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Causes of Poor Performance in Physics at "O" Level Secondary Schools: A Case Study of Selected Secondary Schools in Kigandalo Subcounty, Mayuge District

Mwima Huzaima and Ounyesiga Living

School of Natural and Applied Sciences, Kampala International University, Uganda

ABSTRACT

This study investigates the causes of poor performance in physics among students in Kigandalo Sub County, Mayuge District. Through a mixed-methods approach, the research examines the impact of school facilities, teacher qualifications, and student attitudes on academic outcomes in physics. Data was collected from 140 respondents, including physics teachers, head teachers, other administrators, lab technicians, and students, with an 83% response rate. The findings reveal that inadequate school facilities and infrastructure, such as poorly equipped laboratories and classrooms, significantly hinder effective teaching and learning of physics. Additionally, the level of qualification of physics teachers plays a crucial role, with higher-qualified teachers being better able to explain complex concepts and provide targeted interventions. Furthermore, students' negative attitudes towards physics, often viewing it as a difficult subject, contribute to their poor performance. Intervening factors such as teaching methods, parental involvement, student motivation, peer influence, school management, availability of extracurricular programs, community and environmental factors, access to educational technology, student health and well-being, and government policies also affect the relationship between the identified causes and student performance. Based on these findings, the study recommends improving school facilities, enhancing teacher qualifications through professional development, and implementing strategies to positively change students' attitudes towards physics. Addressing these issues is essential to improve physics performance and overall educational outcomes in the region. Further research is suggested to explore additional factors and the long-term effects of the proposed interventions.
Keywords: Poor performance; Physics; Teacher qualifications; School facilities; Student attitudes

INTRODUCTION

Globally physics education reveals a significant challenge: many students struggle to achieve proficiency in this critical subject. Poor performance in physics has been observed across various educational systems, with multiple factors contributing to this trend. International assessments such as the Program for International Student Assessment [1, 2] and the Trends in International Mathematics and Science Study [3] highlight these disparities, illustrating that students in many countries perform below expectations in physics. According to the 2018 PISA results, while top-performing countries like Singapore and Japan excel in science, many others, including the United States and various European nations, show concerning levels of physics proficiency. The PISA 2018 report indicated that only 27% of students globally reached the baseline level of proficiency in science, which encompasses physics concepts [4]. This finding underscores a widespread issue where students lack a solid understanding of fundamental physics principles. Several factors contribute to the poor performance in physics globally. First, students often enter physics courses with significant misconceptions and a lack of foundational knowledge, which hinders their ability to grasp more complex topics [5]. The cognitive load imposed by the abstract nature of physics concepts can overwhelm students, leading to disengagement and low motivation [6]. Additionally, societal attitudes towards physics and science, influenced by cultural perceptions and gender stereotypes, can impact student engagement. In some cultures, physics is often viewed as a male-dominated field, which may discourage female students from pursuing the subject. This is cultural bias contributes to a lack of diversity in the field, further perpetuating the cycle of poor performance. [7–9]. Africa, students' performance in physics has raised significant concerns among educators and policymakers. Numerous studies indicate that many students struggle to achieve proficiency in physics, which poses a challenge for the continent's scientific and technological advancement. According to the African Union [10], improving science and technology education is critical for achieving the continent's development goals, yet performance in subjects like physics remains alarmingly low [10]. International assessments such as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) provide insights into the challenges faced by African students in physics. For instance, the TIMSS 2019 results showed that African countries, such as South Africa and Morocco, scored significantly lower in science compared to their global counterparts[11]. In PISA 2018, only a small percentage of students from African nations reached the baseline proficiency level in science, highlighting a critical gap in understanding and application of physics concepts [12, 13]. Several factors contribute to the poor performance in physics in Africa. First, inadequate resources and infrastructure severely limit the quality of physics education. Many schools lack laboratories, modern teaching materials, and qualified teachers, which hampers students' ability to engage in practical, hands-on learning experiences [14, 15]. The reliance on outdated curricula that do not reflect current scientific developments further exacerbates this issue [16]. In East African countries the performance of physics has garnered significant attention due to persistently low achievement levels in this critical subject. Despite the recognized importance of physics for fostering scientific literacy and technological advancement, students in countries such as Kenya, Uganda, Tanzania, Rwanda and Burundi frequently demonstrate challenges in mastering fundamental physics concepts. Reports from various educational assessments indicate that these challenges are not only detrimental to individual students but also hinder national development in science and technology [17]. According to the East African Community (EAC) report, the region has experienced persistent underachievement in science subjects, particularly physics. For instance, the Kenya Certificate of Secondary Education (KCSE) results consistently reveal that a significant percentage of students score below the minimum competency level in physics, with the 2020 results indicating that only 30% of candidates attained a mean grade of C+ or higher (KCSE, 2021). In National Examinations Council of Tanzania (NECT 2021), 116,610 applicants took the Physics test; of those, 64,096 (55.33%) passed and 52,514 (44.67%) failed. There were 120,856 candidates that took the test in 2020; 58,808 (48.87%) passed and 62,048 (51.13%) did not pass [18]. In Rwanda a significant factor contributing to poor performance in physics is the insufficient training and professional development opportunities for physics teachers. Many teachers lack a strong background in physics and effective teaching methodologies. According to studies ongoing professional development and training for teachers are essential to improving student outcomes in physics [19]. Schools in Rwanda often lack the necessary resources and infrastructure to effectively teach physics. This includes a shortage of well-equipped laboratories and insufficient teaching materials. The absence of practical experiments hinders students' ability to understand and apply theoretical concepts. According to the Rwanda Education Board's annual reports, the performance in physics at the secondary school level has shown varying trends over the years. In the 2020 National Examinations for Ordinary Level (O-Level) and Advanced Level (A-Level), physics had one of the lower pass rates compared to other science subjects. Specifically, the pass rate for O-Level physics was around 45%, while for A-Level, it was slightly higher at about 50% [20]. In Burundi, the poor performance is attributed to political instabilities which have had a detrimental impact on the education system. Schools often face disruptions, and resources are limited. A report by Human Rights Watch (HRW) 2017 indicates that the ongoing political crisis has led to a decline in the quality of education, including physics education [21]. According to the Ministry of Education and Scientific Research of Burundi [22], the performance of students in physics in national examinations has been consistently low. In the 2019 national examinations, only 35% of students achieved a passing grade in physics at the secondary level. In Uganda the performance in physics has become a pressing concern, as evidenced by consistently low achievement levels in this critical subject. Physics is essential for developing scientific literacy and fostering technological innovation, yet many Ugandan students face significant challenges in mastering its concepts. Various educational assessments and reports highlight the need for urgent interventions to improve physics education in the country [23] .According to the Uganda National

