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The Influence of Instructional Resources on Physics Students' Performance in Bui Division, North West Region of Cameroon

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Abstract
This study investigated the influence of instructional resources on physics students' performance in Bui Division in the North West Region of Cameroon. The descriptive survey design was used for the study. The target population comprised of 25 physics teachers and 180 secondary school students in Bui Division. The purposive sampling technique was used to obtain a sample of 12 physics teachers and 124 students who participated in the study. Data were collected using questionnaires for teachers and students. The face validity of the instruments was done by expert and the reliability was established by a test-retest process of two weeks apart. The reliability coefficients of α=0.696 and α=0.929 respectively were calculated for both teachers and students questionnaires using Cronbach alpha formula. The data obtained were analyzed using descriptive statistical tools like frequency counts, percentages, mean scores and standard deviations. The findings revealed that instructional resources (physics teachers' characteristics, textbooks, laboratory equipment and ICTs) influence students' performance to a large extent. The study recommended that Regular and sufficient supply of instructional resources (physical, human and digital) should be embarked on by the governments, Parent-Teachers Associations (PTAs) and other stakeholders at all levels of schooling.

Keywords: Instructional Resources, Physics Students' Performance, Secondary Schools, Bui Division

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INTRODUCTION

By the middle of the nineteenth century the bulk of physics instruction in many countries was based on the textbook and lecture method, commonly referred to as the "jug and the beaker method". The teachers poured out the content of their jugs of the textbooks onto the blackboard so that the students may fill the beaker of their minds [1]. At the second cycle of secondary schools, the mathematical complexity of physics was seen to be a major contributing factor that appeared to inhibit students from studying physics. There was also a widening gap between the abstract, mathematical and formal world of which the physics student has personal experience. Mathematical and spatial abilities are positive traits in studying science. The link between mathematics and physics is very strong. In fact, there are some topics in physics that appear exactly the same as they are in mathematics such as linear motion, trigonometry and vectors. Students who score high in mathematics are likely to enrol and perform better in physics than those who do not perform well [4]. The most distinctive feature of modern physics is its use of mathematics, experiments, and the combined use of the two features.

The business of mathematics in physics has to do with construction of subsequent analysis of concepts that are applicable to any practical or theoretical situation. Spatial visualization ability is the capability to mentally manipulate three dimensional figures. The theoretical aspect of mathematics calls for spatial visualization ability which is a significant contributing factor to science achievement. Spatial visualization ability tends to be higher among young adults than the older adults. Generally, boys have higher spatial visualization ability than girls according to standard achievement tests [2]. Embeywa [6] argued that since mathematical formulae are expressions of formal relations among constructs, by appealing to a set formula, the physicist is able to undertake both extensive and intensive investigation of various logical relations among constructs without the burden of always looking at individual events from which the constructs were abstracted. The use of mathematical formulae constitutes a saving of mental energy. It provides for an economical use of mental effort. Physics students tend to treat mathematical relations as symmetrical entities by distinguishing dependent from independent variables.

Physics, like mathematics should be taught with all efforts being made to ensure that mathematical expressions introduced by physics teachers are not ambiguous and should provide a direct relation with the physical world and direct environment of the learner. Galileo (n.d) noted that mathematics is the language in

which nature expresses its laws. Most experimental results in physics are numerical measurements. Theories in physics use mathematics to give numerical values to match these measurements. Physics therefore relies largely on mathematics to provide the logical framework in which physical laws may be precisely formulated and predictions quantified. The above literature supports the popular adage that mathematics is the 'queen' and 'servant' of all the sciences.

