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Exploring the Challenges faced by Teachers and Heads of Departments in the Teaching of Grade 12 Map Work in Secondary Schools in Mankweng Circuit in Limpopo Province, South Africa

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ABSTRACT

The study investigated the challenges faced by teachers and heads of departments in the teaching of grade 12 map work. The study was conducted at three secondary schools in Mankweng Circuit, Capricorn South District, in Limpopo Province. Most of the teachers in the circuit appeared to be struggling with the Geographic Information System section when teaching map work. The study was guided by a qualitative research approach with an exploratory research design. Purposive sampling was used to select grade 12 map work teachers and HODs in Secondary Schools. The sample of the study consisted of twelve participants, including three teachers, three HODs and six learners from three schools in Mankweng Circuit. Interviews, observations and document analysis were used as methods of data collection. The data was analyzed thematically and presented as themes emerging from the interviews. The study results revealed that Grade 12 map work teachers struggle to teach the GIS section during map work lessons. The results further confirmed that a lack of GIS knowledge is a barrier to Geography map work teaching and learning. The study recommends that the Department of Basic Education should introduce compulsory GIS workshops for all educators and HODs at the beginning of every school year and quarterly, where they will train new and old educators and equip them with new trends in Geographic Information System technologies. The study will contribute to the existing body of knowledge and will assist teachers and the Department of Basic Education with the best approaches to teach map work.

Keywords: Geography, Map work, Teaching, GIS

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INTRODUCTION

According to Artvinli's research, maps made to enhance map abilities in Turkish geography textbooks were unable to go beyond theoretical knowledge.[1] The lack of fieldwork further highlights the disregard for finding a solution and the persistence of outdated teaching and learning methodologies. In addition, Bock's study on the challenges students had while evaluating spatial data concerning landforms on 1:50,000 topographic maps revealed that student instructors also had trouble reading and

[1] İlker Dere, "Viewpoints of Social Studies Teachers about Oral History Method," *Review of International Geographical Education Online* 9, no. 1 (2019): 171–92.

comprehending maps.[2] Even if the term "contour interval" is commonly used in geography classes, either they are unfamiliar with the concept or they do not know how to calculate the vertical interval in Namibian schools.[3] This suggests that the secondary map work teachers did not provide the students with adequate instruction. They have trouble reading and interpreting maps at university because of this. Learners build new information using their existing knowledge.[4]

There was a study by Ahiaku, Mncube and Sunday, which demonstrated that 77, 5 % of educators in South Africa are not interested in teaching map work due to computations and the GIS part.[5] The study focused more on educators' concerns and obstacles while teaching map work in South African schools. Some people are not participating, such as heads of departments (HODs). Given that learners' performance in geography has been steadily falling, these statistics suggest that teaching geography, and map work in particular, is difficult for them. The absence of learner-teacher support resources for geography map work was a significant contributing factor to the persistently low achievement. The researcher was inspired to conduct this study by the persistently low performance in map work. Teachers, HODs, and learners all face these difficulties. The majority of research concentrates more on the experiences and instructional techniques of instructors when instructing geography in grade 12. The study explored challenges encountered by teachers and HODs when teaching and learning Geography map work in Mankweng Circuit in Limpopo Province. The motivation of this study was a decline in student performance in Geography as a result of ineffective map work instruction. The objective of this study was to explore challenges faced by teachers and HODs in the teaching of grade 12 map work.

LITERATURE REVIEW

Teachers Attitude

According to Kojeweke, a teacher's attitude in the classroom affects the quality of teaching and education as well as negative attitudes, making it difficult for students to receive messages on topics they learn, which leads to incorrect interpretation of concepts. In the classroom, learners will also begin to perceive map work as dull and begin to have an unfavorable view of geography. Some students see geography as an uninteresting subject, which can make it hard for them to get involved in the material and may lead to insufficient pupil motivation and interest levels that are likely to influence their learning outcomes.[6] In Ozdemir's definition, attitudes are propensities that cannot be seen for themselves but are thought to produce observable behavioral tendencies.[7] Teachers may feel more confident in their abilities to instruct Geography map work material, which will encourage students to work hard and pass the course at the conclusion of the school year. In the study "High School Learners' Attitudes toward Geography Courses," Ozdemir found that 89,5% of the students stressed the importance of the geography teacher's actions in the classroom and their performance in order to have a successful geography lesson and map work in particular.[8] Incekara observed that among the obstacles were instructors' attitudes and perceptions about GIS, as well as unfavorable views from educational authorities. He further disclosed that many teachers see geography as just memorizing geographic locations, names, and regional information, negating the requirement for spatial analysis using GIS.[9]

