



Exploring Challenges and Strategies for Improving Grade 9 Learner Performance in Technology: A Case of Umgungundlovu District

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ABSTRACT

This study explores strategies to improve learner performance in Grade 9 Technology, addressing persistent underperformance in the subject. Technology is a vital subject that equips learners with practical skills applicable beyond the classroom, enabling them to pursue technical courses at tertiary institutions and fostering opportunities for self-employment. An interpretivist paradigm and a qualitative approach were adopted to achieve the study's objectives. Four technology teachers from two schools in the uMgungundlovu District were selected through convenience sampling and data was gathered through semi-structured interviews. Thematic analysis revealed that teachers often fail to align assessments with Bloom's taxonomy cognitive levels, resulting in unbalanced examination papers that contribute to learners' poor performance. Guided by Pedagogical Content Knowledge and the Zone of Proximal Development frameworks, the study recommends that the Department of Basic Education provide training to teachers on designing balanced and effective assessments. This paper will contribute to strategies aimed at enhancing teaching effectiveness, improving learner engagement, and informing policy reforms for better academic outcomes.

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INTRODUCTION

This study aims to investigate challenges and ways how to improve learners' performance in grade 9 technology. The consistent decline in learner grades for this subject has been a major concern that prompted this investigation. The recent addition of the technology course to the curriculum has exacerbated this need.¹ Therefore to prepare for a competitive and technologically advanced economy, more engineers, technicians, and artisans are required, which is why technology was included in the South African curriculum.²

The introduction of technology into the South African curriculum faced several obstacles that interfered with the teaching and learning process. Because of these obstacles, learners perform poorly in this essential subject, which serves as a prerequisite for engineering courses after grade 12. Earlier studies have linked these obstacles to teachers who lack the necessary skills to teach technology. This

¹ Gökhan Baş and Cihad Şentürk, "Teachers' Voice: Teacher Participation in Curriculum Development Process," *Ie: Inquiry in Education* 11, no. 1 (2019): 5.

² Department of Basic Education, "Curriculum Assessment Policy Statements (CAPS): Technology," 2011, www.thutong.doe.gov.za/Resource/download.aspx?

assertion is supported by Guion et.al., who contend that teachers who teach technology without receiving formal university training are the reason for learners' subpar performance.³

In addition, research has shown that because most technology teachers were never properly trained to teach technology, they are not provided with access to capacity-building workshops.⁴ Teachers' inability to integrate the design process into their lessons is another difficulty in teaching and learning technology, which has a detrimental effect on how learners attempt the mini Practical Assessment Task (PAT).⁵ Despite the discussion of all the difficulties, learners continue to perform below expectations in technology. Consequently, this study aims to explore challenges and ways to improve the performance of grade 9 learners in technology and was guided by the following main research question: What are the challenges faced by teachers in teaching and learning technology? The main research question is guided by the following sub-research questions:

- What is the pedagogical content knowledge requirement for grade 9 technology teachers, and how is it important in improving poor performance in technology?
- What factors contribute to poor performance in grade 9 technology?

LITERATURE REVIEW

The literature review of the study aimed to review previous studies pertaining to the improvement of learner performance in grade 9. This section additionally looks at the reasons resulting in the poor performance of grade 9 learners in technology, challenges faced by grade 9 teachers in the technology classroom, and teaching methods preferred by learners.

Challenges faced by Teachers in Teaching Technology

The Department of Education has recently held several teacher development programmes in South Africa to acquaint educators with the subject content of technology.⁶ Teaching technology still presents challenges for the teachers. Moreover, Kubheka indicates that among the obstacles hindering the teaching of technological skills are (1) the scarcity of instructional materials, (2) the insufficient preparation of technology educators, and (3) overcrowded classrooms.⁷ Abdullah highlights that facilitators of outcomes-based education training courses received insufficient training in technology teaching and learning.⁸ The lack of implementation of appropriate subject knowledge and skills to conduct workshops resulted in inadequate and subpar training for the teachers in the technology field. These circumstances negatively impacted the teachers' capacity to teach the subject, yet they persisted in teaching technology.

Puspitarini and Hanif observed that although all the teachers were able to give learners the Mini-PAT as required by the Curriculum and Assessment Policy Statement (CAPS) during the class observations, several of the provisions of the subject policy were unfamiliar to them.⁹ Kola agrees that it is crucial for technology teachers to understand the concepts they are teaching.¹⁰ The author goes on to say that preparation enables educators to provide appropriate homework and give learners well-

³ Lisa A. Guion, David C. Diehl, and Debra McDonald, "Triangulation: Establishing the Validity of Qualitative Studies," *EDIS* 2011, no. 8 (August 26, 2011): 3, <https://doi.org/10.32473/edis-fy394-2011>.

