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Bringing Geomorphology to Life Through Fieldwork: A Case of Tshwane Districts Grade 12 Geography Teachers

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ABSTRACT

This study explores the strategies suggested by grade 12 geography teachers to revitalise geomorphology fieldwork within the content-driven Curriculum and Assessment Policy Statement (CAPS) in three Tshwane districts, South Africa. Fieldwork, a vital pedagogical tool for fostering experiential learning and deepening understanding of abstract geographic concepts, has declined significantly due to curriculum pressure, limited resources, and teacher capacity. Using Kolb's experiential learning theory (ELT), the study used a qualitative intrinsic case study approach involving nine purposively selected geography teachers. Semi-structured interviews were conducted and analysed using thematic analysis, resulting in four key themes: (1) using the local environment, (2) technology as an alternative to fieldwork, (3) repurposing school resources, and (4) continuous professional development in effective fieldwork integration. The findings highlight the resourcefulness of teachers and adaptive strategies to promote field-based learning despite systemic challenges. The study contributes to the discourse on practical geography education by offering contextually relevant, teacher-driven approaches to integrate fieldwork into the curriculum. It recommends policy support for localised CPD, flexible curriculum guidelines, and school-level innovation to support experiential learning. The paper concludes that bringing geomorphology to life through fieldwork is feasible and essential to promote learner engagement, conceptual understanding, and environmental awareness in geography education.

KEYWORDS

Experiential learning; geography education; geomorphology fieldwork; grade 12 teachers; teacher strategies.

INTRODUCTION

Geomorphology is the study of landforms and the processes that shape the Earth. Due to the nature of concepts such as erosion, deposition, and fluvial landforms, it naturally lends itself to fieldwork as a key pedagogy for learners to understand these processes in the classroom. However, geography fieldwork has recently seen a decline as one of the significant pedagogies that can help learners understand abstract concepts in the subject (Wilson et al., 2016). Although there is a copious literature that highlights the benefits of fieldwork in Inquiry-based learning, interpersonal development, knowledge retention, deeper understanding of theoretical concepts, and practical application of learned content (Czochański et al., 2024; Firomumwe, 2019; Huh et al., 2022; Wilson et al., 2016), there is still a gap in understanding how to integrate geomorphology fieldwork into a content-based curriculum such as CAPS.

In South Africa, this gap is especially visible in Grade 12 classrooms, where the teaching of geomorphology is guided by the Curriculum and Assessment Policy Statement (CAPS). According to Wilson et al. (2016), the growing concern that undermines the successful implementation of geomorphology fieldwork includes heavy teacher workload, financial constraints, safety concerns, and heavily loaded content curricula. Within the Tshwane metropolitan districts specifically, geography teachers must complete prescribed Annual Teaching Plans (ATPs) with little room for flexibility, and this often results in the exclusion of fieldwork activities.

The CAPS is content-driven, placing a significant emphasis on theoretical understanding and learning outcomes. This policy is strictly structured and accompanied by Annual Teaching Plans (APTs) that geography teachers must follow to the letter, with limited guidance on how to incorporate geomorphology fieldwork. As such, geography teachers prioritise teaching the prescribed content over field-based activities due to the standardised assessment that learners must sit for and the extensive syllabus coverage over a short space of time. Fieldwork is a versatile teaching methodology that can bridge the gap between abstract geomorphic concepts and real-life applications to facilitate deeper understanding. Should this gap between theoretical content delivery and geomorphology fieldwork remain unchallenged, we are likely to see the practical application of geomorphic concepts continue to lose its pedagogical significance in geography education.

Therefore, the theoretical-practical gap in understanding geomorphology requires research into innovative strategies that can help teachers merge theoretical content delivery and hands-on fieldwork activities to benefit geography learners. To achieve this integration of pedagogical strategies, this article was guided by the following research question: *What are the strategies suggested by Grade 12 geography teachers in three Tshwane districts to bring geomorphology fieldwork back to life in CAPS classrooms?*

The following section presents the theoretical framework that foregrounds this paper, followed by a review of the literature to show the current state of geography fieldwork in different educational contexts.

THEORETICAL FRAMEWORK

Kolb's Experiential Learning Theory (ELT) (1984) was seen as a suitable lens to help to understand how grade 12 geography teachers in the three districts of Tshwane can revive dying fieldwork within the geography curriculum. According to Kolb (1984), experiential learning can be achieved through four stages of the learning cycle, which involve (i) experience, (ii) reflection, (iii) conceptualisation and (iv) experimentation. Rather than rote learning in the classroom, ELT encourages learners to become constructors of geomorphology knowledge as they interact with geomorphic landscapes, fostering deep learning and engagement (Kolb & Kolb, 2017). Two constructs of the ELF underpin the paper: concrete experience and active experimentation. The concrete experience stage of ETL aligns well with the understanding of the study that for learners to understand abstract geomorphic concepts, geography teachers should employ the local environment to give learners first-hand experience of geomorphic concepts. Moreover, using digital tools such as Virtual Reality (VR) and Augmented Reality (AR) for fieldwork simulation aligns with active experimentation of the ELT to be used as an alternative to traditional fieldwork (Crogman et al., 2025). As such, framing this paper within the ELT highlights the theoretical importance of hands-on activities in revitalising geomorphology fieldwork in geography.