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[2] L. J. Bock, "Problems Student Teachers Face in Communicating Spatial Information about Landforms on 1: 50 000 Topographical Maps," *Unpublished Master's Thesis, Grahamstown, Rhodes University*, 2003.

[3] J. Naxweka, " Selected Namibian Secondary School Geography Teachers' Pedagogical Thinking and Practices: The Case of Map Work" (2018).

[4] Ananias Mukondeleli, "Teaching of Geography Mapwork in Grade 12: A Case of Nzhelele West Circuit in Vhembe District" (2018).

[5] Philip Kwashi Atiso Ahiaku, Dumisani W Mncube, and Sunday O Olaniran, "Teaching Mapwork in South African Schools: Reflections from Educators' Experiences, Concerns and Challenges," *African Journal of Gender, Society & Development* 8, no. 2 (2019): 19.

[6] K. Mundede and M.C. Namafe, "Exploring the Concepts of Equal Opportunity in Teaching and Learning Geography in Selected Secondary Schools of Kabwe District, Zambia. ," *International Journal of Research Geography.* 5, no. 4 (2019): 23–33.

[7] Unal Ozdemir, "High School Students' Attitudes towards Geography Courses (Karabuk Sample-Turkey)," *World Applied Sciences Journal* 17, no. 3 (2012): 340–46.

[8] Ozdemir, "High School Students' Attitudes towards Geography Courses (Karabuk Sample-Turkey)," p. 552

[9] Suleyman Incekara, "The Place of Geographic Information Systems (GIS) in the New Geography Curriculum of Turkey and Relevant Textbooks: Is GIS Contributing to the Geography Education in Secondary Schools," *Scientific Research and Essays* 5, no. 6 (2010): 551–59, p. 552

Teaching Resources

Students' performance and practice with reading maps is affected by a variety of curriculum- and school-related problems, including insufficient time allocated for teaching Geography and a lack of teaching resources.[10] The study further showed that teaching materials also affect students' performance in Ethiopian schools. It is the responsibility of the school to ensure that teaching and learning materials are always available for teachers and learners. Any situation that denies them access to the resources will result in poor performance in any subject, Geography included. Mzinga and Onyango argued that using appropriate educational tools is important in geography education.[11] Butt argued that teaching aids and learning aids help give educators ideas for teaching.[12] Eldelson et. al., argued that the use of educational tools strengthens geographers' thinking skills and improves their problem-solving skills.[13] The use of geography materials helps educators develop appropriate teaching methods for cartographic lessons. Makewa et al found that secondary school English teachers still face challenges in teaching tenses, spelling, pronunciation, summarization, article use, irregular verbs, punctuation, word order, and conditional sentences.[14] Their study further showed that the problem stems from a lack of educational resources. To master the map work section, educators must be fully equipped with all the teaching tools necessary to convey the content.

Teachers Experience

Okwilagwe states that there is a correlation between student performance and the number of years a teacher has been instructing Geography, and more especially, map work.[15] In some South African schools, Geography is taught by teachers who have been teaching it for years, irrespective of whether they produce good results or not.

According to Kojeweke, nine years or more is considered sufficient to give principals experience in teaching methods that influence students' geography performance in Kenya, as well as imaginative knowledge that encourages students to excel in geography and to encourage them to excel.[16] Poor performance in geography learners may not necessarily be related to new teachers. Geography is a subject that requires one to be equipped with proper knowledge of the content because it consists of two sections, which are the theory part and the map work section. One will need to be fully equipped with mathematical knowledge since there are calculations and measurements in the map work section. This is supported by Naxweka's research study, which revealed that the topics that students find difficult in map work are the same topics that teachers find difficult.[17] She said students found 50% of the topics difficult. Topics include slope, visibility, latitude, and longitude. She also highlighted the many challenges teachers face in teaching map work. Challenges include learners' lack of basic mathematics skills, lack of motivation to attend classes, homework and exams, and negative attitudes towards tedious, difficult, abstract thinking cartographic work. This indicates that learners who find geographic maps difficult to work with are more likely to dislike the subject matter and may abandon efforts to improve their grades.