⁴ Mishack T. Gumbo and P. John Williams, "Discovering Grade 8 Technology Teachers' Pedagogical Content Knowledge in the Tshwane District of Gauteng Province," *International Journal of Educational Sciences* 6, no. 3 (May 25, 2014): 479–88, <https://doi.org/10.1080/09751122.2014.11890159>.

⁵ T. Kubheka, "Taxi Industry Conflict Exacerbated by Law Officials Who Own Taxis," 2021, <https://ewn.co.za/2021/02/11/taxi-industry-conflictexacerbated-by-law-officials-who-own-taxis-inquiry-says>.

⁶ Necati Hirça, "The Influence of Hands on Physics Experiments on Scientific Process Skills According to Prospective Teachers' Experiences.," *European Journal of Physics Education* 4, no. 1 (2013): 1–9.

⁷ Kubheka, "Taxi Industry Conflict Exacerbated by Law Officials Who Own Taxis."

⁸ M. Abdullah, "Use of Guided Discovery Learning Strategy in Teaching Creativity," in *The Use of Guided Discovery Learning Strategy in Teaching* (1 Oliver's Yard, 55 City Road London EC1Y 1SP : SAGE Publications, Ltd, 2015), 34–52, <https://doi.org/10.4135/9781526401861.n3>.

⁹ Yanuari Dwi Puspitarini and Muhammad Hanif, "Using Learning Media to Increase Learning Motivation in Elementary School," *Anatolian Journal of Education* 4, no. 2 (September 1, 2019): 53–60, <https://doi.org/10.29333/aje.2019.426a>.

¹⁰ Isaac Malose Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom," *International Journal of Technology and Design Education* 32, no. 2 (2022): 883–904.

organised activities. As a result, learners will be able to show that they understand concepts, abilities, and values. Mbongwe asserts that a deficiency of technological proficiency is a challenge for technology educators.¹¹ The same was echoed by Puspitarini and Hanif in their research: the biggest problems facing technology teachers were a lack of resources and learners being unable to understand technology-related topics because of their limited knowledge.¹² Jujuju declares that to support learning, educators must be competent in integrating pre-existing knowledge.¹³

Reasons Resulting in Learner's Poor Performance in Technology

According to a study by Puspitarini and Hanif, educators in South Africa find it difficult to teach technology because they lack the requisite competence in the subject. Teachers arrive in class unprepared.¹⁴ Kola stated in his research that he observed the same problem in certain schools where he was assessing pre-service student teachers. In his observation, he found that senior teachers lacked comprehension when it came to teaching technology.¹⁵ The analysis and comprehension of the policy paper on the technology curriculum revealed this lack of experience. There was no document for the technology curriculum policy available for student teachers. The findings indicated that educators viewed the curriculum policy document as a daunting task and chose to disregard it in favour of implementing their traditional teaching methods. It was difficult to understand why mentor teachers failed to obtain a policy document for the technology curriculum when they could have easily obtained one online. Kola goes on to list numerous shortcomings he saw in technology instructors across multiple schools. Two of the shortcomings are highlighted below:¹⁶

- **Poor planning of the learning programme, work schedule and lesson:** Teachers were covering various subjects in one term; there was no grade joint planning. Teachers tested learners on various topics. The fact that the student teachers had to prepare multiple sessions for the same grade made the task challenging for them. Their teaching mentors provided student teachers with work schedules to document in their portfolios and utilise in the classroom. However, they asserted that their mentors did not provide them with work schedules.¹⁷
- **Absence of creativity in using the material resources available in the local context:** Learners needed textbooks. All they could rely on was their teacher's textbook. Posters or learner projects made with technology were not on exhibit. Because of a shortage of resources, mentors failed to work on any projects with learners until student teachers showed up for practice teaching.¹⁸ By using the material resources that were accessible in their communities, student teachers engaged learners as well as their mentor teachers. Student teachers seemed to possess a more profound understanding of technology than the mentor teachers assigned to them. The demands of their circumstances led them to take on the role of mentoring their mentors. This intervention supports the claim made by the Department of Education in 2003 that, although South African school teachers have the qualifications to teach a wide range of subjects, many find the teaching methods related to technology unsettling.

