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Exploring the Effective Use of ICT Tools to Teach Grade 10 Learners Population Geography in South Africa: A Case Study of Eagle's Nest Christian School

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ABSTRACT
Information and Communication Technology (ICT) has been accepted and incorporated into South African public and private schools to a considerable degree. The purpose of this study was, therefore, to explore the effective use of ICT tools in teaching Grade 10 learners Geography in South Africa. The study further explored how teachers and learners utilized the tools in Eagle's Nest Christian School, located in Polokwane, Limpopo Province. The Connectivism Learning Theory served as the theoretical foundation for this investigation. A qualitative research approach was used in the investigation. The study used an interpretive paradigm and a phenomenological research approach. A purposive sampling strategy was used in selecting ten (10) learners and one (1) educator. In-depth interviews and open-ended questionnaires were used to collect data. Thematic analysis was used for data analysis. The findings revealed that Geography teachers make good use of ICT in the classroom. The study also found that Grade 10 learners enjoy being taught Geography with the use of ICT; to them, learning becomes interesting, fun, meaningful, and easy. The study further revealed through the teacher that at times when geographical concepts and videos are displayed, the learners get carried away due to excitement, which sometimes becomes a challenge to handle. The study came to the conclusion that much work needs to be done to successfully integrate ICT in education going forward, and that there is still a disconnect between Geography education and technology. Eagle's Nest Christian School should install smartboards in every classroom, according to the study's recommendations.

Keywords: ICT, Geography, Phenomenological Design, Interpretive Paradigm, Grade 10 Learners.

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INTRODUCTION
In the South African context, every private sector and government department, in their execution of their operation or mandates, the utilization of Information and Communication Technology (ICT) has become widespread and prevalent to such an extent that, without these technological tools, there is virtually no production or work done at all. For the past ten or so years, the Department of Basic Education (DBE) has worked to integrate ICT into the teaching and learning process in an effort to stay ahead of the curve. The teaching of Geography is impacted by digital technology in schools, and the internet offers a wealth of current and varied sources and case studies to enhance lessons.

This study is designed to fill a gap in the body of knowledge between geography education and technology by exploring what can be done to implement ICT effectively in education in the future.

Despite efforts in other subjects, the lack of understanding of population geography has not been addressed. However, without the use of ICT, learners' interest in geography lessons does not lead to engagement in the geography classroom. The researcher was inspired to conduct this research for the reasons stated above.

The purpose of the study is to explore the effective use of ICT tools in teaching Grade 10 learners in Population Geography at Eagle's Nest Christian School, located in Polokwane, South Africa.

LITERATURE REVIEW

A Geography classroom's enthusiasm for teaching and learning has been sparked by the use of ICTs, especially in the last ten years. Schleicher defines ICT as the usage of computing devices, software, digital data storage, audiovisual systems, and communication networks in daily activities.[1] When implemented properly in the classroom, ICTs provide learners with a plethora of advantages, according to Schleicher.[2]

As Lako and Mubita point out, ICTs also aid in the study of Geography education and learning.[3] This is due to the fact that ICTs, such as computers, facilitate the processing and storing of data during the research process. Researchers and educators have shown that ICT technologies are particularly beneficial for locating information quickly and readily, conducting research, improving work performance, and managing and communicating information.[4]

Chigama and Goronga found that although ICT helps teachers find information through internet browsing, internet connectivity can occasionally be an issue.[5] Their study examined teachers' perceptions of ICT integration in teaching and learning across different regions of Zimbabwe. Chigama and Goronga examined the phenomenon from different geographical regions within Zimbabwe, and this study sought to address a geographical vacuum in the body of knowledge.[6] The primary goal of this study was to investigate how well Eagle's Nest Christian School in South Africa, specifically in the Capricorn District Municipality, uses ICT technologies to teach Population Geography to Grade 10 students.

According to Delamont et al., good research should not aim for too much.[7] Ambition is admirable, but overly optimistic time and effort estimations should not be promoted. They posit that American anthropologist Harry Wolcott was known for focusing on just one aspect of a subject at a time, such as a town, a school, or a community leader. "But Harry, what can you learn from just one?" some asked him. "As much as I can," Harry said.

Youssef, Dahmani, and Ragni investigated students' academic achievement, digital abilities, and ICT use. They investigated the digital divide.[8] The results showed that ICT use promotes teamwork and creative ways to reduce student failure rates, especially for first-year students. This study addressed an empirical gap by concentrating on the efficient use of ICT tools to teach Grade 10 learners Population Geography, as opposed to Youssef, Dahmani, and Ragni's study, which concentrated on the academic achievement of first-year students.