Amosun has stated that the experiences of educators should not be restricted to teaching in classrooms and certain subjects; rather, they must participate in national marking, where ideas from

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[10] Siddu S Madiwalar, "Factors Affecting Students' Performance and Practice on Map Reading Skills: A Case Study of Selected Secondary Schools in Asela Town, Ethiopia," *Science, Technology and Arts Research Journal* 1, no. 3 (2012): 97–105.

[11] Waziri Mzinga and Daniel Oduor Onyango, "The Role of Instructional Materials in Learning Geography among Secondary Schools in Busega District, Tanzania," *East African Journal of Education and Social Sciences* 2, no. 3 (2021): 29–36.

[12] Graham Butt, "Globalisation, Geography Education and the Curriculum: What Are the Challenges for Curriculum Makers in Geography?," *Curriculum Journal* 22, no. 3 (2011): 423–38.

[13] Eldeson C. S. J., *A Road Map for 21st- Century Geography Education: Assessment (A Report from the Assessment Committee of the Road Map for 21st Century Geography Education Project)* (Washington: National Geographic Society, 2013).

[14] Lazarus Ndiku Makewa, E Role, and B Ngussa, "Usefulness of Media Resources in English Instruction: A Case of Adventist Secondary Schools in Tanzania," *J. Educ. Pract* 3, no. 15 (2012): 163–72.

[15] Eugenia A Okwilagwe, "Influence of Teacher Factors on Attitudes of Geography Teachers to Map Work in Nigerian Secondary Schools," *IFE PsychologIA: An International Journal* 20, no. 2 (2012): 67–72.

[16] Josephat O Kojweke, "Factors Influencing Students' KCSE Performance in Geography in Public Secondary Schools in Migori District, Kenya," 2013.

[17] Naxweka, " Selected Namibian Secondary School Geography Teachers' Pedagogical Thinking and Practices: The Case of Map Work."

other examiners on particular themes are shared.[18] This is where they will learn new ideas and approaches as to how to deal with any challenge they might encounter while teaching Geography map work. A study by Chirwa and Mubita shows that teacher tenure has a small effect on willingness to use ICT resources.[19] It was teachers who had been teaching for less than five years who were actively trying to use ICT resources. This was because the teachers in this group had just graduated from college, and she was more exposed to ICT resources than older teachers.[20] According to Kojweke, teachers with several years of experience stop and reflect on their day-to-day work, discuss with their peers what is happening in their teaching process, develop new strategies from their experiences, and develop new strategies.[21] One will therefore become more knowledgeable as he/she develops techniques and focuses attention on the learner and some of the characteristics that hinder or facilitate learning. For teachers to reach their full potential when working with geographic maps, they need well-informed, organized, and enthusiastic dean-like leaders. According to Koledoye, a teacher's experience is one of the key factors in personal politics affecting staff.[22] He also believes that experience enhances a teacher's effectiveness. Koledoye also argues that teaching is an act that can be refined through training and practice.[23] Besides, it is very important to secure competent teachers in rebuilding the education system.

