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Innovative Teaching Approaches for Improving Students' Understanding of Map Work by Teachers in South African Schools

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Abstract. Despite the efforts to reform the geography curriculum to enhance mapwork teaching and learning, students continue to underperform. The underperformance of students in mapwork remains a major concern. This study seeks to explore innovative instructional approaches used to foster mapwork instruction and enhance students' understanding. A qualitative approach and a case study were used to gain insight into this study. A purposive sample of eight teachers was selected because they had vast experience in teaching geography. Semi-structured interviews were used to collect data. Data was analysed thematically, and the emerging themes were identified. Findings revealed that students struggle to understand mapwork due to traditional methods of instruction. Most teachers struggle to use innovative teaching approaches because of a lack of appropriate resources and online tools. For mapwork to be effective, schools must provide the necessary resources to improve mapwork instruction and learning and promote a supportive environment. This study contributes to the awareness of the need for schools and teachers to adapt innovative instructional practices to enhance students' understanding of mapwork. The study recommends that schools provide resources that can assist teachers in effectively facilitating teaching and learning. In addition, teachers should endeavour to use innovative teaching methods.

Keywords:
Approaches; innovative teaching; Mapwork; Students; Teachers;

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INTRODUCTION

In recent years, there has been a considerable interest in mapwork instruction in South African schools. This is a result of the fact that most students continue to underperform in mapwork and the national examinations. Maphalala and Mpofu (2020) acknowledge the importance of mapwork by asserting its critical role in developing

students' spatial awareness and mapwork skills. Understanding mapwork concepts, symbols, and spatial relationships in mapwork is challenging, but critical for comprehending geography concepts (Maphalala & Mpofu, 2018). Madende and De Villiers (2019) recognise innovative teaching methods as essential in enhancing students' understanding of mapwork. Lee et al (2021) argue that geographical literacy is needed to improve students' understanding of the importance of maps globally. Hence, the objective of this study is to investigate pedagogies used to enhance students' understanding of mapwork in South Africa.

Assert that innovative teaching strategies lead to an improved school environment (Cheung et al, 2021). This is achieved because it incorporates approaches and tools that enhance instruction and improve engagement. Similarly, Schoeman and Chidzungu (2025) assert that effective pedagogies enhance students' conceptualisation of mapwork. This is achieved through the inclusion of technology, interactive activities, and student-centred pedagogies. Mahlangu and Fraser (2017) posit that the integration of geographical information systems (GIS) in the South African school curriculum is instrumental in mapwork and geography instruction. GIS, as a teaching aid, supports the visual enhancement of spatial data and makes mapwork easy for students to grasp. The integration of GIS enhances students' spatial reasoning and critical skills in mapwork (Rautenbach & Venter, 2017). Implementing innovative pedagogies is vital to improving mapwork teaching and learning in schools.

The teaching and learning of geography and mapwork in South Africa is guided by the Curriculum and Assessment Policy Statements (CAPS). CAPS focuses on developing students' geographical skills from Grades 7 to 12 (Naidoo & Sibanda, 2021). According to Parkinson (2021), mapwork skills include reading and integrating maps, calculating slopes and distances, and understanding compass directions and grid references. These skills are essential for mastering mapwork and geography inquiry. Duke and Cartwright (2021) identify the CAPS curriculum as crucial for teaching mapwork, as it advances students from basic map reading to complex analysis. Literature indicates that the role of teachers in delivering this knowledge is a major concern. Norman and Lotrecchiano (2021) argue that, while teachers are expected to impart mapwork skills, their application of these experiences in teaching is limited.

