American Journal of Multidisciplinary Research & Development (AJMRD)
*Volume 06, Issue 08 (**August - 2024**), PP 17-26*
www.ajmrd.com

Research Paper **Open Access**

Physics Teaching Methods and Its Impact on Students' Academic Achievement in Secondary Schools in the Limbe I Municipality

Awandia Joseph Tazitabong,

ABSTRACT: This study examined the impact of Physics Teaching Methods on Students' Academic Achievement in the Limbe I Municipality. Specifically, the research sought to find out if there is any significant difference between learners taught using educational videos and those taught using pure lecture. Two research questions were formulated from the general research questions which were translated into two hypotheses.
The study used the quasi-experimental research design. The target population of the study was made up of 4126 physics students in two selected secondary schools. The accessible population was made up of 293 form four physics students and the sample size was the same as the accessible population. The learners in the experimental group were taught using videos while those in the control group were taught using pure lecture method. Both groups were taught current electricity for one month. The instrument for data collection was a teacher made test. Data were analysed using both descriptive and inferential statistics. The descriptive statistics used mean score while inferential statistics, used student t-test to test hypothesis. The findings of this study showed that: students taught using videos performed better than those taught using the pure lecture teaching method. Based on the above findings, it was recommended that school administrators should buy physics video simulations so as to enable physics teachers use them during teaching to improve on students learning. The pedagogic inspectors should organize seminars/workshops so as to train physics teachers on the use of videos in the teaching learning process.

Keywords: Physics, physics videos, learners, academic achievement.

I. INTRODUCTION

The word "Physics" has been looked upon by many and it means knowledge of nature. It originated from two Greek words which are "physike´" (repisteme´) meaning love and "physis" meaning nature. Therefore, the word physics stands for love of nature. In other words, it is the study of matter, natural events and energy. Physics is the foundation of all the other sciences as it intersects with many interdisciplinary areas of research such as Quantum Chemistry, Biophysics and Engineering. Hence, Physics does not have rigid boundaries. Physics serves as a foundation for other science subjects like computer, Chemistry and Biology. Physics can be termed as the heart or core of sciences as it helps explain the reality of the universe. Physics has been mystified to make many learners think that the subject is difficult and as such shy away from it.

According to Blarar (2016), the future of every country solely depends on physics achievements as it is the backbone of any growing technology. Hence, Cameroon is not an exception. In order for Cameroon to achieve emergence by 2035, there must be advancement in technology and the core is Physics.

Poor academic performance in Physics in the world especially in developing countries is a call for concern. According to Awandia (2021), the main cause of poor performance is the attitude of the teacher towards the subject. That is, the behaviour of some Physics teachers towards the subject discourages learners and so they find it difficult understanding the concepts. To Iiker(2016), poor academic performance of learners is as a result of poor teaching methods. To them, improved teaching methods will help better learners' acquisition.

In Cameroon, academic achievement in physics is not so different from other parts of Africa and the world. Switching from the New Pedagogic Approach (NPA) to Competence Base Approach (CBA) in 2012 has not still solved the problem of poor academic achievement in Physics. This statement is validated from Chief Examiners Reports (CER) for 2016-2021 General Certificate Examination (GCE) and the results of Physics for the General Certificate of Education (GCE) where learners' performance was relatively low as compared to other science subjects.This researcher things that using videos teaching method can make the difference.

Videos began to enter teaching in the 20th century during the 1950s. Rapid advances in communication and information technology have made them a resource with unlimited possibilities (Nagy & Bernschütz, 2015) accessible to non-professional users (Sani,2012). With the development of computer technology, the possibility to create, edit and share videos has increased the use of videos in teaching as outlined by Kay and Kletskin (2012).

By the 20th century, the was the used of motion pictures to teach science subjects such as physics, and chemistry by educationist in most part of the world and some African countries like South Africa, and Nigeria. The use of video and films as "visual aids" in Physics dates back to the 1950s when the American Association of Physics Teachers sponsored a set of films to bring together current film technology, the expertise of the film producer and the knowledge and experience of outstanding Physics teachers. These were followed in the 1960s by the well-known Physical Science Study Committee (PSSC) series of films, parts of which survive today in the videodisc series "Physics Cinema Classes" (Fuller & Lang, 1992).