In Cameroon, the way some teachers teach physics makes the subject appear as if it is meant for a few privilege students. Some teachers go to the extent of telling students that they are not good enough to succeed in physics and again mystify the teaching of physics. The government structures like the Regional pedagogic offices and the South West Association of Physics Teachers (SWAPT) are making considerable efforts to demystify the teaching and learning of physics through seminars, workshops, and conferences. These efforts are not yet yielding the required fruits [7]. Literature also shows that in Cameroon, the challenges science teaching face center on the shortage of teaching staff and basic commodities. The shortage of competent and qualified teachers has led to the employment of unqualified persons, a situation which prevails more in the private sector. Also, majority of the schools lack functional laboratories due to the lack of equipment. In some cases where there is equipment, they are left unused due to the incompetency of the teacher or get bad because of poor storage and unstable supply of electricity. In some schools, the shortage of furniture makes sitting and notes taking awkward and arduous. The daily struggles in schools such as sharing of physics textbooks or some laboratory equipment amongst students might lead to difficult classroom management and discipline issues [7].

Statement of the Problem

Physics is basic for understanding the complexities of modern technology, and essential for technological advancement of a nation. This aspect of science is making significant contribution to many of the inventions that are shaping the contemporary society, and has helped to explain many of the events being encountered in everyday life. Despite its importance, physics remains the least favoured science subject among students generally in Cameroon. Compared to other science subjects, only a few students choose to study physics at the Ordinary Level (O/L) and subsequently at higher levels. In Universities for example, physics departments, teacher education programs, and electrical engineering programs, physics continue to witness paucity of students, which is the reason for serious shortage of physics teachers in secondary schools. More often than not, physics is taught by teachers who specialized in sciences other than physics.

The performance of students in Cameroon secondary school physics is generally poor. Poor achievement in physics could be attributed to many factors ranging from the attitude of students towards the subject, methods of teaching the subject, lack of motivation on the part of the teachers, lack of basic sciences background at the primary school level, and the lack or shortage of physical, human and digital instructional resources. In Cameroon, physical science especially physics which is resource intensive, it is very difficult to find instructional resources for the teaching of physics in schools adequately and the inequitable distribution of instructional resources (Physics 580, subject report, 2014). A professionally qualified science teacher would be unable to put his ideas into practice if the school lacks the instructional resources for him to translate his competence into reality. The problem of this study therefore is: To what extent do instructional resources affects students' performance in physics in secondary schools, in Bui Division of the North West Region of Cameroon?

Specific Research Questions

1. To what extent do the use of textbooks affects students' performance in physics in secondary schools in Bui Division?
2. To what extent do physics teachers' characteristics affect students' performance in physics in secondary schools in Bui Division?
3. To what extent does the use of laboratory equipment affect students' performance in physics in secondary schools in Bui Division?
4. To what extent does the use of ICTs affect students' performance in physics in secondary schools in Bui Division?

Scope of the Study

This research was carried out on 12 selected secondary schools in Bui Division of the North West Region of Cameroon. This study delimits itself to the use of textbooks, teachers' characteristics, use of ICTs, and the use of laboratory equipment. A total of twelve (12) physics teachers and one hundred and twenty-four (124) form five students responded to the questionnaires.

Research Design

This study adopted a survey design. A survey research design is an appropriate way of evaluating educational programmes as educational activities operate in a social context. A survey design is a fact finding study which involves collecting data directly from a population thereof at a particular time. This design is ideal for this study because the study was conducted in a setting that required direct responses while investigating existing phenomena without manipulating the variables. The design also allows the participants to describe and

provide their opinions regarding the variables being studied in detail.

Area of the Study

This study was carried out in Bui Division. The division derived its name from River Bui which runs through the division. Bui Division is located in the North West Region of Cameroon. It is bounded to the North by Donga and Matung Division, to the North East by Adamawa Region, to the East by the Western Region, to the South by Ngoketungia Division and to the West by Boyo Division. There are six sub-divisions, each of which provides government services to the population. These sub-divisions are namely Kumbo central, Jakiri, Mbven, Kum, Noni and Oku. Most of Bui Division is undulating landscape, with Kilum Mountain as the highest point, located in Oku Sub-Division. Its vegetation is mostly grass with pockets of forest dotted here and there. Prominent amongst these is the Kilum mountain forest, which is a protected area with its peculiar biodiversity. There are touristic sites likes the lakes and palaces.