Brysch (2020) encourages teachers to adapt their pedagogies to ensure that learners are not deprived of experiential learning, essential to deep understanding. Pedagogical adaptation is intrinsic to the continuous professional development (CPD) of geography teachers. In this context, it is key to keep abreast of new developments regarding innovative fieldwork pedagogies and to facilitate experiential learning cycles (Thenga et al., 2020). According to Beard and Wilson (2018), teachers who engage in CPD are better equipped to effectively integrate fieldwork in their classes and apply appropriate, context-suited technologies to enhance both learner engagement and active learning through experiences. In addition, it is likely that teachers who participate in professional development programs have adequate knowledge of repurposing their school resources to align with geomorphology fieldwork. They would therefore be able to create meaningful experiences within the schoolyard or surroundings without the need for off-site activities. Therefore, applying Kolb's ELT, this study provides a theoretical lens to understand how geography teachers can effectively navigate fieldwork challenges, ensuring that geomorphology remains a dynamic, inquiry-driven subject despite logistical constraints.

REVIEW OF THE LITERATURE

Innovative teaching

Geography teachers must explore innovative teaching strategies, such as geomorphology fieldwork that incorporates the surrounding community and environment. This innovation will allow learners to deepen their conceptual understanding and ultimately improve their results in the examination. De Sousa and Golightly (2023) propose innovative teaching in geography, which can stimulate critical thinking through hands-on activities. In their proposal, they propose that problem-based learning (PBL) and experiential spatial problem-based learning (ESPBL) allow learners to engage with geographic problems in real life, thereby promoting active learning and developing analytical skills. Likewise, the researchers in this study believe that the geomorphology fieldwork is well-suited to provide such experience to grade 12 geography learners. Arı (2019) supports this view by stating that, even though there are conflicting views regarding the benefits of fieldwork in geography, it remains the subject's heart. Therefore, its inclusion in the curriculum cannot be delayed. Rather, there is an urgent need to investigate possible innovations that can revive its pedagogical importance in geography education.

While innovative pedagogies highlight the importance of engaging learners in active and problem-based approaches, their success ultimately depends on contextual realities. For South African schools, where resources and time are often constrained, innovation must be grounded in what is practically accessible to teachers and learners (Mkhize, 2023). This makes the local environment a particularly valuable and cost-effective resource, enabling teachers to align curriculum requirements with nearby landscapes that can be used for field-based learning.

Using the local environment

According to Munge et al. (2018), challenges such as excessive finances in geography fieldwork can be overcome by focusing on the local area where the schools are located. For instance, rather than travelling far from the school, geography teachers can identify local places, such as rivers, to teach geomorphology concepts such as erosion, deposition and pollution (De Waele, et al., 2011). This practice will accommodate all learners in the classroom, irrespective of their financial status. In addition, the local focus raises awareness of environmental wellness and encourages learners to take the initiative to be ambassadors of a healthy environment in their communities (Alazmi, 2024). Lee (2021) posits that this type of teaching plays a crucial role in fostering environmental sustainability in the lives of learners and understanding the interconnectedness of human action and its impact on the environment. However, Gruenewald (2003) warns that this focus will require teachers' knowledge of the local environment to choose suitable sites that align with the content taught in the classroom.

Although the local environment offers a practical and affordable means to integrate fieldwork, it may not always provide the breadth of examples or accessibility needed to illustrate complex geomorphological processes. In such cases, teachers are increasingly turning to technology as a complementary or alternative tool. Digital simulations, mobile devices, and online resources can extend learning beyond the immediate school context, exposing learners to geomorphic features and processes that may be absent or difficult to observe locally.

Technology as an alternative to fieldwork

In recent years, technology has grown exponentially, infiltrating all spheres of life, including education (Rani et al., 2024); therefore, it would be absurd to turn a blind eye to its infusion into geography education. Adedokun-Shittu et al. (2020) opined that education in this modern era relies heavily on technology to transfer knowledge: throughout the world, technology-infused learning has been incorporated into geography classrooms. Sahrina et al. (2022) support the incorporation of technology into geomorphology fieldwork, as it aligns well with the required 21st-century skills that geography learners should possess. Furthermore, these authors believe that smartphones can be used for field-based learning in geography, as they can collect data remotely and conduct surveys to some extent. Mobile technology can be suitable for countries like South Africa, where most learners do not have access to advanced technological gadgets, such as laptops and tablets, but do have access to smartphones.

A study by Adedokun-Shittu et al. (2020) found that the use of Augmented Reality (AR) for virtual fieldwork improved the performance of learners in physical geography and knowledge retention. This finding signifies the importance of using technology to combat the challenges associated with fieldwork in geography education. Moreover, with the curriculum packed with content and where there are limited resources at school, this integration of modern pedagogies can foster experiential learning and enhance geomorphology teaching and learning in geography education. As such, the conceptual understanding of geomorphology and the skills of the learners are enhanced. Thus, Moloi and Matabane’s (2024) recommendation to integrate Digital Practical Work (DPW) into teaching, particularly in contexts where traditional laboratories such as conventional fieldwork are impractical, becomes a necessary and contextually responsive approach for strengthening geomorphology teaching and learning.

Repurposing school resources

Like any other practicum school subject, geography requires a laboratory where learners can conduct tests and take measurements to understand the concepts under study. However, in comparison with the varied contexts where geography is offered in schools worldwide, those who find themselves in under-resourced contexts face a significant challenge in implementing components of geography due to the lack of designated laboratories. As’ari et al. (2021) identify the local landscapes as a geography field laboratory that teachers and learners can use to study geography concepts. These authors' perspectives highlight the importance of contextual learning and moving away from the traditional confines of four classroom walls when teaching geomorphology, but rather extending learning to real-life experiences. Das and Chatterjee (2018) add that geography teachers should reconsider looking closely at the school environment rather than looking for off-site fieldwork activities. This focus involves repurposing existing school resources and creating their own laboratories. Investigating the local context is particularly relevant to the South African context, where financial constraints and curriculum pressures often hinder the practical application of geomorphic concepts. This idea is further supported by Ploszajska (1998), who found that repurposing the’ grounds of schools into geography laboratories could save the dying fieldwork practicum of geography in content-dominated curricula. Thus, innovative teachers can transform their unused school land into a powerful geographic site for experiential learning without the logistical challenges associated with traditional fieldwork.