THEORETICAL FRAMEWORK

In order to gain much understanding of map work teaching and learning in grade 12, the researcher applied Lev Vygotsky's social constructivism theory, which focuses on the importance of culture and context in comprehending what happens in society, and building knowledge based on this understanding.[24] According to Vygotsky, cognitive growth occurs first on a social level, and then it can occur within the individual.[25] This means that learning must be a collective thing as social constructivism implies that learning is an interaction between teachers, learners and other stakeholders or the community. The progressions in Vygotsky's theory are learner-centered and discovery-oriented.[26] In constructivism, teachers and peers support and contribute to learning through the concepts of scaffolding, cognitive apprenticeship, tutoring, and cooperative and learning communities.[27] By giving learners homework, Geography teachers will be involving parents and guardians in the teaching and learning process. It will give parents time to go through their children's schoolwork while noting down their challenges. Parents who are really concerned about these challenges might help in coming up with better solutions. For example, by ensuring that their children get Geography extra lessons within their communities. This will help reduce poor performance in Geography map work. By collaborating with others, students establish a setting where peers can share meanings.[28] Social constructivism encourages collaborative learning. Shun asserts that social constructivist teaching approaches emphasize reciprocal teaching, peer collaboration, cognitive

[18] Peter Adewale Amosun, "Why Nigerian Geography Teachers Scarcely and Scantly Teach Map Reading and Why Students Are Scared of It.," *African Educational Research Journal* 4, no. 2 (2016): 42–48.

[19] Cosmas Chirwa and Kaiko Mubita, "Preparedness of Teachers and Learners in the Integration of Information Communication Technologies in the Teaching and Learning of Geography in Selected Schools of Petauke District of Eastern Province in Zambia," *International Journal of Research and Innovation in Social Science (IJRISS)* 5, no. 3 (2021): 456–64.

[20] Chirwa and Mubita, "Preparedness of Teachers and Learners in the Integration of Information Communication Technologies in the Teaching and Learning of Geography in Selected Schools of Petauke District of Eastern Province in Zambia."

[21] Kojweke, "Factors Influencing Students' KCSE Performance in Geography in Public Secondary Schools in Migori District, Kenya."

[22] J. D. Koledoye, "Effect of Teachers' Academic Qualification on Students' Performance at the Secondary Level," 2011.

[23] Koledoye, "Effect of Teachers' Academic Qualification on Students' Performance at the Secondary Level."

[24] Beaumie Kim, "Social Constructivism," *Emerging Perspectives on Learning, Teaching, and Technology* 1, no. 1 (2001): 16.

[25] L. S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge, Massachusetts: Harvard University Press, 1978).

[26] Jianxu Liu et al., "Addressing Rural–Urban Income Gap in China through Farmers' Education and Agricultural Productivity Growth via Mediation and Interaction Effects," *Agriculture* 12, no. 11 (November 15, 2022): 1920, https://doi.org/10.3390/agriculture12111920; Tabona Shoko and Agness Chiwara, "Mukondombera: HIV and AIDS and Shona Traditional Religion in Zimbabwe," *Utambuzi: Journal for the Study of the Religions of Africa and Its Diaspora* 1,no.1 (2015): 5–17.

[27] Robert W Lent, Steven D Brown, and Gail Hackett, "Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance," *Journal of Vocational Behavior* 45, no. 1 (1994): 79–122; Peter N Stearns, *The Industrial Revolution in World History* (Routledge, 2020).

[28] B Brau, "Constructivism. The Students' Guide to Learning Design and Research," *Accessed May* 21 (2020): 2023.

apprenticeships, problem-based instruction, web quests, anchored instruction, and other methods that involve learning with others.[29]

The researcher applied this theory by including teachers and HODs, as they are all involved in the teaching and learning of Geography map work. The theory guided this study to identify challenges teachers experience when teaching map work. The theory relates so much to the study because it encourages collaborative learning and working together. The theory will also assist with better solutions to the challenges.

METHODOLOGY

The researcher followed the qualitative research method, which examines the fundamental characteristics of subjective experiences and the significance attached to specific phenomena.[30] Since this method is interested in the depth of human experiences, it allowed the researcher to gather challenges that teachers come across in the teaching and learning of Geography map work in Grade 12.

Study Design

The researcher used the exploratory research design, which entails a description of a case in relation to its larger context in an effort to comprehend its (the case's) specifics.[31] The design was relevant because the purpose of the study was to explore challenges teachers come across when teaching map work in Grade 12. This design was relevant to this study since the phenomenon had rarely been investigated, and not much is known about the challenges of teaching and learning map work in Grade 12 in Mankweng Circuit.

