The objectives of ILPs are to

- strengthen the students' conceptual understanding of the various topics

- demonstrate how basic principles can be applied through the use of practical examples

- discuss and enhance examination technique

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7   The Thuthuka programme is SAICA's transformation project that was founded nationally in 2004, and it is aimed at motivating and supporting previously disadvantaged learners to pursue a career as chartered accountants (CAs).

- answer students' questions
- help students to focus on their studies and continuously stay up to date with their work.

In terms of the actual sessions, students are given all the resources for the chapter under study at the beginning of each formal lecture. Students are then expected to prepare for the sessions by, at a minimum, reading through the question. Ideally, students are meant to attempt the entire question beforehand. Once the session commences, the academic trainee evaluates the required section, operating on the assumption that the students have read through the question, prior to the commencement of the ILP, to identify the relevant section of the work that is being tested.

The students are then given some time to plan their answers, specifically by considering the approach that they would take in order to identify key aspects and nuances that need to be identified when attempting the question. This process facilitates the development of the students' examination technique[8] through the guidance provided by the facilitator. The academic trainee proceeds to show the students how to apply the principles that they have studied and conveys the ways in which the question could be varied in order to prompt students to think critically and apply their knowledge.

The academic trainee concludes by communicating the way in which students must check that they have covered everything required of them in that question. The academic trainees are given the flexibility to decide how to approach these sessions, such as colour-coding parts of the scenario, having a motivational session at the end, and making use of Microsoft PowerPoint or the document camera.

METHODOLOGY

The study made use of a questionnaire, based on Rowley's (2014) suggestion that questionnaires are the recommended tools for capturing perception-based information for populations such as the CTA group in question (of more than 100 respondents). Thirty-five questions were used. The questionnaire was developed by integrating the literature review results as per the literature review section above. A strategy meeting was held on 17 May 2019 to determine the type of answers the research team sought, and, according to that, the team converted the model answers into questions that would assist in obtaining those answers.

The questionnaire predominantly consisted of qualitative elements, with quantitative elements being limited to a five-point Likert scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Usually, 5 = Always). All questions were closed ended, which means that the students only had to select responses from a list of options. Owing to the fact that the study was predominantly based on perceptions, the researchers conducted a qualitative study, with the quantitative aspects limited to the respondents' mark ranges that are aggregated into tables, graphs and statistics in the results section below.

The first section of the questionnaire comprised defining characteristics, such as where students completed their undergraduate studies, whether they were Thuthuka students, and whether they were repeating their CTA. The questionnaire was developed into four more parts, namely (i) student attitudes towards ILPs and the effects of that on their performance, (ii) student expectations regarding ILPs, (iii) the effect of ILPs on students' academic achievements, and (iv) student critique of the current ILP structure.

The questionnaire was motivated by the aim of individualistic introspection by the students to gain a better understanding of students' perceptions. In order to minimise the biases associated with questionnaires,

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8 'Examination technique' refers to skills that include following instructions and responding appropriately to command words, writing using academic language suitable to the task, and using knowledge from different parts of the syllabus to answer specific questions (Oxford Cambridge and RSA, n.d.).

the questionnaire was sent to the entire Honour's class of 2019 over the general announcement platform (hosted by SUNSurvey, a Stellenbosch University questionnaire tool). SUNSurvey was specifically chosen in an effort to preserve confidentiality since strict access control is exercised on this medium and it is hosted on the university's server.

The CTA class, now referred to as the population (N), had 447 registered students (N=447). This is supported by Gorsuch's (1983) findings that research projects must be conducted with populations that are equal to or greater than 100 people. Of the students in the population, only 63 of them responded to the survey. This translates into a response rate of 14.09% (63/447), which is deemed acceptable according to the work of Everitt (1975), which prescribed a minimum response rate of 10%.

The data were analysed using pie charts, histograms and tables, and by isolating certain groups or characteristics of the population. These groups or characteristics were studied for common trends. The outcomes of this process are discussed below.

The following assumptions were adopted while conducting the research study:

1. All individuals are able to attend ILPs and do not have other commitments in the allocated time

2. All the students are aware of the ILPs and what they are used for

3. Students only attempt the survey once

4. Only targeted students respond to the survey.

Possible limitations of this study have been identified as the fact that the project is focused on a single year group (the Honour's class of 2019) and that the project has been narrowed down to Management Accounting. This study will, therefore, not necessarily be applicable to other subjects or other year groups. The fact that the survey is relatively long (35 questions) might have had a negative influence on the response rate since the students might have been tempted to discontinue the questionnaire along the way. This limits the data available for the researchers to work with. Similarly, further limitations include the bias of students when taking the survey, misunderstanding questions since the survey was only available in English (while it was made available to both Afrikaans and English students), and the fact that the study excluded the influence of factors that are not academic.

RESULTS

General characteristics of the population

CTA students who completed mark improvement[9]

The 63 respondents included mark-improvement candidates who comprised 29% of the population. These candidates were an academically diverse group since they chose which modules to be reassessed for in their mark-improvement year, and thus varied from having one module that year to redoing all four modules[10].

From the survey, it was noted that 95% of the respondents always attended lectures and 67% attended ILPs for Management Accounting half the time or more. Of these, 28% of the candidates were repeating

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9 Mark improvement is an institution-based initiative whereby students who pass the Bachelor of Accounting degree but do not gain entry into the Bachelor of Accounting Honour's degree are allowed to register as special students and repeat any third-year modules that prevented them from gaining entry into the Bachelor of Accounting Honour's programme. Once passed, students are allowed to reapply for consideration into the postgraduate course.

10 Management Accounting 378, Financial Accounting 379, Auditing 378, and Taxation 399.

the course in 2019, compared to the population that had 15% of its members repeating the course in 2019. Mark-improvement students thus had almost double the proportion of students repeating the course in relation to their non-mark-improvement counterparts.

When analysing the CTA performance of the mark-improvement respondents, 22% of them were passing the course (achieving 50% and above) before the June test, which is lower than the 56% pass rate of the population.

Repeat candidates

This section of the results focuses on students who have attempted the course unsuccessfully at least once at Stellenbosch University. These students illustrated slightly different patterns when compared to the mark-improvement group. From the survey, 82% of the respondents always attended lectures, and 55% attended Management Accounting ILPs half or more of the time. Of the repeat candidates, 55% were passing the course before the June test, which is the same as the ILP attendance rate of the population.

Thuthuka students

Based on the questionnaire results, 56% of the Thuthuka respondents (9 out of the 63 respondents) in CTA were first-time candidates, whereas 83% of the population were first-time candidates. The entire Thuthuka group achieved marks below 55% for Management Accounting in CTA. According to the Thuthuka Process Document[11], such candidates must attend all ILPs until their marks improve in the following test. When the data were analysed, it was found that only 45% of them always attended ILPs. The other 55% could be explained by the conjecture that their marks fluctuated above and below this threshold from test to test, which resulted in irregular attendance.

