

PEDAGOGICAL PROBLEMS CHALLENGING THE ACADEMIC PERFORMANCE OF PHYSICS STUDENTS IN SECONDARY SCHOOLS (THE CASE OF GUDURU AREA SCHOOLS).



By- Dereje Endalew Nemera

ATHESIS SUBMITTED TO ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY SCHOOL OF APPLIED NATURAL SCIENCE DEPARTMENT OF APPLIED PHYSICS, FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN PHYSICS.

August, 2018

Adama- Ethiopia

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ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
GRADUATE STUDIES

ADVISOR'S APPROVAL SHEET

(Submission sheet 1)

As research advisor, I certify that I have read and evaluated this Thesis entitled under my guidance and supervision on “Pedagogical Problems Challenging the Academic Performance of Physics Students in Secondary School of Guduru- Area.” I here by recommend that it could be submitted for defense as it fulfill the requirements for Degree of Masters of science in physics

Alemu Kebede (PhD)

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Date

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As members of the board of examiners for the degree of masters of Science in physics. Thesis for open defense examination of Dereje Endalew Nemera. I certify that I have read and evaluated his thesis entitled” **Pedagogical Problems Challenging the Academic Performance of Physics Students in Secondary Schools. (the case of Guduru-area schools)**” and examined the candidate. I therefore, recommend that the thesis could be accepted as it fulfills the requirements for degree of masters of Science in physics.

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LIST OF ABBREVIATIONS AND ACRONOMIES

ACP	Academic Performance
HGW	Horo-Guduru Wellega
ICT	Information Communication Technology
MOE	Ministry of Education
SPSS	Statistical Package for Social Sciences

ABSTRACT

The primary purpose of this study was to identify pedagogical problems challenging the academic performance of physics students in secondary school of Guduru-area. Descriptive survey method was designed to be employed as the method of the study. It was concerned to examine the prediction of pedagogical challenge problems with five independent factors such as, the role of teachers on academic performance of physics students, school facility factors, curriculum factors, the impact of assessment method and school principals' effectiveness in facilitating teaching and learning of physics. Four secondary school sampled students, six physics teachers and two supervisors were used in the study. Questionnaires, interview and observation were means of data gathering tools. Questionnaire was distributed to 120 students, 6 physics teachers and 2 supervisors. The data obtained were analyzed both quantitatively and qualitatively using frequency, percentage, mean, mean average and mean rank using SPSS version 20 software and organized in to meaningful information. Likert scale was used to measure opinions of respondents on the given independent variables. The result of data analyzed and its interpretations indicate that under the role of teachers on academic performance, with average mean value of 2.40 ranked to the most severe problem. The next rank with average mean value of 2.42 was related to school based problems. The 3rd rank with average mean value of 2.43 was curriculum factors affecting the academic performance of physics students. This indicates that teacher's role related pedagogical problems have more negative impact on students' academic achievement than other factors. For instance, readiness of teachers for best performance 78 (65%) of student respondents with mean value of 2.34 responded as less than low performance. Knowing when and how to apply each method of teaching 4 (67%) teacher respondents with mean value of 1.33 responded as very low. Each of other factor computed revealed that there is a great deficiency in the availability of instructional materials, such as physics reference materials, laboratory manuals, computer services, different color chalk, "TV" set, quality and functionality of black board. Also there is a great deficiency in school facility factors such as, class size, student's seat, library services, pedagogical center. The schools were not provided with the necessary facilities and instructional materials. Finally conclusion and recommendation were drawn.

CHAPTER ONE

1. INTRODUCTION

1.1 Back ground of the study

Science education in particular provides good standards for people and leads to cultural and economic developments. For rapid development of science education government, society, and industry should have been in a co-operation and work together[1]. Education in general was viewed as development of life process and universal practice of human learning resulting from man's interaction with his social and natural environment. In line with this Tegene and Tsegaye [2] discussed education as a process and practice engaged in by different societies at all stage of development and geared toward shaping an all rounded by harmonious and integrated development of the mental, physical, social, moral, spiritual, aesthetic etc. The ultimate purpose of education was to empower an individual excel in a chosen field of endeavor and to be able to positively impact his/her environment. On the contrary, the end result of the process of education has been failed to maintain a high degree of academic distinction and excellence among learners and recipients of secondary schools of learning of these days. Reason that may be responsible prevailing circumstances could be largely remote in nature, such as educational policies on student enrolment and admission.

The development of any nation which depends on science and technology depends on the nation's science education for the use of creative human activity which involves distinct way of seeing exploring and understanding reality. Science being fundamental part of every life and essential to our understanding of the world. Scientific knowledge through- technology has had a lot of practical application the lives we lead to day are very different from those of thousand or even 50 years ago. The knowledge we might gain from science education could help us to understand this technical world and lives it successfully [3]. Science education has become such -a dispensable tool that no nation developed or developing wishing to progress in the socio economic sphere will afford to relate its learning in schools. For last two decades, the government of Ethiopia was highly working in both expansion of educational sectors in all level and improving quality of education in all disciplines. However, as some of facts have been

revealed in some science, like physics, mathematics and chemistry, especially in physics the secondary school students attitudes towards the subject at all levels has been declining. Physics is the most utilized basic science subject in technology and technology related profession. This merely indicates the enormous role physics plays in technological growth of any nation must not be undermined in spite of the great emphasis on physics teaching because of its central role in technological development. Physics is not only important to country economic progress but also to individuals to cope with rapidly changing society as a result of advance in technology. The rate of development of any nation was determinable by the rate of technological advancement of the nation [4].

According to finding of researcher in this area, [5] interest of students to learn physics was the lowest. Individual characteristics such as intelligence, cognitive styles, and personality play an important role in learning and instruction as does the context of learning. Other research findings shown that individual student's characteristics variables such as motivational orientations, self-esteem, and learning approaches were important factors influencing academic achievements. Besides other factors, socioeconomic status was one of the most researched and debated factor among educational professionals that contribute towards the academic performance of students. The most prevalent argument is that the socioeconomic status of learners affects the quality of their academic achievements. In recent, prior literature has shown that factors impacting on students 'physics performance [6] thought the primary factor that account for poor academic performance in physics subjects are many, from these school factors are more influential than others. About one-third of all variation in student performance was between schools [7]. Within the words of [8] inadequate assets for that learning and teaching physics constitute a significant reason for student under achievement. Lack of qualified and devoted physics teachers with in poor practical orientation will result in poor knowledge of the idea. In the opinion physics teachers aren't any more devoted for their projects [9, 10]. Various factors have been adduced for poor academic achievement of students in physics. The shortage of qualified physics teachers, poor facilities, equipment and instructional materials for effective teaching. The researcher was initiated to identify the pedagogical challenging problems that affect academic performance of physics students in some Guduru-area secondary schools.

1.2 Statement of the problem

As discussed in back ground part earlier, physics is one of the subjects offered in the secondary schools. It is true that knowledge is obtained from the subject is applicable in any technological and engineering work, and also its benefit for developing countries like Ethiopia is unquestionable. However, the academic performance of physics in the secondary schools of the country in general, and in Horo- Guduru wellega zone in particular in secondary school of Guduru area, lots of pedagogical problems were observed in the teaching and learning of physics. I observed that, the majority of students in the secondary schools had no interest to learn physics and this resulted in low academic achievement. Besides, these teachers in these schools had low motivation to teach physics, the reason could be due to some pedagogical problems encountered in teaching and learning of physics .So it was necessary to study the pedagogical challenging problems that affect the academic performance of physics students in the secondary school of this area. Thus the researcher extremely interested to identify pedagogical challenging problems in academic performance of Guduru-area secondary schools physics students, and to suggest possible solutions.

In this respect the following basic research questions were raised.

1. What are teachers related pedagogical challenging problems that influence academic achievement of physics students in secondary school of Guduru-area?
2. What are the possible physical resources that are influencing academic achievement of physics students in secondary schools of Guduru-area?
3. Is there lack of school curriculum factors that affects the academic achievement of Guduru-area secondary school physics students?
4. What teachers' knowledge and instructional strategies lead the student to poor academic achievement?

1.3 Significance of the study

Identifying pedagogical problems challenging the academic performance of physics students in secondary schools by enlarge is vital for all concerned bodies. More importantly, as per the requirement of the new strategy of education police is becoming the order of the day. Hence

identifying pedagogical problem is important for the achievement of the highest grades in physics. The following contributions may be gained from this study:

1. It may help physics teachers and related body to gain valuable information about, the way that enhances academic performance.
2. It may indicate ways to suggest on how the poor academic achievement students will be academically supported in physics.
3. The study would also add to the literature something serves stepping stone for further investigation that might be carried out on the same topic of study.
4. Encourage all the stake holders of the school at the study site to solve these pedagogical challenge problems.

1.4 Objectives of the study

1.4.1 General Objective:-

- The general objective of the study was to investigate the main pedagogical challenging problems that hinder the academic performance of physics students in secondary schools. (the case of Guduru area Schools)

1.4.2 Specific Objectives

- To identify teacher's role related problems in secondary school of Guduru area.
- To identify curriculum based factors that affect student's academic performance of physics students.
- To check the existence of school facility based problems that affect student's academic performance.
- To assess some preliminary conditions needed for effective academic achievement of students.

1.5 Limitation of the study

The overall nature of the paper would not be without limitation. From the onset, the study was confined itself to Guduru area in the Horo Guduru Wellega zone. This one part limits the scope

of the study and its inclusiveness. The factor for such problems could be many and all the factors cannot be treated by this study. Hence, as mentioned earlier, this study focused on pedagogical challenge problems as a major factor affecting students' academic achievement in physics subject. The respondent sincerity of purpose will be not sure since what was conceived in the mind was hidden. Due to time constraints, the ability to reach out to many secondary schools for the collection of data may be hindered and there was work pressure that restricts access to enough time for the research work.

1.6 Delimitation of the study

Narrowing down the scope of the study to workable size was very important for the effectiveness of the study under consideration. This was particularly useful for student researcher to be intension. Hence the scope of the study is delimited to HGW Zone in case of Guduru area. Moreover; the study focuses on selected sample of secondary schools. Besides, the study is delimited to pedagogical problems challenging the academic performance of secondary school physics students. That is no other subject but physics.

1.7 Organization of the study

There are five chapters in this thesis. The first Chapter consists of an introduction with in which it holds back ground of the study, statement of the problems, significance of the study, objectives, limitation of the study, and delimitation of the study. Chapter two treats review of related literature. Chapter three put forward the research methodology which consists of research design, study area, method of sampling and method of data analysis. Chapter four treats data analysis and results. Finally the fifth chapter draw out findings, conclusions and forward recommendations for the improvements of pedagogical problems that hinder students out comes.

1.8 Definition of key terms

Academic performance: - Refers to the main out puts in education as expressed in terms of learning, that is change in knowledge, skill and attitude of individual

Facility: - Refers to the availability of class rooms student's seats, chair electricity supply laboratory rooms, water supply

Pedagogy:-The professions, Science or theory of teaching

Secondary schools: - Refers to the school consisting of grades (9-10)

Instructional materials: - Have been defined as materials which provide concrete experiences which a learner needs in order to gain knowledge.

Teacher competency:-Refers to the extent in which a teacher who teaches the class room as whole; present information or skills clearly and animatedly; have high expectations for achievement, and relate easily to students.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 The concept of poor academic performance

According to scholars' definition [11], academic performance has been described as the scholastic standing of a student at a given moment. This scholastic standing could be explained in terms of the point obtained in the subject or groups of subjects [12]. On this scholastic standing argued that performance is a measure of output and that the main outputs in education as expressed in terms of learning, that is change in knowledge, skills and attitudes of individual as a result of their experience with in the school's system. Academic performance is regarded student's performance in an examination being depended on his average grade point . Poor academic performance according to Aremu [13] is a performance judged by the examine and some other significant as falling below an expected standard. Poor academic performance of students in Nigeria has been linked to poor teachers 'performance in terms of accomplishing the teaching tasks, negative attitude to work and poor teaching habits which have been attributed to poor motivation[14]. It has also been observed that conditions of infrastructure as well as instructional materials in public secondary schools in Nigeria are poor [15]. These prevailing conditions would definitely show a negative influence on the instructional quality in secondary schools, which may translate to poor academic performance, attitude and values of secondary school students.