Examinations Board, the results of the Uganda Certificate of Education (UCE) in recent years have shown a troubling trend, with a significant percentage of students scoring below the pass mark in physics. For instance, the UNEB report for 2020 indicated that only 41.7% of candidates scored a division one or two in physics, reflecting a decline in performance compared to previous years [23]. This trend suggests that many students are not achieving the necessary proficiency in physics, which could have long-term implications for their further studies and careers in science and technology. Physics is a foundational subject critical to understanding and advancing in science and technology fields. However, secondary schools in Kigandalo Subcounty, Mayuge District, have reported consistently poor performance in physics, which is a cause for concern among educators, parents, and policymakers [24]. This underperformance not only affects students' overall academic achievement but also limits their opportunities to pursue further education and careers in Science, Technology, Engineering, and Mathematics (STEM) fields, which are essential for the socio-economic development of the region. It's upon this back ground that this research aims to explore the factors contributing to the poor performance in physics among ordinary secondary school students in Kigandalo Subcounty, Mayuge district. The purpose of this study is to comprehensively investigate the factors contributing to the poor performance in physics among secondary school students in Kigandalo Subcounty, Mayuge District. By identifying and analyzing these factors, the study aims to provide a detailed understanding of the challenges faced by students and educators in this subject area. The ultimate goal is to develop and propose effective strategies and recommendations to improve physics education, thereby enhancing students' academic outcomes and fostering a greater interest in Science, Technology, Engineering.

METHODOLOGY

Research Design

A descriptive technique was used as the research design in this study. The approach was selected because it helps researchers describe, examine, record, and analyze study variables as they are, making it both appropriate and the most applicable. It's also because, in relation to the research question variable as it exists, the factors influencing secondary school pupils' performance are more qualitative than quantitative.

Area of Study

The research is conducted in Kigandalo Subcounty, Mayuge District, Uganda. This area is selected due to its diverse range of "O" level schools, which provides a representative sample for examining the factors affecting physics performance especially at the ordinary level.