Bui Division is made up of three tribes, namely Oku, Noni and Nso. The people of Bui Division have diverse cultural heritage. They are so attached to their diverse cultures as seen in their practices. Besides modern religion of Christianity and Islam, they also attach great importance to ancestral religion. The major occupation of the people is mainly agriculture. They produce crops in large quantities like maize, beans and tubers like Irish potatoes and cassava just to name these. They also practice bee keeping, producing honey like certified *white honey* in Oku. They also practise animal husbandry, the main actors being the Fulani race. The keeping of small ruminants is practiced mostly in rural areas where feeding and grazing facilities are relatively cheaper. The division has a good number of both primary and secondary schools. Most of the students enrol in arts subjects. There are two main higher institutes of learning like the biomedical institute of the Dioceses of Kumbo and the veterinary school in Jakiri. There are two outstanding hospitals; The Banso Baptist Hospital (BBH) and Shisong General Hospital. There are no industries except the Tadu Diary processing unit.

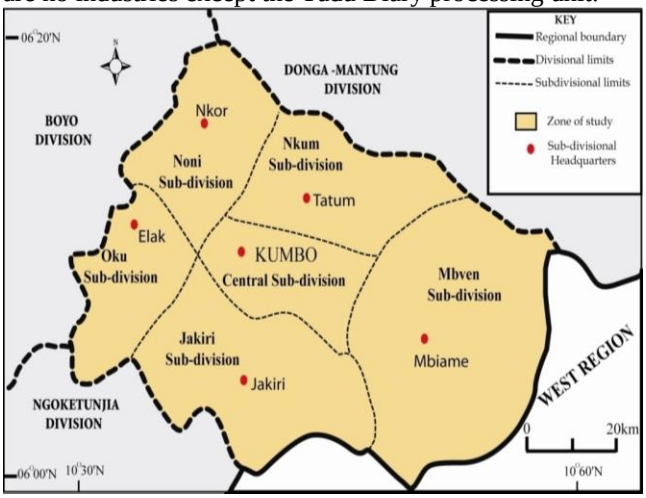

Figure 1: Map of Bui Division.
Source [3].

Population of the Study

The target population of this study comprised 25 physics teachers and 180 students in Bui Division. The physics teachers are the implementers of curriculum in their specific schools and are able to supply accurate information with regard to influence of instructional resources in their schools. They directly utilize the other available instructional resources and are therefore in the best position to provide reliable information on instructional resources availability, utilization and adequacy. Meanwhile the students are those who face the various challenges in visualising concepts and may supply the information required to improve performance from their own perspectives.

Sample and Sampling Techniques

The sample size was made up of 12 physics teachers and 124 Form Five students of 12 public secondary schools in Bui Division. Purposive sampling was used in selecting the physics teachers and the form for this study. This is because the respondents have the required experience to supply the information required.

Table 1: Form Five Students Population Distribution in Selected Schools

S/N	Institution	Teachers		Students	
		Target	Sample	Target	Sample
1	GBHS Jakiri	3	1	17	11
2	GBHS Kikaikom	2	1	22	15
3	GBHS Kumbo	5	1	26	21
4	GBHS Tatum	3	1	15	08
5	GHS Kikaikelaki	1	1	06	03
6	GHS Kitiwum	1	1	11	07
7	GHS Kiyan	1	1	16	12
8	GHS Mah	1	1	12	09
9	GHS Melim	2	1	12	09
10	GHS Nkar	3	1	17	11
11	GHS Shisong	1	1	14	09
12	GHS Wainama	2	1	12	09
Total		**25**	**12**	**180**	**124**

Source [7].

Research Instruments

Questionnaires were generated with close ended items for both physics teachers and students. The questionnaires took the Likert scale type. Each questionnaire included section A for basic demographic data on gender, length of service, qualification; section B for human resources and performance; section C for textbooks and performance; section D for laboratory equipment and performance; and section E for ICTs and performance.