Undergraduate students from other institutions

The only respondent who completed their undergraduate studies at another institution experienced a four-bracket drop (one bracket = 5%) from interval 70-74 in their third year to 50-54 in their CTA year. This statistic is not, however, meaningful as only one respondent of the 63 came from another tertiary institution and no common trends among such a group can, therefore, be determined. When they attended the ILPs, this student prepared for the sessions and wanted to receive examination technique tips.
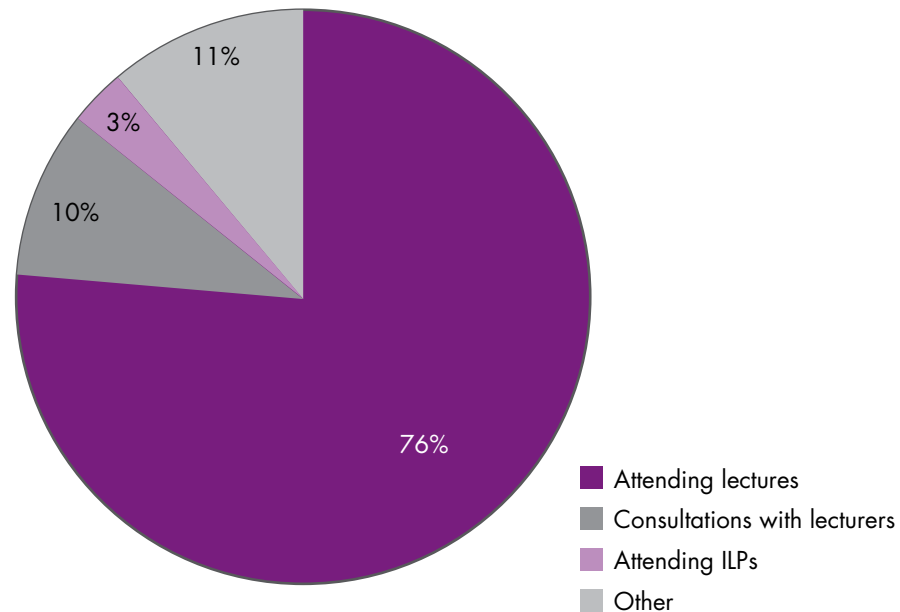
Attendance

Of the 63 respondents, 28% started attending ILPs because of their fear of failing the course. When considering these fearful candidates, 89% were attempting the course for the first time, 59% of the respondents made a conscious decision without motivation or encouragement to start attending ILPs, and, similarly, 14% of the respondents acknowledged their peers or friends as motivators for attending ILPs. The work of Epstein and Karweit (1983) further supports the finding that peers are influential in achieving outcomes (in this context, the outcome of attending ILPs). Eleven percent (11%) of the respondents were compelled to attend ILPs because they were Thuthuka students. When considering the biggest changes that students implemented in their CTA year, 65% started studying for longer hours, while only 6% started attending lectures more frequently.

In analysing Figure 1 below, 76% of the respondents indicated that attending lectures had the biggest influence on their marks. This can be explained by the fact that students spend 82% of their formal hours in lectures and only 18% on ILPs, if they attend them.

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11 The constitution that governs the Thuthuka programme structurally in terms of the relationship between the students and the project managers, expected outcomes, and misconduct consequences. This is an internal document.

Figure 1:
Students' belief regarding the biggest influence on their marks in their CTA year of studies

Legend:
- Attending lectures
- Consultations with lecturers
- Attending ILPs
- Other

(Pie chart values: 76%, 10%, 3%, 11%)

Attitudes towards ILPs, attendance, and the effect on academic performance

Ninety-five percent (95%) of the respondents stated that they expected their chances of passing Management Accounting to increase if they attended ILPs during their CTA year. Of these, 59% of respondents either usually or always attended ILP, which is in line with Von Konsky et al.'s (2009) findings that concluded that students who perceive that a learning tool is beneficial to their learning will use it.

Thirty-eight percent (38%) of the students who usually or always attended ILPs saw an improvement in their Management Accounting mark, of which 92% of these students attributed this improvement to their attendance of Management Accounting ILPs, and 47% of the respondents who perceived ILPs as beneficial maintained their marks.

After isolating the respondents who perceived that attending Management Accounting ILPs would increase their chances of passing the module, the researchers further investigated those who actually attended the ILPs in that group. It was found that 85% of these respondents either saw an improvement in or at least maintained their marks. It was observed that of the students who had an attendance rate of more than 50% of the ILPs, 56% saw an improvement in their marks. This is comparable to the respondents who attended ILPs half or less of the time, but 27% of its members experienced an improvement in their marks.

Of the respondents, 9.5% stated that the biggest change they made in their study efforts during the CTA was to attend ILPs, with 67% of these respondents believing that attending ILPs would improve their chances of passing Management Accounting. In line with the preceding conclusions (that ILP attendance would improve or at least maintain marks), the 9.5% who started attending ILPs in their CTA year experienced either constant or improved academic performance. All these respondents were of the opinion that this was due to the benefit derived from attending ILPs.

The observation from the above-mentioned 9.5% of respondents is that 83% of them stated that they motivated themselves to attend ILPs. It can be concluded that these respondents were not motivated by lecturers, and, it is, therefore, possible that there is some room for improvement in terms of lecturers to encourage students to attend ILPs.

Student expectations

Marks

When evaluating what students expected to gain from attending ILPs, one could be of the opinion that the students have an unrealistic expectation of what ILP attendance would add to their marks as 33% of the respondents expected to see a 5% to 10% improvement in their marks as a result of attending ILPs, 29% expected a 2% to 5% improvement, and 24% of respondents expected a 0% to 2% improvement in their marks as a result of attending ILPs.

Twenty-two percent (22%) of the respondents noted that their marks improved since they started attending ILPs, while 48% of the respondents saw their marks stay constant during the CTA once they started attending ILPs. The results indicate that 3% of the respondents reported seeing a drastic improvement in their marks since they started attending ILPs. This corroborates what was found during the marks-analysis section (which is still to be addressed), namely that only a marginal improvement is expected for those who attend ILPs.

Based on the students' expectations of their academic performance, it is clear that their expectations are high and that the benefit they derived from ILPs might not meet their expectations. This could possibly lead to discouraged students, thus negatively influencing their attendance if these expectations are not met, as evidenced by Von Konsky et al. (2009).

Student needs

When analysing what the respondents wanted ILPs to address, 40% aimed to gain a better understanding of the work and 46% aimed to improve their examination technique. As evident from the respondents' feedback, this aim was achieved as 49% stated that ILPs had improved their examination technique and 62% attributed an improvement in their understanding of the work to ILPs, both of which are objectives of the ILP. This indicates that ILPs offer that which is in line with what students aim to receive from them.

Marks distribution

Figure 2 illustrates the difference in the distribution of marks during undergraduate studies and CTA. During undergraduate studies, students have an even dispersion, which is in contrast to the distribution during CTA, which is skewed towards the right, indicating that the majority of students score below 60% and perform worse than what was expected on average.

Based on the results collected, there was a 10% decrease in their average grade from undergraduate (third-year marks) to postgraduate studies (CTA).