Sampling

The sample comprised 3 teachers, 3 HODs and 6 learners in Mankweng Circuit who are affected by this problem. The particular sample size was selected because interviews are used as a method of data gathering. Secondly, the study focused on teachers, HODs and learners who are part of Geography map work teaching in Grade 12 till data saturation was achieved. The sample consisted of three schools. In each school, one teacher and one HOD were sampled to participate in the study. The total sample was made up of 12 participants.

Data Collection

In-depth interviews

In-depth interviews were used as a tool for gathering data for the study. This technique was selected because it allowed the researcher to ask participants to clarify issues and to ask follow-up questions. There was an interview guide, which was used after school to avoid distracting the teaching and learning process. All participants were given an opportunity to express their challenges when teaching map work.

Observations

Observations were used as another method of data collection to supplement the interviews. The study used on-site observation. The on-site observation technique was selected because it ensures the accuracy of the data collection to accommodate the necessary latitude that was available in data collection through the use of interviews.[32] In order to gauge their attitudes on geography, the researcher observed the teachers and students, as well as conducted interviews with them. To see if they had a favorable attitude about geography, the researcher watched them.

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[29] D.H. Shunk, *Learning Theories. An Educational Perspective* , 3rd ed. (Upper Saddle River, NJ: Prentice-Hall, 2000).

[30] A. Strydom and R.M. Bezuidenhout, " Qualitative Data Collection," in *Research Matters*, ed. Du Plooy Cilliers F., C. Davis, and R.M. Bezuidenhout (Cape Town: Juta, 2014), 228–63.

[31] Strydom and Bezuidenhout, " Qualitative Data Collection."

[32] O S Madumo, "Developmental Local Government Challenges and Progress in South Africa," *Administratio Publica* 23, no. 2 (2015): 153–66.

Document Analysis

The study also used a document analysis technique. The goal of employing documentary analysis is to close any gaps that could arise as a result of the use of interviews and observations as a method of data collection being weak.[33] The researcher employed document analysis to ascertain if teachers record student performance in both formal and informal assessments in order to recognize students who are struggling and need additional support.

Data Analysis

Thematic Analysis was employed to examine the data. According to Plooy-Cilliers, when you perform thematic analysis, the goal is to compile data into groups with linked meanings, which you may then assign to broader categories.[34] In this study, data from the participants' interviews were analyzed using the eight stages recommended by.[35] Zhang These steps are: 1 prepare the data; 2 define the coding unit; 3 create classifications and a coding system or conceptual framework; 4 code the texts; 5 test your coding in a sample text; 6 assess the uniformity of your coding; 7 make inferences from the coded data (interpret your data); and 8 present your research methods and results. According to Strauss, the objective of qualitative coding is data fragmentation rather than data counting.[36]

Ethical Considerations

To gain access to participants, the researcher obtained ethical clearance from the University's Ethics and Research Committee. The participants were not forced to take part in the study. Forms of consent were given to participants to sign, and they were also informed of the purpose of the study. The semi-structured individual interviews were administered in the schools.

PRESENTATION OF RESULTS

Interviews data

Tables 1, 2 and 3 below present data for this study. Table 1 presents the challenges HODs experience when teaching and monitoring map work. Table 2 presents the challenges teachers experience when teaching Geography map work. Table 3 presents strategies that can be utilized in the teaching and learning of grade 12 map work.

Table 1: Challenges HODs experience when teaching and monitoring map work learners and teachers.

Theme	HOD 1	HOD 2
HODs experience when teaching and monitoring map work	*"The most difficult sections of Geography map work for teachers and HODS to teach are GIS and Vertical Exaggeration".*	*"Sometimes it becomes difficult to teach and manage geography teachers and learners when you do not have proper teaching and monitoring tools''*

Table 1: The heads of the Department of Geography indicated that the most difficult topics in map work that they, learners and teachers usually encounter are calculations, in particular Vertical Exaggeration (VE) and Geographic Information System (GIS). The results from the literature showed that Geography educators have a negative attitude as GIS was barely used in lectures, and more than

[33] Madumo, "Developmental Local Government Challenges and Progress in South Africa."
[34] Strydom and Bezuidenhout, " Qualitative Data Collection."
[35] Richard E Mayer et al., "Clickers in College Classrooms: Fostering Learning with Questioning Methods in Large Lecture Classes," *Contemporary Educational Psychology* 34, no. 1 (2009): 51–57.
[36] A. Strauss, *Qualitative Analysis for Social Scientists* (New York: Sage, 1987); Strydom and Bezuidenhout, " Qualitative Data Collection."

half of the teachers had no clear concept of what it is.[37] This implies that teachers must be lifelong learners and keep themselves updated with the current trends in curriculum development.

