

# Action Research: Approaches for Physics Performance in Secondary School

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**Abstract**— Physics is a core, elective and examinable subject. It is useful for any learner to obtain quality grades in any national examinations. Truancy has been a challenge in any learning institution. This action research project aimed at learners to change their attitude, subject choice and motivate them to do well in the subject. Secondary school students were taken on an educational Trip, involved in group work, given an exam or short test or remedial-guided experiments, mentorship and simplified language in teaching and learning physics was used as approaches to engage the learner towards a hundred percent lesson attendance and subject selection. It was carried out for three consecutive months where data was collected using class registers, class test and examinations. It was then analyzed using excel origin application and online zeraki analytics. Class subject entry and performance had positive trend and factors implored had impact on students learning, satisfaction and performance. Learners also developed interest in learning and positive changes in new skills and competencies were noted from the learner. The model may act as prospective strategy for teaching and learning of physics in the competence based curriculum learning.

**Keywords**—Action research, motivate, physics, students learning.

## I. INTRODUCTION

Physics is one of the core and elective subject taught in secondary school. For any developing nation physics is the basis for science, technology and innovation. The subject is key due to its demand for learning skills making it to be taken as complex [1]. Teaching and learning of physics has to be therefore administered in simple and easily and understandable way for the learner. This approach make the learner enjoy and attain knowledge and thereafter gain the necessary skills necessary for the 21<sup>st</sup> century [2]. The teacher therefore needs to guide and mentor the learner to gain the skills. The experiments on the other hand, offered by the subject, are crucial in the skill of analysis and problem solving [3]. One question to answer is, does it matter for students to study physics? Teachers who do not care for this question do not motivate their learners to choose physics as a career performing subject.

Many students study the subject in school because of the teacher who builds their intrinsic interest. Physics, which is perceived to be difficult, is offered by any Education curriculum as one of the several subjects in any secondary school. Learners possess inherent orientations and habits that need to be well understood by teachers that may make learners not to adhere to school academic routine. Motivational strategies can be implored by teachers to correct any notable

improper behavior in order to curb truancy in schools. Classroom academic discipline is key for any student who wishes to be successful in academic world.

Many academic problems, of students have been noted, right from difficulty in physics subject concepts, family background challenges, lack of motivation, poor performance in administered examinations and even most important, to poor study habits [4].

Learners with the external daily activity pressures, absent themselves from academics resulting to poor academic performances. For any academic progress, new approaches and interventions for education has to be entreat to produce desired and improved results.

The purpose of this action research project (ARP), therefore, was to increase the student physics subject attendance in class using effective motivational teaching and learning methods by the end of term 1, in 2025. The action research was also meant to improve students' individual performance in the physics subject leading to general good performance of the mean grade of the learner. The methods used embraced quality effective teaching, which implore discussions groups, guided laboratory experiments, technology use and where possible educational trips/excursions.

## II. SITUATIONAL ANALYSIS

Ngariet secondary is a school which is endowed with facilities and infrastructure. The school is a boarding/day school in Bomet County, Kenya. The number of students present in school Viz a Viz to those present in physics lessons is in ratio of 3:1. In student population, average of 78% are actively involved in continuously learning of physics for the period ending march, year 2025. Absenteeism was a continuous a challenge which was noticeable especially in this baseline information.

The observation made in school and classroom showed there was no consistency in attendance of lessons by the learner, for the second week, third and fourth week of term one, 2025. The data captured by the class and subject showed that a average of 70% per week of students were in school learning, the rest voluntarily took part in learning in some days. The students who fully attended lessons in the class were those who are boarders while day scholars were not consistent and others were being tracked or reminded to attend to school or their lessons by the teachers. In any examinations administered, for example, the learner's performances were proportional to frequency of class lessons attendance. The review of the learners' physics exam

results of term two 2025, for form 4, for example, revealed that more than 50% of the students attained below average grade. The subject teacher, then device ways to motivate the learner to attend to school and physics subject lessons without fail, which would lead to improved performance in physics. The witnessed low turnout in number of students taking physics and dismal performance in physics in the school due to leveled absenteeism in number of students who are majorly day scholars, warranted an action research to be undertaken.