Figure 2:
Distribution of marks across second, third, and CTA years of study

Legend:
- Below 50%
- Between 50% and 54%
- Between 55% and 60%
- Between 60% and 64%
- Between 65% and 69%
- Between 70% and 74%
- Between 75% and 79%
- Between 80% and 84%
- Between 85% and 89%
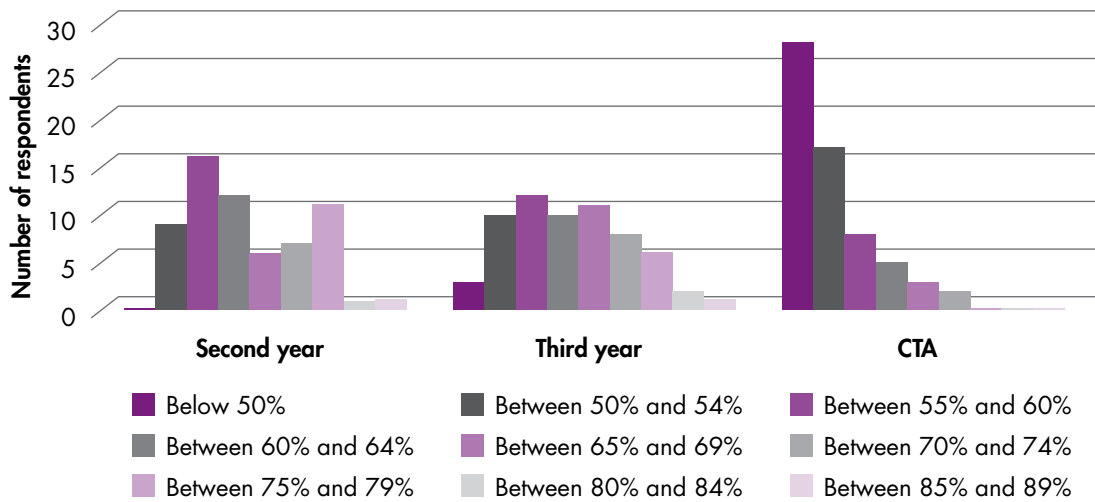
The analysis above serves as an introduction to the results of the 'Mark changes' section of the study. It demonstrates the realities of the students' performance in the Management Accounting module between three years of study and provides the context in which the study was conducted for that section below.

Marks changes

The respondents were grouped together in brackets based on their performance during their third year of study, which was the year that was used to apply for CTA. The brackets are illustrated in Table 1.

Table 1:
Grouping of respondents based on their performance in their third year

Bracket 1 (below 60%)			Bracket 2 (61% up to 75%)			Bracket 3 (above 75%)		
Below 50%	Between 50% and 54%	Between 55% and 60%	Between 61% and 64%	Between 65% and 69%	Between 70% and 75%	Between 76% and 80%	Between 81% and 85%	Above 85%

Based on initial analysis of the data, it is apparent that there is no clear advantage gained by students who attend ILPs 50% or more of the time over those students who attend ILPs less than 50% of the time. This can be seen in Figure 3, which was based on the average bracket change experienced by students when moving from an undergraduate degree to CTA when grouped based on their attendance rates.

Figure 3:
Average percentage bracket change from third year to CTA
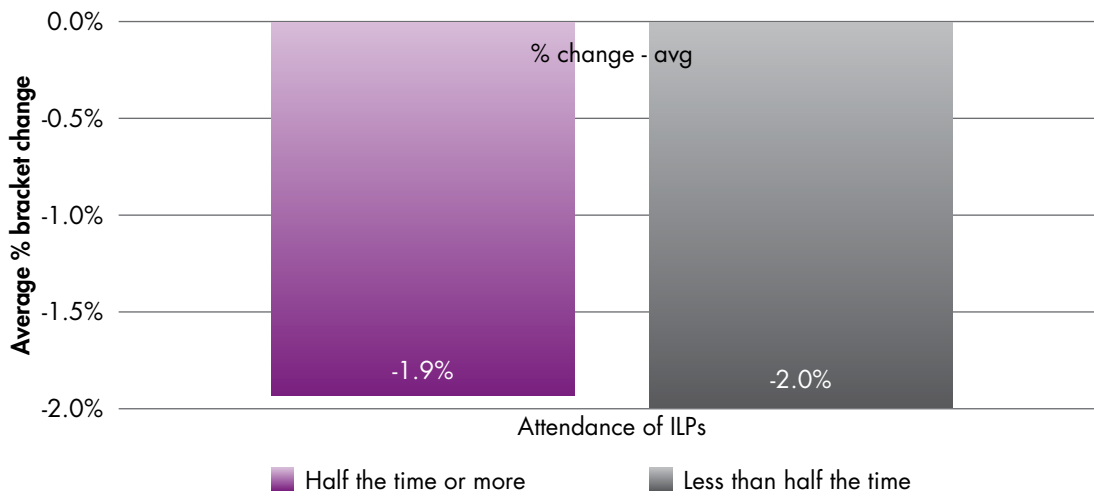
It was further investigated whether certain groups of students were able to experience some benefit from their attendance of ILPs. The benefit would be seen as a change in marks that would be positive in relation to those who chose not to attend ILPs. The respondents were divided into two groups: 'Did attend' and 'Did not attend'. For a student to fall within the 'Did attend' grouping, they had to indicate that they attended ILPs 50% of the time or more. Those students who were grouped in the 'Did not attend' section indicated that they attended ILPs less than 50% of the time.

Table 2 indicates the benefit of ILP attendance for each bracket of postgraduate students based on final-year undergraduate studies, in terms of possible average bracket changes for each range of students.

Table 2:
The benefit of ILP attendance for each bracket of postgraduate students

Grouping	Attendance and change experienced					Outcome
Below 60	**Did attend**		**Did not attend**			**No marginal benefit**
	Bracket	Average of ±	Bracket	Average of ±		
	Between 51 and 54	0	Between 51 and 54	0		
	Between 55 and 60	0.2	Between 55 and 60	0.9		
	Average	0.1	Average	0.4		
	Total	0.2	Total	0.9		
60 - 75	**Did attend**		**Did not attend**			**Marginal benefit**
	Bracket	Average of ±	Bracket	Average of ±		
	Between 61 and 64	-0.3	Between 61 and 64	-0.7		
	Between 65 and 69	-1	Between 65 and 69	-0.5		
	Between 70 and 74	-0.8	Between 70 and 74	-1.8		
	Average	-0.7	Average	-1.0		
	Total	-2	Total	-2.9		

Grouping	Attendance and change experienced					Outcome
Above 75	**Did attend**			**Did not attend**		**Marginal benefit**
	Bracket	**Average of ±**		**Bracket**	**Average of ±**	
	Between 75 and 79	-1.3		Between 75 and 79	-1	
	Between 80 and 84	0		Between 80 and 84	-1.5	
	Between 85 and 89	-1		Between 85 and 89	0	
	Average	**-0.8**		**Average**	**-0.8**	
	Total	**-2.3**		**Total**	**-2.5**	

Based on the observations in Table 2, it can be concluded that the benefit of attending ILPs does not extend to students who fell into the lower bracket (below 60) during their third year, when examining their academic performance during CTA. The benefit does, however, extend to those students who achieved 60% and above during their final year of undergraduate studies.

Current structure critique

Academic trainees: The main aspect that the researchers examined while critiquing the current ILP structure is the fact that the CTA ILPs are presented by the academic trainees compared with the undergraduate ILPs, which are presented by lecturers. It was noted that, out of all the Thuthuka students, 89% of them felt that they received value from having academic trainees present the sessions and frequently stated that they felt academic trainees related better to them. The respondent who transferred to Stellenbosch University for their CTA year occasionally attended ILPs and was satisfied with the fact that academic trainees presented the session.

Respondents (all): The majority, forming 69% of the respondents, were not discouraged to attend ILPs due to them being presented by academic trainees. Of the respondents, 84% perceived that there were benefits to having the academic trainees present the ILPs. Their reasoning was that academic trainees could relate better to students than lecturers (22%), that they had recently passed CTA (24%), and that they provided useful examination techniques (22%).

Mark-improvement students: Based on the information collected, all these respondents were of the view that they benefited from having academic trainees present the ILP sessions, predominantly because they offered good examination technique, good study tips, and due to the mere fact that they had recently passed the CTA course.