Study Population

This study focused on a carefully selected sample of individuals from the broader population within secondary schools in Kigandalo Subcounty. Specifically, the research involved a subset of students, physics teachers, laboratory technicians, and administrative staff. By concentrating on this selected group, the study aims to gain insights that are representative of the experiences and perspectives of these key stakeholders, while recognizing that the findings may not fully encompass the entire population of the sub county's secondary school community. The target population of the study is 215 respondents of which the sample size was selected through the Slovene's formula as shown in Equation (1)[25].

$$n = \frac{N}{1 + N(e)^2} \tag{1}$$

where n = simple size

n= population of the study

1= constant

e = level of significance

Making substitution en equation (3.1)

$$n = \frac{215}{1 + 215(0.05)^2}$$

$$n = \frac{215}{1 + 215(0.0025)}$$

$$n = \frac{215}{1 + 0.538} = \frac{215}{1.538} = 139.792 \approx 140$$

n= 140 respondents

Sample size =140 Respondents.

Sample Size

A sample is a subset of respondents selected from the population of interest [25]. In many circumstances, sampling is a more practical approach than examining the entire population. The goal of a sample is to achieve a result that is typical of the entire population being sampled without having to go to the trouble of questioning everyone, even though no sample can be guaranteed to be truly representative drawn. For this study a sample size of 140 respondents is targeted, comprising 100 students,5 lab technicians, 15 physics teachers, and 20 school administrators. This sample size is considered sufficient to provide a diverse and representative dataset for the study. The Participant schools were drawn from three schools; kigandalo secondary school, Kyoga senior secondary school, s.t peters college Nakazigo. The population included the ordinary level students to whom physics is a compulsory subject and advanced level students taking physics in their combinations.

Table 1. The target population

S/N	Population group	Population	Sample size
1	Administrators (head teachers, director of studies, etc.)	20	20
2	physics teachers	15	15
3	lab attendants/ technicians	5	5
4	Physics students	175	100
	Total	215	140

Source: present study (2024)

Sampling Techniques

Purposive sampling

In this study, purposive sampling was used. With purposeful sampling, study participants who are thought to have a reliable grasp of the study variables are specifically chosen because of their close connection to and involvement with the subject being studied [26]. Head teachers and other administrators at the schools were be purposefully chosen with the aid of a purposive sample technique. Because they are directly connected to and affiliated with the academic procedures used at their institutions, it is expected that the sampled number of persons had knowledge of the variables of the research issue.

Simple random sampling

The study used a straightforward random sample method, where every respondent in the chosen category of respondents has an equal probability of being chosen to participate in the study under simple random sampling [27]. To choose which students to participate in the study, a basic random sampling technique was used. The respondents in this process was chosen at randomly and categorized based on their availability and willingness to participate in the research.

Data Collection instruments

Questionnaire Method

One major research method for the study involved use of questionnaires. This study used both open-ended and closed-ended questionnaires to collect data. A questionnaire is a series of well-considered research questions that are determined following a thorough evaluation [27] In order to support the achievement of the research objectives, the questionnaire tried to elicit particular responses from study participants. In order to allow respondents to provide thorough answers for a thorough analysis, the surveys included both closed- and open-ended questions. The organization of these was determined by the research objectives, which are outlined in the first chapter of this study. Questionnaires, mostly aimed at physics teachers and students.

Interview Method

In-person interviews between the researcher and study participants was also be used in this investigation. According to Dicicco-Bloom, & Crabtree [28], formal interview guides at delicate and complicated topics. In order to allow the interviewee to express opinions, clarifications also were made, as noted by Dicicco-Bloom, B., & Crabtree [28]. Managers are supposed to go through this type of data collecting process, and this helped to obtain firsthand information from the respondents who are to be chosen to supply the necessary data through one-on-one interview sessions.

Data processing and Analysis

Microsoft Excel was utilized to analyze the data and provide the results in the form of frequency distribution tables. The most popular format for presenting data that has was examined were tables. It is well recognized that tables are a helpful tool for presenting a lot of comprehensive information in a condensed space. In this instance, answer data was summarized using frequency distribution tables.