Teachers play a critical role in adopting effective teaching methods to teach mapwork in a manner that enhances students' understanding. Rambe and Mawere (2020) claim that teachers need to be empowered with the skills and knowledge in order to be able to use appropriate pedagogies to improve mapwork learning. There is a need to implement teacher training programs that focus on empowering teachers with innovative teaching methods (Wilcoxen et al., 2020). According to (Wilcoxen et al., 2020), this approach offers practical opportunities for students to experiment. The use of innovative pedagogies in South African schools is essential for enhancing students' knowledge of mapwork concepts. However, there seems to be limited knowledge in the literature on how teachers can implement effective pedagogical approaches to strengthen mapwork instruction for improved outcomes. There seems to be a gap in understanding how teachers can use innovative teaching methods to teach mapwork in schools. This gap requires further studies to explore pedagogical approaches that can be used to improve mapwork teaching and learning.

This study contributes to how teachers can incorporate innovative pedagogies to improve students' understanding of mapwork. The study seeks to empower teachers to use innovative pedagogies to enhance students' learning in mapwork. The study will deepen teachers' awareness of effective teaching strategies that improve mapwork teaching and enhance students' performance. As a result, the following research question was used to explore the objective of the study: How can teachers use innovative teaching approaches to improve students' understanding of mapwork in schools? A theoretical framework that provides a lens for the study is discussed below to provide a foundation for addressing the objective of this study.

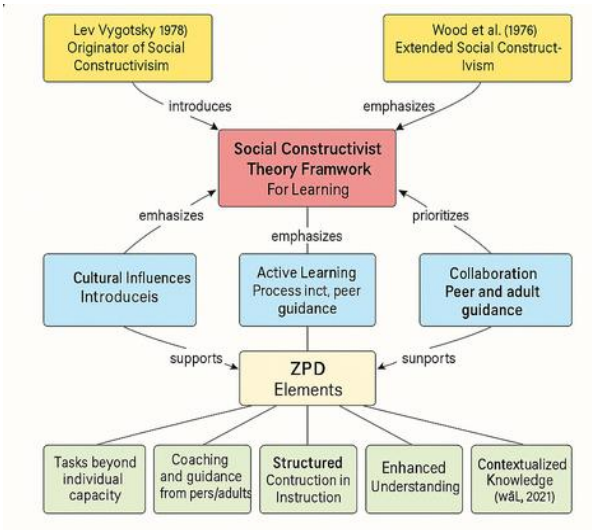
Theoretical Framework

This study used the Social Constructivism theory, which was first proposed by Lev Vygotsky in the 1970s

(Vygotsky, 1978), to underpin this study. Vygotsky's theory emphasises that the learning of students is influenced by social engagement and cultural factors in their cognitive development. Though some scholars have conceptualised social constructivism theory, Vygotsky's work on this theory provides a foundation for this study. Wood et al. (1976) built upon the work of Vygotsky by showing how social constructivism enhances active learning. In this conceptualisation, active learning is achieved through collaboration and engagement by emphasising the role of culture and society in knowledge acquisition.

Used the concept of Zone of Proximal Development (ZPD) to help students comprehend and acquire skills through engagement with peers or knowledgeable adults (Vygotsky, 1978). The theory shows the need for collaboration, mentoring and guidance in learning. Enhanced understanding takes place as tasks often go beyond what students can accomplish alone, and they benefit from groups. Social Constructivism theory, as shown in Figure 1, illustrates the social interaction in instruction that improves students' comprehension through co-constructed knowledge by engagement.

Figure 1 illustrates how Social Constructivism Theory forms the foundation for students' learning through interaction with peers and the teacher as a subject specialist. The figure shows the main components, which encompass cultural influences, active learning, collaboration and social engagement. The figure has ZPD at the centre and represents the space where learners learn through their peers and guidance from the teacher; Tasks are used to support ZPD to exceed the capacity of individuals, coaching and structured interaction. This process guides the achievement of learning outcomes and enhances students' comprehension. The discussion below expands on these components through recent and relevant literature.