Repeat candidates: Of the repeat candidates, 28% yielded no value from academic trainees presenting the sessions. Only 18% of the repeat candidates were discouraged by the fact that academic trainees presented the ILPs. This 18% cited that the academic trainees were too young and that they wanted to receive the lecturers' thought processes on how they attempt questions.

The view of the repeat students is in contrast with all the mark-improvement candidates, as well as the majority of the respondents who stated that they benefited from academic trainees presenting the sessions.

Time at which ILPs are presented and rewards for attendance
ILPs are currently presented after lectures. Of the respondents, 56% agreed that this was the best time slot, and it should, therefore, remain the same. 89% of the respondents indicated that they would be more likely to attend ILPs if they contributed towards their year mark.

This, combined with the fact that ILP attendance is likely to improve students' marks, raises the question of whether students should be rewarded for attending ILPs. This is in line with the results found by Subramaniam et al. (2013). The exact method of reward should be researched further in order to find the best method; for example, awarding marks to students who attend more than 75% of the time, which will then contribute a small percentage towards the students' final mark.

RECOMMENDATIONS

Following from the above, it is recommended that academic trainees continue to present the ILPs because there is a perceived benefit of having them present the ILPs.

Based on the structure of how the ILP is presented, it has similarities to the manner in which formal lectures are presented. One could, therefore, say that the ILPs do not provide students with an alternative learning method. This could lead to many students not attending ILPs as they may perceive that they are too similar to the lecture and, therefore, add no value. Students who do attend ILPs but are searching for an alternative method of learning do not receive this opportunity.

Two possible recommendations have been identified to address this. The first is to create two separate ILPs, one covering basic principles and the other covering examination technique. This will allow for an inclusive service offering that directly addresses both the need for conceptual understanding as well as examination technique. The second recommendation is to introduce a compulsory tutorial for students with marks below the class average. During this tutorial session, students can be tasked to complete a structured question that tests the basic principles that will aim to address the current student needs, and students could be supervised by an academic trainee. The compulsory nature of this tutorial also speaks to the additional benefit that could be derived from incentivisation, and some form of consequence should be applied if a student does not attend the session.

CONCLUSION

Student success at any tertiary institution is the primary concern for all stakeholders involved. With the growing Generation Z population on campuses everywhere, it is important to re-evaluate whether the current teaching structures (such as ILPs) effectively serve the people for whom they were designed. Against this backdrop, this study was conducted to evaluate students' perceptions on whether Management Accounting ILPs have a positive influence on their marks. The study collected results from 14.09% of the population using a questionnaire.

What can be concluded from the research reported on above is that almost all the respondents believed that attending ILPs for Management Accounting 778 would improve their academic performance, therefore confirming that the hypothesis is correct.

By examining the respondents' perceptions, it is clear that attending ILPs, even if attending half the time or more, only has a marginal benefit. The main concern is, as shown in Table 2, that the students who fall within the below 60% bracket in their third year for Management Accounting do not receive the necessary benefit that they require from ILPs. It should, therefore, be considered whether ILPs are used to help students who are not passing to pass, or whether they are aimed at students who are already passing and hoping to obtain better marks.

Students' expectations in terms of the ILP experience were met. They receive examination technique and are offered different ways of understanding the work. The issue here is that their understanding of the content does not translate into improved marks in assessments.

When taking everything into account, very few students benefit from a large investment of resources. Although this shortcoming left the research problem partially unsolved, the recommendations discussed above are but some of the tools available to address the situation.

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The role of a Writing Centre in a South African university of technology (UOT)[1]

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ABSTRACT

Academic development, pedagogical growth, and curriculum expansion remain an ongoing process at institutions of higher education in South Africa. The prospects of expanding educational opportunities to a larger number of hopeful students in South Africa have resulted in the creation of facilities that extend the growth of academic literacies such as the writing centre. These centres have contributed to opening opportunities to not only a larger number of students in scientific and technical fields but also to giving an opportunity to less-advantaged students by offering one-on-one services to grow and nurture their academic literacy capabilities. The focus of this paper is to investigate the role of a writing centre in a South African university of technology with the aim to understand what role this facility plays in the academic development of the students affiliated with such institutions and to unpack the effect of such a centre on the development of curricular and academic literacy. This paper presents findings that were gathered from a PhD study that used a mixed-method approach to investigate how facilities such as a writing centre impact the academic development of students in a university of technology. The study examined the power relations among the tutor (in the writing centre) and tutee (the students using the writing centre) and analysed these relationships by means of critical discourse analysis theory to focus on the intangible assets of the student. Using mixed-methods analysis, the researcher was to be able to understand the perceptions, views, expectations and experiences of students using the writing centre to explore the different ontologies and epistemologies associated with curriculum development, and how this defined the role of the writing centre.

Keywords: academic development, writing centre, pedagogy, curriculum growth, University of Technology, role theory

INTRODUCTION

The success of education hinges on understanding students' experiences in their educational journey. Their involvement is pivotal to understanding and unravelling the role of facilities made for the academic development of students. Frank Clint (2018) explains that academic development is the process of helping students use their knowledge and skills to perform well in university in preparation for their professional

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workplace in the future. Thus, it is imperative to understand that the involvement of students in their learning journey provides an understanding of how educational development can be mapped out, developed, and understood from the students' perspective.

Levin (2000: 155) posits: 'education reform cannot succeed and should not proceed without much more direct involvement of students in all its aspects'.

Writing centres (WrCs) have been introduced in several universities in South Africa as a mechanism for addressing the various changes and developments that have come about with the growth of polyglot societies in higher education (HE) and that have occurred in the general pedagogy in institutions of HE (Archer, 2010; Nichols, 1998). These studies mention polyglot societies and the nature of the environment because the issue of communication is central to developments associated with learning. The majority of students that are enrolled in a university of technology (UoT) do not have English as their first language. This not only creates barriers to learning but difficulties in academic development processes and abilities, which are mostly embedded in higher-order learning dynamics that most WrCs focus on. Nichols (1998), in explaining what a WrC is, argues that WrCs are based on the paradigm that language and knowledge are created socially through conversation or dialogue with people and texts. As a result, the process of language and communication is developed through communities of practice (COPs) that are fostered through WrC practice. A WrC is an alternative to the belief that knowledge is handed down from master to disciple. Archer (2010) explains that the introduction of WrCs in South Africa has led to academic development becoming more integrated into the mainstream as WrCs encourage direct involvement with the students on the development of academic literacies of students. This paper focuses on analysing the role of a WrC in a UoT. The aim of this paper is, therefore, to understand how operational and administrative frameworks within a WrC define the role of such a centre in a UoT in South Africa. By analysing the structure of the Durban University of Technology's (DUT's) Writing Centre, we can understand the role it plays in academic literacy development. This research was premised on the idea that tradition (the olden ways of studying based on one language) in education is no longer the standard, but that it is constantly evolving to suit developments in economic, social and political spheres (Kelly, 2009; Taba & Spalding, 1962). The idea of tradition links to the idea that educational institutions did not previously have spaces that allowed academic development and support in various languages, which is a crucial and salient feature of the WrC as it has a variety of students from different linguistic and traditional backgrounds. This aspect is imperative because students who find it easy to express their most vital and original ideas in their first language then struggle to express them literally. The WrC offers a bridge in academic development and translation as part of the support for students. As a result, student involvement and direct contact are imperative in developmental approaches to teaching and learning. This paper, through exploring the administrative and operational nature and development of a WrC, looks at the role the WrC plays in promoting the academic development of students. This approach enables us to better understand the WrC's significance and contribution to the development of the curricula. The paper uses critical discourse analysis (CDA) as a theoretical framework to explore WrC in South Africa, such as that of a UoT. In doing so, I briefly trace the evolution and explain the operational approach and structure of the DUT WrC. The evolution and historical structure build a foundation on which to understand why there was a need for a WrC and, consequently, to answer the question of what role it plays.