Data Quality Control

Validity of the instruments

The degree to which a test captures the intended meaning of validity is referred to as validity. Content validity was addressed by making sure that the items or questions in the questionnaire and interview guides are consistent with the study's conception. The research examined the validity and reliability of the questionnaire and interview guide. In its most basic form, this relates to how well a scientific experiment or study truly measures what it purports to measure or how well it reflects the reality it holds to represent. In order to ascertain whether or not the instrument was valid, the Content Validity Index was computed.

$$\text{CVI} = \frac{\text{Total number of items rated by all respondents}}{\text{Total number of items in the questionnaire}} \quad (2)$$

where CVI = Content Validity Index

Reliability of the instruments

The extent to which a research tool produces consistent results is measured by its reliability [29]. It is a sign of how well, consistently, and suitably the instrument assesses concepts. The researcher conducted a pre-test of the instruments with 10 respondents to help uncover and identify the inconsistencies to be corrected. This was done in order to demonstrate truthfulness and honesty [29]. The Cronbach Alpha coefficient was computed until at least the minimum reliability index of 0.7 is got which is always required [30]. The Cronbach Alpha coefficient was computed using Equation (3.3).

$$\alpha = (K / K - 1)1 - \sum \sigma^2 i / \sigma^2 t \quad (3)$$

where; K = Number of questions in the questionnaire, $\sigma^2 i$ = Standard deviation squared (Variance) for each individual item, $\sigma^2 t$ = Variance for the total items in the questionnaire

The instruments for this study were tested so that they can give reliable to give a realistic statistic.

Ethical Considerations

The request for approval to conduct the study shall be accompanied by a letter of authorization from Kampala International University. The questionnaires, which were sent directly to study participants in their different locations, were collected one month after they are completed and returned, together with a covering letter outlining the goal of the research. Decisions about whether or not to utilize the data was made after it has been updated. The study is only for academic purposes, and the responders were reassured that the confidentiality and anonymity of the provided information are of utmost importance.

RESULTS

Table 2. Return rate of questionnaires

S/N	Respondents category	Sampled size	Number of questionnaires returned	Return percentage (%)
1	Physics teachers	15	15	100
2	Head teachers	3	3	100
3	Other administrators	17	17	100
4	Lab technicians	5	5	100
5	students	100	100	100
	TOTAL	140	140	100

Source: field data 2024

The table 2 above shows that all the questionnaires were returned by both the students and teachers in this study. This shows that data was collected from all the intended sample of students and teachers therefore was a good representation as proposed.

Table 3 Age of Respondents

Age group	Frequency
15-20	40
20-25	60
25-30	30
30-35	5
35-40	4
40-45	1
Total	140

Source: present study 2024

The table 3 shows the distribution of 140 individuals across various age groups. The majority (100) are aged 15-25, with 40 in the 15-20 range and 60 in the 20-25 range. The number decreases as age increases, with 30 people aged 25-30, 5 aged 30-35, 4 aged 35-40, and only 1 individual in the 40-45 group. The data highlights a younger demographic, with fewer individuals in older age groups.

Table 4 Teachers working experience

Working experience(in years)	Frequency	Percentage (%)
1-5	10	25
6-10	20	50
11-15	6	15
16-20	4	10
Above 20	0	0.0

Source: present study 2024

The above Table 4. shows that majority (50%) of the teachers that participated in this study had a working experience of 6-10 years while 25% of the teachers had a working experience of 1-5years, those who had a working experience of 11-15 years were 15%, 10% of the teachers had an experience of 16-20years and none of them had a working experience greater than 20 years.

Table 5. Class of student respondents

S/N	Class	Frequency	Percentage (%)
1	Senior two(S.2)	25	25
2	Senior three(S.3)	30	30
3	Senior four (s.4)	40	40
4	Senior five(S.5)	5	5
	Total	100	100

Source: present study

Table 5 shows the distribution of students across different classes. The highest percentage of students (40%) are in Senior Four (S.4). Senior Three (S.3) follows with 30%, while Senior Two (S.2) has 25% of the students. Senior Five (S.5) has the fewest students, making up 5% of the total.

Table 6. Level of qualification of physics teacher

S/N	Level of qualification	Frequency	Percentage (%)
1	Master's Degree	0	0
2	Bachelor's Degree	6	40
3	Diploma	4	27
4	Certificate	1	7
5	S.4 and s.6 leavers	4	27

Source: Present study 2024

The table 6 above shows that majority of the physics teachers in kigandalo subcounty (40%) are bachelor's degree holders, those of a diploma are equal to the senior six and senior four leavers and are 27% of the physics teachers. 7% had a certificate and none of them held a masters' degree.

Quantitative analysis

Impact of School facilities/ infrastructure on performance

In this subsection, an investigation on how school facilities impact students' performance in physics was carried out and respondents were required to give their opinion as follows; To what extent does poor school facilities/ infrastructure cause poor performance in physics?

