Vilnius University Press

Contents lists available at Vilnius University Press

Psichologija
2026, vol. 75, pp. 23–42

ISSN 1392-0359 eISSN 2345-0061
DOI: https://doi.org/10.15388/Psichol.2026.75.2

Barriers Experienced by Teachers in the Use of Curiosity in Classrooms in Selected Secondary Schools in South Africa

Ashleigh Askew

University of the Witwatersrand, South Africa
ada@hiltoncollege.com
https://ror.org/03rp50x72

Peter JO Aloka

University of the Witwatersrand, South Africa
peter.aloka@wits.ac.za
https://orcid.org/0000-0002-4298-9211
https://ror.org/03rp50x72

Abstract. This study explored the barriers experienced by teachers in the use of curiosity in classrooms in selected secondary schools in South Africa. By using a multiple case study design within a qualitative framework, data were obtained from 15 teacher participants from 3 (private) independent secondary schools in the Midlands area of KwaZulu Natal. Semi-structured interviews were used to collect data, and the data were analyzed by using thematic analysis. Teacher participants identified several key barriers which were divided into three main themes: teacher-related barriers, learner-related barriers, and school-related barriers. The findings indicate that teacher-related barriers include inadequate time available for lesson planning, teacher fatigue and over-extension, and teachers' fear of the unknown. The findings also indicate that learner-related barriers include learner fatigue and over-extension, learner engagement and apathy, and a results-orientated mindset. Finally, the findings report that school-related barriers include curriculum demands and time constraints, rigid assessment criteria and a diverse range of learners in classrooms. It recommends that the Department of Education should prioritize professional development for teachers so that to equip them with the skills to foster greater curiosity, leading to more empowered and effective teaching.

Keywords: barriers, teachers, experience, use of curiosity, classrooms, secondary schools, South Africa.

Kliūtys panaudoti smalsumą pamokose mokytojų praktikoje: atvejai iš Pietų Afrikos vidurinių mokyklų

Santrauka. Šiame tyrime nagrinėjamos kliūtys, su kuriomis susiduria mokytojai, norėdami pasitelkti smalsumą klasėse, pasirinktose Pietų Afrikos vidurinėse mokyklose. Naudojant kelių atvejų tyrimo dizainą pagal kokybinę metodologiją, buvo surinkti duomenys iš 15 mokytojų, dirbančių trijose nepriklausomose (privačiose) vidurinėse mokyklose Kvazulu Natalio regiono Midlandso apylinkėse. Duomenys buvo rinkti pusiau struktūruotais interviu, o analizei taikyta teminė analizė. Mokytojai nurodė kelias pagrindines kliūtis. Jos suskirstytos į tris temas: su mokytoju susijusios kliūtys; su mokiniais susijusios kliūtys; su mokykla susijusios kliūtys. Tyrimo rezultatai parodė, kad su mokytoju susijusios kliūtys apima nepakankamą laiko kiekį pamokų planavimui, mokytojų nuovargį ir per didelį darbo krūvį, taip pat baimę dėl nežinomybės. Su mokiniais susijusios kliūtys apima mokinių nuovargį ir per didelį krūvį,

Received: 2025-07-24. **Accepted:** 2025-10-27.

įsitraukimo stoką bei rezultatų siekimu grįstą mąstyseną. Galiausiai, su mokykla susijusios kliūtys apima mokymo programų reikalavimus ir laiko apribojimus, griežtus vertinimo kriterijus bei didelę mokinių įvairovę klasėse. Tyrimo išvados rodo, kad Švietimo departamentas turėtų teikti pirmenybę mokytojų profesiniam tobulėjimui, kad šie įgytų įgūdžių skatinti didesnį smalsumą, prisidedantį prie labiau įgalinančio ir efektyvesnio mokymo.

Pagrindiniai žodžiai: kliūtys, mokytojai, patirtis, smalsumo panaudojimas, klasės, vidurinės mokyklos, Pietų Afrika.

Introduction

Achieving learning outcomes remains a significant issue for schools in African countries. For example, Evans and Acosta's (2020) review of 145 empirical studies conducted in several sub-Saharan African countries reported that even an increased access to schools has not led to improvements in the quality of education received, nor has it led to improvements in learner outcomes. According to Bold et al. (2017) and Adeniran et al. (2020), as cited in Evans and Acosta (2020), a high number of learners continue to perform poorly in numeracy and literacy tests despite several years of schooling, which implies that learning outcomes have not been achieved. Moreover, Evans and Acosta's (2020) study further suggests that multi-faceted programs are more effective in producing greater gains in education as are mother tongue instruction interventions and the elimination of school fees in both primary and secondary schooling, thus increasing access to education. This is an interdisciplinary study because it is the interaction between the two disciplines, i.e., between psychology and education, where curiosity is researched, and analysis is devoted seeking to discover how curiosity is adopted and utilized by teachers in classrooms in South Africa. The aim of interdisciplinary research is to point to the body of literature that connects the integration of the psychological concept of curiosity as adopted by teachers in classrooms.

The 2013-dated report by The Education Partnership Centre on learning outcomes in Nigeria conveys a bleak picture of the quality of education. Learners are failing to attend school, to remain in school, and, even when in school, they do not meet the learning outcomes. This is the result of a poor teacher quality and significant teacher shortages and absenteeism (The Education Partnership Centre, 2013). A recent study by Sanfo and Malgoubri (2023) in Ethiopia found that learners from high SES benefited from teachers who were better-skilled in classroom management and cognitive activation techniques and were more likely to achieve learning outcomes, thus widening inequality in education. In Nigeria, a study by Ifeakor and Odo (2020) reported that the negligence of teachers' welfare affects their service. All stakeholders, including school administrators, school heads, government and even society at large, impact the morale of teachers, and a negative view of teachers can result in teachers failing to perform well in the classroom, thus impacting learner outcomes. In addition, Mphale and Mhlauli's (2014) study in Botswana found a poor teacher morale, a lack of teaching resources and inadequate examination preparation as key factors in learning outcomes not being achieved. In Tanzania, Komba's (2017) study posits that one of the key factors influencing learning outcomes in public schools is accountability.