Validity and Reliability of the Instrument

To ensure validity, expert judgment was sought. The advices given were used to improve the instruments. The instruments were pilot-tested to four (04) physics teachers in GHS Sop and GBHS Kimbo and their respective form five students. This was conducted prior to the actual research process. These teachers and students have similar characteristics with the target population of the study. The respondents for pilot testing were not included in the study. The test retest process was done in two weeks apart. The reliability coefficients were calculated for both teachers and students using Cronbach's alpha. The instruments were considered reliable for both the teachers and students with reliability coefficients of 0.696 and 0.929 respectively.

Data collection Procedure

The researchers visited the sampled schools and introduced themselves to the principals to seek consent to carry out research in their schools. The questionnaires were then delivered to the respondents in their respective schools. The school authorities assisted the researchers in this task. For accuracy and consistency, the respondents completed the questionnaires on-the-spot giving a return rate of 100%.

Data Analyses Techniques

Descriptive statistics were used to analyze the data and the statistical tools employed were frequency counts, percentages, mean scores and standard deviations. The results were presented in tables.

Ethical Consideration

The respondents were not required to fill in their names and they were assured that information accessed and secured in the course of this study would be protected from unauthorized persons and that information obtained would be used for the sole purpose of the study. None of the respondents was forced or coerced to give information. Prior arrangements were done through the administration of the schools involved in the study in order not to adversely interfere with the school programs.

Data Presentation and Findings

Decision level: Mean, $\bar{x}$

$$= \frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

Respondents accepted or agreed with the opinion expressed in the item if the mean score is 2.5 and above. Otherwise, they rejected or disagreed.

Research Question 1: To what extent do physics teachers affect students' performance in physics in secondary schools?

Table 2: Students' Perception of Teachers' Influence on their Performance in Physics

S/N	Statement	$\bar{x}$	s	Dec.
1	Our physics teacher organizes us in discussion groups.	3.79	.45	A
2	Our physics teacher has enough time out of class to assist us in learning difficulties.	3.84	.47	A
3	We present some of our physics assignments in class for discussion.	3.79	.45	A
4	Our physics teacher covers the syllabus in time have enough time for revision.	3.78	.47	A
5	Our physics teacher asks us a series of questions leading us to understand a body of knowledge.	3.27	.50	A
6	Our physics teacher makes sure that we understand the necessary mathematics in physics.	3.37	.52	A
	AVERAGE	**3.64**	**.48**	**A**

$\bar{x}$ = mean s = standard deviation Dec. = Decission

A majority of students accepted that their physics teachers organize them in discussion groups, have enough time out of class to assist them in learning difficulties, present some of their physics assignments in class for discussion, cover the syllabus in time, have enough time for revision, ask them a series of questions leading them to understand a body of knowledge and make sure that they understand the necessary mathematical applications in physics. Based on the results obtained from table 2 students are of the opinion that physics teachers affect students' performance to a very great extent ($\bar{x}$ = 3.64 ± 0.48).

Table 3: Teachers' Perception of their Influence on Students' Performance in Physics

S/N	Statement	$\bar{x}$	s	Dec.
1	Students perform better when organized in discussion groups	3.42	.51	A
2	Students perform better when they carry out research and present their findings in class	2.83	.39	A
3	Students perform better when they investigate assigned projects and come out with possible solutions	3.00	.74	A
4	Students perform better when teachers have enough time out of class to assist them with learning difficulties	3.08	.79	A
5	Students perform better when taught regularly	3.92	.29	A
6	Students perform well when the syllabus is covered and have enough time for revision	3.25	.45	A
	AVERAGE	3.25	.53	A

$\bar{x}$ = mean s = standard deviation Dec. = Decission

Physics teachers accepted that students perform better when organized in discussion groups, and when they carry out research and present their findings in class. They are also of the opinion that students perform better when they investigate assigned projects and come out with possible solutions as well as when teachers have enough time out of class to assist them with learning difficulties. Physics teachers equally accepted that students perform better when taught regularly and when the syllabus is covered and have enough time for revision. Based on the results from table 3 physics teachers accepted that their characteristics affect students' performance to a great extent ($\bar{x}$ = 3.25 ± 0.53). Both students and teachers accepted that physics teachers' characteristics affect students' performance to a great extent but the worrying situation remains that of shortage of teachers in Bui Division same like other divisions in Cameroon. There is therefore the need to step up the intake of physics and the mathematical science students in the various Higher Teacher Training Colleges in Cameroon.