Different Methods of Teaching Technology

Findings in a study by Yamada and Otchia show that the most difficult problem every teacher faces is grabbing the learner's attention and conveying ideas in a way that they remember long after they leave

¹¹ Zamabongwe Mbongwe, "Exploring Factors That Influence How Teachers Implement the Technology Curriculum in Grade 9: A Case of Three Secondary Schools in the Umlazi District" (University of KwaZulu-Natal, 2016).

¹² Puspitarini and Hanif, "Using Learning Media to Increase Learning Motivation in Elementary School."

¹³ Hlabje Viceroy Jujuju, "Investigating Learning Environment for Teaching Structures in Technology Grade 9: A Case of Sekhukhune East District" (2021).

¹⁴ Puspitarini and Hanif, "Using Learning Media to Increase Learning Motivation in Elementary School."

¹⁵ Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom."

¹⁶ Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom."

¹⁷ Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom."

¹⁸ Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom."

the classroom.¹⁹ To achieve this, the classroom experience should be redefined, and novel ideas for improving teaching and learning approaches should be implemented.²⁰ Learners are struggling to learn and are working hard to establish a new learning environment. The goal of education is to not only teach learners the textbook and make them understand it but also to foster original thinking, a creative atmosphere, and self-sufficiency. Keamy affirms that methods and approaches can significantly enhance learning skills.²¹ Some creative teaching approaches include combining several digital media types, such as text, graphics, audio, and video, into a multi-sensory interactive application or presentation to impart knowledge to the audience. The Knowledge and Human Development Authority (KHDA) emphasises that schools should take measures to improve the quality of teaching and learning. Teachers should use creative concepts to make teaching techniques more effective, such as:

- **Brainstorming:** Brainstorming meetings are critical. These classes are an excellent method to get your creativity flowing. Focussing multiple brains on a single concept guarantees a plethora of ideas and engages everyone in the discussion. These workshops will provide an incredible chance for learners to express themselves without fear of being judged.
- **Crossover Learning:** Informal learning environments, such as museums and after-school clubs, enable learners to connect educational knowledge to real-world concerns. These connections operate in both directions. Everyday encounters can boost classroom learning. Informal learning can be enhanced by incorporating classroom-based questions and information. These interconnected encounters pique further curiosity and incentive to learn.²² Kola states that teachers can promote meaningful discussion in the classroom by encouraging learners to ask open-ended questions, rephrase remarks with more technical understanding, and create and use models to construct explanations.²³ When learners argue in technical terms, they learn to take turns and listen intently. The same was echoed by Puspitarini and Hanif: professional development can assist teachers in learning these skills and overcoming obstacles, such as how to communicate their intellectual experience with learners effectively.²⁴

Topics that Grade 9 Learners are Struggling with in Technology

Keamy asserts that schools often overlook technology as an underperforming subject.²⁵ There are areas that need improvement as well as topics that learners find to be the most difficult, such as explaining different components of electric circuits. This topic has been a longstanding challenge for grade 9 technology learners. In the same way, Selkrig and Keamy assert that learners find it difficult to explain the components of a circuit.²⁶ The literature further indicates that learners also face difficulties with the meanings of the words presented in the electrical part of grade 9 technology. Another source of challenges is grade 9 learners' inability to distinguish between different electric components, as indicated by the literature. In addition, Selkrig and Keamy assert that grade 9 learners are struggling to give even a basic explanation of a capacitor in the electric circuit.²⁷

¹⁹ Shoko Yamada and Christian S. Otchia, "Perception Gaps on Employable Skills between Technical and Vocational Education and Training (TVET) Teachers and Students: The Case of the Garment Sector in Ethiopia," *Higher Education, Skills and Work-Based Learning* 11, no. 1 (April 27, 2020): 199–213, <https://doi.org/10.1108/HESWBL-08-2019-0105>.

²⁰ Gumbo and Williams, "Discovering Grade 8 Technology Teachers' Pedagogical Content Knowledge in the Tshwane District of Gauteng Province."

²¹ Mark Selkrig and (Ron) Kim Keamy, "Creative Pedagogy: A Case for Teachers' Creative Learning Being at the Centre," *Teaching Education* 28, no. 3 (July 3, 2017): 317–32, <https://doi.org/10.1080/10476210.2017.1296829>.

²² Selkrig and Keamy, "Creative Pedagogy: A Case for Teachers' Creative Learning Being at the Centre."