2.2 Pedagogical challenge problems and academic performance of students

2.2.1 The role of teachers and academic performance

The role of teacher is very important in any teaching exercise especially since his/her direct participation can range from complete control over what is learned to minimum intervention. Teacher is the source of all knowledge that children acquire in class. Teacher can impact students learning in different regards. However, among this the way he delivers the subject or methodology directly related learner's method of teaching [16]. Means of strategies employed

by teachers in an attempt to impart knowledge to the learner are referred to as methodology. Therefore, teachers planning should include:

1. Choice of appropriate teaching material
2. Choice of appropriate teaching method
3. Intensive research on the topic to be taught
4. Determination of the objectives for the lesson

A) Teaching methods (methodology)

The primary purpose of teaching at any level of education is to bring a fundamental change in the learner [17]. To facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and level of student outcomes. In the traditional approach, many teaching practitioners widely applied teacher-centered methods to impart knowledge to learners comparative to student centered methods. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the field of educational research [18]. Moreover, research on teaching and learning constantly endeavor to examine the extent to which different teaching methods enhance growth in student academic performance. Quite remarkably, regular poor academic performance in physics by the majority students is fundamentally linked to application of ineffective teaching method by physics teachers to impart to learners [19]. Substantial research on the effectiveness of teaching methods indicates that the quality of teaching is often reflected by the achievement of learners. According to [20], teaching is a process that involves bringing about desirable changes in learners so as to achieve specific outcomes. In order for the method used for teaching to be active, [19] maintains that teachers need to be conversant with numerous teaching strategies that take recognition of the magnitude of complexity of the concepts be covered. As such alignment of teaching methods with students' needs and preferred learning influence of students' academic attainments [21].

B) Teacher's pedagogical content knowledge

By investigating the knowledge underlying effective teaching and learning, we are studying how to improve teacher quality [22]. Teacher quality itself is an important factor in determining gains in student academic achievement. In fact, the main motive for investigating teacher knowledge is

to improve student outcomes [23]. Literature highlights many features that characterize expert teachers, which include extensive pedagogical content knowledge, better problem solving strategies, better adoption for diverse learners, better decision making, better perception of classroom events, and greater respect for students. Many research findings show that teachers' general pedagogical knowledge is relevant to understanding quality of teaching as understood by its impact on students' academic achievement [24]. Teachers should have knowledge of how particular topics, problems or issues are organized, represented and adapted to diverse interests and abilities of learners.

C) Teacher Competency

It is agreeable that the central tasks of teaching include planning for instruction, managing instruction (including the learning environment), and assessing student learning and each of these tasks depend on the quality of teachers [25]. Teacher educational level would seem to have a positive effect on student achievement. The impact of teacher degrees on student achievement and found that having advanced degree in physics and other science teachers appears to be associated with increased student physics learning outcomes [26]. Similarly, it is reviewed that in previous studies and found a statistically significant effect of teacher experience on student achievement [27]. As [28] indicated in teachers' quality characteristics such as certification status and degree in the field to be taught are very significantly and positively correlated with students' outcomes. In all cases, the proportion of well qualified teachers is by far the most important determinant of student's achievement. If the teacher is ineffective, students under the teacher's tutelage will achieve inadequate progress academically [29]. Quantitative analysis indicates that measures of teacher's preparation and certification are by far the strongest correlates of student's achievement [27].

2.2.2 Curriculum factors and students' academic performance

A. The assessment system

The term assessment has a variety of definitions [30]. For example, simply define it as the general process of collecting and gained information about students' learning. But the most widely used definition of this term is that it is the process of collecting, interpreting and synthesizing information to aid decision making [31]. Learning assessment in the classroom (both by teacher and by students themselves) is an integral component of the teaching-learning

process. Much of this kind of assessment is subjective, immediate and ongoing. It involves class room questioning and dialogue, and the marking of homework. It occurs during learning and is designed to assist or improve student's acquisition of knowledge and skills [32]. It can be understood that assessment has a number of purposes from instructional point of view [33], has for the following purposes of assessment.

- ✓ To monitor the student learning
- ✓ To provide feedback and incentives to motivate students
- ✓ To identify and diagnose the student learning problems
- ✓ To judge, grade and promote students' academic performance

In order to determine student's achievement, physics teachers have to develop their own assessment tools[28]. It is seen that there are significant relationships between assessment questions and students' cognitive development levels. It is believed that the main problem came from the issue of not establishing a relation between student's cognitive development and assessment tools used by physics teachers. It was clear that the majority of physics teachers used only written and oral assessment tools, regardless of teaching experience, almost all the samples do not have detailed knowledge on students' cognitive development and its relation to asking questions.

Methods of student's assessment

Variety of assessment methods can be used for making decision in the teaching and learning process. It is also possible to employ different assessment techniques in secondary schools. Hence, the common methods of assessment at all level of schools as classified by

1. Placement assessment
2. Formative assessment
3. Diagnostic assessment
4. Summative assessment

Placement assessment

This method of assessment is concerned with investigating student's educational background. That is usually takes place before the actual presentation of instruction slowly to provide

information for the plan of future activities. In short, it deals with testing the entry level of students.

Formative assessment

The method of assessment is synonymously used as continuous assessment. In any case formative assessment is the technique of assessment that focuses on monitoring learning progress while instructional process is under way. It helps identify learner's needs and problems in order to take appropriate remedies during the learning process [34]. In this it also helps teachers guide learning during instruction. This means learners are motivated by feedback they are provided with on the spot. It is possible to cite a case in point in this regard.

Diagnostic assessment

This method is simple terms in the way to identify if there exists learning difficulties. As compared to formative assessment which provides first aid for treatment of learning problems, diagnostic assessment searches for real cause of the problem in order of formulate remedial action. In short diagnostic assessment is broader [34].

Summative assessment

This type of assessment method is given by especially at the end of the given course or semester of instruction. It deals with in the out of teaching learning process. As its name designated unlike formative assessment, it is the final summing-up technique designed to determine the extent to which instructional objectives have been achieved.

B) Instructional materials (teaching materials)

Physics is a field of study has a controlling influence over people's lives. The study of physics also enables man to understand the physical and natural process. Physics as a subject is taught in secondary schools. The teaching of this subject in secondary schools is always faced with many challenges. One of these challenges includes lack of appropriate instructional materials. Instructional materials play the role of a stimulant in the teaching and learning process. They introduce a learner to first hand materials and convey a precious quality of intimacy. Furthermore, the learning and teaching more understandable and real. Instructional materials

have been defined and explained in several ways. Explained instructional materials as materials which provide concrete experiences which a learner needs in order to intellectually [35]. Researchers like [35], have observed that in the absence of adequate instructional materials or with a shortage of standard instructional material educational goals and objectives cannot be realized. Teaching materials and related materials inputs that are linked directly to teaching are related consistently to higher pupil achievement after controlling for the influence of family backgrounds [36]. The availability of text books and other instruction materials has consistently positive effect on student achievement [37].

2.2.3 School based problems and academic performance

A) Resources (school facilities)

The process of education is being given to students with different methods namely, teaching, demonstration, laboratory practice field study and etc. [38] However, for this achievement students' knowledge in their subject, generally students rely on the notes, reference, and textbooks, study materials at large to maintain good performance in their learning. But now days, student's number in secondary schools have been increased in the same time basic facilities are not being increased at the same rate. It is observed, this certainly affects the availability of basic facilities to poor academic performance of physics students in secondary schools. School facilities, which are consists of all types of building that use for academic purposes, equipment, classroom facility electricity supply, water supply, laboratory, toilet room ict room and other play a vital role to smothery run teaching and learning process. Also the findings stressed that a professional qualified science teacher no matter how well trained would unable to put his ideas into practice ,when the school setting lacks the equipment and materials necessary for him or her to translate his competence in to reality. This needs so many infrastructure facilities at secondary school to acquire sufficient. The age of building can influence many of the individual factors used in evaluating the condition of an educations facility [39]. study conducted indicate that the age of building had significant impact on student achievement and behavior [3].

School with good libraries perform significantly better on test and knowledge [40] and use of reference materials then students in schools with minimal or no library service [41]. Similarly researcher found strong correlation between school libraries and student programs at all levels as

opposed to schools that do not have such programs the study showed that the highest achieving students attend schools with good school libraries[42].

B) Class size

The size of the class room and the amount of furniture within it directly affects one's perception of being crowded [43]. Some literature reviews stated that now where else are large groups of individuals packed so closely together for so many hours, yet expected to perform at peak efficiency on difficult learning tasks and to interact harmoniously. Because space within the class room is limited, only small amounts of learning materials can be used at any one time; thus, space, or lack of it, restricts the learning opportunities of students. Crowded class rooms provide students with few opportunities to engage the teacher one on one in meaningful conversation. Conversely, where there are broad areas for student movement and work, students direct their own learning activities. The research on class size by [44], suggests that teachers of smaller class confront fewer discipline problems, cover subject matter in more depth, have more one to one contact with students, and keep better performance of students learning.

C) Principal's leadership

The leadership of the principal is an important aspect of moving towards a learning community that in turn will restructure schools for improved student outcomes. Schools with principals who controlled teachers through a system of feedback and socialization had more teacher conformity and higher student achievement when compared to schools where programming and sanctions are used to control teachers [38]. Schools that offer opportunities for teacher to reflect on teaching and learning can create more positive changes than schools where such opportunities are limited. In addition to observing the teacher's frequency of feedback and the focus of the feedback are as important as the brief observations. Without the feedback teachers feel a sense of uncertainty because the supervisor is not validating or improving the teachers' instructional practices. They further stated that a principal has a visible presence in classrooms, department meetings, and talks with staff and students throughout each day [45].

Principals by initiating the school community to aspire high expectation in student science academic progress. Besides administrative and instructional supervision and support play an important role in improving what goes on in school and teachers typically receive from inspector

and pedagogical advisors are in sufficient and in effective. This is particularly the case in most sub Saharan African countries [46] interaction between principals and teachers in terms of the principals a resource provider instructional resources communicator and visible presence .The function of the principal evolved from the Principal teacher as master teacher who also attended to the limited duties required to keep the school organized and operating efficiently to the principal as chief executive officer of the compass [47]. There for the role of the leader ship to produce change in student that occurs in knowledge attitudes skills and behaviors.

Also principals by initiating parent involvement can solve problems related to teaching and learning of physics education of his or her child. The most basic involvement of parents in their child's schooling is provision of basic needs. Teaching materials and related material inputs that are linked directly to teaching are related consistently to higher student achievement [48, 49]. The availability of text books and other instructional materials has a consistently positive effect on student achievement in developing countries [50, 51]. Text books are the instructional device per excellence, the central to science teaching [52]. Parents provide school supplies, supervision of activities, and home environments that are learner friendly [53, 54]. The next type of involvement involves the school's ability to establish a two way channel of communication about the child they share. Abound of ownership is formed between the parent and the school, and parents can become comfortable with the schools expectations, they are willing to communicate with their child's teacher [55, 56]. Parents should be aware of their role in the communication partnership, communicating needs of their child in a clear manner [57]. Academically students have higher test scores, higher graduation rates more homework. Completion rates when parents are involved [58, 59]. The mutual interest the schools and parents have in each child [60]. Parents from a variety of cultural back grounds and with different levels of education, income, or occupational status can provide stimulating home environments that support and encourage their children's learning [61, 62, and 63]. Students with one or two college educated parents have higher levels of academic achievement than other students [64].