### III. LITERATURE REVIEW

Learning is an extremely complex human process. To understand how, children learn either through experiences or through what they are taught or what they observe, the knowhow of gaining knowledge on new concepts and integration of new experiences from taught concepts has to be known. Students mature in their knowledge and understanding when they go to school. Here, academic performance of students is directly affected by their school needs such as academic thirst, library attendance, natural surroundings,

relevance of meals in academic performance, truancy, parents' income and availability of textbooks. [5], [6]. The factors aforementioned are key attribute that bring positive growth and development of the child academically, right from home to school life. Teachers need to motivate the learners in the course of teaching and learning in any learning institution. This will provoke and increase participation between teacher and learner. Teachers' expressions and stimuli variation have an impact on the receiving end and participation of the learner. Learning is active when the learner, being the main agent, is close to teacher's openness and nature in terms of collaboration and interaction [7], [8], [9].

The home environment contributes to part of student academic wellbeing. The home daily routine incorporates all human and material assets present at home. That can impact on students' studies in schooling and life. It can also be influenced by the parent's degree of instruction, occupation and financial status [10]. Home is the basic set up for giving essential socialization to students and setting the instructive structure whereupon, the child developmental aspects are laid. Schooling of a child with guidance/monitoring by parents and people at home environs have a higher likelihood and dominance in influencing the future academic behavior of the child [11].

The natural surroundings, furthermore, was demonstrated as key contributor to the academic output of the Student. This environment could be from what's happening in the surrounding villages, parents' talk/undertakings or people at the proximity of students. Students can benefit from sessions of guidance and counseling from parents at home and can help enhance the academic work [12],[13]. Parental roles and work contributes a lot to the learning progress of students' progress. Literate parents, for example, share information with their children on school activities, academic life and what they ought to learn in school thus contributing positively to their children [14], [15]. Families' earnings too have been shown to give way forward, hopes and vision to educational achievements of their children [16], [17].

Studies have also been done and showed that students from poor family backgrounds are put under manual work and have limited time to study. They are involved in household work more than education. Other families are not capable of food provision which pose as a positive challenge to academic performance of the child. Students from such background are noted not to catch up with the missed lessons leading to poor performance [18], [19].

The present literature review indicates physics lessons strategies used to teach is majorly done by the teacher and as also a holder of the learner. Some of the implored strategies are frequent demonstration and investigation which requires procedural demonstrations and explanation. This aided method assists learner get the knowhow skills only and the learner can practice the acquired skill. Secondly, is using diagrams to solve questions. This method advances the first method by helping learner tackling questions. Using acronyms to improve speed of learning and knowledge retention is also key in learners of low ability to grasps knowledge. This method has been known to assist learners to understand some laws or principles or equations or advance some explanations.

The interest and participation of learner in class, has been elevated by use of Application based approach method where everyday life practice is taught in class. Lastly, Assessment and evaluation of students' work and achievement is the main summation method which is used in learning by either the teacher or examining recognized institution. Here, immediate feedback is very important since it affects progressive learning. This is the most powerful catalyst for learning for career development of the learner.

It is therefore, considered that teaching methods and approaches used, be well-managed in an assumed full classrooms and schools. The Outcomes, therefore, would instill knowledge, skills and attitudes to learner which are linked to national goals for education and give positive participation in society [20]. Teachers need to determine which teaching strategy is best for their students, rather than simply going along with the normal educational trend [21].

Though it's believed that teaching physics is a challenging task, it therefore needs to be made very captivating. It has to be made inquiry based by motivating the learner by the teacher changing 'world' or activities around the learner [22]. Teachers ought not to disseminate knowledge only but also to guide the learner know how to solve a problem that will result to lifelong skills. Use of indoctrination and traditional lecture method to deliver content is a challenge to common cadre of learners. Drills as a practice for solving numerical problems by learner requires a paradigm shift for the twenty first century learner. There is need for the teacher to carefully prepare and present new knowledge to the learner in classroom by simply having prior lesson planning, scheming adequately and appropriately delivering the concepts. All this, will change the behavior, build curiosity of learner and the learner would yearn for more knowledge leading to better understanding and effective fulfillment of knowledge. This new methodologies and pedagogies are useful in improving teaching in physics [1].