²³ Kola, "Using Analytical Rubrics to Assess Technological Solutions in the Technology Classroom."

²⁴ Puspitarini and Hanif, "Using Learning Media to Increase Learning Motivation in Elementary School."

²⁵ Selkrig and Keamy, "Creative Pedagogy: A Case for Teachers' Creative Learning Being at the Centre."

²⁶ Selkrig and Keamy, "Creative Pedagogy: A Case for Teachers' Creative Learning Being at the Centre."

²⁷ Selkrig and Keamy, "Creative Pedagogy: A Case for Teachers' Creative Learning Being at the Centre."

THEORETICAL FRAMEWORK

Pedagogical Content Knowledge (PCK)

The zone of proximal development (ZPD) theory, which Vygotsky developed, posits that a child's growth is mostly social rather than cognitive or biological. The evidence indicates that a child's environment, including the things and people in it, affects how cognitively they develop. Teachers use scaffolding as a means of assisting learners in moving forward in their ZPD. There are three main phases to this process: transfer of responsibility, fading, and contingency. According to Vygotsky's theory of the zone of proximal development, the more knowledgeable other (MKO), such as parents and teachers, is an informed and experienced person who knows more about a concept, procedure, or task than the learner. The MKO provides support to the less competent person through verbal interactions, helping them develop their cognitive and emotional domains.²⁸

In the realm of grade 9 technology, teachers with a firm foundation in computer science knowledge can develop lessons that are both engaging and accessible, thereby enhancing the performance of learners. In the same way, Griffith and Lim claim that formative evaluation in the technology lesson, which allows the monitoring of learners' progress and modifying the lesson accordingly, improves learner performance.²⁹ Making a genuine effort to present material in various ways and offering ample opportunities for learners to apply their knowledge are two strategies that are useful in engaging all learners. Educators must ensure that learners are able to read, hear, see, and perform the tasks taught in a technology lesson plan. Despite being straightforward, this strategy has proven effective over time. It remains a guideline for lesson preparation to raise the calibre of the technological content and improve learners' performances, even when the content changes and delivery methods adapt. In the context of this study, PCK is used to investigate the grade 9 technology teachers and its importance in improving the performance of grade 9 technology learners.

Vygotsky's Theory of the Zone of Proximal Development

The ZPD theory, which Vygotsky developed, posits that a child's growth is mostly social rather than cognitive or biological. The evidence indicates that a child's environment, including the things and people in it, affects how cognitively they develop. Teachers use scaffolding as a means of assisting learners in moving forward in their ZPD. There are three main phases to this process: transfer of responsibility, fading, and contingency. According to Vygotsky's theory of the zone of proximal development, the MKO, such as parents and teachers, is an informed and experienced person who knows more about a concept, procedure, or task than the learner. The MKO provides support to the less competent person through verbal interactions, helping them develop their cognitive and emotional domains.³⁰

By offering support to learners, MKOs help improve their performance. According to Styliadis a teacher who is adept at determining the best teaching strategies will also be knowledgeable about information retention, which is essential and will help learners in grade 9 perform better academically.³¹ The MKO with the finest problem-solving skills will help learners effectively identify and address difficult subjects by guiding them to undertake a self-evaluation to pinpoint their areas of greatest difficulty. Upon recognition, learners will seek additional resources to enhance their understanding of these topics, thereby enhancing their performance. Campbell further explains that learners' focus and information retention can be positively impacted when a teacher who is more informed than the learners

²⁸ Eileen Manoukian, "How Prekindergarten and Kindergarten Teachers Supported Students' School Readiness Skill Development During the Pandemic" (Walden University, 2021).

²⁹ W Griffith and Hye-Yeon Lim, "Performance-Based Assessment: Rubrics, Web 2.0 Tools and Language Competencies," *Mextesol Journal* 36, no. 1 (2012): 1–12.

³⁰ Dimitrios Styliadis, Kyle Maurice Woosnam, and Seongseop (Sam) Kim, "Perceptions of Attractions, Residents as 'More Knowledgeable Others' and Destination Image: Evidence from Two Destinations," *International Journal of Tourism Research* 24, no. 3 (May 4, 2022): 472–86, <https://doi.org/10.1002/jtr.2515>.