In South Africa, learning outcomes remain an area of critical concern for teachers, parents, the Department of Education and other education stakeholders (van der Berg, Taylor, Gustafsson, Spaull, & Armstrong, 2011). The South African National Education Policy (1996) stipulates that every person has the right to receive a basic education which contributes to the holistic personal development of learners. In addition to providing instruction, and developing skills and disciplines, schools must also foster independent and critical thought (National Education Policy Act 27 of 1996). Moreover, Jansen and Blank's (2014) study in South Africa argues that the ten key features of successful schools include established routines; extended learning time; teachers in all classes; high expectations; a culture of love and discipline; parental involvement; visible leadership; a culture of social entrepreneurship; principals who can manage the external environment and opportunities for students to achieve beyond school (Jansen & Blank, 2014, p. 128). The National Education Policy Act 27 of 1996 in South Africa states that all people should have access to lifelong learning (Department of Education, 1996). Learners who obtain a tertiary education are more likely to be meaningfully employed than those without any tertiary qualifications (OECD, 2019). The Department of Education Annual Report (2021/22) prioritizes the preparation of learners for further studies and the world of work, and highlights the importance of learners leaving education when already equipped and able to contribute meaningfully towards developing a fairer and more prosperous South Africa (Department of Basic Education, 2022).

However, the reality of education in South Africa remains a serious cause for concern (van der Berg, Taylor, Gustafsson, Spaull, & Armstrong, 2011). Education is characterized by poorly performing teachers and a lack of accountability as well as low expectations of learners and staff (Mouton, Louw, & Strydom, 2012). The 2022 Reading Panel Background Report reveals that, in 2021, only 27% of Grade 4 students could read for meaning. Whilst the economic status of the country has a role to play in poor educational attainment, 65% of Grade 4 learners in Iran, a country with a similar GDP-per-capita, could read for meaning in 2016 compared with 22% of Grade 4 learners in South Africa. Similarly, in 2013, Grade 6 learners in Kenya and Swaziland performed better than Grade 6 learners in South Africa (Spaull, 2022). The 2021 Progress in International Reading Study showed that only 18% of South African Grade 4 learners could read for comprehension. Learners who did not reach the lowest benchmark are unable to locate explicit information in a text or reproduce the required information. Whilst there is a scarcity of research that correlates literacy scores and curiosity in educational settings, seminal studies in curiosity have shown that individuals are most curious about information of which they have some existing knowledge, and that curiosity increases as one becomes aware of a knowledge gap (Berlyne, 1954; Grossnickle, 2016; Loewenstein, 1994).

Previous studies have provided insights into the challenges faced by schools in South Africa. Research on strategies to improve school outcomes has yielded evidence of interventions relating to pedagogical practices, whole-school leadership approaches, financial and resource management, and community engagement. However, there is a noticeable gap in research on barriers that are experienced by teachers in their attempt to

adopt curiosity in classrooms. This gap is problematic because it does not provide teachers with the opportunity to explore their teaching methods and the reasons behind them. This study was not gender-specific because teachers from both male and female genders were studied. This study aimed to explore barriers that teachers experience in the use of curiosity in classrooms in selected secondary schools of South Africa.

Theoretical Framework

The study was informed by the Information-Gap Theory. The *Information Gap Theory*, as developed by Loewenstein (1994), suggests that individuals are most curious about the topics of which they have some existing knowledge. If new information is unlike that which we are familiar with, there will be no reference point on which to build, and, as such, no conflict will occur, and therefore no curiosity will be triggered (Lamnina & Chase, 2019). As such, Loewenstein's definition of curiosity is "a form of cognitively induced deprivation that results from a perception of a gap in one's knowledge" (Loewenstein, 1994, p.78). Curiosity, as described by Piaget, arises from cognitive disequilibrium experienced when a child tries to incorporate new information into their existing cognitive frameworks. Piaget identified an ideal level of discrepancy necessary for curiosity to manifest 'the known' as the moderate novelty principle (Grossnickle, 2016). If the level of discrepancy is too low, the child will show minimal effort and interest in assimilating new information. On the other hand, highly incongruous information would be avoided or disregarded as it deviates too significantly from their established cognitive structures (Loewenstein, 1994). According to the findings of Wade and Kidd (2019), a reciprocal relationship between curiosity and learning exists. This theory informed the present study because it assists to explain the dynamic interplay among partial knowledge, curiosity, and the learning process. Moreover, learners tend to exhibit the greatest curiosity about the subjects they believe are on the verge of understanding. While learners' existing knowledge objectively predicts their learning outcomes, it is their subjective perception of their knowledge that primarily influences their curiosity.