Continuous Professional Development in effective fieldwork integration

Geography fieldwork is a crucial component of the subject that provides learners with hands-on experiences. Thus, teachers must be adequately trained to integrate this component into their teaching. This is supported by Barnett et al. (2014), who emphasise the need for continuous professional development (CPD) for geography teachers, the purpose of which is to integrate geospatial technology into the fieldwork component of the curriculum. The focus is to build the confidence and skills of in-service teachers in executing meaningful geomorphology fieldwork in their teaching. Das and Chatterjea (2018) warn that, should the CPD on fieldwork integration be ignored, geography teachers will continuously rely on tried and tested traditional classroom teaching, which denies learners a holistic geographical understanding. Endeley and Zama (2021) proposed that teachers are likely to use the teaching method they are familiar with and on which they have been trained. Continual participation in workshops or training will help teachers improve their skills and possibly select the appropriate geography fieldwork activities that align with the syllabus.

METHODOLOGY

Research strategy

This paper aimed to investigate possible strategies that geography teachers could employ to promote geomorphology fieldwork activities using an intrinsic case study. Using an intrinsic case study in this study allowed the researchers to better understand (Tight, 2017) how geomorphology fieldwork can be effectively applied in different school contexts in three Tshwane District schools. This methodological approach aligns with the interpretive principle in qualitative research followed in this paper. Within the three distinctive intrinsic case studies of Tshwane North, South and West districts, the interpretive approach enabled the researchers to ask the participating teachers (through individual interviews) to suggest geomorphology fieldwork strategies that they thought were best suited to bring back to life the teaching of geomorphology in schools despite the well-documented challenges that prevent its implementation. Furthermore, personal experiences of grade 12 geography teachers with geomorphology fieldwork, such as benefits and challenges that ultimately led to the proposed strategies, were deeply explored and understood due to the qualitative interpretive methodology adopted in this study (Lincoln & Guba, 1985). As such, the intrinsic case study provided a basis for a thorough exploration of the phenomenon within a real-life setting (Merriam, 2009).

Participants

This study is focused on nine (9) grade 12 geography teachers in the three districts in the Tshwane metropolitan. The participating teachers were purposefully selected from Tshwane North, South and West district schools. The participation criterion was that the teachers must have been teaching grade 12 geography for two consecutive years and have taught geomorphology. Furthermore, selecting the districts and schools mentioned above was deliberate, as it was convenient for the researcher to easily access participants and sites with a limited budget (Cohen et al., 2017). This deliberate selection was to ensure that schools located in different socioeconomic neighbourhoods were included in the study to determine whether the application of geomorphology fieldwork was similar between schools, and therefore to have a wider range of suggested strategies which could encompass various schools. This approach would ensure the development of equitable policies for geography fieldwork informed by insight from practice for policymakers to implement (Photo, 2022).

The smaller sample size of nine teachers might raise concerns about the credibility of the findings of this study. However, Coyle and Tickoo (2007) state that richness and depth of understanding a nuanced subject are more important in qualitative studies than statistical pertinence. The age of teachers ranged from less than 30 to below 50, with teaching experience of up to 25 years for some. The socio-economic status of the school ranged from quintile 1 to 5. The quintiles refer to the funding model for all South African government schools. Schools falling under quintiles 1 to 3 are declared non-fee-paying schools. These schools mostly serve underprivileged communities: they receive all their funding to run the school from the government. On the other hand, schools categorised under quintiles 4 to 5 mostly serve the privileged communities and are less reliant on government subsidies to run their schools (RSA, 2008). See Table 1 for more details of the participants. Thus, as highlighted earlier in this section, selection criteria ensured that only participants who could interpret their professional experiences regarding the geomorphology fieldwork due to their involvement in grade 12 teaching were selected. Guided by Lincoln and Guba's (1985) four criteria (i.e., credibility, transferability, dependability, and confirmability) to ensure the trustworthiness of the research report, the researchers transcribed the collected data, verbatim quotes used throughout the reporting, and member checking to avoid biases in the collected data.

Table 1.

Participant details

Teachers' Pseudonyms	Age category and gender	Teaching experience	School quintile
Xihlovo	Between 25 and 30 and female	3 years	1
Hlawu	Between 35 and 40, and male	9 years	1
Ndzalama	Between 30 and 35, and male	4 years	2
Nyiko	Between 30 and 35, and male	6 years	3
Noma	Between 25 and 30, and female	3 years	4
Makwalete	Between 30 and 35, and female	3 years	4
Lebo	Between 45 and 50, and female	25 years	5
Xolani	Between 45 and 50, and male	20 years	5
Kea	Between 45 and 50, and female	13 years	5

The researchers in this study adhered to the ethical guidelines prescribed by the University of South Africa, College of Education and the Gauteng Department of Education; they received ethical clearances to conduct the research. Each participant gave written consent to participate in the study after being informed of its aim, objective and relevance. Furthermore, participants were informed that their participation was voluntary and that they were at liberty to withdraw their participation at any stage of the research process should they wish to do so without any explanation or repercussions. To ensure anonymity and confidentiality, pseudonyms were assigned to each participant (see Table 1 above) and used throughout the research report. Lastly, as part of consent, they were informed that their interviews would be audio-recorded for the analysis stage later.