A. To a large extent, B. To a less extent, and C. Does not in any way affect performance?

Table 7. Extent to which school facilities/ infrastructure cause poor performance in physics

S/N	Category of respondents	Frequency	Response		
			A	B	C
1	Physics teachers	15	10	5	0
2	Head teachers	3	3	0	0
3	Other administrators	17	15	2	0
4	Lab technicians	5	4	1	0
5	Students	100	80	15	5
	TOTAL	140	112(80%)	23(16%)	5(4%)

Source; Present study 2024

From the above data, majority of the respondents (80%) stated that school facilities greatly influence the students' performance in physics, 16% suggested that school facilities do affect students' performance in physics but to a less extent while only 4% believe that school facilities has no effect on the students' academic performance in physics.

Teachers' level of qualification and students' performance

Head teachers, physics teachers, administrators, lab technicians were required to present their view on how the level of qualification of the physics teachers affects students' performance in physics. Students in this case were excluded as they are believed to have limited information on teachers' level of qualification. In this survey teaches were to respond to different questions on the scale of whether they strongly agree (SA), Agree (A), Disagree (D) or strongly Disagree(SD). Their responses are as shown in the table 7 below.

Table 8. Teachers' level of qualification and students' performance

S/N	Category of respondents	Response			
		SA	**A**	**D**	**SD**
1	Head teachers	3	0	0	0
2	Physics teachers	13	2	0	0
3	Other administrators	14	2	1	0
4	Lab technicians	4	1	0	0
	Total	34(85)	5(13%)	1(3%)	0(0%)

Source: field data 2024

From the results obtained in table 8 above, majority of the respondents that is 85% strongly agreed that the teachers' level of qualification affects students' performance in physics, 13% of the respondents agreed and only 3% of the respondents disagreed. In order to investigate the disparity between the highly qualified and the low qualified teacher that may improve or deteriorate students' academic performance, the staff and senior five physics students were to answer the questions concerning the three presumed factors. They were to respond in the same way as in the table 8 above, whether they strongly agree (SA), Agree (A), Disagree (D) or strongly disagree(SD), the following results were obtained.

Table 9. Efficiency of high qualified teachers over low qualified teachers.

Point of argument	Response			
	SA	A	D	SD
High-qualified teachers have a strong understanding of physics concepts, principles, and theories which allows them to explain complex ideas clearly and accurately, making it easier for students to grasp challenging material than low qualified teachers.	**20 (44%)**	**15(33%)**	**8(18%)**	**2(4%)**
High-qualified teachers can quickly identify students' misconceptions and learning gaps therefore they can diagnose why a student is struggling with a particular concept and provide targeted interventions to address these issues as compared to low qualified teachers	**25(56%)**	**10(22%)**	**8 (18%)**	**2 (4%)**
High-qualified teachers often bring enthusiasm and passion for the subject, which can be contagious. Their excitement about physics can inspire and motivate students to develop a genuine interest in the subject than low qualified teachers	**20 (44%)**	**12 (27%)**	**8(18%)**	**5 (11%)**

Source: present study 2024

From the Table 9 results above, it is clearly shown that majority of the respondents (44%) strongly agree that High-qualified teachers have a strong understanding of physics concepts, principles, and theories which allows them to explain complex ideas clearly and accurately, making it easier for students to grasp challenging material than low qualified teachers. 33% agree, 18% disagree and only 4% strongly disagree. The results also show that most of the respondents (56%) strongly support the view that high-qualified teachers can quickly identify students' misconceptions and learning gaps therefore they can diagnose why a student is struggling with a particular concept and provide targeted interventions to address these issues as compared to low qualified teachers, 22% agreed, 18% disagreed and the minority (4%) disagreed. It's still shown from the results that most of the respondents partially agree that High-qualified teachers often bring enthusiasm and passion for the subject, which can be contagious. Their excitement about physics can inspire and motivate students to develop a genuine interest in the subject than low qualified teachers, and only 29% are not in agreement with the view.

Impact of students' attitude on their performance in physics

To investigate the impact of students' attitudes on their performance, I first of all had to determine the students perception of physics in which I designed an item that required the students to rate the degree/extent to which physics, is in terms of difficulty, in this, students were to state whether physics was very difficult (VD), Difficult (D), Simple (S), or Very simple (VS). The results are as shown in the table 10 below.