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1 Andreas Schleicher et al., "Envisioning the Future of Education and Jobs: Trends, Data and Drawings.," *OECD Publishing*, 2019.
2 Schleicher et al., "Envisioning the Future of Education and Jobs: Trends, Data and Drawings."
3 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.
4 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."
5 T. Chigama and P. Goronga, "Exploring Teachers' Perceptions towards ICT Integration in Teaching and Learning: The Case of Selected Primary Schools in Harare, Zimbabwe.," *Journal of African Education*, 3, no. 1 (2022): 119.
6 Chigama and Goronga, "Exploring Teachers' Perceptions towards ICT Integration in Teaching and Learning: The Case of Selected Primary Schools in Harare, Zimbabwe."
7 S. A. Delamont, P. Atkinson, and O. Parry, "Supervising the Ph.D. Buckingham: Open University Press. ," 1997.
8 A. Ben Youssef, M. Dahmani, and L. Ragni, "ICT Use, Digital Skills and Students' Academic Performance: Exploring the Digital Divide," *Information*, 13, no. 3 (2022): 129.

In a similar vein, Filita and Jita looked into how educators felt about using ICT to teach Sesotho, a native language of South Africa.[9] The results show how challenging it is to incorporate ICT into Sesotho classroom training. According to the study, there is an uneven allocation of ICT resources, which means that teachers and students have varying chances to make use of various learning platforms that could enhance the educational process and raise student achievement in the topic. As a result, the research filled a gap in the body of knowledge, as previous research focused on the Sesotho Home Language subject. This study, on the other hand, concentrated on the Geography subject.

Research on the use of ICTs in secondary school Geography teaching and learning was done by Constance and Musarurwa.[10] According to their findings, geography classes provide students with a better awareness of the social and natural environments in which they live. Teachers can introduce learners to new geographic settings by using ICTs. This study, which focused on population geography, addressed a knowledge gap in contrast to Constance and Musarurwa's work, which emphasized Physical Geography.

Umugiraneza, Bansilal, and North conducted research in KwaZulu-Natal schools on the use of technology in Mathematics teaching and learning.[11] Teachers who use the internet, according to the findings, have a higher level of trust in Mathematics teaching. This could be because teachers who have access to a wider range of resources have a better chance of learning more about the broad goals and applications of Mathematics outside of the classroom. The problem with this study is that the methodology utilized a quantitative research approach. As a result, this study filled a methodological gap because the researcher used a qualitative data technique in this classroom action research. The researcher chose this methodology for this study because he wants to be involved in the phenomenon.

THEORETICAL FRAMEWORK

The Connectivism Learning Theory provided theoretical guidance for this study. "Connectivism provides insight into the learning skills and tasks required for learners to thrive in the digital era".[12] According to Connectivism theory, learning is the process of connecting specialised nodes or knowledge sources. Moreover, it is crucial to be able to recognise links between concepts, ideas, and areas. The researcher chose this theory because technology is heavily used in the classroom to support Connectivism. According to Siemens, the use of ICT tools necessitates the learners' engagement and active participation. [13] Connectivism allows students to make decisions about their education. Connectivism can thus be implemented in a Geography classroom using ICT tools. A smartboard, for example, can be used to display information and engage students in discussions. Given the foregoing, this theory is more effective in a Geography classroom when applied to learner-centred teaching.

METHODOLOGY

This study adopted a qualitative research approach Goundar asserts that qualitative research is a very subjective field of study that aims to comprehend feelings, impressions, and points of view by looking beyond the numbers.[14] This research approach was decided upon because the researcher believed that the data required would be influenced by participants' personal experiences. This measure of collecting insight information from participants enabled the researcher to describe the phenomenon of utilization of ICT in teaching Grade 10 Population Geography and provide substantive meaning to the problem at hand that was investigated.

Research Design

[9] N. Filita and T. Jita, "Teachers' Perspectives on the Use of ICT in the Teaching of a South African Home Language, Sesotho," *Journal for Language Teaching,* 55, no. 2 (2021).

[10] Kholeka Constance Moloi, "The Complexity of Dealing with Change in the South African Schooling System: 20 Years into Democracy," *African Identities* 12, no. 3–4 (2014): 264–82.