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGIES

3.1 Method of research

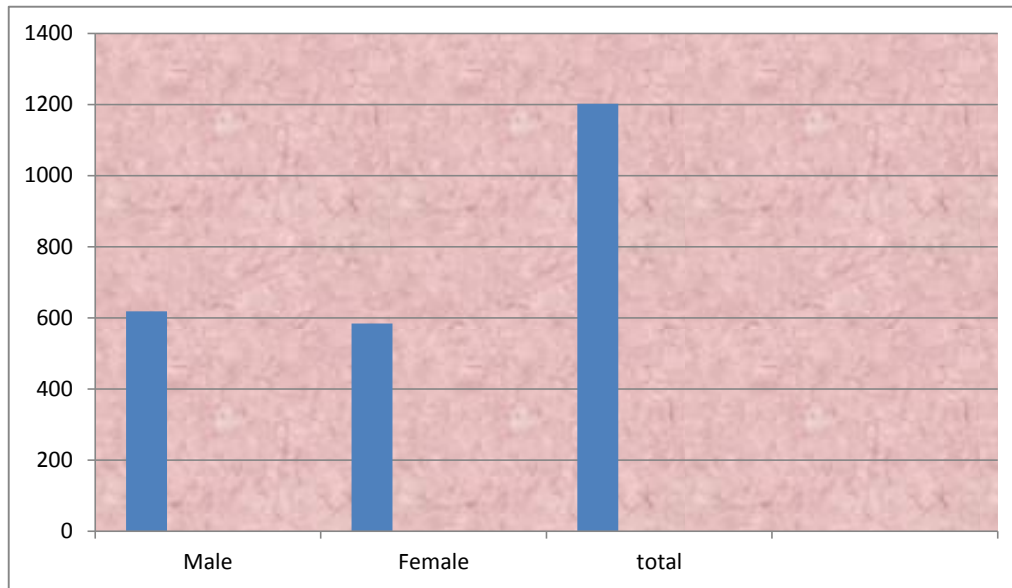
This study was aimed at assessing and describing some pedagogical problems challenging the academic performance of physics students in secondary schools. (The case of Guduru area schools). Descriptive survey method was designed to be employed as the method of the study. The current quality of academic performance of physics students in Guduru area of secondary schools seems seriously affected by these problems. Thus the study is expected to identify the problems and provide some remedial solutions for them

3.2 Study area

The research was conducted in Oromia regional state of HGW zone in Guduru area approximately sited at 272km from Addis Abeba capital city of Ethiopia. It was in the western part of Ethiopia in 4, secondary schools of Guduru area; namely, Combosha, Gebate, Ayele, and Tulu-Habib secondary schools

Table 1 study population

Item	No	%
Male	618	52
Female	584	48
Total	1202	100



Item

Figure 1 Graph of study population

3.3 Instruments of data collection

The data collection instruments in the study were questionnaires, interviews, and direct observations. These were found to be suitable to obtain the necessary information, opinions and attitudes in a structural frame-work from the respondents. The instruments are constructed for teachers, students, supervisors of the schools and others. Questionnaire questions will be prepared in English and instruments are constructed for teachers, students, supervisors of the schools and distributed to other respondents. The questionnaires were both open ended and close ended, the questionnaire was found to be convenient for this study as it is used for sample size.

3.3.1 Questionnaire

For this study questionnaire was an important data collecting tool. It was used as the data collecting instrument to get sufficient primary data. Both open ended and close ended questions were developed for respondents. The questionnaire was selected not only because it is the most common data gathering tool, and also it helps to collect a great deal of information within the time limit and help to reach large group of respondents.

3.3.2 Interview

The second instrument that was employed to generate data was interview. Interview is a major instrument of data gathering. It is used to collect detail information. Interview is conducted in face-to-face encounter between the researcher and the informant and in a place where convenient for the interviews. Interview guide questions were constructed not as an end by themselves rather they were developed in a manner possibility for modification in the process of data collection.

3.3.3 Observation

Observation is one of the means of data gathering instrument. Observation is also another key data gathering tool that helped the researcher as an eye witness to the sit

3.4 Sampling techniques and sample population

There were a total of about 8 secondary schools in Guduru-area of Horo Guduru Wellega zone. Among these schools, in order to gain insight in to the pedagogical problems in academic performance of physics in secondary school, 4 schools were selected for the research work. The selection was by purposive sampling techniques and random sampling techniques were employed. 120 students, 6 physics teachers and 2 supervisors were involved. Educational administrators (school principals and vice principals), physics teachers, students educational supervisors at woreda level held under study.

Table 2 Sample schools with sample population

Sample Schools	Grade 9			Sample size			Grade 10			Sample size		
	M	F	T	M	F	T	M	F	T	M	F	T
Combosha	160	170	330	16	17	33	175	135	310	18	13	31
Tulu habib	39	37	76	4	4	8	40	38	78	4	4	8
Ayele	63	70	133	6	7	13	62	67	129	6	7	13
Gabate	42	33	75	4	3	7	39	32	71	4	3	7
Total	304	310	614	30	31	61	316	272	588	32	27	59

Due to the difference in school size population random sampling were applied to select students as a sample of study from each sample school

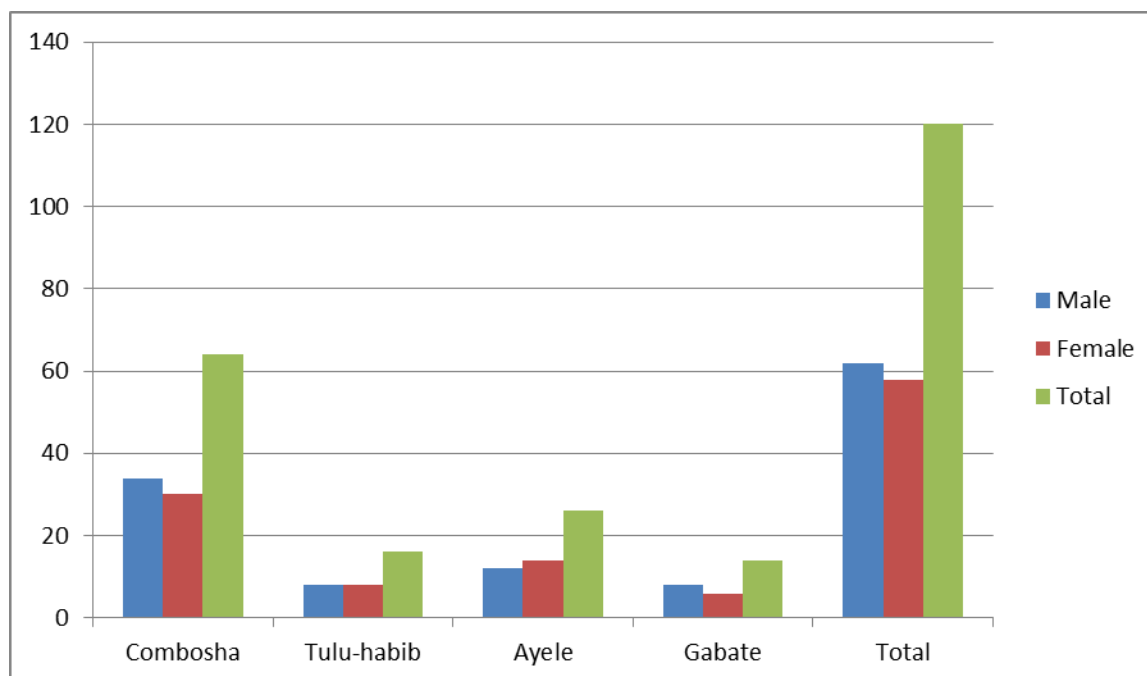


Figure 2 Graph of Sample schools with Sample population

3.5 Procedure of data collection

At the very initial level, the total number of secondary school students in 2017/18 academic year was collected from the principals of each target schools. Based on the collected data the size of the target population was known. Then the sample size for each school was set proportionally using the target student population of each school.

3.6 Study design

In this study an intensive investigation of the pedagogical challenge problems in Guduru-area secondary school physics students were highlighted. This mainly aimed at proposing possible solutions for the academic achievement of secondary school physics students. This was done by raising different questions to selected respondents. Both primary and secondary sources were also used in the study. Primary data, which was used to develop, in fact we were collected from experienced experts of education. Besides by the help of this source an attempt was done to collect data from both teachers and students of the target sample population. By doing so, the accurate data of required quantity were expected to run back from all respondents. To do

questionnaire and interview were used for their convenience to the respondents and the study as well set proportionally using the target population.

3.7 Method of data analysis

Different methods of data analysis relevant to each variable or components were used to examine the quantitative and qualitative responses. The data collected through questionnaire was tailed and computed by using SPSS version 20. Then descriptive values such as, number, percentage, mean value, mean rank and average mean were obtained. Different methods of data analysis relevant to each variable or components were used to examine the quantitative and qualitative responses. On the other hand the interview and observation was analyzed using qualitative method of analysis to get the required information for the study.

CHAPTER FOUR

4.RESULT AND DISCUSSION

This section deals with presentation and analysis of data, contains two parts. The first part on the characteristics of respondents, including students, physics teachers and supervisors. The second part deals with the analysis of different problems challenging the academic performance of physics students

4.1 Characteristics of the study group

Different Categories of respondents were involved in the study. This includes students, physics teachers, and supervisors. These groups respondents were targeted at to conduct an open case study on pedagogical problems challenging the academic performance of physics students in Guduru area.

Accordingly, 128 copies of questionnaire papers were prepared in English and distributed to be filled and fortunately they are all most returned. This makes the rate of return 100% out of 128 questionnaire majority of that is 120 was given to student respondents. The remaining 8, copies were distributed to 6 physics teachers and 2, for supervisors.

Table 3 Characteristics of respondents by different variables

No	Variables	Respondents					
		Student		Teachers		Supervisors	
		No	%	No	%	No	%
1	Sex: A Male	62	52	5	83	2	100
	B Female	58	48	1	17	—	—
	Total	120	100	6	100	2	100
2	Age: A. Below 20 year	100	84	—	—	—	—
	B. 21-30 year	20	16	4	67	—	—
	C. 31-50 Year	—	—	2	33	2	100
	D. Above 51 Year	—	—	—	—	—	—
	Total	120	100	6	100		100

3	Education Status						
	A. Grade 9	61	51	–	–	–	
	B. Grade 10	59	49	–	–	–	
	C. Certificate	–	–		–	–	
	D. Diploma	–	–		–	–	
	E. Degree	–	–	6	100	1	50
	F. MA/MED/MSC	–	–	–	–	1	50
	Total	120	100	6	100	2	100
.4	Work experience						
	A. Below 10 year	–	–	3	50	–	–
	B. 11-15 years	–	–	3	50	–	–
	C. 16-20 years		–	–	–	2	100
	D. 21-25 years						
	Above 26 years						
	Total	-	-	6	100	2	100

Table 3, concerned with the characteristics of the study population on variables such as sex, age, education status and work experience. When we look into sex composition, the data in table 3 indicate that both supervisors' respondents were male. Likewise 5, physics teachers were male, whereas 1, physics teacher was female of sample level of the study. On the other hand, 62 (52%) and 58 (48%), students involved in the study were males and females respectively. This could imply that there were relatively more male students and one female physics teacher participated in the study. Concerning the age of respondents 100 (84%), students were found to be below the age of twenty. But 20 (16%), students were between the age of 21-30 years. On the other hand 4 (67%), teachers were between the age of 21-30 years and 2 (33%) teachers were between the ages of 31-50 years. Likewise, both supervisors were between the ages of 31-50 years.

From this table we can guess that majority of the students were below the age of 20 years which was the proper age for high school students. On the contrary, students included in this study were probably not matured enough and may not respond to open ended questions full.