³¹ Styliadis, Woosnam, and Kim, "Perceptions of Attractions, Residents as 'More Knowledgeable Others' and Destination Image: Evidence from Two Destinations."

develops an organised study environment.³² This, in turn, naturally improves learner performance. Since teachers are regarded to be the MKO in the classroom, they must constantly keep in mind that there are various learners with varying abilities in the classroom. For this reason, it is essential that teachers use Bloom's Taxonomy when creating assessments, as this will help learners tackle questions that best fit their abilities, and this will enhance learner performance.

Relevance of ZPD in this study

Three main stages make up the scaffolding process, according to Campbell contingency, diminishing, and the transfer of accountability.³³ Teachers can use scaffolding strategies to support grade 9 learners as they learn new technical abilities, progressively minimising support as they gain competency, which will lead to higher performance. This is because the goal of the study is to discover approaches to improve the academic achievement of grade 9 learners in technology. A teacher may need to use multiple scaffolds at different times to help learners master increasingly difficult subjects. By doing this, learner performance can improve. According to Sias et.al., the use of educational scaffolding can improve learner performance.³⁴ To achieve this, teachers should choose appropriate assignments that align with the course's learning objectives and curriculum goals. They should also let learners participate in creating instructional goals to boost their motivation and commitment to learning. When evaluating the advancement of learners, consider their backgrounds and past knowledge. A topic that is too basic will rapidly bore learners and sap their motivation. However, overly challenging content has the potential to dull learners' attention.

METHODOLOGY

This study employed a case study design. This was necessary since this study used two schools, and the generalisation of the findings was going to be in question; hence, the case study design ensured that the findings were generalised to the two schools used. This study employed a qualitative research approach. The interpretivism paradigm was used in this study because it fosters a fieldwork-friendly atmosphere and enables researchers to explore settings, interpersonal dynamics, and motivations. Semi-structured interviews gathered the data, and thematic analysis grouped participant responses and extracted similarities to consolidate conclusions. This type of analysis follows six (6) steps which are: (1) Familiarise with the data, (2) Generate codes, (3) Combine codes into themes, (4) Review themes, (5) Determine the significance of themes and (6) Report findings which were all observed during the analysis.

Population

The population of this study consisted of four teachers from two (2) high schools from the uMgungundlovu district in Maqongqo, Pietermaritzburg. Below is the table that shows the biographic information for the participants. This table is a presentation of the biographical information of the four technology teachers from two schools in the uMgungundlovu district that participated in this study. Table 1 below summarises the biographies of the teachers.

Table 1: Participants Biography

Name of Teachers	Gender	Majors	Experience
Teacher A	Female	Technology and Mathematical Literacy	12 years
Teacher B	Male	Technology and EGD	10 years
Teacher C	Male	Technology	9 years
Teacher D	Female	Technology	19 years

³² Sandra Loucks Campbell, "Chaos Theory and Social Work Treatment," *Social Work Treatment: Interlocking Theoretical Approaches*, 2011, 48–57.

³³ Campbell, "Chaos Theory and Social Work Treatment."

³⁴ Christina M. Sias et al., "The Best Laid Plans: Educational Innovation in Elementary Teacher Generated Integrated STEM Lesson Plans," *The Journal of Educational Research* 110, no. 3 (May 4, 2017): 227–38, <https://doi.org/10.1080/00220671.2016.1253539>.

As shown in the table above, all four teachers had the relevant qualifications to teach technology. They all hold degrees. The number of years teaching technology shows that these are not teachers with limited experience but teachers with 9 to 19 years of experience teaching technology. The table above shows the selection of two male and two female teachers. Pseudonyms were employed to protect the teachers' genuine identities and those of their schools. All teachers were identified as Teacher A from School A and Teacher B from School B.

Sampling and sampling method

This study used purposive sampling because only grade 9 technology teachers were required to participate. Convenience sampling was used to select the two schools that were used as the study sites. These were the only high schools in the Maqongqo area. The researcher selected these schools because of their close proximity, ensuring easy access to them. The researcher chose participants based on their availability, rather than randomly selecting them from a larger community.

Ethical Considerations

All ethical protocols were adhered to. The university's ethics committee granted ethical clearance for this study. Gatekeepers' permission was obtained from the KwaZulu-Natal Department of Basic Education (DBE). The participants were served with informed consent letters to consent to their participation and were informed of their ethical rights before the collection of data commenced. The informed consent letter outlined that only participants who consented were allowed to partake; there were no monetary benefits in exchange for participation, and participants could pull out anytime they felt uncomfortable. This was done to ensure that participants were comfortable and confident to share their views and experiences.