Table 10. Students' perception of physics

S/N	Response	Frequency	Percentage (%)
1	very difficult (VD),	45	45
2	Difficult (D)	35	35
3	Simple (S),	15	15
4	Very simple (VS).	5	5
	Total	100	100

Source; Present study 2024

The results from the table 10 already indicate that students take physics to be a very difficult subject as majority of the students (45%) suggested, and 30% showed that it's a difficulty subject, while 15% and 5% suggested that physics was simple and very simple respectively. To investigate the general view on the impact of students' attitudes on their performance in physics, there was an item for both the teachers and students to express their view. This was designed in a way that respondents were to suggest whether they strongly Agree (SA), Agree(A), Disagree(D) or strongly disagree(SD) that negative student's attitudes lead to their poor performance in physics and the following results were obtained.

Table 11. Impact of students' attitude on their performance in physics

S/N	**Category of respondents**	**Frequency**	**Response**			
			SA	A	D	SD
1	Physics teachers	15	10	5	0	0
2	Head teachers	3	2	1	0	0
3	Other administrators	17	14	2	1	0
4	Lab technicians	5	4	1	0	0
5	Students	100	85	10	3	2
	TOTAL	140	115(82%)	19(14%)	4(3%)	2(1%)

Source; Present study 2024

The results from the table 4.10 show that majority (82%) of the respondents strongly agree that student's attitudes towards the subject are paramount in their academic performance, 14% also agree that student's attitudes affect their performance in physics. While as 3% and 2% of the respondents disagree and strongly disagree respectively.

DISCUSSION

The return rate of 100% for all categories of respondents (physics teachers, head teachers, other administrators, lab technicians, and students) is highly commendable. This exceptional response rate provides confidence that the data collected accurately represents the target population, ensuring that the study's findings are reliable and valid. The full participation of all sampled respondents reflects a strong engagement with the study and suggests that the issues explored are relevant and of significant interest to the participants. The majority of respondents (80%) indicated that poor school facilities and infrastructure significantly contribute to poor performance in physics. This underscores the necessity for adequate laboratories, classrooms, and learning materials. The disparity in responses among different stakeholders highlights the urgency of addressing these infrastructural deficiencies to enhance educational outcomes. The data shows that a significant proportion of respondents (85%) strongly agree that the level of qualification of physics teachers affects students' performance. High-qualified teachers are better equipped to explain complex concepts, identify learning gaps, and inspire students. The presence of qualified teachers correlates positively with improved student understanding and performance in physics. Students' attitudes towards physics are a critical factor affecting their performance. The majority of students perceive physics as very difficult (45%), which can lead to a lack of motivation and poor performance. The data indicates that 82% of respondents strongly agree that negative student attitudes significantly contribute to poor performance in physics. This highlights the need for strategies to change students' perceptions and attitudes towards the subject.

CONCLUSION

Based on the data analysis and discussion, the primary causes of poor performance in physics in Kigandalo Sub County, Mayuge District, include: Inadequate School Facilities and Infrastructure**:** Poorly equipped laboratories and classrooms hinder effective teaching and learning of physics. Teachers' Qualifications: The qualifications of physics teachers significantly impact students' understanding and performance. Schools with more qualified teachers tend to perform better. Students' Attitudes: Negative perceptions and attitudes towards physics among students contribute to their poor performance.

RECOMMENDATIONS

To address the identified causes of poor performance in physics, the following recommendations are proposed:

Improvement of School Facilities and Infrastructure

Schools should prioritize the establishment of well-equipped physics laboratories to facilitate practical learning. Physics is a subject that heavily relies on experimentation and practical demonstrations to help students understand complex concepts. A well-equipped laboratory allows students to engage directly with the material, enhancing their comprehension through hands-on experience. A well-equipped laboratory should be conducive to learning, with adequate lighting, ventilation, and seating arrangements. The classroom should be organized in a way that supports interaction and engagement. Seating should be comfortable and arranged to allow all students to see the teacher and the board easily. Flexible seating arrangements can also support group work and collaborative learning. Ensure the availability of updated textbooks, teaching aids, and other relevant learning materials. In addition to textbooks, students benefit from access to a variety of learning materials, including workbooks, online resources, and reference books. These materials provide additional exercises, explanations, and perspectives that reinforce classroom learning.

Enhancing Teacher Qualifications

Continuous professional development programs should be instituted to upgrade the skills and knowledge of physics teachers. Continuous professional development (CPD) programs are essential for physics teachers to stay updated with advances in the field, enhance their teaching methodologies, and improve practical skills. These programs help teachers integrate new technologies, differentiate instruction to meet diverse student needs, and stay aligned with curriculum changes. CPD fosters a culture of lifelong learning, encouraging collaboration among educators and ultimately leading to improved student outcomes in physics. By continually upgrading their knowledge and skills, teachers can provide high-quality education that engages students and prepares them for future challenges. Encourage and support teachers to pursue higher qualifications in physics education. Encouraging and supporting teachers to pursue higher qualifications in physics education enhances their expertise, deepens their understanding of complex concepts, and equips them with advanced pedagogical skills. This professional growth not only boosts their confidence and effectiveness in the classroom but also contributes to better student outcomes. By pursuing higher qualifications, teachers can stay current with educational trends, research, and innovations, ultimately enriching the learning experience for their students.