Data collection process

Semi-structured interviews were conducted with each of the 9 teachers at their respective schools. The research investigation began with the researcher visiting each participating school to establish rapport with the participants. This exercise was carried out to introduce the study and emphasise the importance of the participation of teachers in the success of the study. This was done to evoke the enthusiasm of the teachers and establish a genuine connection with the researcher. The visit to each school lasted three to four hours, depending on the availability of teachers as they were involved in teaching; thus, meeting with participants had to wait for a free period or lunch break. Similarly, semi-structured interviews followed a similar pattern to the initial school visits, but the semi-structured interviews lasted forty-five minutes to an hour with each participant. These interviews were audio-recorded to ensure consistency and objectivity of data collection and ultimately to ensure the integrity of the findings.

Data analysis

The data collected was analysed following the thematic analysis approach of Clarke and Braun (2014). Thematic analysis was appropriate, as it allowed the researchers to interpret themes, patterns, and underlying meanings of geomorphology fieldwork from the semi-structured interview, resonating with best qualitative research practices (Clarke & Braun, 2017). The analysis started with the researchers immersing themselves in the data set, looking for possible suggested strategies to promote geomorphology fieldwork. Then, codes began to emerge due to meaningful patterns in the dataset, ranging from using fieldwork simulation to technology integration. Subsequent to assigning codes, clear themes emerged, prompting the researchers to review, merge similar themes and redefine these themes to ensure that accurate, nuanced and complex teachers' strategies for bringing geomorphology fieldwork back to life were captured. Lastly, the final themes were presented and defined to ensure that they captured the teachers' suggestions. As such, the following four themes emerged from that analysis: (1) using the local environment, (2) technology as an alternative to fieldwork, (3) repurposing school resources, and (4) continuous professional development in effective fieldwork integration.

The study ensured validity and reliability by aligning with Lincoln and Guba's (1985) four criteria: credibility, transferability, dependability, and confirmability. Credibility was enhanced through prolonged engagement with participants, audio-recording of semi-structured interviews, and verbatim transcription of the data. Member checking was also used, whereby participants were given an opportunity to confirm the accuracy of their accounts, reducing the risk of researcher bias. Transferability was supported by purposive sampling of teachers from diverse school quintiles (1 to 5), ensuring that a wide range of socio-economic contexts was represented. Dependability was addressed by following Braun and Clarke's (2014) systematic thematic analysis process, which involved coding, reviewing, and refining themes to capture nuanced teacher strategies. Finally, confirmability was ensured through the use of pseudonyms for anonymity, clear documentation of the data analysis process, and reliance on direct participant quotations to ground interpretations in the data in the following section.

FINDINGS AND DISCUSSIONS

This study aimed to propose suitable strategies drawn from grade 12 geography teachers in Tshwane district schools, which could be used to include the practicum part of the subject back into the curriculum and to "bring Geomorphology to life through fieldwork". Recognising the challenges that geography teachers face in implementing fieldwork in a content-based curriculum such as CAPS (Mpofu & Sefotho, 2024), this study seeks to bridge the gap between geomorphology theoretical content in class and the practical application thereof to foster a deeper understanding of concepts amongst learners. The following section discusses the findings, that is, the suggested strategies that can help bring geomorphology to life using the four themes that emanate from the data analysis stage.

Theme 1: Using the local environment

Once participants were asked to share their challenges to successfully implement geomorphology fieldwork, obstructing factors such as finances and time constraints were raised. Munge et al. (2018) have also highlighted these factors as impediments to fieldwork. Their study suggested that challenges such as finances could be overcome by focusing solely on the local environment and conducting fieldwork rather than travelling off-site. The findings of this paper concur with Munge et al. (2018) that teachers should take time to study their surrounding environment, as it could help mitigate the financial burdens that geography learners incur during their field trips. Noma suggested,

> "*…You don't really have to spend money on that and all of that just for fieldwork. However, I believe that the children can go and experience that on a school field, not leaving the schoolyard or using transport, and all that. It cuts the cost and cuts the time, but as teachers, we must understand the environment and which part can I use to teach a certain geomorphology section".*

This approach underscores the first stage of Kolb's theory, where learners directly interact with the physical landscape to observe geomorphological processes to gain concrete experience. In this case, local rivers offer learners an opportunity to experience concepts such as laminar flow and river sources. Furthermore, the finding echoes Gruenewald's (2003) emphasis on place-based education that teachers' knowledge of the local environment is important for effective teaching and learning, in this context, geomorphological concepts. As such, geomorphology fieldwork is integrated back into teachers' annual teaching plans, as learners would not need to embark on long trips, but it could be conducted around the school's premises and surroundings.

Xolani further highlighted the importance of leveraging the local environment to teach geomorphology fieldwork, saying: "*The community and the environment in which the school is located are very important, especially for trips and excursions*". This finding further shows that teachers acknowledge how enriching the local environment can be to learning. It also aligns with De Waele et al. (2011) in identifying local places where teaching can take place, although it is not fully used. For example, Lebo reflected on a missed opportunity, stating that "*if we could take learners to nearby rivers, show them a source or river mouth, maybe it would help them understand and remember these concepts in the exam… we have a river passing by our school, but I have never thought of even showing them laminar flow.*" Lebo's insight highlights how valuable teaching geomorphology concepts from nearby rivers is to the concrete experience as learners observe fluvial processes, making these geomorphology concepts understandable and memorable.