In terms of education status 61 (51%), students were from grade 9, whereas 59 (49%), students were from grade 10 and all 6, physics teachers 100% acquire at least first degree. In case of supervisors 1 (50%), acquire first degree and 1 (50%), MA holder. Concerning work experience, the data vividly indicate that 3 (50%), teachers have served below 10 years and 3 (50%), teachers have served between the age of 16-20 years. But in case of supervisors both 2 (100%), have served above 26 years. This shows that despite the experience of supervisors, probably guarantees the study under consideration, the experience of the teachers were found not only undermined expectation of good response but also questioned the quality of teaching learning process.

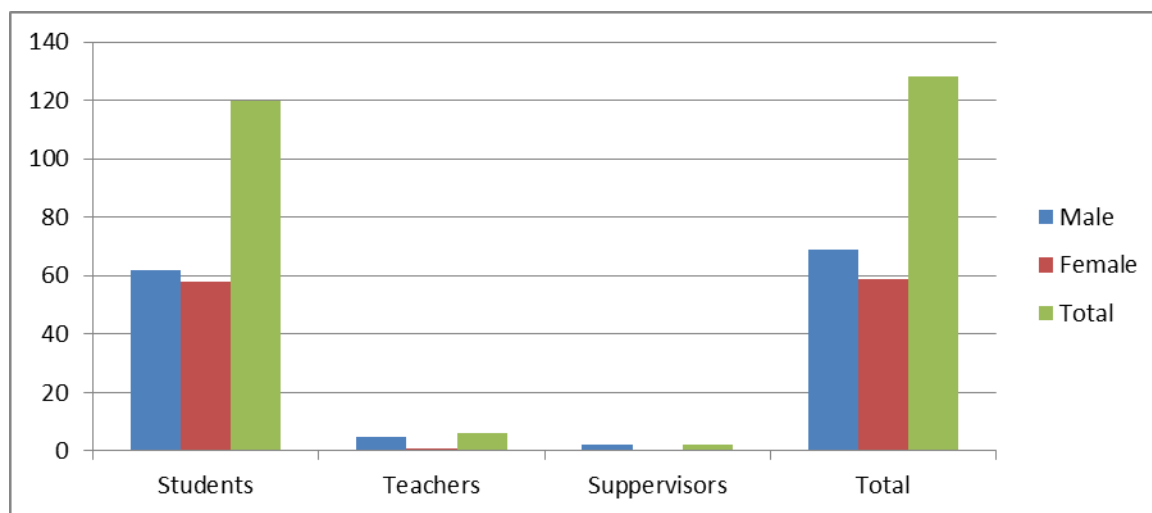


Figure 3 Graph of Sampled respondents with their sex

4.2 Analysis of the data

In the analysis of the study were treated different issues under five sections. Firstly, as depicted in the proceeding tables, an attempt was made to analysis the role of teachers on academic performance of physics students. Secondly, different views of respondents on curriculum based factors that affect academic performance of physics students. Thirdly, analysis on the impact of assessment method on students academic performance. Fourthly, analysis on school facility related factors. Finally, analysis on the school principal's effectiveness in facilitating teaching and learning physics.

Table 4 Analysis of the role of teachers on academic performance of physics students in secondary schools filled by students.

N o	Items	Students													
		5		4		3		2		1		Total		Mea n	M ran k
		N	%	N	%	N	%	N	%	N	%	N	%		
1	Readiness of teachers for best performance	10	8.3	12	10	20	16.7	45	37.7	33	27.5	120	100	2.34	3 rd
2	Teachers knowledge of class room management	20	16.7	24	20	30	25	43	35	3	2.5	120	100	3.29	2 rd
3	Having an experience of various teaching methods	11	9.2	14	11.7	28	23.3	51	42.5	14	11.7	120	100	2.60	5 th
4	Teaching at a steady pace, maintaining clear directions in lessons	20	16.7	32	26.7	35	29.2	32	26.7	1	8	120	100	3.31	1 nd
5	Experience of teachers class room assessment	16	13.3	21	17.5	40	33.3	23	19.2	20	16.7	120	100	2.92	4 th
6	Knowledge of knowing individual student characteristics	3	2.5	7	5.8	15	12.5	20	16.7	75	62.5	120	100	1.69	6 th

Scale 5=very high, 4=high, 3=moderate, 2=low, 1=very low and n=the number of respondents.

Scale of mean, 1.00-1.80 =very low, 1.81-2.60=low, 2.61-3.40=moderate, 3.41-4.20=high 4.21-5.00=very high

As illustrated in table 4 of item 1, the respondents responded as follows, 10 (8.3%) of students responded as very high, 12 (10%) responded as high, 20 (16.7%) responded as moderate, 45 (37.5%) responded as low, 33 (27.5%) responded as very low and mean score was 2.34. From this one can decide that readiness of teachers for best performance was low. As indicated in item 2 of the same table, It was responded as follows, 20 (16.7) very high, 24 (20%) high, 30 (25%) moderate, 43 (35%) low, 3 (2.5%) very low and the mean score was 3.29. This

revealed that teachers knowledge of class room management was moderate. As indicated in item 3 of table 4, it was responded as follows, 11 (9.2%) very high, 14 (11.7%) high, 28 (23.3%) moderate, 53 (45.3%) low, 14 (11.7%) very low and the mean score was 2.60. From this one can deduce that teachers having an experience of various teaching methods were low. As indicated in item 4 of the same table the students responded as, 20 (16.7%) very high, 32 (26.7%) high, 35 (29.2%) moderate, 32 (26.7%) low, 1 (8%) very low and the mean score was 3.31. From this one can decide that teaching at steady pace maintaining clear direction in lessons was moderate. As indicated in item 5 of table 4 the students responded as follows, 16 (13.3%) very high, 21 (17.5%) high, 40 (33.3%) moderate 23 (19.2%) low, 20 (16.7%) very low and the mean score was 2.92. From this one can conclude that experience of teachers' class room assessment was moderate. As observed from item 6 of the same table students responded as 3 (2.5%) very high, 7 (5.8%) high, 15 (12.5%) moderate, 20 (16.7%) low, 75 (62.5%) very low and the mean score was 1.69. From this one can conclude that knowledge of knowing individual student characteristics was very low.

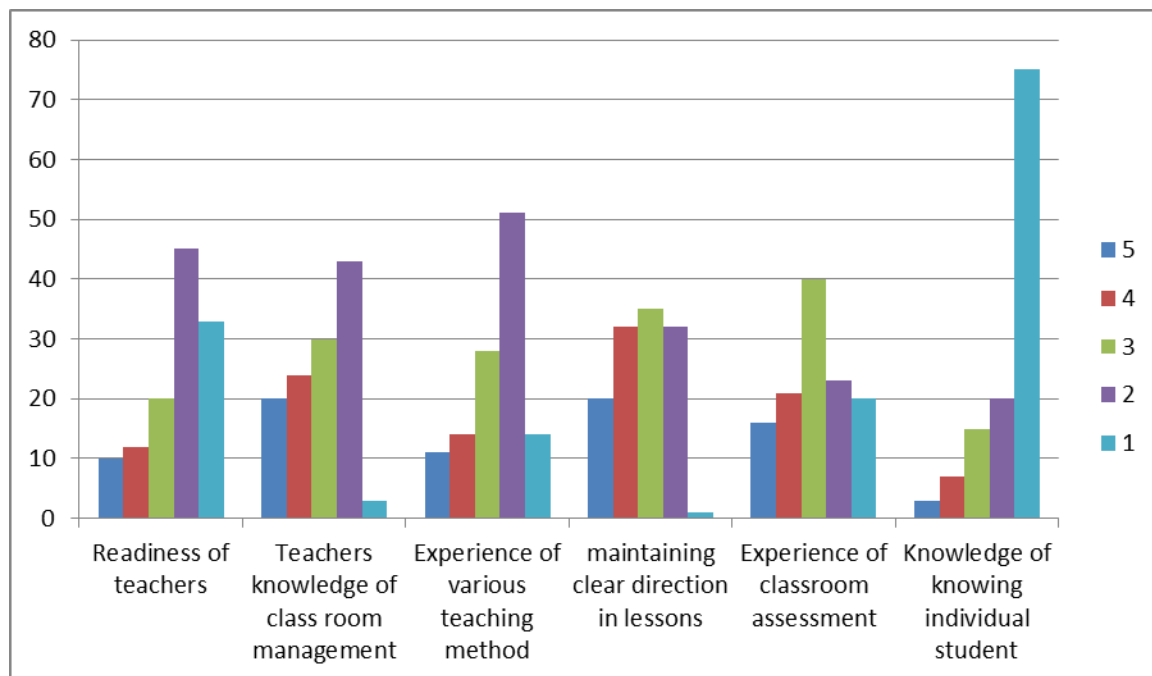


Figure 4 Graph of analysis of the role of teachers on academic performance of physics students in secondary schools filled by student

Table 5 Analysis of curriculum based factors that affect academic performance of physics students filled by students

No	Items	Students													
		5		4		3		2		1		Total		Mean	Mean rank
		N	%	n	%	n	%	n	%	n	%	n	%	n	
1	Availability of sufficient physics text books	16	13.3	20	16.7	60	50	24	20	-	-	120	100	3.23	1 st
2	Quality and functionality of black board	15	12.5	19	15.8	34	28.3	32	26.7	20	16.7	120	100	2.41	4 th
3	Availability of well-prepared physics laboratory manuals	-	-	22	18.3	30	25	55	45.8	13	10.8	120	100	2.36	5 th
4	Availability of computer service for students	7	5.8	14	11.7	23	19.2	60	50	16	13.3	120	100	2.47	3 nd
5	Availability of sufficient different color chalk	9	7.5	12	10	18	15	66	55	15	12.5	120	100	2.52	2 rd
6	Availability of TV set to be used for educational purposes	-	-	22	18.3	19	15.8	44	36.7	35	29.2	120	100	2.23	6 th

5=very adequate, 4=adequate, 3=average, 2=inadequate, 1=very inadequate and n=number

As indicated in table 5 of item 1 the respondents were asked to responded on the level of availability of sufficient physics text book and they responded as, 16 (13.3%) very adequate, 20 (16.7%) adequate, 60 (50%) average, 24 (20%) inadequate and the mean score was 3.23. From this one can conclude that availability of sufficient physics text books were moderate.

In other way in item 2 of the same table as tried to identify quality and functionality of black board the respondents responded as follows, 15 (12.5%) very adequate, 19 (15.8%) adequate, 34

(28.3%) average, 32 (26.7%) inadequate, 20 (16.7%) very inadequate And the mean score was 2.41. This indicates that quality and functionality of black board was inadequate.

As indicated in item 3 of table 5 as tried to know availability of well-prepared physics laboratory manuals and they were responded as follows, no students responded very adequate, 22 (18.3%) responded adequate, 30 (25%) responded average, 55 (45.8%) responded inadequate, 13 (10.8%) responded very inadequate and the mean score was 2.36. From this one can deduce that availability of well-prepared physics laboratory manuals was inadequate. As someone can observe from item 4 of table 5 the respondents were asked to respond about availability of computer service for students and they were responded as 7 (5.8%) very adequate, 14 (11.7%) responded as, adequate 23 (19.2%) responded as average, 60 (50%) responded as inadequate, 16 (13.3%) responded as very inadequate and the mean score was 2.47. From this one can revealed that availability of computer service for students were inadequate.

In item 5 of the same table the respondents were asked to respond on the availability of sufficient different color chalk, they responded as 9 (7.5%) very adequate, 12 (10%) adequate, 18 (15%) average, 66 (55%) inadequate, 15 (12.5%) very inadequate and the mean score was 2.52. From this one can conclude that availability of sufficient different color chalk was inadequate. As mentioned in item 6 of table 5 the respondents were asked to respond on the availability of TV set to be used for educational purposes and they were responded as no response for very adequate ,22 (18.3%) adequate ,19 (15.8%) average, 44 (36.7%) inadequate, 35 (29.2%) very inadequate and the mean score was 2.23. From this one can deduce that the availability of TV set to be used for educational purposes was inadequate.