Changing Students' Attitudes

Implement motivational programs and activities that highlight the relevance and excitement of physics in everyday life, promote peer learning and mentoring programs where students who excel in physics can help their peers and Adopt innovative and engaging teaching methods to make physics more interesting and accessible to students.

Future Research

Further research should be conducted to explore the impact of other factors such as socio-economic background, parental involvement, and the role of extracurricular activities in students' performance in physics. A longitudinal study could provide deeper insights into the long-term effects of the recommended interventions. Further studies can explore the effectiveness of integrating technology and digital resources into physics teaching, assessing how tools like Virtual labs, videos, and interactive apps might enhance student physics understanding and engagement. Further research can also Investigated on whether gender plays a role in physics performance, identifying potential socio-cultural factors or biases that might contribute to differences in achievement between male and female students.

REFERENCES

1. Faresta, R.A., Nicholas, T.Z.S.B., Chi, Y., Sinambela, I.A.N., Mopoliu, A.Z.: Utilization of Technology in Physics Education: A Literature Review and Implications for the Future Physics Learning. Lensa: Jurnal Kependidikan Fisika. 12, 1–27 (2024). https://doi.org/10.33394/j-lkf.v12i1.11676
2. Pols, C.F.J., Dekkers, P.J.J.M., de Vries, M.J.: What do they know? Investigating students' ability to analyse experimental data in secondary physics education. International Journal of Science Education. 43, 274–297 (2021). https://doi.org/10.1080/09500693.2020.1865588
3. Bernardo, A.B.I., Cordel, M.O., Calleja, M.O., Teves, J.M.M., Yap, S.A., Chua, U.C.: Profiling low-proficiency science students in the