From research question one, the findings show that student's performance in physics is greatly influenced by the teacher's characteristics. The findings are in concord with the findings of Olabode (2010) as cited in Mbinkar [7] who examined the effects of teachers' qualification on physics students' performance. The results showed that students perform better in physics when taught by qualified teachers. The same study also revealed that the gender of the teacher has no effect on physics students' performance so long as the concerned teacher is skilful. According to the Department for International Development (DFID) in 2007, the most consistent characteristics in improving students' performance are well trained, prepared, supervised and motivated teachers. Teachers need to be grounded in pedagogy. In this light teachers should be conscious of the fact that different learners have different learning styles. Hence physics teachers should apply, Harword Gardner's (1999) Theory of Multiple Intelligence which states that all human beings have multiple intelligences in varying amounts. The intelligence can be nurtured and strengthened or ignored and weakened. According to Gardner, we can improve education by addressing the multiple intelligences of our students.

Research Question 2: To what extent do textbooks affects students' performance in physics in secondary schools?

Table 4: Textbooks and Students' Performance in Physics

S/N	Statement	Teachers			Students		
		$\bar{x}$	s	Dec.	$\bar{x}$	s	Dec.
7	Access to reference textbooks brings about better performance in physics	3.08	.79	A	3.31	.51	A
8	Textbooks help students to complete physics assignments in time	2.75	.87	A	3.72	.45	A
9	Physics textbooks assist students in self-evaluation	2.67	.49	A	3.77	.47	A
10	A variety of physics textbooks is an enhancing source of learning	2.75	.97	A	3.67	.54	A
11	Physics textbooks keep both teachers and students in focus	3.17	.58	A	3.70	.48	A
12	Physics textbooks assist students in constructing knowledge	2.25	1.06	D	3.33	.62	A
	AVERAGE	**2.78**	**.79**	**A**	**3.58**	**.51**	**A**

$\bar{x}$ = mean s = standard deviation Dec. = Decission

The information in the table above was presented in the line graph below.

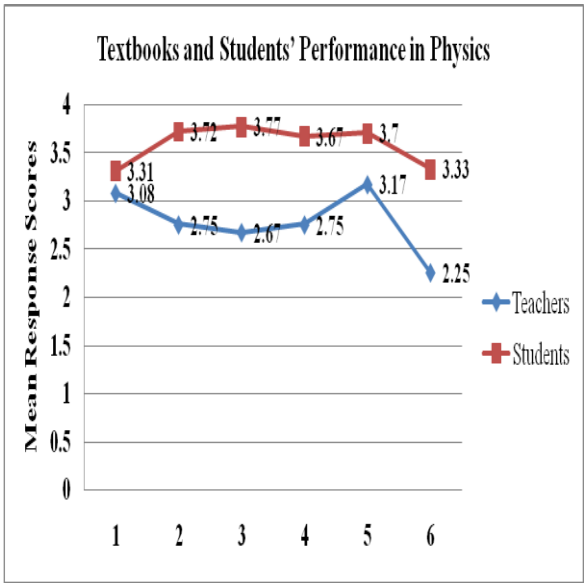

Figure 1: Textbooks and Students' Performance in Physics

Physics teachers and students accepted that access to reference textbooks bring about better performance in physics, textbooks help students to complete physics assignments on time, physics textbooks assist students in self-evaluation, a variety of physics textbooks is an enhancing source of learning and that physics textbooks keep both teachers and students in focus. However physics teachers have the opinion that physics textbooks do not assist students enough in constructing knowledge while students think that physics textbooks assist them to a great extent in constructing knowledge. Thus both teachers ($\bar{x}$ = 2.78 ± 0.79) and students ($\bar{x}$ = 3.58 ± 0.51) agreed that textbooks have a positve influence on student's performance in physics. However students say that textbooks have a high influence while the teachers see the influence as being moderate. The problem remains that of few textbooks in class because for economic reasons, many students cannot afford and own the prescribed textbooks. They depend on the benevolence of the few who own the textbooks and the one or two copies in the library for schools that have library facilities. There is great need for science students to own textbooks for the reasons found in the study.