Table 6 Analysis of school facility factors filled by students

No	Items	Students													
		5		4		3		2		1		Total		Mean	Mean rank
		No	%	No	%	N	%	n	%	n	%	n	%		
1	Attractiveness of the school compound and fencing	19	15.8	21	17.8	25	20.8	45	37.5	10	8.3	120	100	2.95	2 nd
2	Quality and functionality of library services	11	9.2	13	10.8	22	18.3	53	44.2	21	17.5	120	100	2.64	3 rd
3	Adequacy of student's seats	22	18.3	32	26.7	35	29.2	31	25.8	-	-	120	100	3.30	1 st
4	Availability of class size to accommodate all the students	-	-	14	11.7	13	10.8	67	55.8	26	21.7	120	100	2.13	5 th
5	Adequacy of chair and table in the class	5	4.2	15	15.2	34	28.3	54	45	12	10	120	100	2.56	4 th
6	Quality and functionality of water supply	-	-	-	-	24	20	68	56.6	28	23.4	120	100	1.41	6 th

As indicated in table 6 of item 1 the respondents were asked to respond on the attractive the school compound and fencing and they responded as follows, 19 (15.8%) very high, 21 (17.5%) high, 25 (20.8%) moderate, 45 (37.5%) low, 10 (8.3%) very low and the mean score was 2.95 . From this response it was possible to suggest attractiveness of the school compound and fencing

was moderate. This means it needs some changes and improvements. As indicated in item 2 of table 6 the respondents were asked to response on the quality and functionality of library services and they responded as follows, 11 (9.2%) very high, 13 (10.8%) high, 22 (18.3%) moderate, 53 (44.2%) low, 21 (17.5%) very low and the mean score was 2.64. From this someone can infer the quality and functionality of library service were moderate.

As indicated in item 3 of table 6 the respondents were asked to respond on the adequacy of student's seat and they responded as 22 (18.35) very high, 32 (26.7%) high, 55 (29.2%) moderate, 31 (25.8%) low and the mean score was 3.30. From this one can suggest adequacy of students' seats were moderate. As indicated in table 6 of item 4 the respondents requested to respond availability of class size to accommodate all the students, and they responded as no response on very high, 14 (11.7%) high, 13 (10.8%) moderate, 67 (55.8%) low, 26 (21.7%) very low and the mean score was 2.13. From this one can conclude availability of class size to accommodate all students was low. As observed in item 5 of table 6 the participants requested to respond on the adequacy of chair and table in the class and they responded as follows 5 (4.2%) very high, 15 (15.2%) high, 34 (28.3%) moderate 54 (45%) low, 12 (10%) very low and the mean score was 2.56 .From this one can deduce adequacy of chair and table in the class was low. As indicated in item 6 of the same table the respondents were asked to respond on quality and functionality of water supply and they responded as, no response on very high and high, 24 (20%) moderate, 68 (56.6%) low 28 (23.4%) very low and the mean score was 1.41 . From this someone can infer that quality and functionality of water supply was very low.

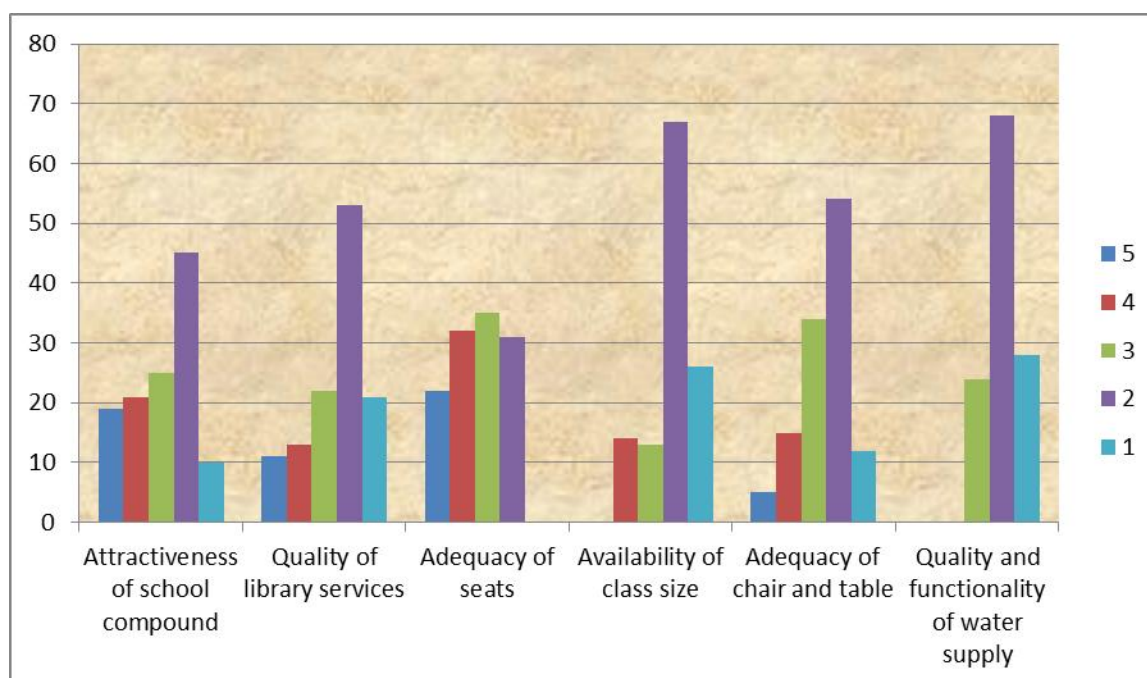


Figure 5 Graph of analysis of school facility factors filled by students

Table 7 Analysis of effectiveness of teacher's role in students' academic performance

No	Item	Teachers													
		5		4		3		2		1		total		Mean score	Mean rank
		N	%	n	%	N	%	n	%	n	%	n	%		
1	Readiness of teachers for best performance	-	-	1	16.7	1	16.7	3	50	1	16.7	6	100	2.33	5 th
2	Better pedagogical content knowledge of teachers	-	-	-	-	-	-	5	83.3	1	16.7	6	100	1.83	8 th
3	Teachers knowledge of class room	-	-	1	16.7	2	33.3	2	33.3	1	16.7	6	100	2.50	3 rd

	management														
4	Having an experience of various teaching methods	-	-	1	16.7	2	33.3	2	33.3	1	16.7	6	100	2.50	3 rd
5	Knowing when and how to apply each method of teaching	-	-	-	-	-	-	2	33.3	4	66.7	6	100	1.33	8 th
6	teacher's experience of preparation of lesson plan and evaluation	1	16.7	-	-	3	50	2	33.3	-	-	6	100	3.0	1 st
7	Teaching in a steady pace, maintain clear direction in lessons	-	-	2	33.3	2	33.3	-	-	2	33.3	6	100	2.67	2 nd
8	Experience of teachers class room assessment	-	-	1	16.7	-	-	4	66.6	1	16.7	6	100	2.17	6 th
9	Knowledge of knowing individual student characteristics	-	-	-	-	-	-	1	16.7	5	83.3	6	100	1.17	10 th
10	Supporting and fostering individual learning progress	-	-	1	16.7	-	-	4	66.7	1	16.7	6	100	2.17	6 th

5=very high, 4=high, 3=moderate, 2=low, 1=very low.

Scale of mean, 1.00-1.80= very low, 1.81-2.60=low, 2.61-3.40=moderate, 3.41-4.20=high, 4.21-5.00=very high. As indicated in table 7 of item 1 the respondents were asked to suggest their opinion on the readiness of teachers for best performance and they responded as no response on

very high, 1 (16.7%) high, 1 (16.7%) moderate, 3 (50) low, 1 (16.7%) very low and the mean score was 2.33. From this one can suggest that teachers' readiness for best performance was low. As indicated in table 7 of item 2 the respondents were asked to reply on better pedagogical content knowledge of teachers and they replied as follows, 5 (83.3%) low, 1 (16.7%) very low and the mean score was 1.83. From this data it was possible to conclude that teacher's pedagogical content knowledge was low. As indicated in item 3 of table 7 the respondents were asked to respond on teacher's knowledge of class room management and they responded as no response on very high, 1(16.7%) high,2 (33.3) moderate,2 (33.3) low,1 (16.7%)\ very low and the mean score was 2.50. From this one can suggest that teacher's knowledge of class room management was low performance. As indicated in item 4 of table 7 the respondents were asked to respond on having an experience of various teaching methods and they responded as follows, no response on very high, 1 (16.7) high, 2 (33.3) moderate, 2 (33.3) low,1 (16.7) very low and the mean score was 2.50. From this one can decide that teachers having various teaching methods were low. As indicated in item 5 of table 7 the respondents were asked to respond on knowing and how to apply each method of teaching and they responded as follows, no response on very high, high and moderate, 2 (33.3%) low, 4 (66.7%) very low and the mean score was 1.33. From this one can decide that teachers knowledge of knowing how to apply each method of teaching was very low. As indicated in item 6 of table 7 the respondents were asked to respond on teachers experience of preparation of lesson plan and evaluation and they responded as follows, 1 (16.7%) very high, no response on high, 3 (50%) moderate, 2 (33.3%) low, no response on very low and the mean score was 3.00. From this one can infer that teachers experience of preparation of lesson plan and evaluations were moderate.

As indicated in table 7 of item 7 the respondents were asked to reply on teaching in a steady pace, maintain clear direction in lessons and they responded as no response on very high, 2 (33.3%) high, 2 (33.3%) moderate, no response on low 2 (33.3%) very low and the mean score was 2.67. From this response it was possible to suggest maintaining clear directions in lessons were moderate. In the same way as indicated in table 7 of item 8 the respondents were asked to response on experience of teachers class room assessment and they responded as no response on very high, 1(16.7%) high, no response on moderate, 4 (66.6%) were low 1(16.7%) very low and the mean score was 2.17. From this one can conclude that experience of teachers' class room

assessment were low. As indicated in item 9 of table 7 the respondents were asked to respond on knowledge of knowing individual students characteristics and they responded as no response on very high , high and moderate 1 (16.7%) low,5 (83.3%) very low and the mean score was 1.17. From this one can suggest that knowing individual student characteristics were very low, this indicate that it needs improvements. As indicated in item 10 of table 7 the respondents were asked to respond on supporting and fostering on individual learning progress and they responded as no response on very high, 1(16.7%) high, no response on moderate, 4 (66.6%) low, 1 (16.7%) very low and the mean score was 2.17 .From this one can suggest supporting individual learning progress was low.