In inquiry based learning (IBL) method, there is need for designing and carrying out specific physics experiment or

investigation which is informed by the teacher, with full concentration, observation and data be collected. This helps learner then, to analyze and interpreted data and explain the findings based on the observations or questions made. This shows that Performing physics experiments play a major role in addressing critical issues in the process of learning in the student. It's a catalyst for positive change, link between theoretical class work and laboratory and by extension, in life. It therefore becomes an invaluable source of learning in promoting systematic educational improvement. It makes learning more relevant and meaningful to students by providing them practical, "real world" experiences [23]. All this needs teachers Collaboration or teamwork, creativity, problem solving, communication, networking and even amongst the learners, which are the 21<sup>st</sup> century skills [24].

Technology plays very important role in stimuli variation. It acts as motivational factor and imparts students' with curiosity and enthusiasm to learn. It's found out multimedia technology is an instrument that many students need to access to, to aid them to acquire new knowledge and develop new and express strong understanding of new concepts. The integration of technology then in teaching and learning could be tapped to create enthusiasm and make students active in learning [25].

Any School should have its infrastructure with technology to merge with the 21<sup>st</sup> century of being information and communications technologies (ICT) compliant. This technology will be used in teaching and learning. This has been perceived that the modern child cannot be taught using chalk and blackboard, or even marker pen and white board. The technology, will fast-track learning and make learning easy because most of the experiments that can't be done physically can be simulate, some tedious experimental activities can be automated.

Studies that have been conducted show that computer simulations in science education can improve teachers instruction effectiveness, comprehension of the students knowhow of physics, engagement between learner and teacher and real life experimentation in physics [26]. This however, falls short to show how computer simulations can be motivating to learner on attending to physics lessons and on alleviating the truancy issue. Academic achievement too, were conducted in biology, Mathematics chemistry and computer studies. However, physics achievements are under-reported [27].

Many teachers know how to use but may not embrace ICT in teaching and learning. Teachers then are left exploiting the potential of digital technologies in other relevant day to day life skills of socio economic development of the society. The curriculum which is very tedious and time bound makes the teacher avoid ICT utilization in curriculum [28].

Socio-economic status of parents affects performance in student academic greatly. Parents should discuss with their school going children on matters concerning their academic performance and establish the challenges that their children may be facing in order to improve their academic performance. Social needs from parents allow their children students to go to school and attend lesson. This shows sense of care and belonging from the surrounding. This can also be from the inner circle of friends and family in general and can assist in

improving confidence of learner to work hard in school. Encouragements can be given also, for them to continue schooling to be successful in their lives [29].

The Attitude of peer toward on school chosen activities has positive significance impact on student academic performance. School programs could be co-curriculum activities which has direct correlation with the learners. This majorly is for open systems [30], [31], [32].

Quality of education of the learner therefore, involves all stakeholders may it be parents, teachers or even educationists? Key client here importantly is the learner, who should be healthy, well-nourished and ready to participate in learning and be fully supported by the stakeholders and communities. This calls for healthy, safe, protective and clean Environment, where the student comes from [33].

#### IV. METHODOLOGY

This classroom action research project was carried out in Ngariet boys secondary school. The research comprised of planning, implementing, observing, and reflecting on the actions to be undertaken. The following methods were inculcated: tracking of students' presence using class registers, having orals or written assessment and tests by evaluation, performing of experiments, use of day to day researched questions to get solutions and explanations; oral submissions and presentations by use of simple words, acronyms to learn the difficult and longer words by group work and lastly using sketches and diagrams as guide to understand and to solve numerical physics questions. Class teachers assisted in daily roll-calls. The information and data required were collected from daily updated of class registers. This information captured the school daily entry. Data analysis was carried out using the Microsoft excel and origin applications.