Source: Author (2025)

Figure 1. Social Constructivism Theory Learning Framework

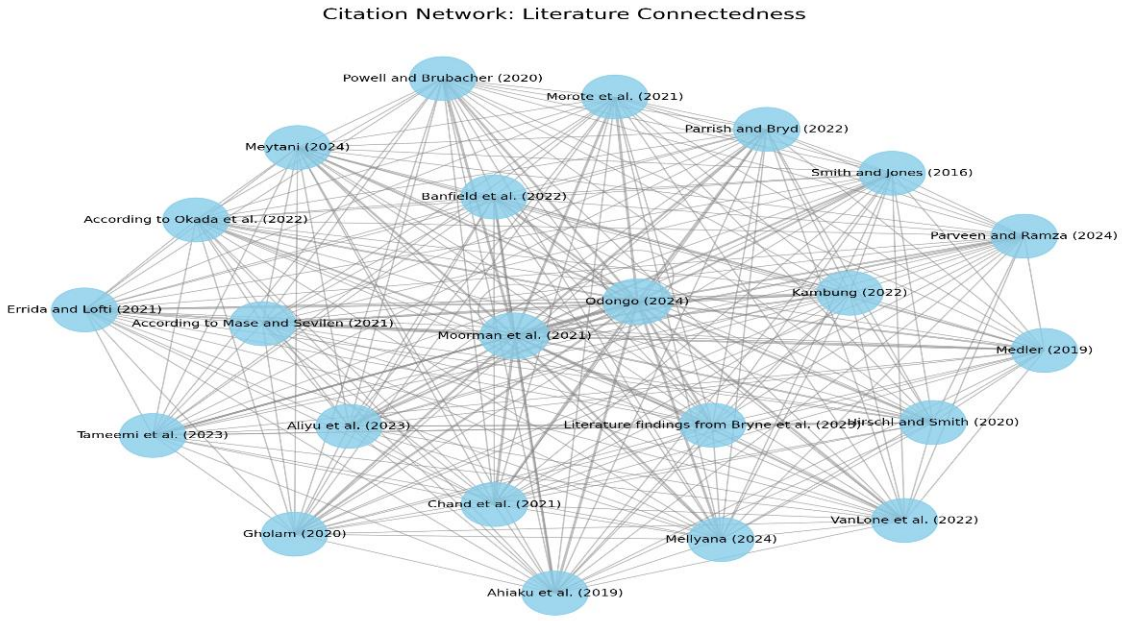
Social Constructivism theory, as based on Vygotsky's (1978) conceptualisation of ZPD, was preferred as a lens for this study. The theory focuses on the development of students' understanding through their interaction with teachers and peers. The theory enhances collaboration and student learning experiences, which are key to helping them understand mapwork. Furthermore, this theory aligns with the focus of the study, which is based on innovative pedagogies that foster the co-construction of knowledge through active and social engagement.

Literature Review

A literature review was carried out through peer-reviewed studies between 2019 and 2024. The search for appropriate literature focused on factors that affect students' understanding of map work, innovative pedagogies, and teaching methods. The interconnectedness of the sources was mapped through Litmaps. The findings from the Litmap search indicated strong citation and alignment of themes, as shown in Figure 2 below.

This study explores the innovative teaching approaches that teachers use to improve students' understanding of mapwork. To respond to the research objective, a relevant literature review was conducted on the following themes: (1) Factors that contribute to the student's poor understanding

of mapwork'; (2) Innovative Pedagogical Strategies for Effective Mapwork Instruction; (3) Teaching Approaches for Improving Students' Understanding of Mapwork



Source: Author (2025)
Figure 2. Literature Connectedness

The following themes for the literature review are discussed below:

Factors that contribute to the student's poor understanding of mapwork

Mapwork is a critical aspect of geography education in schools. In spite of its importance, literature and empirical evidence show that most students grapple with mastering mapwork. Banfield et al.'s (2022) findings revealed that most students in rural and underprivileged areas underperform in geography because they do not have access to resources. These resources include maps, compasses, protractors and grid paper. This limited access to these critical resources presents a barrier to teachers' ability to teach mapwork to improve the learning experiences of students. Kambung (2022), contrastingly, found that the majority of female geography teachers found mapwork teaching to be cumbersome. As a result, this discouraged a lot of students from developing an interest in mapwork. These findings suggest a need for resources that support students' comprehension to be provided, as well as support for teachers who struggle to teach mathematics.