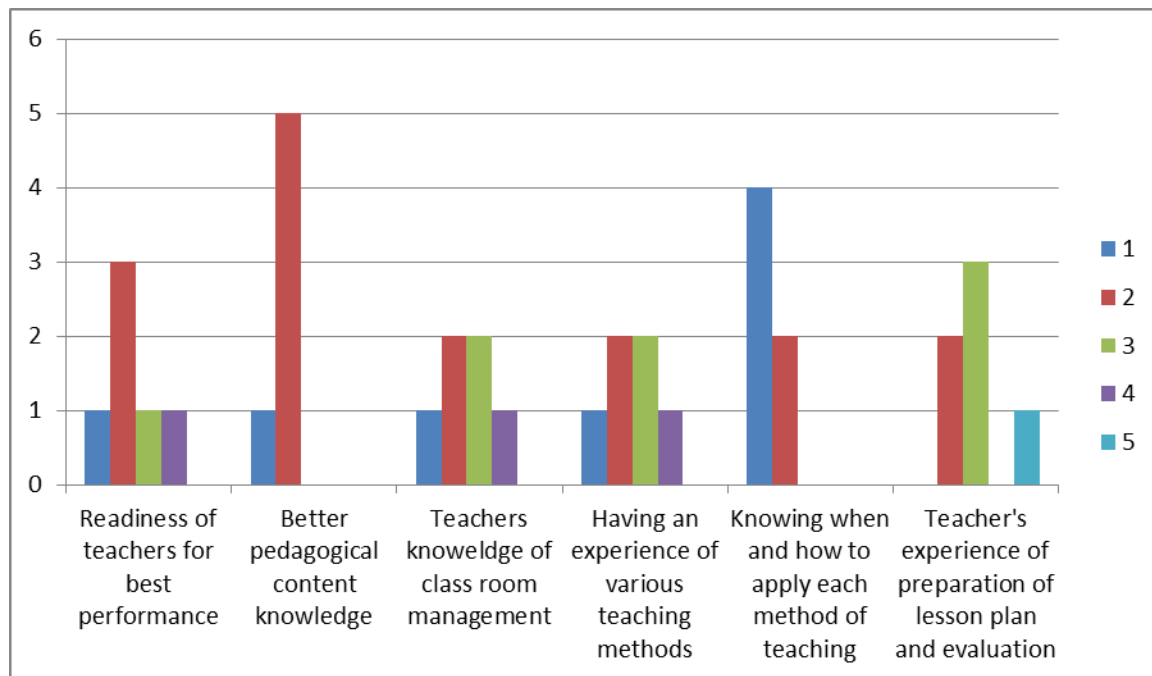


Figure 6 Graph of analysis effectiveness of teacher's role in student's academic performance

Table 8 Analysis of school curriculum based factors that affect academic performance of students' filled by teachers.

N o	Items	Teachers														
		5	4		3		2		1		total		Mean		Mean rank	
		n	%	%	N	n	%	n	%	n	%	n	%			
1	Availability of sufficient physics text books	-	-	3	50	3	50	-	-	-	-	6	100	3.50	1 st	
2	Availability of sufficient physics teacher’s guide	-	-	1	16.7	1	16.7	4	66.6	-	-	6	100	2.50	5 th	
3	Quality and functionality of black board	-	-	-	-	3	50	2	33.3	1	16.7	6	100	2.33	7 th	
4	Availability of enough physics reference materials	-	-	1	16.7	-	-	4	66.6	1	16.7	6	100	2.17	8 th	
5	Availability of well-prepared physics laboratory manuals	-	-	-	-	-	-	1	16.7	5	83.3	6	100	1.17	13 ^t _h	
6	Availability of printing service	-	-	2	33.3	3	50	1	16.7	-	-	6	100	3.17	3 rd	
7	Availability of computer service for students	-	-	-	-	-	-	2	33.3	4	66.7	6	100	1.33	12 ^t _h	
8	Availability of sufficient different color chalk	-	-	1	16.7	2	33.3	1	16.7	2	33.3	6	100	2.17	8 th	
9	Availability of computer service for teachers and administrators	-	-	-	-	1	16.	4	66.6	1	16.7	6	100	2.00	11 ^t _h	
10	Availability of															

	functional duplicating machine in school	-	-	1	16.7	3	50	2	33.3	-	-	6	100	1.83	4 th
11	Availability of TV set to be used for educational purposes	-	-	-	-	-	-	1	16.7	5	83.3	6	100	1.17	13 th
12	Availability of enough stationary materials	1	16.7	1	16.7	3	50	1	16.7	-	-	6	100	3.18	2 nd
13	Quality and functionality of photocopy machine in the school	1	16.7	-	-	1	16.7	3	50	1	16.7	6	100	2.50	5 th

As indicated in table 8 of item 1 the respondents asked to respond on availability of sufficient physics text book and they responded as no response on very high, 3 (50%) high, 3 (50%) moderate, no response on low and very low and the mean score was 3.50. From this one can conclude there was high supply of physics text books.. As indicated in table 8 of item 2 the respondents were asked to respond on availability of physics teachers guide and responded as no response on very high, 1 (16.7%) high, 1 (16.7%) moderate, 4 (66.6%) low and the mean score was 2.50. This indicates availability of physics teacher's guide was low supply. As indicated in table 8 of item 3 the respondents were asked to respond on quality and functionality of black board and they responded as no response on very high and high, 3 (50%) moderate, 2 (33.3%) low, 1 (16.7%) very low and the mean score was 2.33. This indicate quality and functionality of black board was low. As presented in table 8 of item 4 the respondents were asked to respond on physics reference materials and responded as no response on very high, 1 (16.7%) high, no response on moderate ,4 (66.6%) low, 1 (16.7%) very low and the mean score was 2.17. This show there is insufficient physics reference materials. As indicated in item 5 of table 8 the respondents were asked to respond on availability of well-prepared physics laboratory manuals and responded as no response on very high, high, moderate , 1 (16.7%) low, 5 (83.3) very low, and the mean score is 1.17. These show there were insufficient physics laboratory manuals. As indicated in table 8 of item 6 the respondents were asked to respond on availability of printing service and they responded as no response on very high, 2 (33.3%) high,3 (50%) moderate, 1

(16.7%) low, no response on very low and the mean score was 3.17. This indicates availability of printing service was medium supply. As indicated in table 8 of item 7 the respondents were asked to respond on availability of computer service for students and responded as no response on very high, high and moderate, 2 (33.3%) low, 4 (66.7%) very low and the mean score was 1.33. From this one can suggest that there is insufficient computer service for students. As indicated in item 8 of table 8 the respondents were asked to respond on availability of different color chalk and they responded as no response on very high, 1 (16.7%) high, 2 (33.3%) moderate, 1 (16.7%) low, 2 (33.3%) very low and the mean score was 2.17. This indicates there was no sufficient different color chalk. As presented in item 9 of table 8 the respondents were asked to reply on computer service for teachers and administrators and responded as follows, no response on very high, and high, 1 (16.7%) moderate, 4 (66.6%) low, 1 (16.7%) very low and the mean score was 2.00. From this one can deduce that computer service for teachers and administrators was low. As indicated in table 8 of item 10 the respondents were asked to respond on functional duplicating machine and they responded as no response on very high, 1 (16.7%) high, 3 (50%) moderate, 2 (33.3%) low and the mean score was 2.83. This indicates that functional duplicating machine was moderate. As presented in table 8 of item 11 the respondents were asked to respond on availability of TV set for educational purposes and responded as no response on very high, high and moderate, 1 (16.7%) low, 5 (83.3%) very low and the mean score was 1.17. This indicates that TV set for educational purposes were very low. As indicated in table 8 of item 12 the respondents were asked to respond on availability of enough stationary material and responded as 1(16.7%) very high, 1(16.7%) high, 3(50%) moderate, 1(16.7%) low and the mean score was 3.18. This shows availability of stationary materials were moderate supply. As indicated in table 8 of item 13 the respondents were asked to respond on quality and functionality of photocopy machine and responded as 1(16.7%) very high, no response on high, 1 (16.7%) moderate, 3 (50%) low, 1(16.7%) very low and the mean score was 2.50. This shows quality and functionality of photocopy machine was low.

Table 9 Analysis of the impact of assessment method on student's academic performance filled by teachers.

No	Items	Teachers													
		5		4		3		2		1		Total		mean	Mean rank
		n	%	n	%	n	%	n	%	n	%	n	%		
1	The extent of application of continuous assessment	1	16.7	3	50	1	16.7	-	-	1	16.7	6	100	3.33	2 nd
2	Adequacy of materials for effective attainment Of assessment in physics class	-	-	-	-	4	66.6	1	16.7	1	16.7	6	100	2.5	3 rd
3	The extent of conducive instructional process for application of different method of assessment	-	-	-	-	1	16.7	4	66.6	1	16.7	6	100	2.00	6 th
4	The extent to which teachers give class activity homework and assignments	2	33.3	2	33.3	-	-	2	33.3	-	-	6	100	3.57	1 st
5	The extent to which teachers use different varieties of assessment method	-	-	-	-	1	16.7	3	50	2	33.3	6	100	1.83	7 th
6	The level to which teachers use different items of questions	-	-	-	-	2	33.3	3	50	1	16.7	6	100	2.17	4 th
7	The extent to which teachers	-	-	-	-	1	16.7	5	83.3	-	-	6	100	2.17	4 th

	Are encouraged by principals to use continuous assessment														
8	The extent to which the appropriateness of the standard set of number of student by MOE against class room for better assessment method	-	-	-	-	-	-	2	33.3	4	66.7	6	100	1.33	8 th

As indicated in table 9 of item 1 the respondents were asked to reply on the extent of application of continuous assessment and they replied as 1 (16.7%) very high, 1 (16.7%) high, 3 (50%) moderate, 1 (16.7%) low, no response on very low and the mean score was 3.33. From this one can infer application of continuous assessment was moderate. This means it needs improvements. As indicated in table 9 of item 2 the respondents were requested to reply on adequacy of materials for effective attainment assessment in physics class and they responded as 4 (66.7%) moderate, 1 (16.7%) low, 1 (16.7%) very low and the mean score was 2.5 . From this someone can conclude that adequacy of materials for continuous assessment was moderate performance. As indicated in table 9 of item 3 the respondents requested to reply on the extent of conductive instructional process for application of different assessment method and they replied as no response on very high and high , 1 (16.7%) moderate, 4 (66.7%) low, 1 (16.7%) very low and the mean score was 2.00. From this someone can conclude that extent of conductive instructional materials for continuous assessment method was low. As indicated in table 9 of item 4 the

respondents were asked to respond on the extent to which teachers give class activity, homework and assignments and they replied as 2 (33.3%) very high, 2 (33.3%) high, 2 (33.3%)= low no response on very low and the mean score was 3.57 . From this one can decide that the extent to which teachers give class activity, homework and assignments were high application.

As indicated in table 9 of item 5 the respondents were asked to reply on the extent to which teachers use different varieties of assessment method and they responded as no response on very high and high, 1 (16.7%) moderate, 3 (50%) low, 2 (33.3%) very low and the mean score was 1.83

.From this one can decide the extent to which teachers use different varieties of assessment method was low .As indicated in table 9 of item 6 the respondents were asked to response on the level to which teachers use different items of questions and they replied as follows, no response on very high & high, 2 (33.3%) medium, 3 (50) low, 1(16.7%) very low and the mean score was 2.17. From this one can infer that the level to which teachers use different items of questions were low. As indicated table 9 of item 7 the respondents were asked to reply on the extent to which teachers were encouraged by principals to use continuous assessment and replied as no response on very high and high, 1 (16.7%) moderate, 5 (83.3%) low, no response on very low and the mean score was 2.17. From this one can conclude that the extent to which teachers were encouraged by principals to use continuous assessment was moderate. As indicated by table 9 of item 8 the respondents were asked to respond on the extent to which the appropriateness of standard set by MOE against class room for better assessment method and replied as no response on very high, high and moderate 2 (33.3%) low, 4 (66.7%) very low and the mean score was 1.33 .From this one can deduce the standard set by MOE against class room was very low.