[11] C. Lorraine LeBlanc, *Spiritual Paths & Crossroads* (Morrisville, North Carolina: Lulu Publishing, 2018).

[12] George Siemens, "Connectivism: A Learning Theory Fir the Digital Age," 2005, p. 7

[13] Siemens, "Connectivism: A Learning Theory Fir the Digital Age."

[14] Sam Goundar, *Research Methodology and Research Method* (Victoria University of Wellington , 2012).

"Research design is the overall plan, structure, or strategy that guides a research project from its conception to the final data analysis," states Jansen.[15] This study used an interpretive research paradigm because the researcher saw insight as socially constructed and emerging from people's social practices. The researcher opted for a phenomenology research design because the goal of the study was to investigate how to teach Population Geography in Grade 10 using ICT tools.

Sampling

A sample of ten (10) learners was drawn from a population of twenty-eight Grade 10 Geography learners who were purposefully sampled from the Eagle's Nest Christian School. They were chosen based on their performance levels, thus from the lower, middle, and high levels, using their marks from cycle test 1, which was devised by the Geography teacher and researcher and administered and moderated by the Geography educator. Only one (1) Geography teacher, who taught Geography in Grade 10, was chosen on purpose. The logic behind this sample was that the current investigated phenomenon was focal in Grade 10, so the teacher responsible for that Grade was a suitable sample. Therefore, the overall sample of the study comprised ten (10) learners and one (1) educator.

Data Collection

Open-ended questionnaires and in-depth interviews were used to collect data from the participants in accordance with the phenomenological research design. This made it possible for the researcher to get comprehensive, extensive data regarding the subjective experiences of the subjects. One of the main advantages of phenomenological research design is seen to be this richness. The data that was gathered through such interviews and questionnaires was qualitative. Thanks to these means, the researcher was able to learn more about how students experienced Geography classes that used ICT. Moreover, the goal was to gain knowledge about the teacher's expertise and how to use ICT to enhance Geography teaching and learning.

Data Analysis

In this study, data was presented in the form of tables, figures and narratives. The collected qualitative data was analysed thematically. The most fundamental technique for identifying codes and themes that repeatedly appeared in raw data was an inductive thematic analysis, so the researcher used that.

Ethical Considerations

Ethical factors that were taken into account were beneficence, fairness, confidentiality, and respect for participants. Ethical approval is essential to guarantee that the study was carried out responsibly and accountable, which is why the Turfloop Research Ethics Committee (TREC) was consulted for a clearance certificate in order to further lower the risk of harm to people and, ultimately, ensure that the study produced positive results. The researcher made sure that participants gave their consent to engage in the study voluntarily, deliberately, voluntarily, logically, and in a clear and understandable manner.

The goal of the study, any dangers, and the need for confidentiality to preserve the participants' identities were explained to the participants. The participants were informed that they might stop participating at any time and that it was entirely voluntary. More significantly, their identities were to be kept secret at all costs. To assess the results of the suggested study, the researcher used pseudonyms. Throughout the study, precautions were taken by the researcher to ensure the participants' safety, and the information gathered was only utilised for scholarly purposes. Every encryption technique was used to protect the data and preserve the participants' privacy and confidentiality, and the researcher would be the only one with access to the collected data. No participant was expected to receive any immediate material or financial rewards; instead, the study's benefits were the creation of knowledge in the fields of Geography and Environmental Studies.

PRESENTATION OF FINDINGS AND DISCUSSION

[15] **Amanda Jansen, "Entangling and Disentangling Inquiry and Equity: Voices of Mathematics Education Professors and Mathematics Professors.," Journal of Urban Mathematics Education 16, no. 1 (2023): 10–39, p. 2**

The eleven participants unanimously concurred that the use of ICT tools in the Geography classroom can go a long way in enhancing teaching and learning. The various themes that were established through the data are presented below.

Theme 1: ICT reduces too much work

Some of the findings emanating from this theme are as follows:

- *Information is renewed every day.*
- *Geography is a very content-oriented subject. If learners have these tools in the classroom every day, they will help everyone. They can quickly refer to notes.*
- *Through ICT tools, learners can access more information and a broader understanding of things that we are supposed to be doing. "For instance, the use of YouTube. If learners do not understand a particular subject, they can always refer to YouTube."*
- *ICT tools are significant because they help you understand the subject.*
- *Through ICT tools, learners can learn different ways of communication, and most importantly, they can learn how to draw diagrams in Geography.*

The researcher believes that the use of ICT in the geography classroom not only impacts learning but also impacts the teaching of geography positively. In this vein, learners would be able to grasp the content of geography.