For students' knowledge of mapwork to be strengthened, the implementation of spatial literacy in schools should be considered an important element of mapwork. Al-Tameemi et al. (2023) found that the implementation of spatial literacy in less developed countries faces significant challenges. In spite of the importance of spatial literacy in assisting students to interpret geographic information, its implementation is hindered because of a shortage of appropriate resources (Al-Tameemi et al., 2023). This challenge has been a major contribution to the underperformance of students in geography. According to Okada et al. (2022), cognitive challenges like students' inability to connect the symbols of mapwork to real objects and a limited practical learning experience exacerbated this problem. Similarly, Parrish and Bryd (2022) identified that the difficulty in abstract reasoning of students in making sense of mapwork contributed to the difficulty in students' comprehension of mapwork. These challenges that affect students' comprehension of mapwork require that teachers be able to align their teaching methods with the practical understanding of mapwork.

Innovative Pedagogical Strategies for Effective Mapwork Instruction

Literature findings indicate that the traditional approach to teaching mapwork primarily encourages rote memorization. Meytani (2024) argues that this conventional method inadequately prepares students for the practical world. This is because they emphasize memorization of physical maps. This suggests a need for teachers to adopt innovative teaching methods to enhance students' understanding of mapwork. Harefa (2024) found that the shortcomings of traditional approaches have increased the demand for innovative, student-centred pedagogies. Similarly, Mellyana (2024) identified that integrating technology and active learning strategies is crucial for improving students' comprehension of mapwork. Aliyu et al. (2023) assert that using technology like GIS and digital mapping tools such as Google Maps enhances students' spatial reasoning and engagement. Ni'mah et al. (2024) believe that problem-based and collaborative learning pedagogies are essential for fostering students' critical thinking and independence.

Despite the benefits of using practical, technology-based pedagogies in teaching, these methods come with inherent challenges. Ahiaku et al. (2019) found that some of the challenges with integrating technology into mapwork teaching included outdated teacher education, lack of resources and negative perceptions of students towards mapwork. VanLone et al. (2022) argued that teachers who were equipped with the traditional approach of teaching failed to create an engaging environment that supports students' learning. Chand et al. (2021) argue that a lack of mapwork resources like maps and GIS software exacerbates the effective teaching of mapwork. Delelu et al. (2020), on the other hand, blame the poor students' understanding of mapwork on the school curriculum. The author is of the view that there is too much emphasis on examination performance through memorisation, as opposed to promoting deep learning through practical pedagogies. These complexities in the teaching of mapwork demand a multifaceted approach. These need to take into consideration the improvement of the curriculum and adapting to innovative methods of teaching mapwork.

Teaching Approaches for Improving Students' Understanding of Mapwork

The ability of students to understand and apply mapwork to a real-world context is vital for their understanding and achievement in geography. Moorman et al. (2021) assert that a firm grasp of mapwork can contribute to improved students' understanding of spatial thinking skills and handling of geographic information systems (GIS). Nevertheless, it is important to acknowledge that teaching mapwork in under-resourced rural and township schools presents significant challenges. Some scholars believe that problem-based learning (PBL) and inquiry-based learning (IBL) should be utilised as pedagogies to facilitate mapwork instruction. Kotsis (2025) recognised that PBL and IBL are effective for promoting active student learning and analytical reasoning. Similarly, Hirschl and Smith (2020) found that the use of PBL and IBL is a student-centred approach that assists students in applying knowledge in a practical way to an authentic environment. Sam (2024) argued that the use of IBL and PBL contributes to students' autonomy and curiosity in finding solutions to a problem. The use of these teaching approaches is key to addressing the weaknesses in the traditional approach to mapwork instruction.