The latter finding aligns with De Waele et al. (2011) in identifying local places to illustrate concepts. Lee (2021) advances a slightly different perspective by arguing that the use of the local environment can foster environmental wellness among learners, a view that resonates with Alazami's (2024) finding that learners are better positioned to solve spatial problems and make informed decisions when learning is grounded in their immediate surroundings. The finding of this nature highlights the awareness of geographic features rather than environmental wellness, as Makwalete is quoted as saying, "…just to make them aware of geomorphic features found in the environment around them, *which will make it easier to remember during tests".* These findings highlight the educational value of experiential learning in helping learners become familiar with geographic concepts found around them, and the familiarity in helping them recall the concepts learned in the exam. However, these findings indicate that teachers are only concerned with tests and examinations rather than holistic learning as envisaged by Kolb's learning theory.

Theme 2: Technology as an alternative to fieldwork

The participants in this study saw technology as a suitable alternative to traditional fieldwork. The findings in this paper reveal that to overcome the challenges associated with current fieldwork practices, geography teachers should embrace technology, which has infiltrated all spheres of life, including educational spaces. This finding was pertinently articulated by Kea, who was teaching in a quintile 5 school, and she said, "...*in my opinion*, *we cannot shy away from the impact that technology can play in the teaching fieldwork these days. For example, my learners have all the latest gadgets that we can perhaps look at when we think about geomorphology fieldwork".* Kea's comments reflect the concrete experience, the first stage of Kolb's theory, that digital tools present an opportunity through visual and interactive resources for learners to actively engage in their learning. In this case, digital access to geomorphological features provides a simulated yet authentic field experience. Xolani shared a similar sentiment but took the idea further by suggesting the use of virtual reality (VR). He stated, *"Schools should try to get those virtual reality headsets where the learner can be taken to the Grand Canyon in the United States and other geomorphic features around the world without leaving their classes."* This finding is consistent with Rani et al. (2024), who have indicated the widespread prevalence of technology in the education sector and the importance of acknowledging it and infusing it into daily teaching by teachers. This also aligns with the work of Adedokun-Shittu et al. (2020), whose findings show that the integration of virtual reality in the classroom improves the understanding of geomorphological content of learners. Similarly, this finding attests to Moloi and Matabane's (2024) proposal for the integration of Digital Practical Work (DPW), particularly in remote or resource-constrained contexts where traditional fieldwork is impractical. In the context of this study, these insights suggest that when used appropriately, technology offers learners first-hand exposure to distant or complex landforms, enabling access to a type of fieldwork experience even within the classroom.

Interestingly, the findings of this paper noted how the two teachers who taught in the lower quintile schools (quintiles 1 and 2) added to the argument of technology infusion as an alternative to traditional fieldwork. Their suggestions differed from those of the other two teachers from the schools in higher socio-economic areas. However, they focused on the easily accessible forms of technology for their learners, given their context. For instance, Hlawu said: "…*maybe we should use WhatsApp where we could send learners pictures and videos explaining these geomorphic pictures; hopefully, it might help them understand better than when I explain as a teacher in class*". This suggestion speaks to Kolb's second stage, which is about reflective observations and indicates that digital images and video can help learners reflect on the geomorphic concepts being taught. As such, observing these visual materials encourages learners to link visual cues with classroom explanations, moving beyond the delivery of verbal content. Similarly, Ndzalama offered another cost-effective strategy aligned with the realities of under-resourced schools. He stated, *"…probably I can bring my laptop to class and play them videos of river capture, for example, because I tried it and I think it helped my learners, as they could see how it happened instead of explaining on the chalkboard".* This suggestion engages the learners in abstract conceptualisation, the third stage of Kolb's learning cycle theory, as they move from watching videos to understanding and internalising the fluvial process, which in this case is the river capture process. This finding is significant to this paper because it offers a different perspective on how technology should be seen as an alternative to traditional fieldwork. This finding adds to the body of knowledge that geography teachers should consider the socio-economic status of schools so they can choose a suitable technology for their learners. Of course, the use of high technologies such as VR and augmented reality (AR), as argued by Adedokun-Shittu et al. (2020) and Sahrina et al. (2022), can improve the understanding of learners of abstract geomorphic concepts. However, one should always consider the context and realities of schools when acquiring such technologies. As found in this paper, social media platforms can be used as a form of technology integration that can serve a similar purpose to that of VR and AR in geomorphology fieldwork.

Theme 3: Repurposing School Resources

Although technology was seen as a big game changer that could fast-track the resuscitation of geomorphology fieldwork in geography education, some other teachers felt the need to look at the resources at their disposal as an alternative. It was worth noting that this point of view came from teachers who were in schools in quintiles 1 to 3, as their perspectives and realities of having technology may be perceived as out of reach. However, it was emphasised that despite the factors that impede them from implementing fieldwork, they saw a value in experiential learning for their learners. Xihlovo remarked: *"…although I struggle to give my learners experiential learning through fieldwork due to costs, I think maybe we can try to dig a river here at school and show the learners all the river processes that we teach in geomorphology that can give them some practical learning"*. These remarks stress the' exposure of learners to simulated geomorphology fieldwork within school premises for hands-on learning, echoing Kolb's first stage of concrete experience. Thus, by mimicking river processes on-site, learners can observe geomorphological phenomena directly and engagingly, allowing them to interpret what they saw in the simulated environment and compare it with the learned content in class. By so doing, they engage in reflective observation, the second stage of Kolb's theory. This reflection allows them to begin making sense of geomorphic processes in relation to the physical models they encounter. Nyiko added: *"… as an option, you can use the long jump sand to create landforms with learners to show them how it looks in reality, and even the concepts of erosion and deposition can be explained there too"*. These comments further reinforce the idea that meaningful geomorphology fieldwork can occur within school premises, replacing traditional fieldwork. These practices align with the work of As'ari et al. (2021) and Ploszajska (1998), who argue for using school environments as accessible and effective teaching spaces. However, unlike these studies, the present findings do not recommend a permanent conversion of school grounds to geography laboratories. Rather, they suggest repurposing as a pragmatic and flexible strategy to support learner engagement and deepen conceptual understanding of geomorphic processes.