However, these videos and many similar Physics videos produced in the following years had a major limitation: the control exercised by the classroom teacher or student is limited to turning the videotape on or off. Thus, an important pedagogical consideration is severely limited during such passive viewing of these films; the ability of the teacher to respond immediately and appropriately to the needs of the students (Fuller & Lang, 1992).

With the invention of the computer, practical activities like ICT aided videos were used for the teaching of Physics in different parts of the world. By the year 2001, Cameroon also introduced the integration of ICTs into the country's curriculum for both primary and secondary schools (Reiner, 2009). These Computer-controlled digital videos in Physics education (Interactive video) could be defined as any video which the user has more than minimal 'on-off' control over what appears on the screen. The "media attributes" (Salomon, Perkins & Globerson, 1991) of interactive digital video include; random access, that is allowing users to select or play a segment or individual frame (picture) with minimal search time; still frame, that is allowing any frame of the video clip to be clearly displayed for as long as the user wishes to view it; step frame, that is enabling users to display the next or previous frame; and slow play, that is enabling the user to play the video at a comfortable speed.

Given the circumstance that people use technologic means such as computer, internet, and smart phones every day, it is vital to note that individuals (academicians, teachers and experts etc.) who are responsible for teaching in education and instruction environment should both resolve information in various forms of materials like video, audio, text, graphs and images and serve knowledge by combining and constructing to the learners and those who are dropout (Reiner, 2009). All these methods where mean at improving the academic achievement of students.

Academic achievement describes academic outcomes that indicate the extent to which a student has achieved their learning goals. Academic achievement refers to completing educational benchmarks such as a bachelor's degree. Academic achievement is often measured through examinations or continuous assessments. In other words, academic achievement is the extent to which a student or institution has achieved either short or long-term educational goals. Achievement may be measured through students' grade point average, whereas for institutions, achievement may be measured through graduation rates. Tambo (2012) defined academic achievement as how well students perform in a school as measured by test or examination. In most schools in Cameroon, students have continued to be taught using pure lecturer method which has not led to the improvement of their academic achievement. It for this reason that the researcher thinks using videos can improve on the situation.

Statement of the Problem

Teaching and learning in most African countries are done using the conventional way (Toplis, et. al., 2012). This is not different with the case in Cameroon secondary schools. This explains why many students are less motivated in certain subjects in science and their achieve is usually low like in physics.

In 2001, the Cameron government introduced the use of information, communication and technology (ICT) in the curriculum of primary and secondary schools and as such better performance of learners in science subjects like physics and chemistry. It was also geared at improving the understanding of learners in most concepts in science education. The government of Cameroon also encouraged Science, technology, engineering and mathematics (STEM) education (Mayer, 2001) as a means to improve on the teaching of technology and Physics.

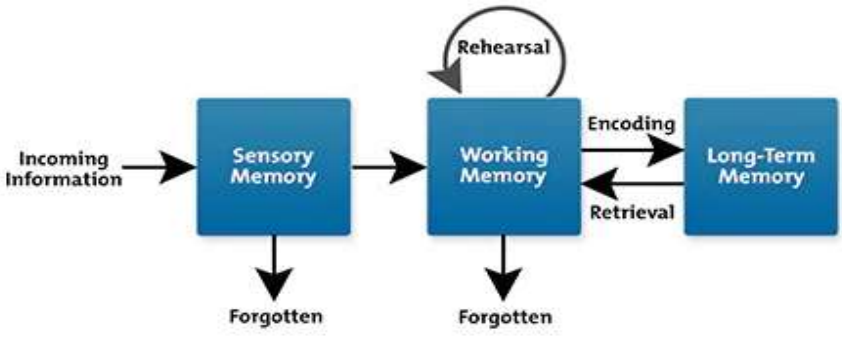
Despite all these, the performance of learners and the number of physics students keeps dropping as they ascend the academic ladder. This can be seen from the result statistics of physics students at the ordinary level in the Cameroon General Certificate Examination (GCE) from 2018 to 2021. Looking at the Physics statistics from 2018 to 2021 academic years, it shows a high student failure rate of 55.45% in 2018, 57.03% in 2019, 57.74% in 2020 and 26.7% in 2021. This therefore shows that there is a problem with the subject and the teaching method could be one of the causes of this drop in achievement of learners. The researcher also realized that the number of students taking physics is small no matter the numerous advantages behind the subject. The exact cause of the poor performance of the learners in the subject remains unclear but the researcher thinks that teaching method may be an important contributor.