Technology integration into mapwork instruction influences students' knowledge and engagement. Zberreanu. (2024) argue that online tools like GIS, digital mapping, and virtual reality provide interactive experiences that enhance traditional teaching. Hlatywayo and Manik (2022) highlight how GIS helps students visualize spatial relationships, improving their understanding of complex mapwork concepts. Research shows that digital tools can create engaging learning experiences and enhance mapwork competencies. However, Parveen and Ramza (2024) note that the cost of these tools can be unaffordable for many schools, making their use dependent on schools' and teachers' ability to secure them.

Effective mapwork teaching relies on the teacher's ability to foster visualisation and spatial thinking skills. Bryne et al. (2023) found that manipulatives, kinaesthetic activities, and graphics enhance map

interpretation. Carbonell and Hess-Medler (2019) noted that practical experiences with models like globes and 3D maps improve understanding of spatial relationships, making them more effective than two-dimensional maps. Moorman et al. (2021) advocate for field trips to provide real-world experiences, which also boost student interest in mapwork. These findings indicate that practical and interactive teaching is essential for enhancing students' learning experiences. Teachers should employ innovative pedagogies and digital tools to increase interest in mapwork.

METHODS

This study explored innovative teaching approaches that are used in schools to improve students' understanding of map work. It sought to enhance the performance of Geography through innovative teaching methods in schools. For this reason, a qualitative research approach was employed to investigate the innovative teaching practices that are used to teach mapwork. A case study design was used to gain an in-depth knowledge of the phenomenon being studied. According to Cleland et al. (2021), using a case study design helps to focus on specific contexts and participants. Errida and Lofti (2021) note that case study design offers a detailed understanding of complex issues within a particular context. These approaches allow for a nuanced examination of underlying factors and implications of using innovative approaches to teach mapwork.

The study focused on teachers in one of the South African secondary schools. A sample size of eight teachers was purposively selected. Participants selected had a minimum of 5 years of experience, possessed the relevant teaching qualification, and were currently employed to teach in a secondary school in a township in South Africa. This criterion was to ensure that participants had considerable content knowledge and classroom experiences that were relevant to the study. The data for the study was collected through qualitative semi-structured interviews to gain in-depth insights (Mahat-Shamir et al., 2021). Data collection was organised to accommodate the participants' schedules, either during school hours or outside of them. The interviews were conducted on school premises and were each scheduled to last between 45 minutes and 1 hour. With the participants' permission, the interviews were audio recorded, transcribed, and analysed afterwards. The questions included open-ended items, which were evaluated by a colleague prior to the interviews.

Thematic analysis was used to identify key themes and patterns in the data. The use of thematic analysis makes it suitable for various qualitative methods, which include interviews and document reviews (Jowsey et al., 2021). Powell and Brubacher (2020) assert that it is important to provide participants with interview questions in advance to familiarise themselves with the material. Transcribed interviews were read repeatedly to ensure familiarity with the data, after which, the initial codes were generated and categorised into potential themes. Themes were reviewed and refined by the research team to ensure consistency and reliability. In addition, coherence was ensured by the two researchers independently coding a sample of transcripts and comparing the outcomes. Triangulation in data analysis was ensured by cross-checking interview data with field notes to ensure trustworthiness.

Potential bias of the study was reduced by conducting member checks with the participants and maintaining a reflexive journal to reflect on possible assumptions throughout the study (Motulsky, 2021). Clearance for the study was obtained from the institution of the researchers to ensure the ethical consideration of participants. The school principal granted permission for the study to be conducted through an on-site interview with participants. The consent and participation of the participants were voluntarily sought. They were given the option to withdraw at any time without any consequences. Their identities were kept anonymous, and the data was to be kept safe and secure for five years. A literature review is discussed below to explore the innovative practices used in schools.

RESULTS AND DISCUSSIONS

This study explored innovative practices used to teach mapwork in schools and to address students' challenges in understanding mapwork. Four themes emerged from the thematic data analysis. These themes include:

- Theme 1: Lack of practical application of mapwork
- Theme 2: Enhancing mapwork teaching with integration of technology
- Theme 3: The Impact of Theoretical application of mapwork
- Theme 4: Pedagogical strategies and student engagement

These themes are discussed in relation to the findings of the study below.

