

TEACHER-LEARNER BLAME GAME: A BARRIER TO PHYSICAL SCIENCES SUCCESS IN RURAL SCHOOLS

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Abstract

Attaining success in Physical Science education is essential for a nation aiming to participate in the global economy, particularly due to its connection with the provision of rare skills obtainable via science-related professions. However, several studies have indicated that effective teaching and learning of Physical Sciences in rural secondary schools is hindered by numerous challenges, including socio-economic disparities. While factors such as infrastructure, resource availability, teacher retention etc. affect the quality of Physical Science teaching and learning, teachers and learners' perspectives about each other's influence on their competence play an even bigger role. This study utilized a multiple case qualitative study through individual interviews with teacher and focus group interviews with learners to collect data from 10 Physical science learners and 4 teachers from two rural schools, then analysed them thematically. Findings of this study revealed that learners blamed teachers lack interest in their learning, negative attitudes towards them when they find it difficult to understand the subject matter and lack of commitment to attend classes regularly and deliver effective lessons for their poor comprehension and performance in Physical science. On the contrary teachers also blame learners for their lack of commitment in attending classes and doing all assessment activities and applying themselves in learning the subject. This study implies a need for a rigorous intervention by school managers and other education to reduce tensions that exist between teachers and learners, which adds to existing challenges in Physical Sciences teaching and learning. The study recommends roadshows in rural schools by provincial and district officials to establish the root cause of the tensions and establish platforms to dissolve them. The study further recommends frequent monitoring of these schools by subject specialists to support both teachers and learners in their development of the subject matter. Further empirical studies should be done in more rural schools to establish mitigating ways to reduce possible underlying challenges that lead to tensions between Physical science teachers and learners in rural schools.

Keywords: *Learners, teachers, blame game, physical science, rural schools.*

1. Introduction and literature review

Physical Sciences is one of the science, technology, engineering, and mathematics (STEM) subjects taught in secondary schools. This subject is critical in developing learners' scientific literacy and problem-solving skills, which are necessary for their future success (Afolabi & Adedoyin, 2018), as well as determining learners' acceptance into various in-demand university degrees, particularly in science and technology (John, 2019). Despite its relevance, learner performance in physical sciences is consistently low, particularly in rural secondary schools. This is due to educational challenges in rural schools (Mbonambi et al., 2023), such as a lack of resources and bad infrastructure. These problems have been noticed in both developed and developing countries. For example, despite America's economic advantages, the American Institutes for Research (2021) found that around 20% of rural schools in the United States function in outmoded buildings that impede learning.

Furthermore, rural schools encounter difficulties in recruiting and maintaining trained and experienced physical science teachers. Substandard working conditions in rural schools make them unappealing to most instructors, who, if hired, tend to leave quickly when offered positions in urban schools. Rural schools have higher turnover rates than urban and suburban schools, resulting in vacancies sometimes filled by inexperienced educators (Tran et al., 2018). According to Du Plessis and Mestry (2019), geographic remoteness, inadequate lodging, and limited professional development opportunities make it difficult for rural schools to attract and retain teachers. As a result, they hire teachers from other disciplines who lack the necessary skills to instruct in physical science. Instructing in fields outside one's expertise has serious consequences. Teachers struggle to provide great education because they lack subject

area competence (Beley, 2025). This may lead to increased stress, less confidence in teaching ability, and worse job satisfaction. Aventura and Vina (2023) discovered that while teaching outside one's area of expertise can improve teachers' adaptability and creativity, it also causes significant stress and undermines their confidence. As a result, rural physical science students in rural schools score much lower on standardised examinations than their urban counterparts (Maringe & Singh, 2022). Johnson et al. (2021) stated that the unique problems faced by kids in rural schools impede academic advancement and development.