The steps taken by the subject teacher to ascertain whether learning took place was use of questions/answer method, where, sampled short test questions which were written on board or question paper for the learner and marked random in class as lesson was going on. Here, the teacher had to move round the class or group to group guiding or marking learner work. Any error or corrections to be made by the learner, the teacher made correction for them or a willing volunteer student went forward, to the board to demonstrate how the sampled question could be tackled, as the teacher went back to observe from the student how it's worked out. This prompted the teacher to ascertain whether learning has taken place. Learning process was also checked by observations by the physics teacher via students written and updated subject notes, students' written feedback notes and test or exams results. All this processes, also took place for individual learners or in groups or as a class or during the laboratory guided physics experiments.

Practical examinations were administered after every two weeks. Key questions that were asked in the question paper were majorly mechanics and optics which propped the learner to give responses regarding knowledge, synthesis, analysis and application skills.

Here, new understanding with formal simple language and make conceptual connections using hands on activities via the experiments was made. New terms or key words and definitions

were probed, underlined and questions asked in the question papers before the experiments were performed. This allowed exact set ups, procedures, recording of observations or data, analysis and interpretation of the questions in the question paper. Several activities were done during collection of data which were procedural, hands-on and minds-on, making the learner to precisely observe and record the result. The experiments were conducted in groups; ideas were shared by the learners, collaboration done, communication skills improved by discussion of observation and results obtained. The guided experiment were motivational physics factor and was a pulling factor for the learner towards embracing and changing attitude towards physics as a subject. The practical exams were marked and results summed together with the midterm, or end term exams and analysis were made all together.

The extent of increased entry and improved learning by this action research was also monitored by use of class registers marking by the subject teacher. The number of students who attended every physics lesson every week in form one, two, three and four students were captured, recorded, tallied and analysis were done for interpretation. Data captured in registers, were once randomly from any day of every week for analysis and interpretation.

Computer experimental simulations were also used in classroom instruction by the teacher to ascertain whether it increased learners understanding of physics concepts. The chosen specific physics computer simulations were inculcated during the normal lesson hours. The level of learners' curiosity was noted by the subject teacher to check on their concept grasping ability and learning habits. While learning was conventional, students were randomly asked questions or given opportunity to ask questions on what they had observed on any simulations made during the lessons. These methods of observation and interaction of assessment of learners was well done.

Standard and well-structured designed questions, which adhered to Bloomberg taxonomy, were also set by the subject teacher and moderated by the head of department. They were then administered to learners as midterm and end of term exams for the short time action research. This was meant to find out if learners' interest was aroused in learning physics.

Educational trip/excursion was also used on form four to remove monotony of class work and as learning tool. Parents were requested to facilitate the trip. Students were provided by the teacher with open ended questions of real life fields/applications where they were to answer as they were being guided on the trip. The trips, was to try to find out what they know, or what they have learned in class or any new idea where possible give the learner unique external learning experiences. It was also, importantly meant to allow students be motivated towards learning the subject and give them the time to reflect on their class work and make sense of concepts that they have learned.

## V. RESULTS DISCUSSIONS AND ANALYSIS

Curriculum in Secondary school favors all students' right from days-scholars to boarders. The Classroom action research

was carried out by the physics teacher as a researcher in collaboration with class teachers to improve on the classroom learning process of the students. The results were majorly analyzed for form four and three students respectively and interpretation done.

### 5.1 Attendance

The number of present students in physics lessons showed a positive trend noted in form threes and form fours as from week 6 henceforth seen in figure 1. In form one and two, it remained constant in week three and six respectively. In week 5, the impact of the AR showed that learners were actively involved continuously in the academics till the period ending in weeks twelve, thirteen and fourteen. This is shown by positive trend line. In Figure 1, its noted that the line graph is not straight showing that, absenteeism is a continuing challenge noticeable especially in data representation. This translates to those who attend the lessons compared to the students expected enrolment in school. In figure 2, there was also positive trend in school attendance.