Theme 1: Lack of practical application of mapwork

Students find it difficult to understand mapwork because of the lack of practical application in a real context. Findings revealed that most students do rote learning with mapwork concepts without proper understanding. This affects their ability to make sense of mapwork. T1 explained, *"I have observed that most of my students find it difficult to understand mapwork. This is because instead of students trying to understand, they would rather memorise the content and concepts of mapwork. This makes mapwork more abstract".* This view is aligned with Okada et al. (2024) findings, which assert that students find it difficult to connect mapwork concepts and symbols to an authentic situation practically. The hindrance in students' understanding can be attributed to the fact that mapwork teaching is more abstract. This finding is supported by T4, who opined, " I have observed that geography teachers do not patiently teach and explain mapwork to students. As a result, *students feel that mapwork is difficult to understand".* These findings demonstrate the inability of teachers to use appropriate pedagogies to enhance the teaching of mapwork for improved student understanding. This finding is reinforced by the conclusions of Harefa (2024) and Kambung (2022), who proposed a practical and student-centred approach to teaching mapwork.

Most participants stressed that students' understanding can be improved by providing them with practical opportunities. T7 explained, *"I think that the students' knowledge of mapwork is dependent on the frequency of exposing students to practical mapwork. At the moment, that is not the situation in my school. The presentation of mapwork lessons is more theoretical than practical. This has led to unnecessary rote learning".* This finding is contrary to the traditional approach to teaching mapwork, which depends largely on theoretical teaching strategies. This is aligned with Parrish and Bryd's (2022) findings, which identified how the abstract reasoning approach used to teach mapwork affects students' understanding. As a result, T7 recommended the use of practical and hands-on techniques in teaching and providing the needed support for teachers and students to practice. This view is supported by Moorman et al. (2021), who proposed that including field trips can help students apply theory to practice.

Theme 2: Enhancing mapwork teaching with integration of technology

The lack of integration of technology in mapwork has been seen as a challenge that affects students' understanding of mapwork. Most of the participants concurred that using online tools, such as GIS and interactive maps, improves students' knowledge. This is especially because such tools offer students engaging and visual learning opportunities. T5 asserts, *"In our school, we hardly use online tools like GIS or online maps to teach mapwork. Integrating these tools can assist students in applying their understanding of mapwork practically".* Aliyu et al. 's (2023) findings suggest that incorporating online tools improves the gap that exists between theory and practical applications.

T6 shared the same concern by claiming*, "I believe that we can use technology to address practical challenges of teaching mapwork. This will help in improving students' knowledge".* This perspective is supported by Mellyana (2024), who maintains that the use of online tools enhances active engagement and assists students in visualising the contents of many works. TI supports this and says. *"I think that making use of digital and online resources allows students to visualise mapwork online. In spite of the benefit of these online tools, most teachers struggle to use them and prefer traditional methods".* This is aligned with Vanlone et al. (2022) findings, which revealed that most teachers use traditional pedagogies, which do not give students a complete understanding of mapwork.

Most schools and teachers, in spite of the benefits of using digital and technological

tools, were not able to do so because of a lack of resources and funding. T3 mentioned, *"I have noticed that most of my students ' attention improves when I use digital tools to teach. However, my school is not able to purchase most of these tools for the school. GIS, which we can use to teach mapwork online, is expensive for my school to procure".* Ahiaku et al. (2019) and Banfield et al. (2022) note that the shortage of resources that teachers experience in schools forces them to continue using traditional teaching approaches. Whilst the integration of technology is beneficial, the shortage of resources continues to impede effective mapwork teaching.