Literature Review

Literature on barriers that teachers experience exists, but it yields mixed results in varied contexts. Despite the recognition of curiosity, along with motivation to learn, as more important than intelligence in predicting educational achievement (Pluck & Johnson, 2011), education systems do little to stimulate or harness learner curiosity. Jirout et al.'s (2018) study conducted in the United States argues that curiosity poses a risk for teachers as it undermines progress towards rigid goals. In an education system that measures static knowledge and values factual recall, with a strong emphasis on test scores, it is unsurprising that learners, as well as teachers, perceive uncertainty as highly risky. However, the above-reviewed literature by Jirout et al. (2018) does not address any aspects on the barriers that teachers face in the adoption of curiosity in classrooms. Pascoe, Hetrick, and Parker's (2019) narrative review of studies from the United States, Canada and

Europe concluded that heightened academic stress leads to poorer academic outcomes and more mental health issues. To counter these negative effects, the authors recommend that young people should adopt stress-management strategies. The study by Pascoe et al. (2019) attempts to propose ways of stress management, but it does not address barriers to adoption of curiosity in classrooms, which is the main thrust of this research. In addition, Klusmann et al.'s (2022) quantitative study in Germany found that teacher exhaustion leads to reduced emotional support for learners and diminished organizational skills in lesson planning and delivery. Singh and Manjaly's (2022) study in India indicated that pedagogical styles, learning environments, assessments, and teacher-learner relationships all constrained curiosity. Moreover, Singh's (2021) study, also conducted in India, indicates that teachers frequently chose to lecture their classes, while often relying on writing on boards or dictating notes for learners to copy. However, the reviewed research by Singh (2021) did not address the current teaching methods in classrooms, such as adoption of curiosity. Thus, there is the research on the adoption of curiosity that is limited, and it remains important to research barriers to adoption of curiosity in classrooms, which is a crucial aspect of teaching methods that are available for teachers in schools.

Furthermore, teachers showed limited engagement with questioning, failed to identify or leverage knowledge gaps, and did not encourage active group work among learners. Challenges such as large class sizes, inadequate teaching facilities, and insufficient staffing contribute to the prevalence of teacher-centered methods (Singh, 2021). Moreover, the study reported a lack of meaningful feedback from teachers to learners. The feedback that is provided often comes in the form of high-stakes examinations, which tend to offer negative or minimal feedback. In the findings reported by Singh (2021), there is limited research on curiosity in classrooms, due to which, it is important to study barriers that are experienced by teachers. In 2008, a reform to Malawi's primary school curricula shifted the focus towards active learner-centered classroom practices (Chiphiko & Shawa, 2014). The study findings indicated that barriers to the use of curiosity in classrooms included inadequate teaching and learning materials, large class sizes, and insufficient learning facilities (Matsepe & Maluleke, 2019). In another research, Okolie et al. (2021) conducted a qualitative study which revealed that locally trained teachers frequently default to lecture-based methodologies and prioritize theoretical knowledge, potentially hindering the development of critical thinking skills among learners. However, the above-reviewed research lacks aspects of the current teaching modes that are being adopted by teachers and barriers that are experienced in classrooms. This is the research gap that was attempted to fill by this study. In their mixed-methods inquiry conducted in Tanzania, Kibga, Gakuba, and Sentongo (2021) revealed that teachers were reluctant to engage learners in the learning process, primarily due to concerns about disrupting the completion of schemes of work. Teachers perceived learner-centered methodologies as potentially time-consuming and doubted their effectiveness in adequately preparing learners for assessments. The above-reviewed study by Kibga et al. (2021) contends that the learning process in classrooms is affected by various challenges, but there remains a gap in research on barriers to adoption of curiosity in classrooms. In South Africa, Bontwini

(2017) reported that the teaching of Natural Sciences in primary schools in the Eastern Cape is uninspiring and unlikely to encourage learners to develop an understanding or interest in sciences beyond compulsory schooling.

From the above-reviewed literature, it is evident that there are few studies from international and regional perspectives on barriers to the adoption of curiosity in classrooms. However, literature on the South African context regarding barriers that are experienced by teachers in their attempt to adopt curiosity in classrooms is extremely limited. This gap is observed despite teachers being expected to adopt the use of curiosity in their teaching in classrooms.

Aim of the Study

This study aims to explore barriers which teachers experience in the use of curiosity in classrooms in selected secondary schools in South Africa.

Methods

Research Paradigm

A research paradigm represents a shared set of beliefs and ideas that guide thinking and data interpretation (Kivunja & Kuyini, 2017). This research aligns itself with the *Interpretivist Paradigm*, which seeks to comprehend and describe human experience (Chilisa & Kawulich, 2012). Interpretivism emphasizes the significance of context, time, and the individual in interpreting individual and group realities and acknowledging the existence of multiple realities (Chilisa & Kawulich, 2012). The Interpretivist Paradigm is relevant in this study because it assists in understanding how teachers conceptualize curiosity, its impact, and the challenges they encounter in doing so.

Research Design

This study employed a multiple case study research design. Tomaszewski et al. (2020) assert that case studies enable researchers to explore contemporary experiences in authentic contexts, while emphasizing the interconnection between these variables. Case studies are bound systems, defined by time, space, and activity. Through a bounded system encompassing multiple sources and various types of evidence, researchers can examine the full complexities of an experience. This study adopted a multiple-case study design, gathering and analyzing data from fifteen (15) teachers across three (3) independent schools in KwaZulu Natal, South Africa. This research design was appropriate for this study because it aimed to produce reports encompassing case descriptions and recurring case themes in similar school contexts. The qualitative methodology adopted was relevant for this study because it obtained the in-depth experiences of teachers with those learners who display problem behaviors and allowed for flexibility throughout the research when answering the research questions. It also helped the researcher analyze the data more intensively.

Research Sampling and Sample Size

The study sample comprised the participation of fifteen teachers (15), with five teachers (5) from each school in KwaZulu Natal, South Africa. These participants possessed the relevant teacher training and accreditation, thereby ensuring that they were representative of the teaching body of each school. Regarding gender representation of the study participants, ten (10) female teachers and five (5) male teachers participated in the study, an indication that gender representation was adhered to in the sampling of participants. This representation included a mix of male and female teachers, denoted by varying years of experience, and involved in diverse subject disciplines. To ensure that the participants would have these specific characteristics, we used purposive sampling. This provided the study with rich and diverse data. However, there was some degree of convenience sampling within the specific criteria given the participants' willingness and ability to participate. Mason (2010) emphasizes that the sample size should align with the project's aim, and that a sample size of above 15 participants is considered appropriate for a qualitative study.