THEORETICAL PERSPECTIVES OF A WRITING CENTRE

Critical Discourse Analysis

CDA is a perspective of multidisciplinary discourse studies that specifically focuses on the discursive reproduction of power, such as the disparities found in language communication (Van Dijk, 2015). In this study, the idea of CDA was characterised by the common interest in demystifying ideologies and power through the systematic and reproducible investigation of semiotic data, which are spoken, written

or visual (Wodak & Meyer, 2009). Manjeya (2017) elaborately explains that this, as a result, illustrates how CDA relates to the process of writing and literacy (in the case of this article, the student's ability to read and write in the institution's medium of communication) by examining the various power relations that are explicated in the reproduceable investigations built around semiotic data, which also emphasises self-reflection. This process of the WrC strongly emphasises the development and building up of the student by focusing on statements such as 'what you can expect at the WrC'.

The CDA power relations analysis relates to the structure of the WrC that tries to understand how power and inequality can be analysed to help understand how the development of academic literacies is viewed from the experiences of the student. Fairclough, Mulderrig and Wodak (2011) explain that CDA is not a discrete academic discipline; instead, it is a problem-oriented research approach that uses several methods in research. Fairclough, Mulderrig and Wodak (2011) further agree with Blommaert and Bulcaen (2000) that the main focus of CDA is structured around social practice and development for language as a practice. As a result of the nature of CDA, it is unique in its view of the relationship between language and society and in its critical approach to methodology.

This shows how this theory is used to describe the structure of the WrC. Firstly, it caters to the relationship between language and society. As a result, this theory gives clarity to the discussion on how language is influenced by society through a COP as is elaborated by Geller et al. (2007), Archer (2010) and Denny (2010). The various views intertwined in understanding the connection of language to society is what shapes the discursive analysis. Kress (1990) defines CDA as a multifaceted domain of inquiry whose main facets are centred around social practices linked to various disciplines. CDA focuses on language discourse and on how language reflects power dynamics. Fairclough (2013) explains that CDA has a basic property: it is relational; hence, it deals with how language reflects power dynamics by trying to create a balance and benefit in both parties. The focus of CDA in this paper is on individuals and social relations and is implemented by attempting to cater to the layered character. The intricate details of the theory thus give light for the investigation by giving the students a voice, as elaborated by Fairclough (2013), and it shows that discourse is not simply an entity definable on its own but that it is rather understood as sets of relations that are constructed around the social practice of relationships in which the concept of power is ubiquitous.

Finally, when applied to the WrC setting, CDA enables one to see how power can shift to the student who receives intangible assets (the skills students take with them to their professional workplaces) to prepare them for the academic and professional fields. There is a need to understand how the criticality of this discourse and its type are imperative in the development of pedagogy for academic development.

Bitzer (2009) explains that 'academic development' is the dominant term for tertiary education development in the HE context, incorporating the ideas of the students, staff, curriculum, and institutional development. By understanding CDA, power relations analysis in the WrC, which relates to the structure of the WrC, one can attempt to understand how power and inequality can be analysed. This, in turn, can help understand how the development of academic literacies is viewed from the experience of the student. This paper breaks down the interplays involved in the tutor-student relational dynamics. This development can either be embedded in different phases of the social structure found within educational facilities or be multidimensional and distributed (Boud, 1999). Within the DUT structure, this embodiment is embedded in each department as an extension and requisite of student development, which falls under the portfolio of teaching and learning within faculties. In most cases, academic development is encouraged by breaking down barriers in language and communication. Given that the world we live in is multilingual, various curricula have focused on ensuring that language is not a barrier in academic development, hence, the creation of facilities such as the WrC. The WrC's role in academic development is a central concept in this paper.

Daniels (2016) explains that pedagogy is both the science and art of education because the substance of pedagogy lies much less in the process it brings into play than in the theoretical reasoning through which it discovers, evaluates and coordinates these processes of discourse. All of these are crucial steps in analysing the critical discourses that make up the language and communication dynamics of consultations between the tutor and tutee. Pedagogy mainly relates to the practices of how best to teach and improve the curriculum of academic development by creating a lasting skill for students in tertiary education. Pedagogy has often been identified by academics as the development of curricula, which also denotes the same phenomenon but emphasises improving what already exists (Manjeya, 2017).

To understand pedagogy more intricately, it is imperative to understand critical pedagogy. Giroux (2020) explains that critical pedagogy asserts that students can engage their learning from a position of agency, and that, in so doing, they can actively participate in narrating their identities through the culture of questioning, which opens up a space of translation between the tutor and tutee. Wink (2005) notes that critical pedagogy is the prism that reflects complexities between teaching and learning; it sheds light on the hidden subtleties which the naked eye cannot see in the practice of teaching and learning. Wink (2005: 41) goes on to explain that, when using critical pedagogy, one has to 'learn to relearn to unlearn'. Pedagogy can thus be explained in terms of the general understanding of science and education, and in terms of the fact that it is critical in understanding students' experiences. This study, as a result, utilised critical pedagogy as this outlook strongly relates to understanding the main framework in the development of academic writing. Critical pedagogy is relevant in understanding student academic development and how the WrC contributes to this. Pedagogy is the way that defines the theory and practice of the various methods and ways of teaching and learning, and it is best understood as the art, science or profession of teaching.

The idea of the 'role' as a word in depicting the role of a WrC has been explored within various social contexts. Role theory explains and illustrates the special, social connotations a specific entity has in society within a given community or cluster (Biddle, 2013). It is imperative to understand the role the WrC plays in promoting academic literacy development. This study is based on the premise that the centre in itself is considered a facility, not only for those who have difficulty expressing themselves literally but also for those who do not have the medium of communication as their first language. As a result, responsiveness, knowledge, and ideas about the role of the WrC in itself are marred by the student's ideas of how this facility is fit for the undergraduate curriculum (Hutchings, 2006; Manjeya, 2017). This paper forms part of understanding the role of a WrC and the paper explores the perceptions and views of both the students and the administration of the WrC.