Lydia (2013) as cited in Mbinkar [7] found that the availability of textbooks influence students' performance, although the influence was not statistically significant. However textbooks can facilitate learner construction of new concepts by illustrating as intelligible, plausible and possibly fruitful in their conceptual change theory. Students need to use quality textbooks in order to have good performance in physics and in implementation of the curriculum. Textbooks ensure that students can do their private reading, complete assignments in time and conduct group discussions. Textbooks can also be used as reference materials to supplement the teachers' instruction. Teachers' guides give the teachers direction on how to introduce and deliver content in various subject areas. Inadequacy of resources in the library means that learning gaps may occur in this subject area resulting in low mean grades in national examinations. Reference books enhance the students reading material hence they should not be restricted to a few classroom textbooks (Posner, Strike and Hewson, 1982 as cited in Mbinkar [7].

Research Question 3: To what extent do laboratory equipments affect students' performance in physics, in secondary schools?

Table 5: Laboratory Equipment and Students' Performance in Physics

S/N	Statement	Teachers			Students		
		$\bar{x}$	s	Dec.	$\bar{x}$	s	Dec.
1	A school with a good laboratory would have good performance	2.67	.65	A	2.52	1.22	A
2	Physics laboratory work makes instructions relevant to learners	2.42	.79	D	3.64	.52	A
3	Physics laboratory work reduces the issue of abstraction	3.17	.58	A	3.65	.59	A
4	Physics laboratory work takes care of the cognitive, affective and psychomotor domains of learning	3.25	.62	A	3.73	.53	A
5	Students learn better in the physics laboratory because they put all their five senses in use	3.33	.49	A	3.71	.54	A
6	Hand-on activities in the physics laboratory make learning interesting	2.92	.79	A	3.60	.49	A
	AVERAGE	**2.96**	**.65**	**A**	**3.48**	**.65**	**A**

$\bar{x}$ = mean s = standard deviation Dec. = Decission

The information in the table above was presented in the bar chart below.

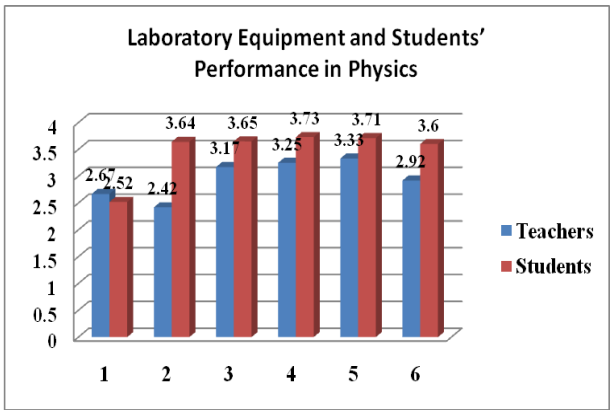

Figure 2: Laboratory Equipment and Students' Performance in Physics

Physics teachers and students are of the opinion that a school with a good laboratory would have good performance; physics laboratory work takes care of the cognitive, affective and psychomotor domains of learning; students learn better in the physics laboratory because they put all their five senses in use and that hand-on activities in the physics laboratory make learning interesting. Physics teachers feel that physics laboratory work make instructions moderately relevant to learners and reduces the issue of abstraction. Meanwhile the students feel that physics laboratory work makes instructions very highly relevant to learners and reduces the issue of abstraction. Both teachers ($\bar{X}$ = 2.96 ± 0.65) and students ($\bar{X}$ = 3.48 ± 0.65) accepted that laboratory equipment have a great influence on students' performance in physics in Bui Division of the North West region of Cameroon. The problem reamains that of equiping the laboratories well and providing regular water and electricity supply.