Positionality

The positionality with respect to the social and cultural position (gender, race and class) and to the way how it might affect the research findings has been discussed. It is evident that, regarding the gender representation of the study participants, ten (10) female teachers and five male (5) teachers participated in the study, which is an indication that gender representation was adhered to in the sampling of participants. This representation included a mix of male and female teachers, with varying years of experience, and involved in diverse subject disciplines. Thus, the gender distribution of the participants did not affect the findings of the study. In this study, the participants were racially diverse, that is, there were 4 white, 5 black African, and 6 'colored', thus, the teacher participants were diverse race, and this did not affect the study findings. In addition, the teachers were all from the middle class, and thus, this did not affect the study findings. Thus, the social and cultural positions did not affect or sway the findings of the study.

Data Collection Methods

This study utilized semi-structured interviews for data collection. According to Ruslin et al. (2022), an interview is an exchange of ideas and experiences between two people with a shared interest in a specific theme or topic. The researcher's role is to guide the conversation. Thus, Ruslin et al. (2022) add that semi-structured interviews are particularly valuable for qualitative research as they "allow[s] for researchers to acquire in-depth information and evidence from interviewees while considering the focus of the study" (Ruslin et al., 2022, p. 22). The participants were interviewed individually, in person, and with the participants' permission. Each interview lasted approximately 50 minutes and consisted of five core questions aligned with the specific research inquiries of this study. The use of audio recordings assured the precision of the transcribed data and afforded

the researchers the ability to revisit the interviews, thereby facilitating a more thorough analysis.

Data Analysis

For this study, thematic analysis, which involves identifying recurring patterns as themes, was adopted (Lochmiller, 2021). Richie and Spencer (1994), as cited by Ruslin et al. (2022, p. 27), state that "defining, categorizing, explaining, exploring, and mapping is fundamental to the analyst's role". According to Braun and Clarke (2006), thematic analysis provides the researcher with flexibility in organizing and describing the data in rich detail. They emphasized the importance of "constantly moving back and forth between the entire data set, the coded extracts of data that you are analyzing, and the analysis of the data that you are producing" (Braun & Clarke, 2006, p. 86). Braun and Clarke (2006) also identified six stages of thematic analysis. Nowell, Norris, White, and Moules (2017) argued that thematic analysis aims to systematically organize data into meaningful groups by studying data and emphasizing the parts that look significant or fascinating, as well as give these sections codes, or brief labels, that encapsulate their contents (Braun & Clarke, 2023). The researcher is required to keep these codes broad at this stage, thereby capturing all potential themes. The third step is to search for themes; it is important to make sense of theme connections. The purpose of this step is to collate codes into potential themes. Then, the researcher is expected to examine the codes and find any connections or patterns among them, to create broad themes, group codes that are related together and to put the topics in a hierarchical order, while considering the major and the supporting themes (Braun & Clarke, 2023). The fourth step is to review the themes. The purpose of this step is to refine and validate the themes identified by checking the themes against the dataset so that to ensure that they accurately represent the data. The researcher implements this objective by splitting, combining, or discarding themes as necessary, and creating a thematic map intended to visualize the relationships between themes (Braun & Clarke, 2023). The fifth step involves defining and naming themes, which allows to clearly define each theme and articulate its scope and focus. This is done by writing detailed analyses of each theme, and explaining what it captures, while also defining its significance (Naeem et al., 2023). In this study, the data analysis was conducted from an interpretivist perspective, and this involved detailed, iterative analysis of the interview data to understand the subjective meanings, experiences, and worldviews of the participants on barriers that teachers experience in creating a culture of curiosity in their classrooms. This process started with data, in which coding, constant comparison, and theme development were done with the objective to identify patterns and build an understanding of the social reality from the participants' perspectives.

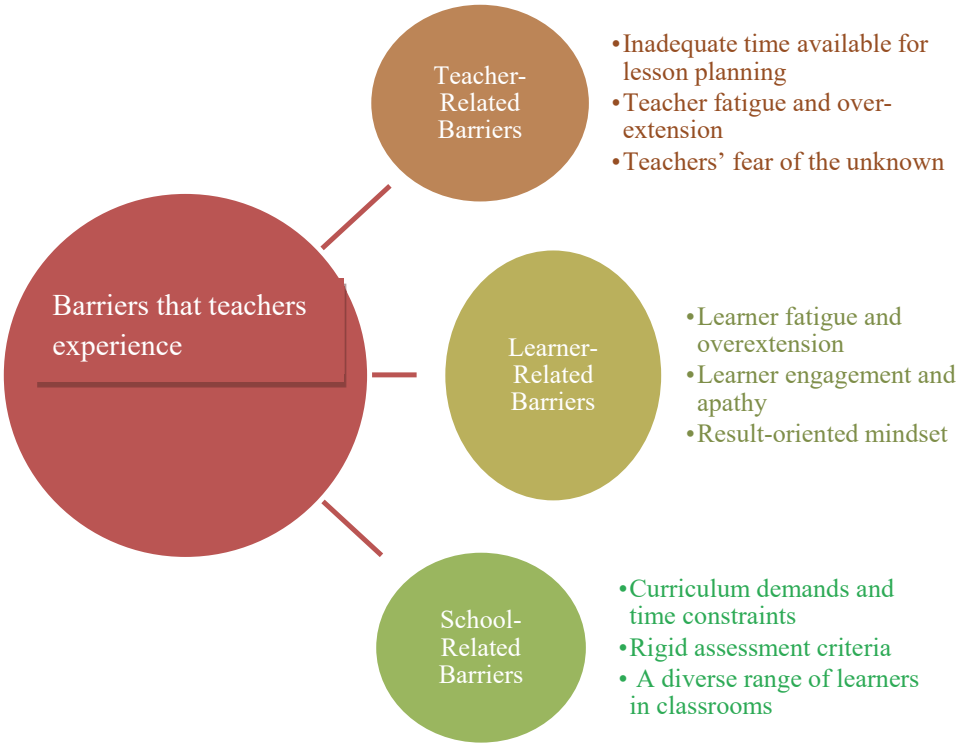
Findings

This study explored the barriers that teachers experience in creating a culture of curiosity in their classrooms. This study findings are not gender-specific because both male and female