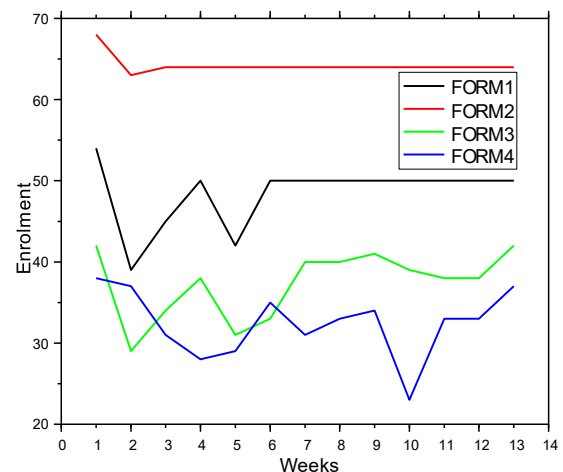


Fig. 1. Number of present students in a day per week.

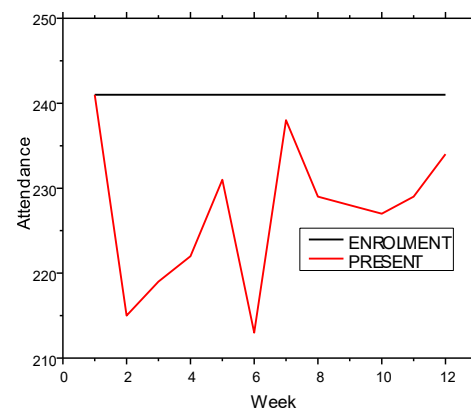


Fig. 2. School weekly enrolment.

### 5.2 Education Trip/Excursion

Students were taken to Tenwek Mission Hospital for excursion on factual finding. They were taken through several machines; eye unit, radiology department and hydroelectric power main electricity generation. Students learned on defects

of the eye, body organs, process of electricity generation respectively and how the machines used were relevant to real life from classroom work. During the trip, the students were very alert, responsive to questions asked and always ready to take part in learning. Students' interest shifted towards learning physics. Students initially were uninterested in learning physics prior to the intervention, but by observations, it showed that were very supportive and curious about their learning during the trip.

Hundred percent became proactive, responsive, and more open to discussions asked by the trip guide. Our main focus was on developing students' interest in physics by using relevant trips as an intercession program. All the students agreed that physics is an interesting subject and the trip made them believe that what was being taught in class and this would determine their understanding of physics.

### 5.3 Group Work

Team work when was used in teaching students, where several groups were formed, to perform experiments and tackle class assignments, enhanced collaboration and communication skills amongst the students. Simple language was also noted to have been used by the learners in their midst of their discussions. This led to tackling of several questions in a simple and faster manner. It improved their attitude and enhanced the learning strategies and boosted their understanding and their performance as noted in 5.3

### 5.4 Testing Method

Oral or written tests or use of daily researched questions were done by the learner once the Physics objectives on content had been attained by the teacher. This were followed up by solutions and explanations inform of group work. This gave a positive impact to the progress of the learner. The class test mean marks added together with exams revealed a drastic improvement in students' performance in the physics test compared to the base line test seen in figure 3. The average trend line showed that, there was value addition majorly on form three and form four respectively which was interestingly a positive achievement for the learner.

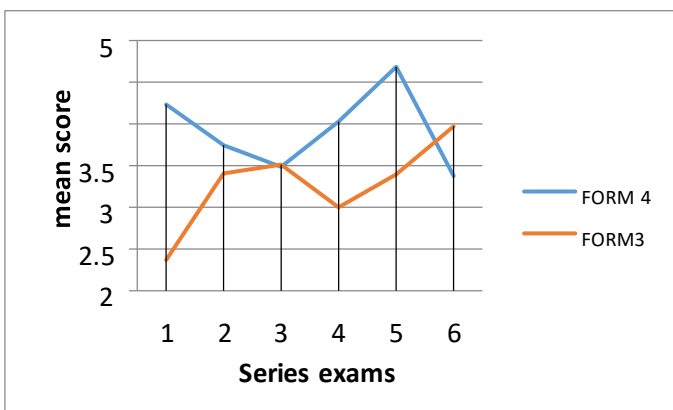


Fig. 3. Average performance of learners in several exams

There was a highest mean mark that was attained consecutively for all exams for form 4 and form three. The