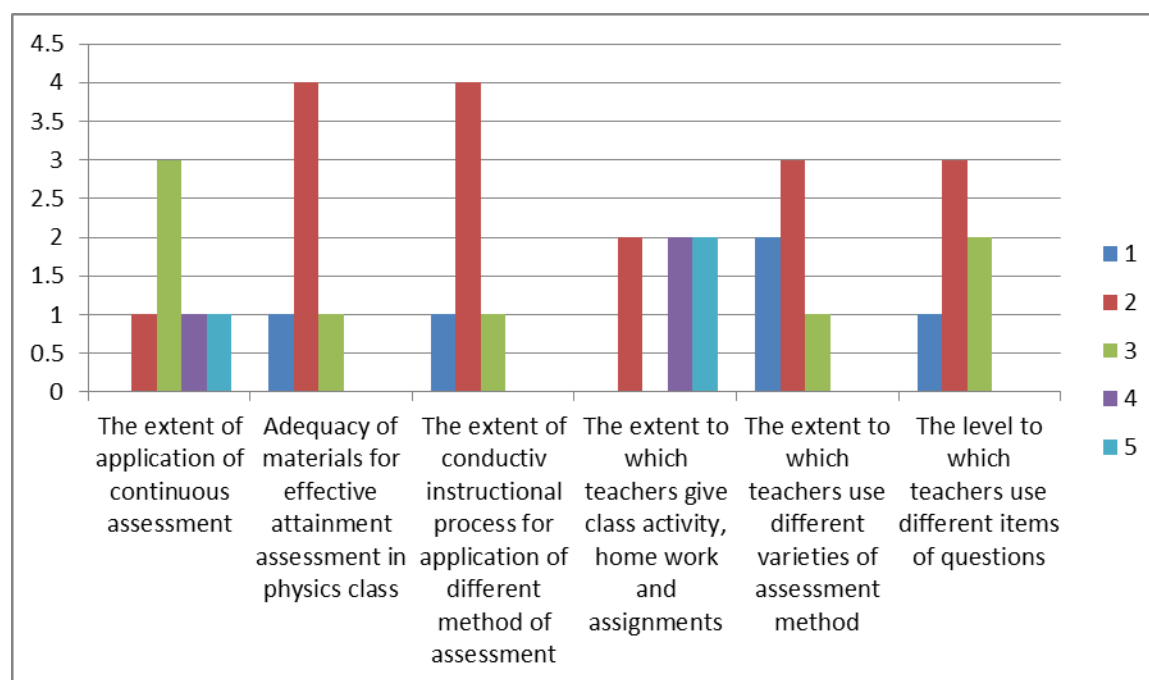


Figure 7 Graph of analysis of the impact of assessment method on student's academic performance filled by teachers.

Table 10. Analysis of school facility related factors filled by teachers

No	Items	Teachers													
		5		4		3		2		1		Total		Mean	mean rank
		N	%	n	%	N	%	n	%	n	%	n	%		
1	Attractiveness of the school compound and fencing	-	-	1	16.7	5	83.3	-	-	-	-	6	100	3.17	1 st
2	Attractiveness of class room condition (floors, walls)	1	16.7	-	-	-	-	4	66.6	1	16.7	6	100	2.33	5 th
3	Quality and functionality of library services	-	-	1	16.7	4	66.7	1	16.7	-	-	6	100	3.00	2 nd
4	Functionality of pedagogical center	-	-	-	-	-	-	2	33.3	4	66.7	6	100	1.33	8 th
5	Adequacy of student's seats	-	-	1	16.7	1	16.7	4	66.6	-	-	6	100	2.50	4 th
6	Availability of class size to accommodate all the students	-	-	-	-	1	16.7	4	66.7	1	16.7	6	100	2.00	6 th
7	Adequacy of	-	-	1	16.7	3	50	2	33.3	-	-	6	100	2.83	3 rd

	chair and table in the class														
8	Quality and functionality of water supply	-	-	-	-	-	-	4	66.7	2	33.3	6	100	1.67	7 th

As indicated in table 10 of item 1 the respondents were asked to respond on attractiveness of the school compound and fencing and they responded as, no response on very high, 11(6.7%) high, 5 (83.3%) moderate, no response on low and very low and the mean score was 3.17. This shows attractiveness of school compound was moderate. As indicated in table 10 of item 2 the respondents were asked to respond on attractiveness of class room conditions (floors, walls) and they responded as 1(16.7%) very high, no response on high and moderate, 4 (66.7%) low, 1(16.7%) very low and the mean score was 2.33. From this one can conclude attractiveness of class room condition were low. As stated in table 10 of item 3 the respondents were asked to respond on quality and functionality of library services and they responded as no response on very high, 1 (16.7%) high ,4 (66.7%) moderate ,1 (16.7%) low and the mean score was 3.00. This shows quality and functionality of library services were moderate. This means it is not enough for quality service. As indicated in table 10 of item 4 the respondents were asked to respond on functionality of pedagogical center and they responded as, no response on very high, high and moderate, 2 (33.3%) low, 4 (66.7%) very low and the mean score was 1.33. From this one can decide that functionality of pedagogical center was very low. As indicated in table 10 of item 5 the respondents were asked to respond on adequacy of students' seats and they responded as no response on very high, 1(16.7%) high, 1(16.7%) moderate, 4 (66.7%) low, no response on very low and the mean score was 2.50. From this one can suggest that adequacy of students' seat was moderate. As indicated in table 10 of item 6 the respondents were asked to respond on availability of class size to accommodate all the students and they responded as, no response on very high and high 1(16.7%) moderate, 4 (6.7%) low ,1(16.7%) very low and the mean score was 2.00. This indicates availability of class size to accommodate all the students was low.

As indicated in table 10 of item 7 the respondents were asked to respond on adequacy of chair and table in the class and they responded as no response on very high, 1(16.7%) high, 3 (50%) moderate, 2 (33.3%) low, no response on very low and the mean score was 2.83. This shows adequacy of chair and table in the class were moderate. As indicated in table 10 of item 8 the respondents were asked to respond on quality and functionality of water supply and they responded as no response on very high, high and, moderate ,4 (66.6%) low ,2 (33.3%) very low and the mean score was 1.67. From this one can conclude that quality and functionality of water supply was very low.

Table 11 Analysis on school principals' effectiveness in facilitating of teaching and learning of physics filled by supervisors

No	Items	Supervisors													
		5		4		3		2		1		total		Mean	Mea
		n	%	N	%	N	%	no	%	no	%	no	%		n rank
1	Motivation of physics teachers for best performance	-	-	-	-	-	-	2	100	-	-	2	100	2	8 th
2	Encouraging physics teachers to use continuous assessment to enhance student's performance	-	-	1	50	-	-	1	50	-	-	2	100	3.00	2 nd
3	Creating of favorable working environment	-	-	-	-	2	100	-	-	-	-	2	100	2	8 th
4	Allocation of resources to support students learning	-	-	-	-	1	50	1	50	-	-	2	100	2.5	3 rd

5	The extent to which school principals encourage teachers to understand the curriculum	-	-	-	-	-	-	2	100	-	-	2	100	2	8 th
6	To what extent school principals facilitate provision of instructional materials for physics teachers	-	-	-	-	1	50	-	-	1	50	2	100	2	8 th
7	The extent to which school principals implement a strategy through which physics teachers can acquire appropriate teaching methods	-	-	-	-	-	-	2	100	-	-	2	100	2	8 th
8	To what extent school leaders create suitable classrooms for student learning?	-	-	1	50	1	50	-	-	-	-	2	100	3.5	1 st

As indicated in table 11 of item 1 the respondents were asked to respond on motivation of physics teachers for best performance and they responded as follows, 1 (50%) high, 1 (50%) low and the mean score was 2.00. From this one can conclude that principal's motivation of physics teachers for best performance was low application. This shows principal's motivation of physics teachers need improvements. As indicated in table 11 of item 2 the respondents were asked to respond on encouraging physics teachers to use continuous assessment and they responded as 1(50%) high 1 (50%) low and the mean score was 3. From this one can deduce that principals

encouraging physics teachers to use continuous assessment was moderate. As stated in table 11 of item 3 the respondents were asked to respond on creating of favorable working environment and they responded as 2 (100%) moderate and the mean score was 2. This shows principals creating favorable environment were low performance. As indicated in table 11 of item 4 the respondents were asked to respond on allocation of resources to support students learning and they responded as follows 1 (50%) moderate, 1 (50%) low and the mean score was 2.5. This shows principal's allocation of resources to support students learning has low performance.

As observed in item 5 of table 11 the respondents were asked to respond on the extent to which principals encourage teachers to understand the curriculum and they responded as 2 (100%) low and the mean score was 2. From this one can understand principals encourage teachers to understand the curriculum were low. As shown in table 11 of item 6 the respondents were asked to respond on to what extent school principals facilitate provision of instructional material for physics teachers and they responded as follows 1 (50%) moderate, 1 (50%) very low and the mean score was 2. This shows principal facilitating for instructional materials for physics teachers was low. As observed in item 7 of table 11 the respondents requested about the extent to which physics teachers can acquire appropriate teaching methods and they responded as follows 2 (50%) low and the mean score was 2. This shows the extent to which school principals implement strategy through which physics teachers can acquire appropriate teaching method was low. As indicated in table 11 of item 8 the respondents were asked to respond on to what extent school leaders create suitable class rooms for student learning and they responded as 1 (50%) high, 1 (50%) moderate and the mean score was 3.00. This means the extent to which school principals create suitable condition for class room students' learning was moderate application. This means it needs improvement.

4.3 School Observation

As I observed sampled schools, some schools have lack of laboratory rooms, quality black board, pedagogical Centre, laboratory equipment; enough physics reference materials where they are my focus of observation. But the status of each variable is different from one school to another.

Table 12 observation checklist about the role of teachers in teaching during physics class.

No	List of observation	Applied Well		Applied to some extent		Not Applied well	
		N	%	n	%	n	%
1	Teacher's management of class room	2	33.3	3	50	1	16.7
2	Teachers use varieties of teaching method	1	16.7	1	16.7	4	66.7
3	Readiness of teachers for best performance	2	33.3	4	66.7	-	-
4	Teachers deliver the topic well	1	16.7	5	83.3	-	-
5	Students follow the lesson well	4	66.7	1	16.7	1	16.7

Key-n =number of class rooms observed

As indicated in table 12 of item 1 from observation check list teachers' management of class room 3 (50%) of classes were applied to some extent. As shown in table 12 of item 2 from observation, teacher's use of varieties of teaching method 4 (66.7%) of classes were not applied. As shown in table 12 of item 3 from observation, readiness of teachers for best performance 4 (66.7) of classes were applied to some extent. As indicated in table 12 of item 4 from observation, the way teachers deliver the topic 5 (83.3) of classes were applied to some extent. As indicated in table 12 of item 5 from observation, students follow the lesson 4 (66.7) of classes were applied.

Table 13 Problems perceived to affect the academic performance of physics students as rated by average mean value

No	Items(variables)	Student respondents	Teacher respondents	Average mean
		Mean value	Mean value	
1	The role of teachers on academic performance of physics students	2.62	2.17	2.40
2	Curriculum factors on academic performance	2.54	2.31	2.43
3	School based problems on academic performance	2.49	2.35	2.42

More over the interview done with physics teachers of the sampled schools indicated the same idea confirmed to that of the above table. The data collected from physics teachers through interview revealed that teachers' role related pedagogical problems are the most determinant factors that affects academic performance of physics students in the study area. Besides, the interview done with physics teachers indicated that shortage of school facility resources and instructional materials are factors that hinder effective improvement of academic achievement of physics students.

CHAPTER FIVE

5.SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This Chapter deals with the major findings, conclusions and recommendations based on the result obtained through data analyzed and interpreted in chapter four. The main aim of carrying out this study was to investigate the main pedagogical challenging problems that hinder the academic performance of physics students in secondary schools in the study area. Thus to arrive at overall results three types of data collection tools: questionnaires, interview, and direct observation were used. The data gathered through these tools were analyzed and discussed in the previous chapter. Hence based on the analysis and discussion the following Summary, Conclusion and Recommendation were made.

5.1 summary

The main purpose of this study was to examine pedagogical problems challenging the academic performance of physics students in secondary school of Guduru-area.

This study was conducted in four selected schools. The participants of this study were students of grade 9 and grade 10 of the sample schools, teachers and supervisors. The researcher was selected 120 participants from students, 6 from physics teachers, 2 from supervisors. The sample size for each school was set proportionally using the target population and the instrument used in this study were questionnaire, interview and observation. The questionnaire was administered to 120 students, 6 physics teachers and 2 supervisors the questionnaire mainly focusing on teachers role, school facilities, and curriculum factors.