Table 2: Challenges teachers experience when teaching Geography map work.

	Teacher 1	**Teacher 2**	**Teacher 3**
Teachers' challenges in teaching grade 12 map work	"*Most of the learners do not know the basics of Geography. In Grade 12, you find that they lack information from the lower grades, which is important." GIS part because it is new to us, we do not have resources to teach it like GIS labs and I remember two years back we had to request the department to workshop us. I think they also struggled with it as they were reluctant, hence, we had to request them for a workshop."*	"Learners need to go for fieldwork to see those landforms they are taught in school and any other Geographical features and again we lack teacher training as we do not attend Geography workshops regularly". "We do not have enough written work output due to a lack of time, and we do not have enough contact time."	"Slow learners, honestly, they cannot cope with the scope we are given; Geography has got a lot of scope that we get from the Department, it is hard for them to cope because majority of them are pushed or progressed to Grade 12." "*GIS is also difficult to teach because, as teachers, we were not trained enough to teach GIS."*

In Table 2: Geography map work educators indicated that a lack of background in Geography by learners is one of the challenges that they encounter when teaching map work in Grade 12. They said that learners lack prior knowledge of Geography from previous grades, which are grades 10 and 11. Social constructivism believes that learners learn well when they are able to link current knowledge to their previous grades. Geography educators also indicated a lack of teaching resources, such as maps and textbooks, a lack of teacher training, limited contact time, overcrowding in classrooms and a lack of funds for fieldwork are some of the challenges that they come across when teaching map work. They also indicated the issue of the language barrier, where learners struggle to grasp some of the concepts, especially GIS concepts. This affects teachers' pace of teaching because they take a lot of time explaining until learners understand. Geography teachers also indicated that it is difficult to teach GIS because it was not part of the syllabus in the past and is new to them, which is why they struggle to teach GIS. They indicated that, as teachers, they were not trained enough in GIS and that it is also difficult for learners to understand and relate to GIS.

Table 3: Strategies that can be utilized in the teaching and learning of grade 12 map work

Teacher 1	**Teacher 2**	**Teacher 3**
"Workshop, if they arrange workshops, we will attend because we want to learn and give learners the right information. I think the best thing that they can do is to train us."	"I think we must engage curriculum advisors regarding this problem because it affects the quality of Geography results.''	"I think somehow the government must try and get GIS specialists to assist us when it comes to GIS topics, and they can do this at least 3 times a year at the beginning of every quarter."

[37] Ali Demirci, "How Do Teachers Approach New Technologies: Geography Teachers' Attitudes towards Geographic Information Systems (GIS)," *European Journal of Educational Studies* 1, no. 1 (2009): 43–53.

In Table 3, Geography educators indicated that map work teaching can be improved through regular workshops, as they still need a lot of training, especially when it comes to GIS. They also indicated that curriculum advisors must be engaged more, so that they must have more subject briefings, if possible, once every quarter. They also suggested that the government must at least try to get some GIS specialists once a quarter to workshop teachers on GIS topics. Educators also indicated that a one-day workshop is not enough.

Data from Observations

The researcher's main focus was to monitor teachers' and HODs' attitudes toward Map work, and they all showed interest in Geography as a subject; they just did not know how to approach and teach some sections of map work. They are all willing to learn, should they get the necessary support from the Department of Education.

Data from Document Analysis

The researcher used document analysis to determine if the teachers keep records of learners' performance in both formal and informal assessments to identify learners who experience challenges and need more attention. There was evidence of formal assessment files; however, in both schools, teachers and HODs do not keep records of learners who are struggling in map work, and they also do not have educators' resource files, which keep records of all informal assessments and annual teaching plans.