Emerging pedagogical trends suggest that technology could help rural schools improve their classroom infrastructure. It has the ability to bridge this gap by making high-quality instructional resources available to learners. For example, projectors and computer labs can be partially replaced by simple, non-commercial Learning Management Systems (LMS) accessible via smartphones, such as Google Classroom (Mustaffa et al, 2024). Nonetheless, many rural schools continue to face limited technological instructional resources. Although steps have been implemented to provide resources in rural schools, challenges with electricity and connectivity impede these efforts. Letwaba and Pitsoe (2021) underlined that infrastructure deficiencies not only impede learners' access to content, but also increase the burden and stress on teachers, forcing them to resort to traditional teaching methods.

Although many studies have examined structural and institutional barriers to physical sciences performance in rural schools, there is a scarcity of research on interpersonal and attitudinal concerns. The efficacy of STEM education is heavily influenced by both teachers' and learners' attitudes toward the subject (Johnson et al., 2018). According to this study, a healthy relationship between teachers and learners helps to offset the challenges that rural schools encounter when it comes to teaching and learning about physical science. Bevilacqua et al. (2019) argue that the quality of teacher-learner contact is the most important predictor of performance and learning success. In a trusting environment, teachers and learners can work together to improve the quality of physical science teaching. Anecdotal evidence suggests the development of a blame-shifting culture between educators and students, in which each group attributes poor performance to the perceived shortcomings of the other. This reciprocal blame may reduce accountability, harm teacher-learner relationships, reduce learner motivation, and impede effective instructional support. The challenge stems from a lack of understanding of the teacher-learner blame game as a barrier to success in physical sciences in rural schools, as well as how these dynamic elements influence instructional methods, learner engagement, and academic achievement. This study intends to analyse this relational barrier in order to improve comprehension and suggest focused intervention options through the following research questions:

1. What variables contribute to the emergence of blame between educators and students in Physical Sciences classrooms?

2. In what manner does the teacher-learner blame game impede learner progress in physical sciences and their relationship towards each other?

2. Methodology

This study used a qualitative case study research design (Creswell & Poth, 2018), guided by the interpretivism research paradigm. The decision to do a qualitative case study was driven by the desire to obtain a full picture of participants' views, feelings, and experiences, as well as to determine the importance of their actions. This strengthened the interpretivism worldview, which prioritises understanding human experiences and social realities through qualitative research methods such as interviews and case studies (Bryman, 2016). The study was conducted in two rural schools, with 5 grade 9 students and 5 physical science grade 11 students selected through purposive sampling. Grade 9 and 11 students were chosen because grade 9 is an exit grade before learners choose subjects of specialisation in grade 10, and grade 11 is the final grade before the exit grade 12, where learners know exactly how they will perform in physical science. Each school had four instructors, one in grade nine and one in grade eleven. Semi-structured interviews were used to collect data from teachers, while semi-structured questionnaires were employed to obtain information from students. Teacher responses were classed as **W**, **X**, **Y**, and **Z**. Learners were given anonymous surveys to allow them to respond as much as possible, as data may include comments about their professors that might make some people uncomfortable in interviews or focus group discussions. A thematic analysis (Braun & Clarke, 2016) was used to identify trends in blame attribution and perceived barriers.

3. Results and analysis

Findings for this study focused mainly of the teaching and learning of physical science and not other contextual factors outside the classroom activities. Teachers and learners' responses were based on learners interest and attitudes towards the physical science subject and teachers, teachers frustration regarding learners readiness to take up physical science and both learners and teachers commitment to effective teaching and teaching of physical science. Grade 9 learners responses were only based on the physical science content from the natural science subject.