According to the findings of this study, ICT is effective because the number of textbooks is reduced. This is consistent with the findings of Aidoo et al., who assert that ICT helps teachers by reducing their workload. Videos can cut down on the amount of time needed to prepare lecture notes, narrate, and explain the material to students.[16]

Theme 2: Excitement towards ICT use in the Geography Classroom

It was discovered that when ICT tools are utilized inside the classroom, learners mostly become too excited, and that, on its own, poses a serious challenge in teaching a concept such as the Demographic Transition Model in Population Geography. The respondents had this to say:

- *"Learners get distracted by classmates and noise around the classroom, and when excited, they get distracted."*
- *"Sometimes when I make use of ICT tools, the learners remember the use of fonts and other things. At other times, when I present the information using ICT, it becomes more of a game. In such instances, learners lose concentration, and they become more excited than when I present videos or PowerPoint presentations. There is more excitement than concentration on the key aspects of the lesson in question. So sometimes I must calm them down and take them through the major concepts at hand for that day."* **(Teacher)**

The researcher agrees with both learners and the teacher simply because most of the learners have a mentality that when an ICT tool is used in class, learning does not take place, because they become excited. This excitement leads to distraction, which affects the lesson. This is similar to the study conducted by Seemiller, who asserted that learners get distracted by ICT tools.[17] The findings of the study revealed that the platform used frequently may distract learners and impede their ability to pay attention.

Theme 3: ICT encourages learning

In the Geography classroom, participants noted that the usage of ICT tools promotes learning and has a beneficial effect on both teaching and learning. They stated:

[16] Godwin Etse Sikanku et al., "A Comparative Analysis of Hillary Clinton and John Mahama's Concession Speeches in the 2016 US and Ghanaian Presidential Elections," *Howard Journal of Communications* 34, no. 1 (2023): 76–91.
[17] Corey Seemiller, "Curbing Digital Distractions in the Classroom," *Contemporary Educational Technology* 8, no. 3 (2017): 214–31.

- *Technology motivates learners to learn because you have this equipment that is attractive to their eyes, which can help learners handle any information more easily.*
- *"Yes, it's motivating and hands-on in terms of experience; it can change a learner's attitude. It arouses interest among the learners."* **(Teacher)**

The researcher strongly believes that these findings are accurate simply because nowadays learners are exposed to technological gadgets that make life a bit easier for them, unlike using the traditional approach of learning without ICT tools.

Theme 4: Effectiveness of the ICT tools

It was discovered that ICT is effective, as stated by the teacher and the majority of the learners. Participants indicated that ICT tools stimulate more interest and help learners in presenting audio-visual aids, so they are very powerful and effective in covering geographical concepts.

Graphs, diagrams, and image illustrations become easier through the use of ICT tools. A respondent said:

- *Laptops and projectors have the ability to summarize information easily. Geography has a lot of content, a lot of theories that one needs to understand, and information needs to be embedded in the learners' minds.*

This study is of the view that ICT is very helpful in teaching and learning since it may help educators as well as learners get new information, based on the data collected from the participants. According to a study by Ojo and Adu, using ICT in the classroom helps teachers and students develop their ICT-related skills and competencies.[18]

Theme 5: Shortage of ICT Tools

A respondent stated:

- *Laptops/computers or smartboards are not available. However, the projectors are the major ICT tools used mainly by the teacher. Educational videos from the internet are shown to the learners.*

The shortage of resources hinders the teaching and learning of Geography if ICT tools are not integrated. This becomes a serious challenge when certain concepts need to be further explained. This finding also agrees with the views of Palagolla and Wickramarachchi, who noted that the main obstacles to the successful integration of ICT in schools are limited managerial support and a lack of ICT proficiency.[19]

The findings of this study revealed that there is no smartboard in the Geography classroom, as stated by the teacher. This finding is in agreement with what was stated by Munje and Jita that a lack of ICT resources can hinder the use of ICT resources in the classroom, which assist learners in their learning endeavours.[20] The literature shows that the use of ICT tools in the classroom is highly effective despite the pros and cons.