Burak (2009) as cited in Mbinkar [7] opined that in order to construct knowledge on their own and to acquire problem solving skills, students need to study in the laboratory environment that brings science process skills in prominence. Ojera [9] also stated that in the present age, new information is constantly being added to the existing information and as such the main objective of school laboratories at secondary school should be to equip the students with the skills of accessing information rather than transferring information to students.

Research Question 4: To what extent do ICTs affect students' performance in physics in secondary schools?

Table 6: ICTs and Students' Performance in Physics

S/N	Statement	Teachers			Students		
		$\bar{X}$	s	Dec.	$\bar{X}$	s	Dec.
1	A school with a well-equipped computer laboratory is likely to have good performance in physics	2.42	.67	D	2.51	1.06	A
2	Students work longer without getting tired or bored when using the computer laboratory to study physics	2.50	.67	A	2.86	1.28	A
3	Students complete physics assignments faster when using internet sources	3.08	.79	A	2.96	1.23	A
4	The internet is a super highway for physics knowledge	3.25	.45	A	2.77	.84	A
5	Internet sources help both teachers and learners to update their knowledge in physics	3.17	.39	A	3.20	1.08	A
6	Questions generated by computers can prevent copy work when a given group of students is tested in physics	2.00	.60	D	2.90	1.30	D
	AVERAGE	**2.74**	**.60**	**A**	**2.87**	**1.13**	**A**

$\bar{X}$ = mean s = standard deviation Dec. = Decission

The information in the table above was presented in the line graph below.

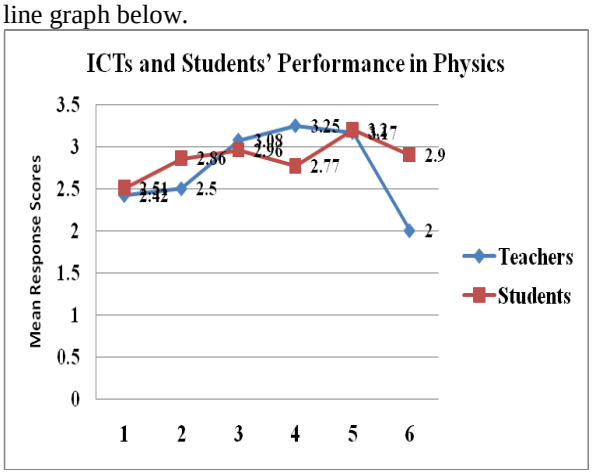

Figure 3: ICTs and Students' Performance in Physics

Physics teachers and students had the view that students work longer without getting tired or bored when using the computer laboratory to study physics, complete physics assignments faster when using internet sources, the internet is a super highway for physics knowledge and internet sources help both teachers and learners to update their knowledge in physics.

However teachers said that a school with a well-equipped computer laboratory may not likely have good performance in physics and questions generated by computers cannot prevent copy work when a given group of students is tested in physics. Meanwhile, the students opined that a school with a well-equipped computer laboratory is likely to have good performance in physics and questions generated by computers can

prevent copy work when a given group of students is tested in physics. This implies that supervision and guidance by laboratory attendants and teachers is very necessary to influence learning. Both teachers ($\bar{x}$ = 2.74 ± 0.60) and students ($\bar{x}$ = 2.87 ± 1.13) accepted that ICTs have a positive moderate influence on student's performance in physics. This implies that ICTs should be made available for learners by the stakeholders to enable them study physics and other mathematical sciences. Resources like calculators, computers, internet resources, projectors, and other laboratory resources should be made available and frequently used in the teaching and learning process in secondary schools in Cameroon.

Mwilli, Tanui and Ronoh [8] investigated the influence of instructional resources on secondary school academic performance in Makeuni County Kenya. The study revealed that student's academic performance in KCSE was influenced by instructional resources like chalk boards and chalk, students' textbooks, teachers' textbooks, classrooms, laboratories apparatus and chemicals. Based on the findings of the study, it was concluded that students' academic performance depended on teachers' reference books and guides, students' and teachers' textbooks, charts, chalk boards and chalk, classrooms, and laboratory apparatus and chemicals as teaching and learning materials.