It is from this background that the researcher sort to find out if teaching physics using videos can significantly improve students' achievement in physics.

Theoretical Review

Cognitive Load Theory by Atkinson and Richard Shiffrin in (1968) is builds on the model of human information processing shown in figure 1.

Figure 1: Information Processing Model



Adapted from Atkinson, R.C. and Shiffrin, R.M. (1968)

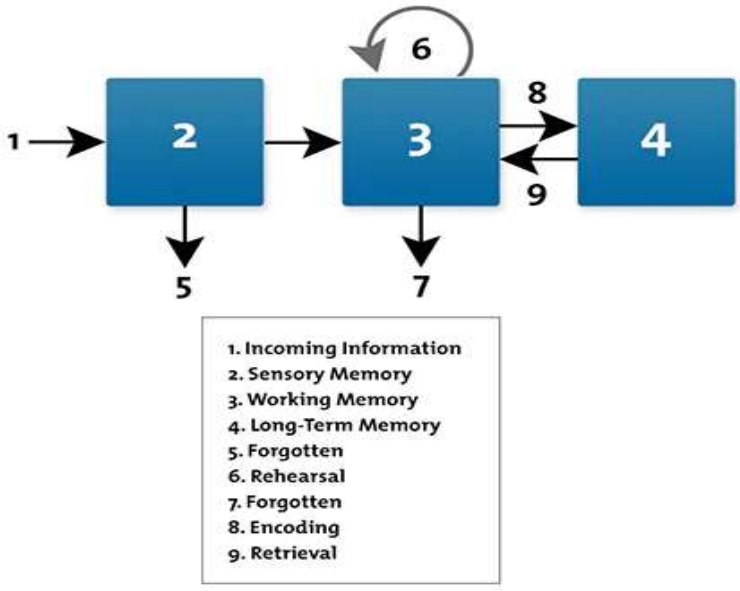
It describes the process as having three main parts: sensory memory, working memory, and long-term memory. Since then, many researchers have added to our understanding of this concept, but the basic model remains the same.

Every day, you are bombarded with sensory information. Sensory memory filters out most of this information, but keeps an impression of the most important items long enough for them to pass into working memory.

Information from your sensory memory passes into your working memory, where it is either processed or discarded. Working memory can generally hold between five and nine items (or chunks) of information at any one time. This is central to cognitive load theory, for example, when your brain processes information, it categorizes that information and moves it into long-term memory, where it is stored in knowledge structures called "schemas." These organize information according to how you use it. So, for example, you have schemas for different concepts such as dog, cat, mammal, and animal. You also have behavioral schemas for actions like hitting a ball, riding a bicycle, ordering food at a restaurant, and so on. The more practiced you become at using these schemas, the more effortless these behaviors become. This is called "automation." Schemas are also significant to cognitive load theory.

For example, a labeled diagram places a lower demand on your working memory than one that has the labels listed at the side. Imagine, for example, how you would feel if we had presented the diagram in Figure 1 in this way:

Figure 2: Information Processing Model – With Legend



Cognitive load theory also shows us that working memory can be extended in two ways. First, the mind processes visual and auditory information separately. Auditory items in working memory do not compete with visual items in the same way that two visual items, for example a picture and some text, compete with one another.

This is known as the "Modality Effect." So, for example, explanatory information has less impact on working memory if it is narrated, rather than added to an already complex diagram. Second, working memory treats an established schema as a single item, and a highly practiced "automated" schema barely counts at all. So, learning activities that draw upon your existing knowledge expand the capacity of your working memory.

This means that pre-training, or teaching people prerequisite skills before introducing a more complex topic, will help them establish schemas that extend their working memory; and this then means that they can understand and learn more difficult information.

Cognitive Load Theory helps you design training or learning materials that reduce the demands on learners' working memory, so that they learn more effectively. You can apply the concept of cognitive load to learning and training in several ways.

1. Measure Expertise and Adapt Presentation Accordingly

The more expertise you develop in a particular area, the more information you have available in your schemas. Remember, it doesn't matter how complex a schema is – it counts as a single item in your working memory. This is why it is a good idea to adapt your instruction to reflect the level of expertise of the people you're teaching. Do this by administering a training needs assessment, or ask learners to describe how familiar they are with the topic. Next, use Bloom's taxonomy of educational objectives to ensure that you present information at the right level for your learners – what seems obvious to you may not be at all obvious to them.