gender teachers were studied. In addition, the study findings point to interdisciplinary and integration of psychology and application to South African classrooms. Thus, the findings integrate and bring to the fore new knowledge which has resulted from psychology of curiosity as applied in education. The teacher participants identified several key barriers which have been divided into three main themes: teacher-related barriers, learner-related barriers, and school-related barriers. The first theme, the teacher-related barriers, is divided into 3 sub-themes: *inadequate time available for lesson planning*, *teacher fatigue and over-extension*, and *teachers' fear of the unknown*. The second theme, learner-related barriers, is divided into 3 sub-themes: *learner fatigue and over-extension*, *learner engagement and apathy*, and *a results-orientated mindset*. Finally, the third theme, school-related barriers, is divided into 3 sub-themes, namely, *curriculum demands and time constraints*, *rigid assessment criteria*, and *a diverse range of learners in classrooms*. A summary of the themes is presented in Figure 1 below; it shall be discussed thereafter.

Figure 1.

Themes and sub-themes on the barriers which teachers experience in the use of curiosity in selected secondary schools



Source: Analyzed interview data, 2024.

Theme 1: Teacher-Related Barriers

The findings of the study suggest that several teacher-related barriers prevent teachers from fostering a sense of curiosity in the classroom. The study's findings indicate that the sub-themes on teacher-related barriers that affect teachers and teaching approaches include inadequate times available for lesson planning, teacher fatigue and over-extension, and teachers' fear of the unknown. The sub-themes are discussed as follows:

Sub-theme 1: Inadequate time available for lesson planning

The study suggests that teachers frequently experience a shortage of time for both lesson planning and the development of new and innovative resources. Participant 1 admitted that a packed schedule leaves little room for reflection regarding her teaching methods. She believes that, with a chance to reflect, she could customize lessons to align more closely with the learners' interests, thereby enhancing their engagement and curiosity. The teacher reported that:

> *"I think that sometimes I'm preoccupied with getting through the content. I think I need to be better at thinking about things that are genuinely interesting to them and then creating more sound links between what we're covering and what lights their fire. I think I could be a more reflective practitioner. I don't know if our timetables allow for hours and hours of reflection. I wish it did."* (Participant 1)

Meanwhile, Participant 7 provided an alternative perspective, expressed as follows:

> *"I feel like if anything going from public to private school has improved my teaching because I've got the space to now be curious and foster that curiosity and creativity. That has been amazing. I'm feeling very fortunate because I felt like I've been sleepwalking through my teaching career for a large portion of it and now, all of a sudden, there are so many amazing ideas out there – and online – and I've got the opportunity and the resources and the time and space to do it all."* (Participant 7)

Based on the interview results above, it is of importance to acknowledge this alternative viewpoint, as well as the challenges faced by teachers in the state sector. However, it is equally crucial to recognize the time constraints and pressures faced by educators in independent schools. Both sectors encounter barriers hindering the design of lessons and the development of resources that cultivate curiosity among learners.

Sub-theme 2: Teacher fatigue and over-extension

Fatigue and over-extension because of involvement in extracurricular activities and broader school-life commitments are identified as significant obstacles to a teacher's capacity to nurture curiosity in the classroom. The role of a teacher often extends well beyond the confines of classroom instruction, including involvement in sports, cultural events, academic support, and various leadership positions. Analysis of participant interviews reveals the following:

"I think my first-year teaching has been quite an overwhelming year, and then you are coaching sports all the time. I've struggled with energy levels to sustain that creativity – to think how am I going to approach this in an incredibly new and never-before-seen way – where the boys are just going to walk out of my class and go "That was the best lesson!" I think the onus does fall on the teacher because children need to be given opportunities to experiment and solve and dive into things, and so I think if you are lacking in curiosity and interest and drive yourself that is just going to reflect in the class." (Participant 1)

"Teachers can get worn down; the school needs to have us at the optimum of our productivity. If you are run off your feet the whole time, developing curiosity in your students falls right away; you just need to get through the hoops. The school needs to protect the staff." (Participant 3)

The analysis of the excerpts above underscores the challenge of being overextended and its implications for teaching methods. Teachers frequently find themselves overwhelmed, exhausted, and stretched thin, leading to a perceived decrease in their effectiveness in the classroom. It appears that there is a direct correlation between a teacher's lack of energy, curiosity, or enthusiasm for their subject, and the level of energy and enthusiasm exhibited by learners. As such, schools must safeguard their staff's well-being so that to maintain productivity.