PRESENTATION OF RESULTS

In response to the research questions that focus on exploring challenges and ways to improve the grade 9 learners' performance in technology, this section presents data that was gathered mostly through semi-structured interviews, discusses it, and analyses it. Data from the semi-structured interviews underwent thematic analysis. Table 2 below displays the five themes that emerged from the findings.

Table 2: Themes emerged from the findings

Themes emerged from the findings	
Theme 1	All teachers are qualified to teach Technology subjects.
Theme 2	Poor performance as a result of insufficient resources.
Theme 3	Lack of parental support.
Theme 4	Full attendance in Technology developmental workshops.
Theme 5	Teachers do not adhere to Bloom's Taxonomy cognitive tiers.

The five themes that emerged from the findings are displayed in Table 2 above. The study's findings will be presented and discussed in relation to the research objectives and theoretical framework that guided this study using these themes.

Theme 1: All Teachers are Qualified to Teach Technology Subject

The following question was posed to teachers during the interview: Are you professionally qualified to teach Technology? Please state your specialisation. Below is how they responded:

Teacher A's response was:

"Yes, I am qualified to teach Technology, my specialisation is Technology Education."

In the same manner, Teacher B said:

"Yes, I have a qualification to teach Technology, my specialisation is Technology Education."

Teacher C also said:

“Yes, I am a qualified Technology teacher who is specialising in Technology Education.”

Teacher D said:

“Yes, I have all the necessary qualifications needed to teach Technology, my area of specialisation is Technology Education.”

All the teachers indicated that they have all the required professional qualifications to teach technology in grade 9. The teachers have also confirmed that their specialisation is technology education. This assertion is in line with the views of Jujuju, who posits that a teacher must have all the certified academic qualifications to be employed to teach.³⁵

Theme 2: Poor Performance as a Result of Insufficient Resources

The question posed to teachers during the interview was: What do you think is the reason for learners' poor performance in grade 9 technology? Below are the teacher's responses to the question:

Teacher A said:

“The reason for poor performance in grade 9 Technology is the lack of resources in our school, we do not have enough resources that are required to teach Technology.”

Teacher B proceeded in the same vein and said:

“Learners from grade 9 are underperforming because they do not do PAT because of lack of resources. The school does not have textbooks, there are no ream papers to make copies for the learners, the chalkboard is too small, and it takes a lot of time to finish writing notes. Teaching periods are very short to get all the work done.”

Teacher C responded by saying:

“The main reason for poor performance in Technology in our school is the lack of resources. There are no learner guide textbooks, there is only one teacher guide textbook that we use to teach Technology. The classes are overcrowded, there is no space for the teacher to move around in class making sure that all learners are following and are doing their work correctly.”

In the same vein, Teacher D's response was:

“The poor performance in Grade 9 Technology is mainly caused by insufficient resources that are needed to teach Technology. The school has a shortage of textbooks. Also, learners do not take it upon themselves to learn for them to pass. You give them work to do at home, they come back the next day with the work that is not done.”

The responses above show that the main reason for the poor performance of grade 9 learners in technology is the lack of resources. Although teachers are making every effort to assist learners and ensure they achieve high grades in their subjects and skills, the school is failing to provide them with the necessary resources to effectively teach technology. This scenario is in line with the argument of Puspitarini and Hanif, that a school that does not have the resources that are required for successful teaching and learning will always produce poor results.³⁶

Theme 3: Lack of Parental Support

During the interview the participants were asked this question: What role do parents play in improving the performance of learners in grade 9? Below are the responses from the participants:

Teacher A said the following when asked about the role that is played by parents to learners:

³⁵ Jujuju, “Investigating Learning Environment for Teaching Structures in Technology Grade 9: A Case of Sekhukhune East District.”

³⁶ Puspitarini and Hanif, “Using Learning Media to Increase Learning Motivation in Elementary School.”

“Parents do not offer support to their kids because you find that when you give learners homework to do, about 80% of the class comes back the next day without completing their homework. If the parent was involved in any way, they would have made sure that their kids have completed homework which would result in no learner coming to school with incomplete homework.”

Teacher B said:

“The parents do play their role in supporting the learner in making sure that they get good grades because learners come to school without doing their homework and parents do not come to parents’ meetings when they are called.”

Similarly, Teacher C’s response was:

“Very few parents play a role in improving their children's academic performance by ensuring that homework is completed every day, they attend parents’ meetings, and they always come to school to check on their children's performance. Most parents do not care if their learners pass or fail, they never bother themselves by coming to school.”