DISCUSSION

The findings revealed that HODs find GIS as the most challenging section of map work to teach. The results from the literature showed that Geography educators have a negative attitude, as GIS was barely used in lectures, and more than half of the teachers had no clear concept of what it is.[38] In addition, one of the challenges was to successfully integrate GIS into Turkey's Geography curriculum.[39] The findings also revealed that they manage teaching and learning by using monitoring tools such as written work templates and analysis of results for both teachers and learners. However, they do not have proper monitoring tools. Furthermore, the study revealed that a lack of background in Geography by learners is one of the challenges that they encounter during the teaching of map work in Grade 12. They said that learners lack prior knowledge of Geography from previous grades, which are grades 10 and 11. A study showed that Geography map work educators still lack content knowledge from secondary education in Northern Ireland.[40] Geography map work educators also indicated a lack of teaching resources, such as maps and textbooks, a lack of teacher training, limited contact time, overcrowding in classrooms and a lack of funds for fieldwork are some of the challenges that they come across when teaching map work. A study by Ahiaku et al indicated that a further barrier to the teaching and learning of map work in South African schools is a lack of resources like maps, textbooks and computers.[41] Incekara argued that some of the problems affecting the adoption of GIS and map work include a lack of Geography map work in classrooms, laboratories, and source materials.[42]

The findings also revealed that map work teaching can be improved through regular workshops, as they still need a lot of training, especially when it comes to GIS. They also indicated that curriculum advisors must be engaged more, so that they must have more subject briefings, if possible, once every quarter. Social constructivism theory encourages interaction between teachers, learners and all other stakeholders in education. They also suggested that the government must at least try to get some GIS

[38] Demirci, "How Do Teachers Approach New Technologies: Geography Teachers' Attitudes towards Geographic Information Systems (GIS)."

[39] Ali Demirci, "Evaluating the Implementation and Effectiveness of GIS-Based Application in Secondary School Geography Lessons," *American Journal of Applied Sciences* 5, no. 3 (2008): 169–78, 49

[40] Anne M Dolan et al., "Student Teachers' Reflections on Prior Experiences of Learning Geography," *International Research in Geographical and Environmental Education* 23, no. 4 (2014): 314–30.

[41] Ahiaku P., "Measuring the Effectiveness of Appointment of School Management: A Qualitative Analysis of the Stakeholders' Views," 2019, https://hdl.handle.net/10520/EJC-1a8060edb0.

[42] Incekara, "The Place of Geographic Information Systems (GIS) in the New Geography Curriculum of Turkey and Relevant Textbooks: Is GIS Contributing to the Geography Education in Secondary Schools."

specialists once a quarter to workshop teachers on GIS topics. Educators also indicated that a one-day workshop is not enough. In addition, support, training for teachers and monitoring processes are necessary to comprehend what is happening in classroom situations.[43]

RECOMMENDATIONS

The findings of this study revealed two implications. Poor performance in map work results from a lack of teacher-learner resources. The study also revealed that a lack of teacher training on the map work contributes to teacher struggles when teaching the topic. The study therefore recommends that the Department of Education should support Geography map work educators with proper GIS training so that they do not struggle during instruction in the classroom. Skills and training should always be available to ensure the requirements of curriculum implementation in the classroom. In addition, the Department should also provide proper teaching resources to make the teaching and learning of map work easier for teachers and learners. It is further recommended that the government must at least try to get some GIS specialists once a quarter to workshop teachers on GIS topics. The government should institute support, training for teachers and monitoring processes in order to comprehend what is happening in classroom situations.

CONCLUSION

The article aimed to explore the challenges teachers and HODs experience when teaching map work in Mankweng circuit schools. The study was conducted in order to come up with possible strategies that can be utilized by teachers in order to improve map work performance. The study has suggested that the Department of Education should arrange quarterly GIS workshops where they would get specialists to workshop teachers and learners about GIS. The Department should also provide proper teaching resources. This will ensure that the teaching and learning of map work becomes easier for teachers and learners, thus yielding a positive outcome.

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