Sub-theme 3: Teachers' Fear of the Unknown

High expectations are placed on teachers, especially within the context of independent schools where parents have typically made substantial financial investments in their child's education. Teachers face immense pressure to achieve impressive results, which is a burden not only imposed by school leaders and boards of governors but also by alumni and other stakeholders within the school community. This pressure is heightened by the understanding that the success of a group of learners can impact future enrolment at that school. The weight of this pressure can lead teachers to avoid innovative approaches to the curriculum, instead opting for the traditional methods or focusing solely on examination-oriented teaching. Consequently, this diminishes opportunities for exploration, inquiry, and creativity in the classroom. Teacher participants report the following:

"Maybe just fear that it's not going to work; fear that you put a huge amount of time and energy into something and it doesn't work. I know I'm wrong in thinking this, but if there's absolute chaos in the classroom, and nobody comes up with a proper solution – unfortunately, that's what I would view as not working. But that's not to say that it hasn't sparked something, some boy hasn't learnt something, or it sparked an interest in something. Maybe we should just let it go and let the boys run with it and actually, it's OK if it's … It's that fear of chaos which I think in most schools especially a school like this we shy away from – things are very structured." (Participant 2)

"I think we must stop saying time actually – I'm sure everyone says 'time'. Future fit has just demonstrated that we can collapse a timetable and bring curiosity into the classroom. It's fear – that's a big one – fear of missing out on curriculum, of outcomes, getting through the work, of performance appraisal." (Participant 13)

The participants highlight fear as a significant factor shaping their teaching methods. Concerns about potential classroom chaos, the risk of investing time and energy into unsuccessful activities, or learners not achieving learning objectives deter teachers from attempting innovative approaches.

Theme 2: Learner-Related Barriers

The participants' responses indicate various learner-related factors that hinder learners from fully engaging with interest. These sub-themes include learner fatigue and overextension, learner engagement and apathy, and a result-oriented mindset. The sub-themes on learner-related factors are discussed below.

Sub-theme 1: Learner fatigue and over-extension

Interestingly, the participants note that fatigue and over-extension are not exclusive to teachers but that these factors also affect learners. This phenomenon seemed to be more prevalent in boys' boarding schools, where the participants observed high levels of engagement in sports. One teacher reported that:

> *"Fatigue. I think our boys are stretched in every single direction and sometimes I find they are just 'pap' and they are just exhausted. So, I think that hinders curiosity in the classroom. Because they are playing way too much sport – and off-season sport – and waking up to do gym in the morning. And then I don't think our calendar, with the number of tests is working. I think boys are writing more than two to three tests in a day. So, I think they just actually have a little bit of burnout."* (Participant 1)

This participant acknowledges the significance of sports in school life. However, heavy involvement in sports can lead to learners feeling stretched, overwhelmed, and distracted. The prominence of sports can detract from learners' curiosity about learning, as they may feel exhausted and, in some cases, experience burnout. When combined with excessive academic testing, these factors serve as barriers to learners' excitement about learning and their ability to engage fully and meaningfully.

Sub-theme 2: Learner engagement and apathy

While the teacher plays a pivotal role in impacting learner engagement and fostering curiosity, several other factors can determine whether a learner engages in the classroom, some of which are beyond the teacher's control. Analysis of participant interviews reveals the following:

> *"For me and I'm just thinking specifically of my subject, I don't know that students who choose the subject necessarily have a massive interest in it which I think can stifle curiosity. I would like to think that students who choose Geography do so because they are curious and are interested in the environment and their place in the environment and relationships. I think a lot of students do it because it's not an easy subject but it's a subject that the*

majority of students can pass with a bit of hard work. I think that is a challenge that you are not just getting the kids who are interested in the subject." (Participant 2)

"I would say boys who struggle with impulse control and dominate and shout out. They sabotage others' interests and curiosity – it means many boys just sit – because there's always that person who's distracting, and disruptive. That's a big challenge in my lower grades." (Participant 15)

The excerpts above suggest that some learners choose subjects not out of genuine interest, but rather because they perceive them as less challenging than others. This can adversely affect learner engagement. Moreover, some students may resist taking responsibility for their own learning, thus developing an over-reliance on the teacher. Conversely, others may deliberately disrupt the classroom environment, by impacting not only their own engagement but also that of their peers.

Sub-theme 3: Results-orientated mindset

Unsurprisingly, the study highlights preoccupation with results among learners, as their achievements are measured primarily through examinations and assignments. Participant 12 remarks that "curiosity is a risk", thus indicating that straying from the conventional methods of learning can be seen as potentially jeopardizing success. The following excerpts demonstrate how a result-oriented mindset can diminish learner curiosity.

"The outcomes-focused guys, the mark-getters with typically lots of family pressure, and those who like measurable achievement, will find a lot of the way I teach frustrating. What do I get marks for? Is this going to be in the test?" (Participant 4)

"They go from class to class, they write notes, and even the top kids become secure in that kind of environment because they know the recipe to get the marks. Sometimes they (the bright kids) are the most intimidated by doing something a little bit different because they're not too sure of the pathway to the A. I think for some of those top achievers, curiosity is a risk – especially if they're kids who have to work hard to get their top marks and that's their identity around their marks." (Participant 12)

The findings indicate that learners value tasks that yield numerical results; this can be exacerbated by family pressure. As such, some learners have mastered a formulaic approach that reliably secures results. Therefore, it can be argued that deviations from the conventional teaching methods can therefore be perceived as risky by these learners. However, in order to foster greater curiosity and promote deep learning, teachers must be prepared to challenge learners and extend them beyond their comfort zones.

Theme 3: School-related barriers

School-related barriers are those aspects within the school system that hinder teachers' experience in the use of curiosity in the classroom. The study findings indicate that the school-related barriers are divided into 3 sub-themes, namely, curriculum demands and time constraints, rigid assessment criteria, and a diverse range of learners in classrooms.