highest for form four was in exam five with a mean score of 4.6826 while it was 3.97 for form three. This was key achievement and critical observation in the motivational theory of exams, used in the action research. By use of these methods, teaching and learning in physics class became more interesting for both the learner and teacher. Students' participation in class activities became livelier: responses were made within the lesson, collaboration and self-expression was free and open due to use of simple language. By this academic performance, there is accomplishment by the learner and the teacher over duration of time and is assessed when knowledge gained through teaching and learning is examined or observed when learners change to expected and accepted moral behavior. The general outcome measurable and observable behavior of a student within series of exam for period of one term as scored or ranked or commended depended on the set standards of educational goal of a curriculum on a number of physics subjects. In a mean scale of 1 -12points, in the several series of examinations, students obtained mean points of 4.354 for form 4 and 3.875 for form three which is considered to be academically and potentially good. The trend for both classes is convincingly positive as per the actions partaken by the research. The percentage surpasses the expected 35% for all the classes. The academic performance, here, thereof, is affected by availability of students to learn, motivated by interest in a subject due to use of technology.

The data from questionnaires revealed that 59% of the students agreed that Trips /tour is very important to enhance better learning. 87.5% agreed to some extent that "they understand well in the class when the teachers use simple language to teach." Only 9% disagreed that the way of teaching determines their understanding of physics." The majority of the students (71%) agreed that "Frequent test assist a lot in understanding the concepts taught by our teacher in class". Generally, the questions and ratings revealed that average of all students (72%) agreed that "learning takes place when they are motivated.

### 5.5 Remedial Guided Experiments

Laboratory provided a carefully planned sequence of instruction and placed the student at the center of learning. When the learner was involved in the performance of practical, curiosity was aroused and interest was generated. Connect of Prior theoretical class knowledge and practical was link and exploited by the learner. From the scripts of the learner and assessing of their understanding, it demonstrated that there was clear understanding of new concepts by observation or open ended response in their experiments. This strategy of experiments enhanced active learner involvement in learning physics and also improved skill of problem solving. It also provided reasonable responses to questions hence a positive interaction between the learner and the teacher, in a very supportive manner and thereby improving learning outcomes. Frequent guided experiments and practical performance led to reinforcement of established physics concepts and understanding of expected real life skills.

### 5.7 Use of Technology

The Use of ICT in teaching made learning very interesting for the learner. The teachers work was also simplified and made easy since most of the physics concepts which are abstract, expensive to acquire or even not within reach are well outline using the ICT technology. When videos were used, the real world outside classroom was brought closer. The learner was able to observe and make conclusion in a much easier and simpler way.

On demonstrations and virtual experiments which were conducted using v-lab (the *virtual physical laboratory v 7.*).

Learner's interest and curiosity was built. They were also able to ask questions continuously throughout the lesson. Though it resulted to creation of suspense to the learner at the end of the lesson, it made the learner to yearn for the same knowledge in the next lesson. This motivated the learner then to attend the next lesson. It was noted also that, many students attended the lessons when simulations were being used to teach as compared to when normal lessons when they were not implored. See fig 4.5. It was also noted that many students understood the contents and gained knowledge by watching the content of the physics videos or simulations which were projected by the teacher. During simulation where it involved set ups, identifying and varying parameters, learners were sensible to obtain the results easily. And such experiments which could have been of high order tasks, simulation gave learner ample time to make observatory results and actualize experimentally in the lab, later, without trial and error. This showed that computer simulations in physics lessons should be used as a motivation pulling factor to students to understand concepts relayed in physics. This will curb the challenge of lesson absenteeism due to lack of interest by the students to learn.

### 5.6 Results Commentary

Parents facilitation of student towards educational trips, regular group work done in class, teacher influence by use of simple words language and performance of experiments in the subject as motivational factors. Aspiration, internal satisfaction and interest in subject by students' level of interest in the subject was raised a lot by this factors and end result was captured by the examination results. Similarly, student's attitude to school and their interest in learning physics was key influence their subject performance. Using class registers to assess attendance on school and class work showed similarly positive academic performance in physics. This correlation between school and class attendance had a statistical significant impact on subject performance. Generally, we can say, attitude towards physics as a subject has a direct impact on physics score and overall academic performance.