Furthermore, Hlawu added to the conversation of repurposing school resources for the benefit of geomorphology fieldwork by suggesting that

"…maybe we should be given a portion of land which we can use to create and mimic geomorphology landforms and that becomes the area where we teach our learners because, to be honest with you, in our school, as you can see, we have the land that is not used and is becoming a danger to our learners since the grass is hardly cut".

His proposal further cements the importance of concrete experience by envisioning a dedicated outdoor space where learners can engage with geomorphic simulations. Moreover, the suggestion implies potential for reflective observation as learners would have easy access to the mimicked landforms to revisit and critically engage with them whenever time permits.

This finding aligns with Das and Chatterjee (2018), who advocate for repurposing existing school resources to support the practicum part of geography. However, this study offers a novel insight not widely addressed in previous literature: the need for active school leadership and management support to facilitate such initiatives. As Ndalama explained, *"…for me, I believe if the principal could approve, we could easily use the empty space behind the classrooms for building small geomorphology models."* Similarly, Xihlovo highlighted the dependency on leadership decisions by noting, *"... without SMT support, it is difficult, because we need their permission to turn unused land into learning areas, which at this moment is a risk to learners as it attracts snakes in summer."* By involving school management in the restoration and transformation of unsafe or neglected school spaces, teachers not only promote experiential learning but also address broader concerns related to learner safety and the use of school infrastructure.

Theme 4: Continuous Professional Development (CPD) in effective fieldwork integration

Teaching relies heavily on human input, particularly that of teachers. Therefore, qualified and well-trained teachers are essential for effective curriculum delivery. All teachers who participated in this study had formal teaching qualifications and extensive experience teaching Grade 12 geography, ranging from 3 to 25 years. Despite their experience, many expressed discomfort and unease when implementing geomorphology fieldwork. This discomfort was attributed mainly to their lack of exposure to fieldwork pedagogy in pre-service and in-service contexts. Noma, for example, had four years of experience teaching Grade 12 but admitted that she had never received any training, either during her initial teacher education training or thereafter, on how to implement fieldwork. She expressed a strong desire for professional development, saying: *"Personally, I think I need a workshop that would focus on developing my skills to teach through fieldwork."* Noma's appeal reflects the concern raised by Das and Chatterjea (2018), who warned that when professional development is overlooked, teachers are left uncertain about how to improve their practice. In the context of Kolb's Experiential Learning Theory, this lack of exposure to professional development helps explain why teachers in this study demonstrated only partial engagement with the experiential learning cycle.

Although some had engaged with conceptual knowledge (abstract conceptualisation) and observed alternative teaching practices (reflective observation), they lacked opportunities for active experimentation, where newly acquired skills and knowledge are tested and applied in real teaching contexts. In the absence of structured CPD, teachers often remained at the level of theoretical awareness, with limited movement into confident practice, which Kolb identifies as essential for transformative learning. As Xihlovo explained, frequent practical training would give her confidence to implement simulated models: *"…I think maybe if we are workshopped frequently as teachers on how to use models and all that, it might slowly build interest in fieldwork teaching."* Her observation supports Endeley and Zama's (2021) view that in-service programs can encourage teachers to adopt alternative pedagogies, even if they have not received extensive prior training. Xihlovo's case, like that of Noma, underscores the need for

CPD to support teachers in moving beyond concrete experience, reflective observation and abstract conceptualisation into the active experimentation stage, which remains notably absent across all participant responses. Without this phase, the ideas and intentions of the teachers remain in theory, not practice, a critical barrier to meaningful integration of geomorphology fieldwork.

An insightful and unique finding came from Makwalete, who advocated for self-directed learning as a form of CPD. She noted that in the absence of structured training, teachers should take the initiative to improve their teaching methods:

> *"…I think we need to be innovative as teachers rather than waiting for training from the district, which might never come. For me, I watch a lot of TikTok and YouTube videos to see what other teachers are doing around the world, and that helps me a lot to refine my teaching skills."*

Makwalete's reflection introduces an important dimension to the conversation about CPD. While her self-directed approach offers an accessible and innovative solution to professional growth, it also raises critical questions about its effectiveness in supporting the full experiential learning cycle. Although her engagement with online content enables reflective observation and may even inform conceptualisation, the absence of collaborative or structured feedback mechanisms limits the extent to which active experimentation can occur effectively and sustainably. Nonetheless, her approach brings a valuable perspective to the body of knowledge by challenging traditional models of CPD and encouraging further research into how self-directed digital learning can be systemically integrated into teacher development programmes.

Based on the latter, these findings suggest that calls for CPD must move beyond generic appeals for "more training." Instead, they highlight the need for multi-layered, context-sensitive approaches: structured workshops to build specific skills in fieldwork pedagogy, peer mentorship to enable reflective dialogue and experimentation, and recognition of teachers' agency in pursuing innovative self-directed learning. This layered model better aligns with the practical realities of schools while also encouraging teacher autonomy, thereby addressing the gap between theoretical intentions and classroom practice.