Sub-theme 1: Curriculum demands and time constraints

The study findings show that teachers perceive time constraints as a significant barrier that impedes them from fostering curiosity among learners. Firstly, this sub-theme considers the amount of time needed to cover the curriculum with most teachers feeling that the number of lessons allocated to cover the syllabus was not sufficient in the senior grades. This places significant pressure on both teachers and learners to cover the work, while leaving little time for exploration and inquiry. This discrepancy places considerable pressure on both teachers and learners to cover the necessary material, consequently leaving scant time for exploration and inquiry. The interview excerpts from participants are reported as follows:

> *"Time, time definitely in terms of getting through certain amounts of work within a certain time frame. I could see how in Grade 11 and Matric curiosity is substituted for just reaching the final goal, maybe both in teaching and in learning. Boys realizing in matric that 'I'm not here for fun – just tell me what I need to know."* (Participant 1)

> *"Time – with the girls and time to prepare. I feel if we had more time, I would have more fun with my teaching, and they would have more fun with their learning – I had planned to do an amazing race but we just didn't finish on time."* (Participant 6)

The findings suggest that teachers perceive the cultivation of greater curiosity as a time-intensive task. Particularly, teachers overwhelmingly believe that the density of the syllabus leaves little room for fostering curiosity. Teachers are pressured to prioritize results over curiosity. As such, fun, freedom, and playfulness in learning are often relegated to the junior grades, while learners preparing for external examinations are primarily focused on covering content and preparing for examinations.

Sub-theme 2: Rigid assessment criteria

The assessment of learner outcomes solely through examinations poses a further barrier to teachers. The participants note that the constraints imposed by a system reliant on test scores diminish learners' creativity and, consequently, their curiosity. The participants report the following:

> *"I worry that, at the end of the day, I am preparing these girls to write a matric exam, and, if I am not standing up there telling them every little thing they need to know, I might disadvantage them. How do I know if they will discover things on their own?"* (Participant 6)

> *"Probably just the time constraints – if you must cover certain content for an exam or block test or something – I do think we over-assess. I don't know if we do enough creative work – it's hard to assess that – so why do we have to assess? Now we don't ever do poetry writing because we are not going to assess that. But now we know we don't ever write poetry – we don't write enough creative pieces, either. If we do want them to write creatively, we've got the challenge of CHAT GPT which has completely destroyed original thought. That's a big challenge, too. Creativity and curiosity go hand in hand."* (Participant 15)

Based on the excerpts above, it is apparent that teachers are reluctant to incorporate opportunities for independent study for fear of disadvantaging learners or not preparing them adequately for examinations. Furthermore, the nature of assessment, including *what* is assessed and *how* it is assessed, influences the content covered in the curriculum. As a result, there has been a decline in the emphasis placed on creative writing, as it is not assessed to the same degree as other curriculum components. Moreover, the emergence of AI tools, such as ChatGPT, has influenced teachers' views on creative work, prompting concerns about AI's capacity to limit original thought and creativity.

Sub-theme 3: A diverse range of learner needs in classrooms

Within a single classroom, there exists a spectrum of learners, each with unique needs and backgrounds. These students vary in academic abilities, and some may experience learning difficulties or exhibit diverse social, emotional, and behavioral needs. Teachers must have the expertise to differentiate the content and delivery methods so that to ensure that learning is accessible to all learners. Furthermore, they must cater to a range of interests to effectively engage and enthuse every learner. This undertaking presents a significant challenge, as reflected by the following participants:

> *"In the classroom space, where we have 20 to 25 boys sometimes, I find with curiosity that I am appealing to just a small percentage of boys, and not all the boys are curious about the same thing."* (Participant 5)

> *"Children are different and have different interests as well which I think is a limitation – especially with English, you have the girls who love poetry and writing and love reading, and other girls who will just eye-roll the whole time. I think that is also a problem we have no control over whether they're receptive and whether they want to know."* (Participant 10)

The diverse interests of learners can influence their responses to various subjects or specific topics. The findings indicate that teachers acknowledge the difficulty in engaging the entire class, noting that there are instances where teachers may lack control over whether individuals will be receptive and respond enthusiastically.

Discussion

The findings indicated three areas where teachers experience barriers in the adoption of curiosity in the classroom: teacher-related barriers, learner-related barriers, and school-related barriers; they are discussed as follows. The study findings reveal that teachers frequently experience scarcity of time, largely due to the pressure of completing the curriculum content and managing additional non-classroom commitments such as extracurricular activities, leadership roles, and administrative duties. This perceived lack of time hinders their ability to reflect on their teaching, plan, and deliver engaging and innovative lessons. The study indicates that teacher fatigue negatively affects their ability to craft effective lessons, thereby impacting learner outcomes. Teacher fatigue and overextension also lead to decreased enthusiasm for their subject, which, in turn, diminishes learners'

interest and enthusiasm. In agreement, Klusmann et al. (2022) found that increased teacher exhaustion correlates with decreased learner interest and enthusiasm, ultimately leading to poorer learner outcomes. Additionally, the study findings show that exhausted teachers often resort to less innovative pedagogical approaches, repeatedly using outdated materials and lecture-style, along with teacher-centric methods. In agreement, Singh and Manjaly (2022) reported that external pressures leading to an over-reliance on teacher-centric methods significantly hinder a teacher's ability to foster curiosity.

The study findings also highlight the positive effect of reflection on teaching practice. When teachers have time and space to reflect, they can design more effective lessons that engage learners. In agreement, Bontwini (2017) posited that a lack of teacher reflection leads to unengaging lessons with little connection to learners' authentic experiences. Furthermore, Kibga, Gakuba, and Sentongo (2021) assert that teachers fear deviating from teacher-centric approaches because they worry about disrupting syllabus completion and inadequately preparing learners for assessments. In addition, the study reports that teachers fear losing control of the classroom environment if they deviate from teacher-centric methods. Engel (2013) further agrees and acknowledges the negative effects of excessive or insufficient classroom control on learner creativity and curiosity.