In terms of Physical and Human Geography, it should be mentioned that geographers are aware of what is happening in their surroundings. With the information gathered from an interview, the researcher may now reliably draw the conclusion that using ICT in a geography classroom is effective. According to the study, there is a laptop and an overhead projector in the Geography classroom. The classroom does not, however, have a smartboard. The researcher concurs with Munje and Jita that a

[18] OA Ojo and EO Adu, "The Effectiveness of Information and Communication Technologies (ICTs) in Teaching and Learning in High Schools in Eastern Cape Province," *South African Journal of Education* 38, no. Supplement 2 (December 31, 2018): 1–11, https://doi.org/10.15700/saje.v38ns2a1483.

[19] Nisha Palagolla and Ruwan Wickramarachchi, *Effective Integration of ICT to Facilitate the Secondary Education in Sri Lanka* (arXiv preprint, 2019).

[20] Paul Nwati Munje and Thuthukile Jita, "The Impact of the Lack of ICT Resources on Teaching and Learning in Selected South African Primary Schools," *International Journal of Learning, Teaching and Educational Research* 19, no. 7 (July 30, 2020): 263–79, https://doi.org/10.26803/ijlter.19.7.15.

deficiency of ICT resources may make it more difficult for students to use these tools in the classroom to support their learning.[21]

Lastly, the study revealed that ICT tools are more beneficial for visual learners. This study is of the view that ICT encourages students to learn since its visually appealing tools make it easier for them to process knowledge. The findings of this study showed that ICT tools are more effective and stimulate student engagement when employed effectively in a Geography classroom. This is similar to the study conducted by Humanity and Inclusion (HI), where ICT can assist students who struggle with vision, memory, and focus.[22] Additionally, a student who is blind or visually handicapped can utilise a computer to access online content with the help of a screen reader.

Significance of the Findings

This study is important to the field because it explored the effectiveness of utilizing ICT tools to teach Population Geography in the 21st Century classroom. Other scholars in the field of Geography education who primarily focus on Population Geography can benefit from this study. In order to compare the two periods in terms of teaching Population Geography without any ICT tools versus teaching it with ICT tools. The results of this study revealed that the use of ICT tools will benefit Geography educators in planning lessons that stimulate more interest and learner participation in the classroom. Moreover, the findings of this study also benefit visual learners who learn best through seeing graphs, pictures and videos. As a result, the findings of this study are useful because the policy of inclusive education was adhered to when ICT tools were integrated in teaching Population Geography.

RECOMMENDATIONS

The aim of the study was to establish the effective use of ICT tools in teaching Population Geography in Grade 10. In accordance with the unanimous and positive sentiments raised by the participants, the researcher recommends the following:

- Department of Basic Education should at least build computer labs for all the schools for the purpose of integration of ICT into teaching and learning.
- Schools within their community should engage in a fundraising exercise with an aim of purchasing ICT tools.
- While the proposal of building and buying for every school might be a tedious process, as an interim measure, the schools use smartphones to assist learners in accessing the internet and Google information.

CONCLUSION

The study sought to explore the effective use of ICT tools in teaching Grade 10 learners Geography in South Africa. Based on the findings of this study, the researcher concludes that Geography educators should adopt the use of ICT tools in teaching learners Population Geography because ICT tools are effective in reinforcing concepts taught in population geography. The collected data revealed that ICT tools motivate learners to learn more because nowadays learners are exposed to technological gadgets that are attractive to their eyes and can help learners to easily recall any information quickly. With the rapid rise of technological advancement, it is crucial that the DBE provide all schools with all the necessary resources that will enhance teaching and learning of population geography to run smoothly in the classroom.

RECOMMENDATIONS FOR FUTURE RESEARCH

The researcher would like to suggest that the same research idea be pursued in the future once the school has been given a fully functional computer laboratory and smartboards. Such a comparative

[21] Munje and Jita, "The Impact of the Lack of ICT Resources on Teaching and Learning in Selected South African Primary Schools."
[22] Humanity and Inclusion, "Information and Communication Technology Supporting the Inclusion of Children with Disabilities in Education Fact Sheet," Handicap International - Humanity & Inclusion, October 1, 2025, https://alliancecpha.org/en/technical-materials/information-and-communication-technology-supporting-inclusion-children-disabilities-education-fact-sheet.

study will indicate whether teachers can or cannot meaningfully deliver the content to the learners with or without the use of ICT tools. Furthermore, the researcher suggests that the same research idea should be pursued in future, specifically on Mapwork, as there is a higher failure rate in the Mapwork section in the FET phase.

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