CONCLUSIONS

This study was designed to explore the suggested strategies of grade 12 geography teachers to revive geomorphology fieldwork in the Tshwane District classrooms, guided by the central research question: *What are the suggested strategies of geography teachers to bring geomorphology fieldwork back to life in the classes of the Tshwane District?* The findings directly address concerns about the widening gap between theoretical content delivery and experiential learning within the constraints of the CAPS curriculum. In addition, the diminished presence of fieldwork in South African geography education, especially in geomorphology, highlights the urgent need for innovative, context-sensitive responses. Through thematic analysis of semi-structured interviews, four key strategies emerged: (1) using the local environment for contextual and accessible fieldwork; (2) adopting technology as an alternative to traditional fieldwork, accounting for varying levels of access; (3) repurposing school resources to simulate geomorphological features; and (4) engaging in continuous professional development (CPD) to enhance pedagogical capacity in geomorphology fieldwork teaching. These strategies reflect both the challenges and the resilience of teachers working in diverse and often resource-constrained environments. Teachers demonstrated a commitment to experiential learning, finding creative ways to adapt fieldwork practices to their local school contexts.

Kolb's Experiential Learning Theory (1984) provided a suitable theoretical lens to interpret these findings. Teachers' efforts to integrate local landscapes and low-cost simulations align with the concrete experience stage of the learning cycle, while their use of technology, which included smartphones, social media, and virtual simulation, all demonstrate concrete experience, reflective observation and abstract observation. The findings affirm the relevance of experiential learning theory in shaping inquiry-based learner-centred pedagogy and underscore the role of CPD in enabling teachers to navigate and overcome systemic barriers to fieldwork. Therefore, addressing a gap in the literature on teacher-informed strategies to reintegrate geomorphology fieldwork into a content-heavy curriculum, this study uniquely contributes to the discourse on geography education in South Africa. It offers practical, contextually grounded recommendations that challenge the prevailing notion that fieldwork is unfeasible in under-resourced schools. The findings introduce fresh perspectives on the use of accessible digital tools such as WhatsApp and YouTube to support field-based learning, encouraging reimagining what constitutes meaningful geography fieldwork in the 21st century.

Furthermore, the study recommends that schools and education departments' SMTs, together with the SGBs and district officials, prioritise support for teachers through structured, localised CPD programmes focused on fieldwork integration. In addition, school management teams could explore transforming underused outdoor spaces into interactive learning zones. Lastly, curriculum developers should also consider providing greater flexibility within CAPS to accommodate context-appropriate fieldwork practices. However, this study is not without limitations. Its focus on a small purposively selected sample within one metropolitan area can affect the transferability of the findings to other settings. Additionally, relying on self-reported teacher data excludes learner perspectives and observational evidence. As such, future research could broaden the scope by including multiple stakeholders, incorporating learner feedback, and adopting mixed-method designs to gain deeper insight into the impact of geomorphology fieldwork on learner performance. In conclusion, this paper reinforces the value of experiential learning in geography education. It demonstrates that, with innovative thinking and systemic support, geomorphology fieldwork can be reimagined and revitalised even within the constraints of the CAPS curriculum. Bringing geomorphology to life through fieldwork is possible and essential for cultivating critical, engaged, and environmentally aware learners.

REFERENCES

Adedokun-Shittu, N. A., Ajani, A. H., Nuhu, K. M., & Shittu, A. K. (2020). Augmented reality instructional tool to improve the academic performance and retention in Osun state Nigeria. *Education and Information Technologies*, *25*, 3021-3033. https://doi.org/10.1007/s10639-020-10099-2

Alazmi, H. (2024). Core Practices for Teaching Geographic Inquiry: The Delphi Study. Journal of Social Studies Education Research, 15(4), 223-261.

Arı, Y. (2019). Fieldwork in geography undergraduate degree programmes of Turkish Universities: status, challenges and prospects. *Journal of Geography in Higher Education*, *44*(2), 285–309. https://doi.org/10.1080/03098265.2019.1698016

As'ari, R., Maryani, E., & Rohmat, D. (2021, March). Develop Critical Spatial Thinking by Utilizing Local Landscapes: Geography Field Laboratory Studies. In *IOP Conference Series: Earth and Environmental Science*,683(1), 012028. IOP Publishing. https://doi:10.1088/1755-1315/683/1/012028

Barnett, M., Houle, M., Mark, S. L., Minner, D., Hirsch, L., Strauss, E., ... & Hufnagel, B. (2014). Participatory professional development: Geospatially enhanced urban ecological field studies. *Teaching science and investigating environmental issues with geospatial technology: Designing effective professional development for teachers*, 13-33. https://doi.org/10.1007/978-90-481-3931-6_2

Beard, C., & Wilson, J. P. (2018). *Experiential learning: A practical guide for training, coaching and education.* Kogan Page Publishers.

Brysch, C. P. (2020). Teacher attitudes toward alternative professional development in geography. *Journal of Geography*, *119*(2), 55-62. https://doi.org/10.1080/00221341.2019.1706621

Clarke, V., & Braun, V. (2014). Thematic analysis. In T. Teo (Ed.), Encyclopedia of critical psychology (pp. 1947–1952). New York, NY: Springer.

Clarke, V., & Braun, V. (2017). Thematic analysis. *The journal of positive psychology*, *12*(3), 297-298. http://dx.doi.org/10.1080/17439760.2016.1262613

Cohen, L., Manion, L., & Morrison, K. (2017). *Research methods in education* (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Coyle, N., & Tickoo, R. (2007). Qualitative research: what this research paradigm has to offer to the understanding of pain. *Pain medicine*, *8*(3), 205-206. https://doi.org/10.1111/j.1526-4637.2007.00303.x

Crogman, H. T., Cano, V. D., Pacheco, E., Sonawane, R. B., & Boroon, R. (2025). Virtual Reality, Augmented Reality, and Mixed Reality in Experiential Learning: Transforming Educational Paradigms. *Education Sciences*, *15*(3), 303. https://doi.org/10.3390/educsci15030303

Czochański, J. T., Korwel-Lejkowska, B., Staszek, W., & Zawadzka, A. K. (2024). The role of student fieldwork activities in the education of Spatial Management on the example of classes at the University of Gdańsk. *Journal of Geography, Politics and Society*, *14*(1), 56-65.