In the same manner, Teacher D said:

“There is no role that is played by parents in terms of improving learner performance because even when a learner has failed Technology, parents do not bother themselves to come to school to check what led to a learner failing.”

Teachers indicated in the above responses that parents do not play a role in supporting learners with their schoolwork. One teacher went as far as to mention that parents do not even attend parent meetings when they are called by the school. He stated, *“Parents do not even come to check how the learners are performing academically.”* According to Badri et.al, the secret to a well-performing learner is that three people must perform their duties in full, with teacher number 1 always being there to teach them what they do not know. Secondly, it is crucial for a learner to actively listen and follow the teacher's instructions. Lastly, the parent must always be present to help and support the learner and the teacher as well.³⁷

Theme 4: Full Attendance in Technology Developmental Workshops

Another question that was posed in the interview was: Have you attended any developmental workshops to assist in teaching Technology?

Teacher A responded to the above question as follows:

“Yes, I have attended about 3 developmental workshops ever since I started teaching Technology.”

Teacher B’s answer to the question was:

“Yes, I have attended quite a few developmental workshops, and these workshops have been helping me improve my teaching skills when teaching Technology.”

Teacher C had the following to say:

“Yes, I have but it was a very long time ago, many things have changed within the curriculum.”

At the end, Teacher D said:

³⁷ M. Badri, A. Al Rashedi, and J. Mohaidat, “School Teachers’ Technology Readiness – An Empirical Study Applying Readiness Factors and Teacher Type Categorization,” in *Proceedings of the 2013 International Conference on Information, Business and Education Technology (ICIBET-2013)* (Paris, France: Atlantis Press, 2013), <https://doi.org/10.2991/icibet.2013.124>.

“Yes, I have attended workshops and ever since I started attending these workshops, they have been of great help to me in terms of improving the way I teach and how I interact with my learners.”

The teachers indicated that they have attended the technology developmental workshops to help them develop themselves in terms of teaching. One teacher responded that yes, she once attended the workshops, but it was a long time ago. This situation is contrary to the assertion of Keamy that technology teachers must attend developmental workshops occasionally to develop themselves with new knowledge and skills that are required to teach technology.³⁸

Theme 5: Teachers do not Adhere to Bloom’s Taxonomy Cognitive Levels

Another question posed during the interview was: When setting examinations do you conform to Bloom's Taxonomy? Please explain.

Teacher A said:

“No, I do not follow Bloom's Taxonomy when setting my assessments because in my class, my learners are very slow and if I give them questions that are too hard they will fail. So, in order for them to pass I always set questions between level 1 and level 3, at the end of the day the aim is for my learners to pass. Also, the Department of Education is putting us under pressure as we are told that no learner is going to fail, therefore we must give them free marks.”

The same sentiment was echoed by Teacher B who said:

“At first I did conform to Bloom's Taxonomy, but I realised that following Bloom's Taxonomy was not doing me any good because my learners were still failing. I then spoke to my department head and with his permission, I stopped using Bloom's Taxonomy. So now I just use only level 1 and level 3 questions.”

Teacher C responded to the above question as follows:

“I am a very old teacher and when I started teaching there was no Bloom’s Taxonomy, so the answer is no, I do not follow Bloom's Taxonomy when setting my examinations.”

Teacher D said:

“No, I do not follow Bloom's taxonomy when setting my examinations because I believe that as a teacher I know my learners and I know their capabilities so I just use that knowledge of my learners to set questions that they will be able to answer so that they will pass. That is what the Department of Education wants after all.”

From the above responses, teachers responded that they do not adhere to Bloom’s Taxonomy cognitive levels when they set their assessments, and this is in contradiction with the views of Anderson, who argues that Bloom’s Taxonomy cognitive levels help teachers to balance all the cognitive levels, as this is important when setting an assessment to ensure that all learners stand a better chance to perform better in the assessment since not all learners have the same intellectual capacity.³⁹

DISCUSSION

This study identified that a major factor contributing to low learner performance in Grade 9 Technology is the lack of sufficient resources. Puspitarini and Hanif assert that schools without the necessary resources for effective teaching and learning are likely to produce poor results.⁴⁰ The interviews with

³⁸ Selkrig and Keamy, “Creative Pedagogy: A Case for Teachers’ Creative Learning Being at the Centre.”

³⁹ L.W. Anderson, “A Comparison of National and Transnational Reports on the Quality of Educational Research and Development in Europe,” *Teachers and Teaching* 20 (2017): 131–47.