Evolution of the University of Technology in South Africa

The need to expand education and integrate the English language into the global economy resulted in the creation of UoTs, such as the DUT, in South Africa. In this generation, language has not only broken down communication barriers but has allowed the development and integration of multidisciplinary education and opportunities. Scholars such as Mbembe (2015) and Wa Thiong'o (1992) have explored the issue of language in education and have shown that inclusion of its variants is a juxtaposition of development and global integration. The DUT's (2008b) website explains how and when the educational landscape in South African HE shifted by noting:

> The Higher Education landscape changed in South Africa in 2002 when ML Sultan and Technikon Natal merged to form the Durban Institute of Technology on 1 April 2002. (Durban University of Technology, 2008b)

This change was to further streamline and harmonise the activities of all tertiary institutions in South Africa to position themselves against global benchmarks and to attract the finest students and staff (Department

of Higher Education and Training [DHET], 2017). Matoti et al. (2011: 1142) explain that 'during the restructuring of Higher Education in South Africa, some Technikons were merged with universities to form Comprehensive Universities'. Technikons were changed to UoTs and, at the time of publishing this article, there were five of these in South Africa. As a result, all former Technikons were redesignated UoTs. The progress of UoTs has since evolved and continue to grow to suit the context in which they are birthed, and they have, indeed, harmonised their activities with the global community through decolonisation and curriculum integration to suit the current educational debate on Africanisation and indigenisation as well as on the nature of the South African HE curriculum (Le Grange, 2016; Shay, 2016). However, in as much as this debate ensured the growth and significance of curriculum development in HE, it is imperative to note that this paper discusses the role of a WrC in a UoT. The current debate on curriculum and its significance to African HE has focused on the versatility of the traditional university as it is programme or discipline based (according to the structural makeup of the institution). Hence, the adoption of a WrC has been smooth. However, when it comes to a UoT, specifically in South Africa, the application and role have shifted due to the fact that UoTs by creation are not discipline specific but programme specific. The role of a WrC in a UoT is, therefore, shifted to the student body for which it needs to cater. Most UoTs having transitioned from Technikons, which were institutions largely characterised by technical programmes, leaves the role of the WrC much to be desired as they need to be structured in line with the programmes that the specific UoT offers.

The structure of UoTs was such that its context defined its mandate. The context of a UoT is different from that of a traditional university because, unlike traditional universities, the UoT was closely monitored by the state, as is explained by Matoti et al. (2011), and it had different admission requirements for its programmes. This not only has implications on the institutional curriculum and culture but also cultivates an environment that allows for COPs such as the WrC, which is a major role of the facility as identified within most traditional universities (Johnson & Louw, 2014). Research COPs are what give a suitable environment for the birth and growth of WrCs. Furthermore, recruitment of the employees of these UoTs has been based on experience in the field rather than academic experience because UoTs were meant to prepare skilled labour for industry and not necessarily to cultivate research. This structure allowed the space for the WrC facility in a bid to improve the academic literacy performance of the student body. The above-mentioned structure also included the integration of academic experiences and work into the professional world, therefore meaning that, in the right circumstances, such placements can engender a deeper level of learning (Matoti et al., 2011). Furthermore, this deeper level of learning can be encouraged through the establishment of WrCs, which defines another one of its major roles.

Evolution of the Writing Centre

The first WrCs to be established in South Africa was in the 1990s with the University of Witwatersrand (Wits), the University of Cape Town (UCT), and the University of the Western Cape (UWC), which are all traditional universities (Archer & Richards, 2011). This chapter of South African universities began by reflecting on what the transformation of education would be like in universities in the post-apartheid era. The history and role of the WrC in South Africa have largely been influenced and shaped by the decisive moments of opening access to HE to students whose admittance had been curtailed by squandered intellectual abilities, which was caused by Bantu education and the old order of separate development (Archer, 2010; Archer & Richards, 2011). This issue perpetuated various debates on transformation and access to education, hence, giving a context and history of the WrC in South Africa by understanding how the intricacy of their link shapes the history of the WrC. Transformation, as a result, highlighted the change from a previously rigid system that did not afford the majority of students the right to an opportunity to learn in institutions of HE. Various debates circulated the changing landscape and how it opened many doors to whom the majority had been previously shut out.

The history of the WrC is shaped through understanding the complicated identity of negotiations woven into the idea of non-traditional students seeking to perform the kinds of writing that universities demand – that is, to acquire the cultural capital of academic literacies. Given the history of South Africa, therefore, many relations are to be traced back to the transformation of and access to HE for WrCs. Ajayi (1996) discusses the growth and context of South African WrCs. In pursuit of unravelling the history of the WrC and how it was eventually presented and introduced at UCT, Wits, and UWC, it is of pivotal importance to understand the basis of the need for the facility itself. Archer and Richards (2011) identify the main reason for the existence of the WrC in South Africa, and they summarise it as a process of multimodal means to communicate beyond what is traditionally identified as 'writing'. In other words, the role of the WrC is essentially to help develop and learn academic writing. The question then arises: if this was the structure of a WrC in a traditional university, how, then, is the role of the facility perceived in a UoT? The ideas of transformation and access that lie at the foundation of the WrC's creation are not perceived as part of a curriculum that is dominated by existing world views; these ideas are crippled by the power play that dismisses the phenomenon of the WrC in UoT as an African facility addressing African academic problems. Rather, it builds on the idea that a UoT is created based on programmes. It is, therefore, created for the research purposes of the institution; hence, it is founded as a COP in research to build on the ideas of transformation and excess in the academic literacy as explained by Heath (1983), Johnson and Louw (2014) and Lea and Street (1998); it is not founded on the ideals of the structures and context of western education. Therefore, the role of the WrC is built around creating solutions for academic literacy growth and development by understanding the community in which it is birthed.

The English language has increasingly been recognised as an important mode of communication in the academic world. However, over time, cognitive use of the language in academia has seemingly become difficult as most students do not have English as their first language. This has created barriers to thriving and development for both graduate and undergraduate students in South Africa. Al Fadda (2012), Bacha and Nahla (2002), and Olivas and Li (2006) concluded that the main challenges students face are a consequence of the levels of their language competency, which is a result of English being a second language of communication in both academic and social contexts. This challenge has resulted in the creation of WrCs in South Africa along with the need to rapidly increase academic development in HE. It is, however, important to note that the services that the WrC offers are not only for those who have English as a second language but also for those who have it as a first language. The construct and art of writing are not something that an individual is born with but rather born into, with many students having trouble adapting to academic writing, as explained by Lillis and Turner (2001). It is imperative to note that the construct of writing and academic literacy is not a born attribute but is rather a social practice born from the norms and practices of an educational culture (Gee, 2004). Reading and writing is built around the fact that every writer needs a reader to form the web that ties communication in society. And the society, in particular, is that in which the WrC is to be, which is subject based as it is drawn into the UoT society – that is, it draws from the educational and traditional cultures of the institution. So, everyone needs to, at some point in their life, learn academic writing and literacy. This is because no one is born with an academic language (in both its modes: oral and written); rather, it is learned, acquired and developed through formal education. It is within this formal education that various facilities are constructed to build upon the growth and development of pedagogy as a whole. Therefore, assistance from this facility is for every student to 'learn to write and write to learn' (Durban University of Technology, 2015).

With an understanding of the evolution of the WrC, one can conclude that the specific roles of the DUT WrC are to

- act as a familiar COP

- engender deeper levels of learning

- develop and learn academic writing

- create solutions for academic writing through practice.

Although the specific roles can be separately explained, they are dependent on each other. These roles are also the intent of the given UoT in which it is birthed. A look at the growth of academia and the construction of the curriculum can shed more light on these roles as explained below.

Academic growth and curriculum construction within the WrC

The growth and development of academic curricula have been introduced in institutions of HE as a substantial effort in building the educational discourse and its improvement through the creation of WrCs. This section discusses the role of the WrC in the development of academic writing in South Africa. Archer (2010) has articulated that issues around language and its development in South Africa are significant when one views them in relation to the ongoing legacy of apartheid, which is still evident in non-equitable educational systems across the country.

The systems of African education that have been set up to help develop academic writing as a whole, on both educational and professional platforms, have resulted in the adoption of a continued system that produces unprepared professionals in both academic and professional careers. Desmond (2018) explains that the curricula throughout our education system are in dire need of transformation; hence, a collective approach to the roles of different facilities is important to understand the options for development. Learners and students too often do not see themselves in the curricula, making education an alienating endeavour rather than a liberating experience. This, therefore, explains why the development and set pedagogy of the South African curriculum in academic writing need investigation, particularly as they relate to what the role of the WrC really is. The gap that is created by this system of pedagogy, specifically its effects on English in UoTs, signifies a need to create space to understand its role.