3.1. Learners interest toward the physical science subject

Teachers reported that learners' grasp of physical science affected whether they had a negative or positive attitude towards the topic. For example, Teacher **W** mentioned that some learners had a bad attitude towards physical science. He additionally stated: *"the interest they have in the subject itself is not there, some of them they have already given up"*. Nonetheless, he acknowledged that there were some students who were motivated and worked hard to succeed in physical science. This was visible while teaching, as the teacher stated: *"Whenever I do an extra class, there are students who focus more and show interest. Some students can even attend sessions on Saturdays and Sundays"*. Learners' responses about their interest in physical science matched those of their teachers. Three grade 11 learners stated that they were performing well in physical science and that their success was due to their passion and curiosity, which motivated them to work harder. These learners were self-motivated, and they stated that their good performance was due to their desire to pass the subject with distinctions at matric. Their comments demonstrate that personal goals can be a motivator for high achievement.

Nevertheless, grade 11 students who stated that they were no longer interested in the topic claimed that the teacher did not make learning these subjects attractive. This was despite a grade 11 teacher's comment that he tries to pique learners' interest in physical science through a variety of instructional approaches. Teacher **X** stated that he guarantees that learners are engaged in the lessons by having interested learners ask more questions and seek clarification, allowing him to move beyond surface-level instruction and explore complicated subjects in more depth. He used a variety of instructional approaches, including practical activities and, where possible, YouTube. Career objectives influenced learners' interest in physical science. Two grade 9 students and one grade 11 student who showed an interest in the subject stated that they want to be doctors, which motivated them to study hard. Some grade 9 learners, however, stated that their poor performance in physical science was due to a lack of interest in the subject. According to teachers and learners, those who did not perform well lost interest in the subject. This demonstrated a strong link between learner performance and interest in the subject. Teacher **W** stated that some learners rarely had unfavourable attitudes towards science teachers. This also demonstrated how learners' interest in physical science influenced their attitudes towards their teachers.

3.2. Teachers and learners competence in physical science

Teachers expressed their dissatisfaction with the educational policy that allows learners to advance to the next grade while failing the prior grade. According to them, learners' awareness of this guideline allowed them to relax because they knew they wouldn't have to repeat a grade if they had already done it once during a phase. Teachers **W**, **X**, and **Z** reported that they taught grade 9 learners who did not pass grade 8, as well as grade 11 students who did not pass grade 10. Because these learners lack a solid comprehension of natural and physical science curriculum, they risk maintaining or even growing underperformance in these subjects. Teachers **Y** was not assigned grade 9 or 11 when the study was conducted, but he reported having similar experiences with learner growth when he was previously assigned physical science in these grades. According to teachers, their situation of having to work with learners who had no basic knowledge of physical science was frequently taken as a negative attitude towards students. Teacher **W** stated that he does not believe the learners understand anything enough due to their prior grade-level experience. He offered an example of general education and training (GET0 phase and stated that it is where the physical science curriculum begins, therefore if they do not comprehend, they would not grasp enough when they enter Grade 10.

On the contrary, Grade 11 students who faced content issues stated that their difficulty with the physical science subject was due to a lack of understanding from grade 10 and the effort to relate new information to current knowledge, making learning more difficult. According to them, their teacher seemed to struggle with the physical science content. Furthermore, some learners reported that in grade 11, certain teachers did not present specific information on time, resulting in topics being rushed and leaving them with little knowledge. They also stated that excessive homework does not contribute to a greater comprehension of physical science but rather consumes a significant amount of time that could be spent learning. Eight grade 11 students from both schools reported that they perform better in mathematics, while

two indicated that they perform better in natural science or physical science. Teachers and learners' responses revealed that both teachers and learners content knowledge and time management contributed to learner performance, leading to them blaming each other.