Philippines using machine learning. Humanit Soc Sci Commun. 10, 192 (2023). https://doi.org/10.1057/s41599-023-01705-y
4. Education Policy in Japan, https://www.oecd.org/en/publications/education-policy-in-japan_9789264302402-en.html
5. Assem, H.D., Nartey, L., Appiah, E., Aidoo, J.K.: A Review of Students' Academic Performance in Physics: Attitude, Instructional Methods, Misconceptions and Teachers Qualification. European Journal of Education and Pedagogy. 4, 84–92 (2023). https://doi.org/10.24018/ejedu.2023.4.1.551
6. Lodge, J.M., Kennedy, G., Lockyer, L., Arguel, A., Pachman, M.: Understanding Difficulties and Resulting Confusion in Learning: An Integrative Review. Front. Educ. 3, (2018). https://doi.org/10.3389/feduc.2018.00049
7. Mansour, N.: Exploring the Impact of Social, Cultural, and Science Factors on Students' STEM Career Preferences. Res Sci Educ. (2024). https://doi.org/10.1007/s11165-024-10210-4
8. Ikkatai, Y., Inoue, A., Minamizaki, A., Kano, K., McKay, E., Yokoyama, H.M.: Masculinity in the public image of physics and mathematics: a new model comparing Japan and England. Public Underst Sci. 30, 810–826 (2021). https://doi.org/10.1177/09636625211002375
9. Downing, V.R., Cooper, K.M., Cala, J.M., Gin, L.E., Brownell, S.E.: Fear of Negative Evaluation and Student Anxiety in Community College Active-Learning Science Courses. CBE Life Sci Educ. 19, ar20 (2020). https://doi.org/10.1187/cbe.19-09-0186
10. Education, Science & Technology | African Union, https://au.int/en/education-science-technology
11. College, T.& P.I.S.C. at B.: TIMSS 2019 International Results in Mathematics and Science, https://timssandpirls.bc.edu/timss2019/index.html
12. Trends in International Mathematics and Science Study (TIMSS) - Methodology and TechnicalNotes, https://nces.ed.gov/timss/technotes.asp
13. Strietholt, R., Baghaei, P., Liaw, Y.-L., Meinck, S., Strello, A.: Operationalization and Methodology in TIMSS. In: Isac, M.M., Sandoval-Hernández, A., and Sass, W. (eds.) Knowledge and Willingness to Act Pro-Environmentally: Perspectives from IEA TIMSS 2019 and ICCS 2016 Data. pp. 21–29. Springer Nature Switzerland, Cham (2025)
14. Sibomana, A., Nicol, C.B., Nzabalirwa, W., Nsanganwimana, F., Karegeya, C., Sentongo, J.: Factors Affecting the Achievement of Twelve-Year Basic Students in Mathematics and Science in Rwanda. IJLTER. 20, 61–84 (2021). https://doi.org/10.26803/ijlter.20.7.4
15. Assem, H.D., Nartey, L., Appiah, E., Aidoo, J.K.: A Review of Students' Academic Performance in Physics: Attitude, Instructional Methods, Misconceptions and Teachers Qualification. EJEDU. 4, 84–92 (2023). https://doi.org/10.24018/ejedu.2023.4.1.551
16. A.h, K., A.a, O., A.a, F.: Factors and Effect of Poor Background on the Students Academic Performance in Physics at Senior Secondary School in Birnin Kebbi Metropolis. Journal of Engineering and Technology. (2020)
17. Bjornlund, V., Bjornlund, H., Van Rooyen, A.F.: Exploring the factors causing the poor performance of most irrigation schemes in post-independence sub-Saharan Africa. International Journal of Water Resources Development. 36, S54–S101 (2020). https://doi.org/10.1080/07900627.2020.1808448
18. Myombe, G.L., Mushi, P.S.D.: The Correlation between Continuous Assessment Scores and National form four Examination Results in Tanzania: A Case Study of Morogoro Municipality. East African Journal of Education Studies. 5, 455–465 (2022). https://doi.org/10.37284/eajes.5.2.843
19. Uwizeyimana, D., Yadav, L., Musengimana, T., Uwamahoro, J.: The impact of teaching approaches on effective physics learning: an investigation conducted in five Secondary Schools in Rusizi District, Rwanda. Presented at the July 25 (2018)
20. Niyibizi, O., Uwitatse, M.C., Mutarutinya, V.: Teachers' Perceptions of Continuous Professional Development in Innovative Mathematics and Science Teaching. J. of Instr. Math. 5, 95–107 (2024). https://doi.org/10.37640/jim.v5i2.2152
21. Human Rights Watch Submission to the Universal Periodic Review of Burundi | Human Rights Watch, https://www.hrw.org/news/2017/07/20/human-rights-watch-submission-universal-periodic-review-burundi, (2017)
22. Alemu, M.: Improving Secondary School Students Physics Achievement Using Reciprocal Peer Tutoring: A Multi-level Quasi-Experimental Study. EURASIA J MATH SCI

T. 16, (2020). https://doi.org/10.29333/ejmste/115164
23. Nicholus, G., Muwonge, C.M., Joseph, N.: The Role of Problem-Based Learning Approach in Teaching and Learning Physics: A Systematic Literature Review. F1000Res. 12, 951 (2023). https://doi.org/10.12688/f1000research.136339.2
24. Taangahar, B., Fatoki, J.O., Joshua, J.D.: Students' Academic Performance in Physics as a Correlate of Their Academic Performance in Mathematics in Makurdi Local Government Area, Benue State, https://papers.ssrn.com/abstract=3973091, (2021)
25. Adam, A.M.: Sample Size Determination in Survey Research. Journal of Scientific Research and Reports. 90–97 (2020). https://doi.org/10.9734/jsrr/2020/v26i530263
26. Suri, H.: Purposeful Sampling in Qualitative Research Synthesis. Qualitative Research Journal. 11, 63–75 (2011). https://doi.org/10.3316/QRJ1102063
27. DiCicco-Bloom, B., Crabtree, B.F.: The qualitative research interview. Medical Education. 40, 314–321 (2006). https://doi.org/10.1111/j.1365-2929.2006.02418.x
28. Dicicco-Bloom, B., Crabtree, B.F.: The qualitative research interview. Med Educ. 40, 314–321 (2006). https://doi.org/10.1111/j.1365-2929.2006.02418.x
29. Sürücü, L., Maslakçi, A.: VALIDITY AND RELIABILITY IN QUANTITATIVE RESEARCH. bmij. 8, 2694–2726 (2020). https://doi.org/10.15295/bmij.v8i3.1540
30. Tavakol, M., Dennick, R.: Making sense of Cronbach's alpha. Int J Med Educ. 2, 53–55 (2011). https://doi.org/10.5116/ijme.4dfb.8dfd

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