The DUT WrC Model

As has already been discussed on the various types and models of WrCs in South Africa and how they came to be, it is imperative to explore the policy formulation that builds up the DUT WrC's operational and administrative framework to understand its role. The DUT WrC was started in the Faculty of Arts and Design in early 2008 (Durban University of Technology, 2008a). The WrC was situated at City Campus and was operational on Tuesdays, Thursdays and Fridays. The centre was operated and overseen by a parttime coordinator and consultant (Durban University of Technology, 2008a). The policy and operational framework of this WrC would

- provide a friendly and relaxed learning environment where students would work on pre-arranged writing tasks

- investigate providing a variety of resources to the students such as one-on-one tutoring and small group work (Durban University of Technology, 2008a).

As a result, the 2008 policy and operational framework of the DUT WrC explain the main aspects of the pillars that built the policy that established the DUT WrC of 2017. A look into the structures as explained above clearly shows that the model that was built around it was not developing into an emergency writing clinic, but rather into a space to learn to write and write to learn. Also, taking into consideration the fact that DUT is programme based and not discipline based, the centre was developed around the offered programmes on each campus. A point to note will reveal that this move – as far as the decolonisation discussion is concerned – is a move towards a transformation that is subject based (Desmond, 2018). This WrC, like the UCT WrC, was built as an extension of Centre for Higher Education Developments (CHED); thus, the models of DUT (a university of technology) and UCT (a traditional university) did differ in the

structure of idea and funding but they both worked towards the integration of writing development into assignments, which is part of pedagogic growth in academia. They also differ in the type of student body that uses this facility as an extension of academic support and development.

The operational guidelines of the DUT WrC included that there was to be intricate collaboration with lecturers and the WrC staff and, as encouragement of the use of the WrC, they would award students with a certain percentage on their final mark. This, however, can be said to have worked against the various models of WrCs in South Africa. This retrogression was as a result of students using the WrC to gain extra marks instead of actually using it as an opportunity to learn; hence the assertion that many WrCs in South Africa are emergency writing clinics (Bacha & Nahla, 2002; Hutchings, 2002, 2006).

As a result, the creation of the WrC was based on the need for the development of academic writing and support to move towards the growth of curriculum for the University. As the realisation of this need grew, the current WrC had to grow to become a place that would cater for more students that were enrolled at DUT as it was only available at one campus (City Campus). There was thus a proposal to expand the project of the WrC to the other campuses, which included Steve Biko, ML Sultan, Pietermaritzburg and Riston (Pratt, 2008). This proposed extension was based on a 'macro' approach in which the diversity of approaches to teaching and learning in the university programmes would be accommodated by the WrC (Pratt, 2008).

This macro approach views communication in written modes as a social process; hence, the practice of the WrC is a social, community practice in which learning is gradual. In this proposal, consultations were not designed to fix problems but rather to establish effective academic writing practices (Pratt, 2008) so that fewer problems were experienced in the acquisition of the intangible assets offered by the university. The proposed extension, which is the current form of the WrC, was designed to employ a 'hands-on' approach that would be modelled around developing writing competence at the requisite university level (Pratt, 2008). The proposal to formulate and build the WrC explained the nature of discourse at the university in relation to pedagogic development. It stated that

teaching of written communication is often hindered because the field is highly politicized and fraught schisms and disputes. The approach envisaged here embraces diversity as a resource rather than a threat to tenure, publication, or power. The givens therefore are:

- Communication in written mode is a social process best learned and developed as part of the human socialization process which notices diversity of disciplines and professions

- Communication in written work is crucial to intellectual development and closely linked to learning (Pratt, 2008: 2).

When illustrated in a diagram, the process above can be depicted as in Figure 1 below.

Figure 1:
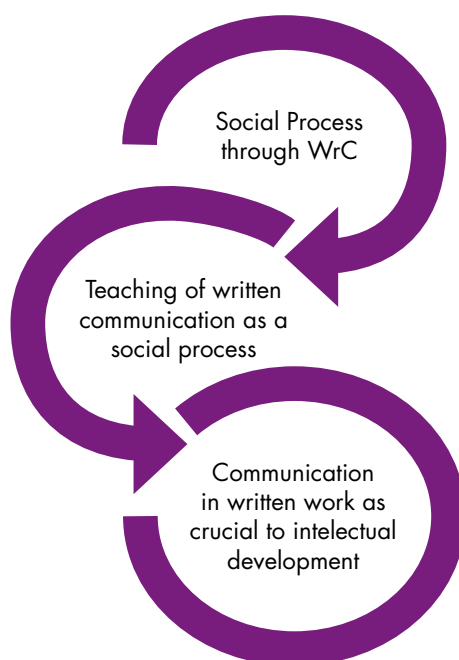*Social Practice and Writing Centre*

Figure 1 illustrates how the DUT WrC integrates into the patterns of socialising at DUT. The operational and administrative framework of the WrC is set up in such a way that the centre breaks its specific functions according to the needs of the campus, hence the importance of the UoT being programme based. In moving forward with the current decolonisation discussion on the curriculum in South African universities, this marks a way forward in that the WrC's role is to also use its social practices as a facility to help decolonise the curriculum by tapping into the patterns of socialisation that make up the diverse educational culture that builds up a UoT.

The major role of the WrC is thus to facilitate the growth and development of academic literacies by adopting and integrating into the institution's patterns of socialisation. It also has a creative writing component that is used to target emerging writers who are usually high performers. The DUT WrC hosts an annual creative writing competition (Mheta, 2016). This is where they encourage writing of various genres from poetry to essay writing. This initiative is a strategy to counter the stigma that is often associated with using WrCs – that is, the perception that only students with difficulties use the WrC. The main aim of the WrC is to

- develop student writing

- create confidence to write more in budding writers

- promote reading and writing outside disciplines (Mheta, 2016).

The major role thus takes into consideration the type of institution in which the WrC is developed. In a traditional university, the operational and administrative frameworks will be based on the need to develop and grow academic writing, whereas, in a UoT, the framework is based on a bigger need to develop and grow academic literacy. The main conditions of the WrC are, therefore, that any approach by the WrC must be thoroughly planned and researched and that academic programme teams must be actively engaged with adequate writing support that contributes directly and indirectly to academic growth (Pratt, 2008). The structure of the proposal of the current WrC, as a result, builds up the policy formulation in

which operational and administrative frameworks of the WrC are developed and designed to fit the DUT WrC model.

The role of a WrC has been noted to be defined by the institution in which it is birthed. In pursuit of understanding the role of the WrC, a mixed-method study was used in which the researcher used both quantitative and qualitative methods of investigation to collect information from both students using and staff working in the WrC. As part of the study, numeric reporting on qualitative data through Likert-scale questionnaires was used. Epistemological (the nature or grounds of knowledge) and ontological (the nature of existing facts or of what is) values were used to understand the views of the students regarding what the WrC is and what role it plays in their academic journey. Ethical clearance for this study was granted as part of PhD research. Investigation for this study was undertaken through purposive interviews with the staff and open-ended questionnaires with randomly selected students who walked into the centre. With open-ended questions, the questionnaires asked the students to express their views on what the WrC is and what they believed it was for. The researcher used thematic analysis to group together themes that were identified in the questionnaires about the role of the WrC.