3.3. Commitment to teaching and learning

Teachers blamed some learners for lack of commitment in their learning of physical science while some learners also blamed teachers for lack of commitment in teaching, assisting them with content and making the learning material easier as well as attending classes consistently. Teachers indicated that there were learners who did not show commitment in their studies because they bunked classes. While some learners some confessed that one of the challenges that cause them to not do well in physical science was a result of missing some classes, they stated that this is because of absents of their teachers. Most grade 9 learners complained that teachers taught them in English most of the time, and that because they did not understand English well, they did not understand what was taught sometimes. For grade 11 who had limited proficiency in English, the science terminologies made the challenges more. Teacher X said: *"Remember in physical science, more especially on the physical science part on mechanics for example, you need to be able to interpret the whole statement before you can answer the question. Imagine if the learners don't understand or are unable to interpret obviously, they won't be able to answer the question."*

Whereas some teachers advocated code switching to enable learners to understand the content taught, Teacher Z differed, indicating that this creates a further challenge of communication. He indicated that teachers normally switch to their mother tongue, which may be different to that of other learners in a diverse class. His response was: *"Some of the challenges on the personal level is the language I switch to. I am a Nguni language speaking person and mostly here there are learners speaking Setswana, Sesotho and Tsonga. And if I try to code switch and use the wrong term while code switching, I then create another misconception"*. Teachers and learners responses revealed that their commitment in attending classed and language of instructions affected learners comprehension in the subject.

Teachers faulted certain learners for a lack of commitment in physical science education, while some learners accused teachers of a lack of commitment to teaching, supporting them with subject, making the learning material easier, and attending classes on a continuous basis. Teachers said that some learners did not show commitment to their academics since they skipped classes. While several learners admitted that one of the problems that caused them to perform poorly in physical science was missing certain classes, they indicated that this was due to the absence of their teachers. Most grade 9 learners complained that teachers taught them in English most of the time, and that because they did not grasp English well, they did not always understand what was being taught. The science terminologies posed additional hurdles for students in grade 11 who had inadequate English skills. Teacher X stated, *"Remember that in physical science, particularly in the mechanics section, you must be able to interpret the entire sentence before answering the question. If the learners do not comprehend or are unable to interpret the question, they will be unable to respond"*.

Whereas some teachers supported for code swapping to help learners understand the material, Teacher Z disagreed, saying that this adds another layer of communication complexity. He stated that teachers typically switch to their native tongue, which may differ from that of other learners in a diverse class. His comment was as follows: *"One of the personal obstacles I face is switching between languages. I speak Nguni, while most of the learners here speak Setswana, Sesotho, and Tsonga. And if I try to code switch but use the wrong term, I will create another misconception"*. Teachers and students' replies demonstrated that their commitment to attending class and the language of instruction influenced their comprehension of the subject. These responses show challenges cause by consistent attendance of classes by both teachers and learners. The use inability of learners to fully comprehend the English language caused challenges in comprehending the physical science content.

4. Conclusions and recommendations

This study found that effective teaching and learning are dependent on both learners and teachers. While contextual issues in rural schools are not ignored, the study found that school-related factors influence both instructors and students' blame games. The policy decision on learner progression has expedited teachers' and students' challenges in physical science. Teachers criticised learners for their lack of interest in the subject, while learners blamed teachers for their lack of enthusiasm in assisting them with their study. Furthermore, while teachers claimed that some learners lacked the basic physical science topic knowledge for the grades taught, students also stated that their teacher lacked sufficient information to ensure their success in the subject. The use of the English language was also cited as a cause of their incapacity to comprehend the physical science content. While it was not the teachers' fault, learners expected teachers to help them understand the subject by code switching, yet some teachers highlighted its

complexity in a varied class. All of these obstacles result in a lack of grasp of physical science, which leads to low performance. Nonetheless, there were promising signs from learners who performed well and teachers who demonstrated their commitment to education.

This study suggests that there is no fast solution to the teacher-learner blame game in physical science teaching and learning in rural schools, but certain measures can be implemented to help both teachers and learners. This report suggests that the Department of Education implement a monitoring program to examine the progression policy, provide platforms and solutions for support programs in areas where teachers are unable to mitigate problems, such as language barriers, and provide skilled scientific teachers. Current monitoring programs should incorporate collaborations between natural science and physical science subject advisors. Further empirical research should be conducted in more rural schools to identify mitigating factors that contribute to tensions between physical science teachers and learners in remote schools.

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