Das, D., & Chatterjea, K. (2018). Learning in the field—A conceptual approach to field-based learning in geography. *Learning geography beyond the traditional classroom: Examples from Peninsular Southeast Asia*, 11-33. https://doi.org/10.1007/978-981-10-8705-9_2

de Sousa, L. O., & Golightly, A. (2023). Geography Education for Sustainable Development Through Problem-Based Learning. In *Understanding Sustainability with Pedagogical Practice: A Contribution from Geography Education* (pp. 119-131). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-2687-9_10

De Waele, J., Gutiérrez, F., Parise, M., & Plan, L. (2011). Geomorphology and natural hazards in karst areas: a review. *Geomorphology*, *134*(1-2), 1-8. http://www.elsevier.com/locate/geomorph

Endeley, M. N., & Zama, M. A. (2021). *Perspectives in Curriculum Studies*. Spears Media Press. https://doi.org/10.2307/j.ctv23g7wmv

Firomumwe, T. (2019). Experiences out of the classroom: The importance of fieldwork in learning geography at secondary school. *i-manager's journal on school educational technology,* 14 (3), 16–24. https://doi.org/10.26634/jsch.14.3.15169

Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, *32*(4), 3-12. http://links.jstor.org/sici?sici=0013-189X%28200305%2932%3A4%3C3%3ATBOBWA%3E2.0.CO%3B2-J

Huh, S., Crane, M., Loux, T., Hong, J. E., & Jo, I. (2022). GeoActivity Types in APHG: Field Study. *The Geography Teacher*, *19*(2), 65-70. https://doi.org/10.1080/19338341.2022.2042836

Kolb, A. Y., & Kolb, D. A. (2017). Experiential learning theory as a guide for experiential educators in higher education. *Experiential Learning & Teaching in Higher Education*, *1*(1), 7-44. https://nsuworks.nova.edu/elthe/vol1/iss1/7

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

Lee, J. C. K. (2021). Geographical and environmental education in school curricula. *Oxford Research Encyclopedia of Education*.

Lincoln, E., & Guba, I. (1985). Naturalistic inquiry. Sage.

Merriam, S. (2009). Qualitative research: A guide to design and implementation (revised and expanded from qualitative research and case study application in education). Jossey-Bass.

Mkhize, T. (2023). Teachers' Perceptions of Paper-Based GIS Implementation in The Rural Learning Ecology. *Journal of Curriculum Studies Research, 5*(2), 118-135. https://doi.org/10.46303/jcsr.2023.20

Moloi, M., & Matabane, M. E. (2024). Enhancing Physical Science Education: The Integration of Digital Practical Work in Teaching Electrodynamics for Experiential Learning. *Research* *in Social Sciences and Technology*, *9*(3), 351-369.https://doi.org/10.46303/ressat.2024.64

Mpofu, J., & Sefotho, M. M. (2024). Challenges of competency-based curriculum in teaching learners with learning disabilities. *African Journal of Disability*, *13*, 1268. https://doi.org/10.4102/ajod.v13i0.1268

Munge, B., Thomas, G., & Heck, D. (2018). Outdoor fieldwork in higher education: Learning from multidisciplinary experience. *Journal of Experiential Education*, *41*(1), 39-53. https://doi.org/10.1177/1053825917742165

Photo, P. (2022). Learners' perceptions of learning science in an informal learning environment: A Phenomenographic study. PhD dissertation: University Pretoria

Ploszajska, T. (1998). Down to earth? Geography fieldwork in English schools, 1870–1944. *Environment and Planning D: Society and Space*, *16*(6), 757-774. https://doi.org/10.1068/d160757

Rani, P., Sachan, R. K., & Kukreja, S. (2024). A systematic study on blockchain technology in education: initiatives, products, applications, benefits, challenges and research direction. *Computing*, *106*(2), 405-447. https://doi.org/10.1007/s00607-023-01228-z

Republic of South Africa (RSA) (2008). Amended National Norms and Standards for School Funding. Government Gazette, 31496(1087). Pretoria: Government Printers.

Sahrina, A., Rosyida, F., Bin Shafie, A., Prasetyono, D., Suprianto, A., Fadlan, M. S., & Labib, M. A. (2022). The Use of Smartphones in Geography Learning: A 21st Century Learning Innovation in Identifying Nature Appearances Based on Fieldwork. *International Journal of Interactive Mobile Technologies*, *16*(22). https://doi.org/10.3991/ijim.v16i22.36151

Thenga, M., Goldschagg, P., Ferguson, R., & Mandikonza, C. (2020). Teacher professional development and Geography teachers' pedagogical practices for climate change education. *Southern African Journal of Environmental Education*, *36*. https://doi.org/10.4314/sajee.v36i1.17

Tight, M. (2017). *Understanding case study research: Small-scale research with meaning*. SAGE. https://doi.org/10.4135/9781473920118

Wilson, H., Leydon, J., & Wincentak, J. (2016). Fieldwork in geography education: defining or declining? The state of fieldwork in Canadian undergraduate geography programs. *Journal of Geography in Higher Education*, *41*(1), 94–105. https://doi.org/10.1080/03098265.2016.1260098