The data was analyzed using descriptive statistics such as number, percentage, mean and mean rank accordingly, the following major findings were obtained from the analysis.

1. Regarding to the role of teachers on academic performance, of physics students in secondary school of Guduru area the data gathered from student respondents by using

questionnaire, with average mean score of 2.62 revealed that the role of teachers on academic performance of physics students were moderate application. Besides, the information obtained from class room observations readiness of teachers for best performance was applied to some extent.

2. Concerning to curriculum based factors that affect students' academic performance of physics students, the data gathered from student respondent using questionnaire with the average mean score of 2.54 revealed that inadequate. This shows observable problems that need improvements.
3. The data gathered from student respondents on school facility factors using questionnaire with the average mean score of 2.49 revealed that low. This indicates lack of school facility factors that hinder students' academic achievement.
4. From the response given by teacher respondents on teacher's role for best performance, with the average mean score of 2.17 revealed that low and the information gathered from the analysis of interview shows the same result. So there was an extensive problem of teachers' role related pedagogical problems.
5. With respect to school curriculum based factors the data gathered from teacher respondents using questionnaire with the average mean score of 2.31 revealed that low application. Moreover the interview done with teacher indicated the same idea confirmed to the above idea.
6. From the response given by teacher respondents on the analysis of assessment method and students' academic performance using questionnaire with the average mean score of 2.63 indicate that moderate performance.
7. The data gathered from teacher respondents using questionnaire on school facility related factors with the average mean score of 2.35 revealed that low performance and information from interviews revealed the same result. This indicates the insufficient quantity and quality supply of school facility related factors that affect students' academic achievement.
8. The data gathered from supervisor respondents on the analysis of school principals' effectiveness in facilitating the teaching and learning of physics by using questionnaire with the average mean score of 2.38 revealed that inadequate

application. Moreover this indicates there is no timely and change oriented support for teachers from school administration.

5.2 Conclusions

Based on the summary of the findings, the following conclusions were drawn. Pedagogical problems challenging the academic performance of physics students were a complex issue. This had been indicated from the findings in terms of the appearance of of pedagogical challenge problems that hinder academic achievement of physics students.

1. From the findings of the study it has been observed that pedagogical problems were the commonly basic factor that influence the academic achievement of physics student's .This is perhaps because of, some of the predictor variables that were more significantly related to students out comes.
2. Educators (teachers) have a great role in fostering positive or negative attitude to the subject matter on students' out comes, for example teachers' pedagogical content knowledge, teachers method of teaching, teachers competency were some parameters that influence students learning outcome .
3. There is a strong association between academic achievement of students and their school administration. Furthermore, the student should perform well if they are properly guided by their school principals, teachers and supervisors.
4. There is a strong association between academic performance of students and lack of school based problems, like school facility such as, class size, student's seat library services, ict rooms pedagogical center, water supply,...etc. All these services are the major problem that the students of the study area are facing and have an immense challenge on student performance.
5. Assessment that a teacher is being using have an impact on academic performance of physics students. In the study area teachers did not fully apply continuous assessment. The low adequacy of effective attainment assessment in physics class, low use of variety of assessment methods, low level of teachers' use of different items of questions, in appropriate class size and others influence the academic performance of physics students in the study area.

6. The role of school principals in motivation of teachers for best performance, encouragement for enhancing continuous assessment, creating favorable working condition, allocation of resource, encouraging teachers for understanding curriculum was low. This all might be the case for low out comes of students in the study area.
7. As it can be observed from table 13 above analyses of data using questionnaires from teacher and student respondents, the first problem perceived with less average mean value of 2.40 ranked to the most severe problem was teachers' role on academic performance of physics students. The next rank with average mean value of 2.42 school based problems affecting students' academic performance. The 3rd rank with average mean value of 2.43 curriculum factors affecting students' academic performance. Based on the above result teachers' role related pedagogical problems have more negative impact than other factors.

5.3. Recommendations

According to the findings of the study the following recommendations were forwarded as recommendation to improve the pedagogical problem challenging the academic performance of physics students in the school of Guduru-area.

1. There should be continuous teachers work shop and training to improve their educational level, teachers should develop their teaching method, knowledge and competency. Teachers' should be encouraged to use continuous class room assessment.
2. School administrators should constantly provide the necessary resources for physics learning environment in order to treat for better students 'academic achievement. In addition to this, it is necessary to build resources and facility capacity of the school.
3. There should be improvement in short supply of curriculum based materials that affect student learning capacity. Such as well-prepared physics laboratory manuals, teacher's guide, physics reference materials, computer service and other physical materials.
4. The government and local community should work to solve the problem of class size, necessary buildings, and in making school compound more attractive and save. To see quality student's out comes in physics at schools and to rise up students ability of learning and to have better citizen for tomorrow, government and community should work honestly from their heart felt.

5. In order to enhance the level of students in physics performance, assessment should be accompanied by feedback .This is simply to identify the strength and weakness of each student and then to help them to improve up in their weakness.
6. The population of students admitted into the school should be dependent on the available space and facilities. There should be reasonable match between student population and available resources.
7. From the result of the study pedagogical problems in secondary schools of the study area were need change and improvements. So all the stake holders must work collaborate to enhance and promote physics academic achievements by solving all these pedagogical challenge problems.

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APPENDIX I
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF APPLIED NATURAL SCIENCE DEPARTMENT
OF PHYSICS

Questionnaire to be filled by students, physics teachers and supervisors

This questionnaire was prepared to identify the pedagogical challenge problems encountered in academic performance of secondary school physics students and so as to suggest possible solutions. Since the information you provided me was valuable for this special study. I request your genuine response.

Thank you for your sincere cooperation's

General directions:

- It is not necessary to write your name
- For questions with alternative choices put an "X" mark inside the box
- Write your opinion briefly for open ended questions on the space provided

Part I General Information

Personal Background Information

1.1 Name of the school _____

1.2 Name of the woreda _____

1.3 Sex : Male ---- Female----

1.4 Age A. below 20---- B. 21-30 C. 31-50 ----- D. above 51 ----

1.5 Qualification MA/MED/MSC---- BA/BED/BSC----- Diploma

Any other-----

1.6. Work experience in years

A. For teachers 1-5---- 6-10 11-15----- 16-20---- 21-25---- 26 and over -----

B For experts (supervisors and others)

Below 10----- 11-20 ----- 21-30----- 31 and above-----

Major _____ Minor _____

Others _____

Part II

Directions: kindly indicate the level of degree of your opinion to the issues presented by putting “X” mark in the space provided corresponding to each item under scales that represents your opinion, against each item, there are rating options ranging from 1to 5, 5 stands for very high,4=high,3=moderate,2=low,1=very low

1 .Effectiveness of teachers ‘role in students’ academic performance

No	Items	Students				
		5	4	3	2	1
1.1	Readiness of teachers for best performance					
1.2	Teachers knowledge of class room management					
1.3	Having experience of various teaching methods					
1.4	Teaching at a steady pace, maintaining clear direction in lessons					
1.5	Experience of teachers class room assessment					
1.6	Knowledge of knowing individual student characteristics					
2	Curriculum based factors					
2.1	Availability of sufficient physics text books					
2.2	Quality and functionality of black board					

No	Items	Student				
		5	4	3	2	1
2.3	Availability of well-prepared physics laboratory manuals					
2.4	Availability of computer service for students					
2.5	Availability of sufficient different color chalk					
2.6	Availability of TV set to be used for educational purposes					
3	School facility related factors					
3.1	Attractiveness of the school compound and fencing					
3.2	Quality and functionality of library services					
3.3	Adequacy of student's seats					
3.4	Availability of class size to accommodate all the students					
3.5	Adequacy of chair and table in the class					
3.6	Quality and functionality of water supply					

3.7 If there are any other dimensions of teachers role to impact on student's academic performance, please list them on the space provided below

3.8 Write any kind of problems with necessary feedback during the time of instructional assessment

3.9. What problem do you face while using assessment methods in physics class?

No	Items	Teachers				
		5	4	3	2	1
	Questionnaire for teachers role					
1.1	Readiness of teachers for best performance					
1.2	Better pedagogical content knowledge of teachers					
1.3	Teachers knowledge of class room management					
1.4	Having an experience of various teaching methods					
1.5	Knowing when and how to apply each method of teaching					
1.6	Teachers' experience of preparation of lesson plan and evaluation					
1.7	Teaching at a steady pace, maintaining clear direction in lessons					
1.8	Experience of teachers class room assessment					
1.9	Knowledge of knowing individual student					

	characteristics					
1.10	Supporting and fostering individual learning progress					
2.	Questionnaire for school curriculum based factors	5	4	3	2	1
2.1	Availability of sufficient physics text books					
2.2	Availability of sufficient physics teachers; guide					
2.3	Quality and functionality of black board					
2.4	Availability of enough physics reference materials					
2.5	Availability of well-prepared physics laboratory manuals					
2.6	Availability of printing service					
2.7	Availability of computer service for students					
2.8	Availability of sufficient different color chalk					
2.9	Availability of computer service for teachers and administrators					
2.10	Availability of functional duplicating machine in school					
2.11	Availability of TV set to be used for educational purposes					
2.12	Availability of enough stationery materials					
2.13	Availability of enough stationery materials					
3	Questionnaire for assessment method					
3.1	The extent of application of continuous assessment					
3.2	Adequacy of materials for effective					

	attainment assessment in physics class					
3.3	The extent of conductive instructional process for application of different method of assessment					
3.4	The extent to which teachers give class activity, homework and assignments					
3.5	The extent to which teachers use different varieties of assessment method					
3.6	The level to which teachers use different items of questions					
3.7	The extent to which teachers are encouraged by principals to use continuous assessment					
3.8	The extent to which the appropriateness of the standard s The extent to which the appropriateness of the standard set by MOE against class room for better assessment method					
4	Questionnaires for school facility					
4.1	Attractiveness of the school compound and fencing					
4.2	Attractiveness of class room conditions(floors, walls)					
4.3	Quality and functionality of library services					
4.4	Functionality of pedagogical center					
4.5	Adequacy of student's seats					
4.6	Availability of class size to accommodate all the students					
4.7	Adequacy of chair and table in the class					
4.8	Quality and functionality of water supply					

4.9 List other main school facility factors that impacts on academic performance of physics students

No	Questionnaire for school principals effectiveness	Supervisors				
		5	4	3	2	1
5.1	Motivation of physics teachers for best performance					
5.2	Encouraging physics teachers to use continuous assessment to enhance student's performance					
5.3	Creating of favorable working environment					
5.4	Allocation of resources to support students learning					
5.5	The extent to which school principals encourage teachers to understand the curriculum					
5.6	To what extent school principals facilitate provision of instructional materials for physics teachers?					
5.7	The extent to which school principals implement a strategy through which physics teachers can acquire appropriate teaching methods					
5.8	To what extent school leaders create suitable class rooms for students learning?					

5.9 List any other activities in which principals are engaged in order to create positive school environment.

APPENDIX II

Interview guide question of physics teachers

This study was designed to assess pedagogical problems challenging the academic performance of physics students in Horo Guduru Wollega zone (The case of Guduru area schools). As you are under this profession, you are kindly requested to respond your free ideas as appropriate. I strongly believe that your response contributes to complete the study as intended.

Thank you in advance for your cooperation!

Interview guide questions

1. What were the main challenges during teaching lessons in class rooms?
2. To what extent teachers know individual student characteristics?
3. How do you explain the level of supporting individual student learning progress?
4. What is the relation between pedagogical content knowledge and students learning outcome?
5. How do you explain the adequacy of physics text books?
6. How do you explain the adequacy of physics laboratory manuals?
7. How do you describe, Quality and functionality of black board?
8. Is there sufficient different color chalk?
9. Is there enough "TV" service for students and teachers for educational purposes?
10. How do you describe the whole school facility factors for educational purposes?