⁴⁰ Puspitarini and Hanif, “Using Learning Media to Increase Learning Motivation in Elementary School.”

technology teachers revealed that many schools lack the necessary resources, which hinders the teaching and learning process of technology.

In addition, the study found that parental involvement in supporting learners' academic performance is limited. Parents often fail to establish strong partnerships with teachers to help improve learner outcomes. Badri et.al. highlights the importance of mutual responsibility between parents and teachers for learner success.⁴¹ Chowa, et.al., also emphasises global recognition of the need for parental involvement in education.⁴² However, educators in schools serving disadvantaged communities often perceive parental involvement negatively, viewing it as less supportive and less effective in advancing children's learning. This study suggests that teacher education programs and institutions do not adequately prepare educators to address issues related to family/school partnerships.⁴³ Teachers also reported that, despite efforts to encourage parental involvement, parents in disadvantaged communities participate minimally due to factors such as low education levels, lack of empowerment, poverty, employment challenges, family structures, and teacher attitudes.

The study further found that teachers do not adhere to Bloom's Taxonomy cognitive levels when setting assessments and examinations. This failure results in unbalanced question papers, disadvantaging learners. It is crucial for examination papers to include various questions catering to different cognitive levels, as learners have diverse abilities. Epstein supports this view, stating that teachers should design assessments that align with Bloom's Taxonomy to ensure fair evaluation and improve learner performance.⁴⁴

Lastly, the study revealed that teachers in the uMgungundlovu District are committed to their professional development. They proactively attend workshops to enhance their skills and content knowledge, demonstrating a passion for their work and a desire for the academic progress of their learners. Badri et.al., echo the importance of continuous self-development for teachers to acquire new skills that can positively impact classroom teaching.⁴⁵

RECOMMENDATIONS

To improve grade 9 learners' performance in technology, several recommendations are proposed. First, schools in the uMgungundlovu District should be provided with adequate resources, such as teaching materials and technology tools, to enhance the teaching and learning process. Teachers must be trained to align assessments with Bloom's Taxonomy to ensure fair, balanced, and cognitively appropriate question papers. In addition, efforts should be made to encourage greater parental involvement through programmes that promote attendance at parent-teacher meetings and active participation in school activities. Ongoing professional development for teachers, including workshops on pedagogical skills and assessment design, will support improved content delivery and teaching strategies. A review of the grade 9 technology curriculum should be conducted to ensure its relevance and effectiveness, with accompanying support materials for teachers. Finally, fostering collaboration and mentorship among teachers and increasing teacher-student interactions outside of lessons will further support learners' academic growth and address individual needs.

CONCLUSION

This study aimed to explore the challenges and strategies to improve Grade 9 learners' performance in technology. The findings reveal that schools lack the necessary resources for effective teaching and learning. In addition, grade 9 technology teachers are not aligning their assessments with Bloom's

⁴¹ Badri, Al Rashedi, and Mohaidat, "School Teachers' Technology Readiness – An Empirical Study Applying Readiness Factors and Teacher Type Categorization."

⁴² Gina Chowa, David Ansong, and Issac Osei-Akoto, "Parental Involvement and Academic Performance in Ghana," 2013.

⁴³ G.J. Edwards, "Becoming a Teacher: How Mandatory Experiential Learning Programmes Impact Teacher Education," in *American Educational Research Association 2005 AERA Annual Meeting April 11–15*, (Montréal, Québec, Canada: Educational Researcher, 2004), 40–48, <https://doi.org/10.3102/0013189X033009040>.

⁴⁴ S.M. Epstein, "Educational Assessment Knowledge and Skills for Teachers," *Educational Measurement: Issues and Practice* 20 (2013): 3–12.

⁴⁵ Badri, Al Rashedi, and Mohaidat, "School Teachers' Technology Readiness – An Empirical Study Applying Readiness Factors and Teacher Type Categorization."

taxonomy, which contributes to learners' poor performance. This challenge must be addressed promptly. The findings also highlight the lack of parental support for learners. Teachers often work in isolation, as parents do not attend meetings when called, further hindering learner success. This gap in parental involvement is a significant factor contributing to the underperformance of grade 9 learners in technology and needs urgent attention. Despite these challenges, technology teachers are committed to improving learners' academic outcomes. They actively participate in developmental workshops to enhance their skills, enabling them to deliver content in ways that facilitate better learner comprehension and retention.

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