However, the study also reports that not all teachers feel burdened by a lack of time or restricted in their ability to deviate from the traditional curricula, and some recognize the positive impact that teacher and learner engagement outside the classroom can have on cultivating curiosity. This is significant given the malleable nature of curiosity (Grossnickle Peterson, 2020). More exposure to curiosity-rich experiences, whether in the classroom or in other structured learning environments, leads to more engaged, critical, and creative learners. The implication of this finding is that school leaders and governing bodies must ensure that teachers use their time in meaningful and effective ways that best support learner progress.

The study findings indicate that teachers perceive that learners in high-pressure school environments also experience overextension and fatigue. This is due to demanding sports, cultural, and academic schedules, as well as the rigid school routines often found in boarding schools. These pressures leave learners merely trying to get through the school day, with little room for genuine curiosity about their learning. Supporting this finding, Pascoe, Hetrick, and Parker (2019) reported that ongoing school-related stress negatively impacts learners' academic performance and enjoyment of learning, along with other adverse physical and mental outcomes. Additionally, a result-oriented mindset, where learners measure success solely through assessments, hinders the fostering of a curiosity-rich environment. Jirout et al. (2018) support this finding, by stating that school cultures emphasizing performance-based behaviors restrict curiosity. Moreover, excessive pressure to excel academically can further dampen curiosity in the classroom.

Finally, the study findings suggest that teachers perceive learner apathy or lack of engagement as negatively impacting their efforts to stimulate curiosity. Learners who are uninterested in the subject fail to take responsibility for their learning or display disruptive behaviors can influence the pedagogical approach teachers use. In such cases,

teachers are more likely to adopt a lecture-based or authoritative approach. According to Okolie et al. (2021), this shift to a lecture-centric approach, although for different reasons, leads to the same outcome: a lack of development in critical and creative thinking among learners. The implication of this finding is that school leaders need to carefully manage learners' schedules to prevent them from overextending themselves and experiencing burnout. Additionally, professional development programs should equip teachers with tools to support those learners who feel overwhelmed or apathetic about their learning. The study findings showed that teachers find the diverse range of learner needs in the classroom challenging when trying to cultivate a curiosity-rich environment. A significant variation in learner's abilities, needs, and interests affects the ways how teachers engage students. This makes it difficult to target learning effectively and address the appropriate information gap (Loewenstein, 1994) or zone of curiosity. As a result, some learners may lose interest because the material is too easy or irrelevant, while others may find it too challenging and beyond their reach.

The study's findings indicate that teachers feel overburdened by the intense curriculum, particularly in the senior grades. This aligns with the findings of Kibga, Gakuba, and Sentongo (2021), who reported that teachers view engaging learners in the learning process as time-intensive and doubt its effectiveness in adequately preparing them for assessments. Additionally, the study finding suggests that the length of lessons can impact learner curiosity. Short lessons do not allow for sufficient exploration and reflection, resulting in less curiosity from learners. In agreement, Kibga, Gakuba, and Sentongo (2021) noted that, when under time pressure, a teacher's primary aim becomes completing the syllabus and preparing learners for examinations. Similarly, Jirout et al. (2018) also observed that when there is insufficient time for exploration and investigative activities, learners become passive, which leads to minimal curiosity and a negative impact on learning outcomes. The study findings reveal that rigid assessment criteria are a barrier to cultivating curiosity. The nature of what is assessed, how it is assessed, the frequency of assessments, and the time constraints all influence how teachers engage with the curriculum and the outcomes expected from learners. In agreement, Jirout et al. (2018) noted that classroom environments with an excessive focus on performance-related behaviors suppress curiosity. Consequently, teachers tend to maintain strict control over the learning process, while adopting a teacher-centric model and directing the pace of learning (Singh, 2021). Lastly, the study findings show that teachers find the diverse range of learner needs in the classroom challenging when trying to cultivate a curiosity-rich environment. A significant variation in learners' abilities, needs, and interests affects how teachers engage students. Singh (2021) emphasizes that learners are likely to become disengaged when the content is either too easy or too difficult, underscoring the importance of targeting learning at an appropriate level. The study findings point to interdisciplinary and integration of psychology and application to South African classrooms. Thus, the findings integrate and bring to the fore new knowledge which has resulted from psychology of curiosity, as applied in education.

Conclusions, Implications & Recommendation

The study also concludes that teachers identify time as a significant barrier to fostering curiosity in learners. The scarcity of time is multifaceted: teachers report lacking sufficient time to develop engaging resources and activities and having inadequate contact time with learners due to an intense curriculum. Timed assessments further hinder learners' ability to demonstrate authentic understanding. Rigid school structures and demanding sports, academic, and cultural commitments leave little room for deep thinking and reflection. Some teachers noted that the barrier is not solely time but also a fear of uncertainty and risk aversion among teachers, learners, and parents, which prevents the adoption of novel teaching approaches. In performance-driven cultures, particularly in independent schools, results are often prioritized over deep learning, thus impeding the cultivation of curiosity. For teachers to embed curiosity in their classrooms, they need to shift the mindset from viewing it as an additional task to seeing it as a vehicle for enabling deep learning within the curriculum. The implication of this finding is that, through effective teacher training programs, the Department of Education and professional development opportunities, teachers should be equipped with tools to design meaningful assessments that accurately gauge learner understanding. Additionally, professional development opportunities must provide teachers with the resources and strategies necessary to differentiate and scaffold learning effectively.

Suggestions for Further Research

Based on the study, the findings, and recommendations, further research is recommended in the following areas including, experience of teachers in fostering curiosity in under-resourced schools, relationship between curiosity and emotional intelligence in adolescence, impact of streamed classes versus mixed ability classes on learner curiosity, and, finally, the impact of demanding academic and extra-curricular learner schedules on epistemic curiosity and learning outcomes.

Author contributions

Ashleigh Askew: conceptualization, background information, literature review, data analysis, investigation, writing – original draft.

Peter JO Aloka: conceptualization, methodology, discussion, conclusion, review and editing.

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