Theme 3: The Impact of Theoretical application of mapwork

The findings revealed an over-dependence on theoretical mapwork instruction. Some participants found it worrying that the emphasis on theory did not help students apply mapwork theory into practice. T6 said, *"It looks like how we teach mapwork and the exercise that we give to students focuses too much on theoretical knowledge as opposed to practical understanding". This approach to teaching mapwork does not allow students to learn practical skills in mapwork".* This finding supports the view of Ni'mah et al. (2024) and Delelu et al. (2020), who argued that abstract presentation and reasoning of mapwork limit the opportunity for students to apply mapwork to their mapwork knowledge in practical situations. This finding suggests a shift in the pedagogical approach to mapwork instruction that increases the understanding and application of mapwork.

T7 shared the same perspective by pointing out, *"I have observed that the mapwork lessons that I present are more of theory than practical. As such, students only memorise and lose the essence of the practicality of mapwork".* Kotsis (2025) and Hirschl and Smith (2020) critique this by recommending that teachers need to incorporate the practical aspects that help students link theory to practice. Conversely, T3 argue that laying a foundation for a strong theoretical understanding of mapwork should be fundamental by asserting, *"for me, I see that mapwork as a subject is difficult for students to understand because they are not properly introduced and practically exposed to mapwork concepts".* This view focuses on the need to blend theory and the practical aspects of mapwork during mapwork lessons. This outcome aligns with the findings of Zberreanu (2024) and Hlatywayo and Manik (2022), who proposed a blended approach to mapwork instruction.

Theme 4: Pedagogical strategies and student engagement

The pedagogical approach in teaching mapwork promotes the active engagement of students with mapwork. The findings acknowledged that the use of traditional and teacher-centred pedagogies usually results in students' passive learning. Consequently, students fail to engage actively in mapwork lessons. T4 stated, "*I think that most of us teachers are not able to teach and explain mapwork concepts with appropriate pedagogical strategies to enhance students' understanding".* Students are not given the opportunity to engage in mapwork meaningfully, and this makes them believe that mapwork is difficult. This view resonates with Vygotsky's (1978) conceptualisation, which shows the importance of interactive and collaborative learning environments that enhance the knowledge construction of students through collaboration.

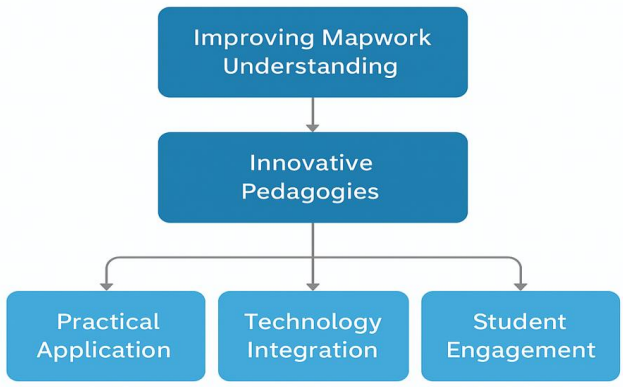
In contrast, T7 emphasises the need to use innovative teaching approaches to teach mapwork. T7 said, *"I think that the knowledge of students in mapwork is dependent on how often they learn mapwork practically".* This finding aligns with Mellyana (2024) and Aliyu et al. (2023), who found that using student-centred and practical approaches to teach mapwork helps students to engage and enhance their knowledge of mapwork actively. However, some participants were concerned about the limitations of innovative strategies to facilitate instruction in mapwork. T1 said, *" I prefer to use the teacher-centred approach to teach mapwork. However, I find that this approach is not that effective to support lessons with visuals*". In support, T5 mentioned, "I think that the lack of homework *and extracurricular activities in schools needs to provide support for students' learning of mapwork on how".* This lack of mapwork learning undermines students' ability to engage in practical learning.