The study

This section reports on part of larger study by Manjeya (2017), which investigated the contextual, operational and administrative frameworks of the DUT WrC. In this study, research activities involved a pluralistic collection of data in which perceptions, knowledge and understanding of the services of the WrC are gathered using both qualitative and quantitative methods. The study looked at and relates to the theoretical aspect of CDA, which looked at the relationships between language and society; the study also explored the critical approaches of methodologies used by the WrC to communicate its role in a UoT (Fairclough & Wodak, 1997). The researcher gathered data using questionnaires and interviews and formulated themes and trends, as they emerged from the student body, to illustrate their understanding of the WrC and the services it offers. This paper focuses on the data that explain the role of the WrC as defined by the students. The researcher collected data from all WrCs at DUT campuses. These data sets included responses on perceptions of (i) the role of the WrC, (ii) the booking system, (iii) the overall experience of the consultation, (iv) an understanding of the role of the student in the consultation[3], and (v) the final understanding of the writing process by the students at the end of the consultation. After the data were collected and gathered to explain the phenomenon of a WrC in a UoT, themes, trends and relations were developed to explain what the role of the WrC at DUT entailed. In this paper, only results that relate to understanding the role of the WrC in a UoT are included in the findings.

Lumen Learning (2020) explains that perception is the way sensory information is organised, experienced, and consciously interpreted. It involves both bottom-up and top-down processing. This study focuses on the understanding of how students interpret the sensations that are influenced by their available knowledge and experiences of and thoughts about their WrC experience, which are all strongly linked. The students' perceptions of services, operations and the administrative framework of the WrC have revealed what students in a UoT understand a WrC to be and what services it offers. This section reports on the findings that define the role of the WrC in a non-traditional university, which is DUT in this context.

Analysis of students' views on the role of the Writing Centre

Data from the study reveal the perceptions of the students, their responses to information and their awareness of the structures that build up the marketing that supports the operational framework of the

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3   See explanation in Manjeya (2017) regarding the evaluation of the power relations exhibited in the tutor-student dynamic.

WrC. To communicate what the WrC is to the larger student body, the facility sets up (i) roadshows (stands within the campus that had both visual and verbal signage of what the WrC is), (ii) workshops (classes that were provided to help students' academic development process) and (iii) writing competitions (an annual competition which encourages students' creativity in writing). This directly speaks to the main aspects of CDA and what it seeks to examine. CDA considers the relations of activities and nuances between language and society; a critical methodology was utilised to communicate the role of the WrC. The explanations below show how these activities provide a bridge between linguistic and societal interactions as well as the core function of the WrC.

The roadshow is meant to inform the students, in a fun, interactive way, of what the WrC is, what it offers, how the student can be helped, where the WrC is located, and how the student can access the WrC. In interviewing the WrC staff, one of the managers noted: 'roadshows are just a party they don't get the message and usually they manage to inform only a section of students who are available during that time, which might all be graduating'. Therefore, the roadshow serves to inform only the students that are on campus during that time; thus, it cannot be considered a successful tool in informing the students of the existence of the WrC. The data collected from 200 randomly sampled students revealed that each campus had at least above 90% of students who did not know or had any knowledge of the roadshows. This shows that the roadshow is not a good marketing tool as part of the operational and administrative framework as it only manages to reach a limited number of students. In other words, the roadshows that have been done reveal that they managed to only reach less than 10% of the student body who might have been leaving or graduating in that semester, hence validating the statement above by the WrC staff member.

The role of the WrC, in relation to the functionality of the students, clarifies the argument by Levin (2000: 155) who insists that 'indeed, greater student involvement would constitute an important reform in its own right'. Therefore, understanding of the role of the WrC through the roadshow is abstracted and only beneficial to the few who are available for this particular show on campus on the day it is held. A common debate in current education argues that students believe that they have a right to participate in the decision about their education. By not getting or understanding the role of the WrC through the roadshow, the students are left out of participating in the process of their education. Without students' understanding and participation, are the roles of the WrC attending to the current curriculum debate?

Responses to the workshop revealed that more than 90% of the students from all campuses have never heard about either the workshops or the writing competition. This explains how the lack of awareness about what services the WrC offers students can disrupt its service delivery and what the role of the centre is. This moves the idea in which the student is central to the core business of the WrC from the centre stage as students are neither aware of the services and the role of the WrC nor of how to use the facility (Levin, 2000). This affects the end product, which might affect the facility's contribution to pedagogic growth. Investigations with students revealed that most of the students viewed the WrC as an academic emergency room in which they could casually come and drop off a dying thesis or paper which the tutors would magically resuscitate after 30 to 60 minutes. This view triggers an argument of the communication not only about the efforts made by the WrC itself but also by the academics regarding what the WrC offers. In a bid to illuminate the centre, academics began giving marks – for example, 10% – for a WrC stamp. The process of writing is one that takes time, and, given the student structure and makeup of an institution such as DUT, there seems to be more than just a certain percentage attached to the relevance and role of a WrC. The slogan of the centre states: 'Writing to learn and learning to write'. Sensibly, this slogan goes a long way in fulfilling the role of a WrC: it is a process that is intertwined with language and society; hence, it is a community practice (Archer & Richards, 2011). This means that CDA looks to clarify and confirm that the role of a WrC is found within the links of language and society; however, the particular methodology applied in communicating what the WrC is, in this case, needs further investigation.

As part of the development of the administrative and operational framework of the DUT WrC, the facility has been put in place. This explains that the data given for roadshows, workshops and the writing competition are not based on a faulty administrative and operational framework, but rather that it is greatly influenced by student apathy towards writing and development towards the general pedagogy. This apathy is, then, what influences the views of the WrC as an emergency room waiting to attend to dying or stricken theses, dissertations and papers a few hours before submission. This, then, goes on to look at how this apathy influences the responses to understanding the writing process as well as the role of the student and the tutor.

CONCLUSION

The main issue discussed in this paper concerns understanding what the role of the WrC in a South African UoT is (Pratt, 2008; Archer, 2010; Archer & Richards, 2011). The paper explored the different theoretical underpinnings and evolution of the type of university in question to bring to light the kind of environment that will give light to understanding the specific factors that influence the role of a WrC in this type of institution. The paper went on to trace the evolution of the WrC in South Africa, how it was established in UoTs and why this was done. By examining the nature of their academic growth and development, and by examining the DUT model, the researcher was able to draw four significant roles of WrCs in UoTs. The researcher concluded that the roles of the WrC in a UoT are to (i) act as a COP space, (ii) engender a deeper level of learning in academia, (iii) develop and teach academic writing, and (iv) create solutions for academic development. Although these roles were arrived at separately, they cannot work independently of each other. Hence, the role of the WrC is a woven web of dependant variables. It is noteworthy that the differences between the roles of a WrC in a traditional university and in a UoT differ according to how the operational and administrative frameworks vary. The fact that the basis and need in which the two are set is what sets them apart. Also, the role of a WrC in a UoT is defined by the student body and the extent to which it is integrated into the institution. The paper, as a result, used responses from a larger study to analyse the awareness and expectations of the DUT students and what they viewed to be the role of the WrC. The perceptions of the students in relation to their awareness and expectations of the facility revealed that, indeed, the primary role of the WrC in UoTs is to promote academic literacies. The researcher, however, notes that these findings cannot be generalised as it is an investigation pertaining to a specific case study of a WrC in which results just like the model WrC can be institution specific.

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