Student's self and external motivation played a vital role towards the subject positive performance. Motivational characteristics such as peer pressure, self-sacrifice, career focused and self-exploration. motivation could be at Random or Controlled where the teacher gives out tokens to the student on positive value addition in comparative of examinations or tests. Positive attitude towards the subject will improve results too, that is to say class attendance and regular studying by the

student are the key factors which affect the performance of the student. It implies that if a student has assignments completed, completing of syllabus, paying attention to weak students, students' evaluation and performing of practical's, then the learner will post good results at the end of their learning.

Family and home support or parent involvement in educational activities at schools such constant communication with the school from home have a direct or indirect influence on the academic performance of their children. Parents here can provide home-school tutorials for their children to acquire good studying behavior in the house or school. Alcohol and substance abuse in the community which affects students school attendances can also be checked by employing guidance and counseling to the students, the parents and community members where possible.

Exposure to several and joint exams with other schools both internal and external makes a dynamic shift to the learner performance. Fees problems which affect students' school attendance can be checked by involving all the stakeholders.

Field excursion on key topics taught such as main electricity, photo electricity, x-ray, cathode rays and cathode ray oscilloscope, electronics, gas laws etc. can be taken. Other actions required include frequent *baraza* for physics, grouping learners per their performance, having collaborative/team teaching and engaging learner to perform more guided perfect physics experiments.

## VI. CONCLUSION

This action research describes high-resolution work in Teaching and learning of a school with different impactful motivational factors. The instruments used affected negatively by absenteeism amongst the students were subverted and the general overall performance of all subjects showed significant positive value addition based on the direct factors mentioned in chapter four. Tracking of student's daily attendance in the school increased by 9%, making the daily attendance to stand from 87% to 91%. This led to positive impact in teaching and learning process in class and overall positive performance in physics. The use of simple language led to attitude change towards the subject. They liked the subject which led to high entry in the subject right in subsequent lower class. Use of acronyms was vitally used as part of changing the attitude. Strategies for teaching physics had direct positive impact where it made the subject concepts more understandable to the learner. The key role of teacher using assessment and evaluation showed value addition in performance of physics.

The sensitivity and performance of the school system need to be improved when the factors are fully implemented and constantly used with consistency for further value addition of the learning process in the school.

## VII. RECOMMENDATION

There is need to use motivational modules that which make student to come to school to learn. To curb the vice of absenteeism we'll try to use Educational trips/excursions to remove monotony of class work learning processes. School *Barazas* is key in marketing the subject to learners. By this, uses of simple language to teach physics will assist demystify the

notion embraced by most students that physics is difficult. Group works and assignment demands a lot of collaboration amongst students and exhaustive discussion, and when there is no clear, right answer, there's further consultation from the teacher. Frequency of interaction on the tasks given, consistently predicts individual group learning when groups are working on discovery problems. Educational trip although is fun, is felt also as crucial in making physics meaningful to students. Students come from class to variety of real life fields/applications. Trips, will try to find out what they know, learnt, embrace new ideas and give them unique external learning experiences. It allows students time to reflect on their class academic for them to make sense of learned concepts via the excursions. The results depicted here as motivational, enhances school or subject entry retention and performance of the learners. The proficiency towards physics then was strengthened and learners' confidence and competence is highly portrayed by the action research results. It is therefore, highly dependent to any learning institution and teachers of physics to adopt the potentialities of motivational factors within their reach as transformative agents towards betterment of the learners' performance.

Teachers also need to be equipped and updated on digitization of information and knowledge dissemination by upgrading their skills and methods of teaching and learning. This enhances the preparedness of content by simply use ICT technology for teaching purposes. ICT is the best link between the teacher and the learner in terms of knowledge dissemination. This process is achieved through in-service for teachers in the profession to improve the success of teaching and learning in a science subject.

Schools need to make huge investment in technology, such as on ICT as teaching of physics could be impossibility. Schools require infrastructure such as computer systems, supplies and equipment, LAN and Internet connection. Electricity connection to schools is also important. Key stakeholders should come in handy to support, for the benefits and positive effective of a smart school. This will generally boost the learner towards attaining the 21<sup>st</sup> century skills and developing any nation.

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