These findings support the findings of Sam (2024) and Bryne et al. (2023), who assert that the lack of opportunities for collaborative

learning undermines students' understanding of mapwork. Allal's study proposes the use of effective instructional strategies to facilitate the teaching and learning of mapwork. This will require a move from the use of teacher-centred and traditional pedagogies to innovative pedagogies which emphasise the practical experiences of students. This study shows that students are able to gain deeper insight when practical activities, technology and digital tools are incorporated into mapwork teaching. However, for this to be effective, teachers and students must be supported with the resources needed to make mapwork instruction meaningful. This study makes a meaningful contribution to innovative strategies that can be used to improve mapwork teaching and students' understanding. This is illustrated in the figure below.

Contribution of The Study

This study contributes to improving mapwork teaching and students' understanding of mapwork, as shown and explained in Figure 2 below.



Source: Author (2025)

Figure 2: Improving Mapwork Understanding Through Innovative Pedagogies

Figure 2 illustrates how students' understanding of mapwork can be improved by using effective innovative pedagogies. Firstly, the figure identifies the challenges that students experience in understanding mapwork. These include rote learning, lack of practical experiences and inadequate engagement opportunities. Figure 2 suggests that transitioning from teacher-centred to student-centred approaches, through the use of digital tools such as GIS and online maps, can enhance students' understanding of mapwork. In addition, the figure shows the need for students to be provided with practical activities like field trips and experiential tasks. It highlights the need to foster collaboration among students through problem-solving tasks, peer collaboration, and providing resources while training teachers appropriately. This figure demonstrates how students' understanding of mapwork can be improved through providing them with a practical and theoretical understanding of mapwork.

CONCLUSION AND SUGGESTIONS

The study findings showed a lack of connection between theory and practical students' experiences in mapwork teaching. As a result of this gap, students tend to over-depend on rote learning and memorisation of mapwork concepts. This challenge hindered the conceptual understanding of students in mapwork. This challenge is exacerbated by teachers' reliance on the use of traditional methods of teaching, which force students to learn mapwork in the abstract. Most of the participants mentioned that the lack of practical teaching through the use of online and digital tools had a negative effect on students' understanding.

Literature findings support this conclusion by emphasising the need for teachers to use student-centred approaches and online tools like digital mapping and GIS to reinforce students' understanding of mapwork. In addition, literature supports that resource constraints and lack of teaching materials in schools continue to remain a concern in mapwork instruction. To address this challenge, teachers need to consider using innovative teaching strategies that foster a culture of collaboration and teamwork in mapwork instruction. This study significantly contributes to mapwork instruction and students' understanding of mapwork, as shown below.

Recommendations

1. **Policy Recommendation**

School authorities should revise the mapwork curriculum to incorporate online and digital resources in the teaching of

mapwork. Online tools can provide students with the practical experiences they need to enhance their understanding of mapwork.

2. Recommendation for teaching training in colleges and universities

Teaching, training colleges, and universities should empower teachers on how to integrate online tools and technology in mapwork teaching to provide students with experiential learning opportunities. Teachers should focus on how to equip teachers to foster a collaborative learning environment that is supportive of students' learning.

3. Recommendations for schools

Schools should provide teachers with the appropriate teaching and learning resources that deepen teaching and provide practical learning opportunities to students. Resources that are appropriate for teaching and learning mapwork include GIS, maps, and digital mapping tools. These resources not only enhance students' understanding but also provide an environment for collaborative learning.

4. Teacher recommendations

Geography and mapwork teachers should adopt innovative teaching pedagogies and student-centred approaches to facilitate mapwork instruction. The use of innovative and student-centred approaches to teach mapwork can enhance students' learning by providing practical and experiential learning. In addition, teachers should promote a collaborative teaching environment where students support and work together to achieve a common goal.

Limitations of the study

The study relied solely on the use of semi-structured interviews to collect data. This could expose the research to subjective interpretation and bias from the researcher's perspective. In addition, because of the smaller sample that was used, the findings of the study may not be generalisable and reflective of a broader population.

Suggestions for future studies

Future studies should employ different data collection instruments for triangulation. Achieving triangulation will enhance the validity of the study. In addition, future studies should consider using a larger sample to improve the generalisability of the study.

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