CONCLUSION

The findings show that instructional resources greatly influence students' performance in physics if they are available and used in secondary schools in Bui Division of the North West Region and Cameroon as a whole. This indicates that when instructional resources are adequate in terms of quality and quantity, their utilization enhances student-centered method of knowledge acquisition. In this way students are greatly involved in hands on activities, discussions, experimentation and practical activities. Such an approach brings into play curiosity, interest, imagination and critical thinking. This state of affairs may improve enrolment and performance in physics and other mathematical sciences. Consequently, the use of instructional resources may enhance technological development especially as there is great emphasis now on the teaching of science, technology, engineering, and mathematics (STEM) in Cameroon. Instructional resources are capable of enhancing concepts visualization and complement teachers' activities. Hence they reduce the stress on both teachers and students.

The utilization of instructional resources play paramount roles in the teaching and learning process in science, technology, engineering, and mathematics (STEM) and hence resulting in good performance. Well selected instructional resources take care of learners from different backgrounds, gender as well as their different learning styles. Many learners would develop the required competencies in technological know-how. This would be a necessary condition for the development of the nation, whose benefits would be progressive improvement of living standards. As the schools depend on instructional resources in order to have good performance, so also is the dependency of the nation on her educational system to perform well in terms of her development drive and the fulfillment of her vision 2035.

LIMITATIONS OF THE STUDY

The hurdle for this study was the socio-political situation that is rocking the Anglophone Regions of Cameroon given that which Bui Division is located in the North West Region of Cameroon. Since schooling has not been very effective in the North West and South West Regions of Cameroon caused by the crisis, the sample size might not have been an adequate representative of the target population.

RECOMMENDATIONS

1. Regular and sufficient supply of instructional resources (physical, human and digital) should be embarked on by the governments, Parent-Teacher Associations (PTAs) and other stakeholders at all levels of schooling. Resource persons should be encouraged and incorporated in the teaching and learning process by the school authorities. The Cameroon government should also step up the intake of physics and the mathematical science students in the various Higher Teacher Training Colleges (HTTC) and Higher Technical Teacher Training Colleges (HTTTC) or organize massive recruitment of STEM teachers.
2. Resources assist in visualization and conceptualization in physics. The school administration should therefore prioritize the provision of physics laboratory equipment to improve the quality of class experiments and students' achievement.
3. Teachers should also make use of locally available materials and cultural artifacts (Ethnophysics) so that learners can associate the subject with the surrounding environment and compliment on convectional resources. This also helps to arouse interest in STEM and reduce abstraction.
4. The use of field trips and laboratory works should be encouraged to give the students direct experience with their surrounding and appreciate the importance of physics to the environment.
5. Conferences, seminars and workshops should be organized regularly for physics and other mathematical science teachers to broaden their

knowledge on instructional resources and the best ways to make use of instructional resources.

6. Both male and female students should be encouraged and motivated through counseling, prizes, and scholarships to see physics as one of the subjects needed for the country technological break-through. This is likely to bridge the gender gap and to improve enrolment and performance in physics.
7. Teachers' and parents attitudes affect the way a student views a subject. Teachers' and parents should therefore cultivate a positive attitude to STEM in order to foster the same to the learners.

CONTRIBUTION TO KNOWLEDGE

The knowledge of physics is very vital in today's technological world. This study revealed that the use of instructional resources in teaching physics could enhance technological development especially as there is great emphasis now on the teaching of science, technology, engineering, and mathematics (STEM) in Cameroon. The country cannot emerge without technological know-how, whether imported or home based. Therefore, the youths of Cameroon need functional knowledge in physics with which to enhance technological development. This study could provoke a rethinking in the provision, distribution and proper utilization of instructional resources by stakeholders in secondary schools in Cameroon.

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