2. Reduce the Problem Space

The "problem space" is the gap between the current situation and the desired goal. If this is too large, people's working memory becomes overloaded. This often happens with complex problems, where the learner needs to work backwards from the goal to the present state. Doing this requires them to hold a lot of information in their working memory at once. Focusing on the goal also takes attention away from the information being learned, which makes learning less effective.

A better approach is to break the problem down into parts. This reduces the problem space and lightens the cognitive load, making learning more effective.

Other ways to reduce the problem space include providing worked examples and presenting problems with partial solutions for the learner to complete. These approaches are particularly useful, because they demonstrate strong problem-solving strategies in practice.

3. Reduce Split-Attention Effect

When you have multiple sources of visual information, such as diagrams, labels and explanatory text, your attention is divided between them. This adds to the cognitive load, making it more difficult to create new schemas. This effect is reduced when you integrate visual information. Incorporate labels into diagrams (as in Figure 1), rather than placing them in a box to one side, or, if this isn't possible, focus in on one part first. If learners need to use a manual while working through a computer program, for example, allow them time to become familiar with the text first, before introducing the program.

Split-attention effects also apply to multiple sources of auditory information. So, for example, if you are speaking to learners on a particular topic, try to remove any extraneous sources of noise, such as other people talking or music playing in the background.

4. Take Advantage of Auditory and Visual Channels in Working Memory

Another way to overcome the split-attention effect is to replace some of the visual information with auditory information. This reduces the cognitive load on people's visual working memory by also using the auditory channel, which has its own memory space.

Mayer and Moreno (1998), found that students learn more effectively when they were shown an animation that was accompanied by narration, rather than the using same animation with added on-screen text. You can replicate this by directing your learners' attention to parts of a diagram while talking about it. So, using videos accompany with explanations can improve students level of understanding of the subject matter.

II. REVIEW OF RELATED LITERATURE

Science is the systematic study of nature. That is, it is a step-by-step process. According to Tambo (2012), teaching methods are the standard procedures for presenting subject matter and organizing student-

teacher interaction during lesson. Hence, teaching methods are the various ways used by a teacher in presenting a lesson. These methods vary with subject and content. That is, no specific teaching method is the best in teaching all the subjects and topics within a given subject. According to Loyens et al (2005) as cited in Alemnge (2021), teaching methods used by teachers in the teaching and learning process depends on the age and background of the learners, the type of lesson and the school objectives. That is, each teaching method have planned objectives that the teacher seeks to accomplish. Bame (2004) fragmented the teaching methods into teacher-centred and learners-centred teaching methods and looked at the advantages of each teaching method. According to Bame (2004) as cited in Alemnge (2021), the selection of teaching methods should respect certain principles like learning, objectives and desired behavioural changes, teacher's ability to use a particular teaching method effectively and creatively, take into consideration the capacity of the learners and must be closed to the subject matter. This study was aimed at comparing the pure taught method and videos teaching method.

Lecture Method is sometimes called the pure lecture method. It is one of the oldest and popular (more frequent) method of teaching. In this method of teaching, a teacher teaches a lesson in the form of speech or talk. According to Tambo (2012), the lecture method consists of a person presenting information on a particular topic or subject matter to another person of audience. In other words, it involves a teacher exposing subject matter to students and students listen and take down notes. In fact, the teacher is more active in this method of teaching and learners are passive. According to Mamuel and Federico (2017), lecture method is the oldest form of teaching which is based on idealism. They think that, the teachers do the explanation of the topic to the learners and emphasis is laid on the content of the work. To them, there is a very little cope for learners' activity in this form of teaching and is considered a teacher-centred method of teaching.

According to Dzah (2014), this method of teaching has the following principles; listening by students, subject matter can be correlated with other subjects, new knowledge is given related to previous knowledge, and the teacher attempt to impact perfect and complete knowledge of the subject matter to students.

According to Tambo l (2012), the lecture teaching method has the following advantages;

1. It is highly efficient if a teacher has a systematic and logical manner.
2. It is convenient and comfortable, and a teacher is free to develop his/ her style of teaching.
3. It saves time and energy.
4. It is suitable for quick dissemination of information.
5. This method of teaching can be used to arouse students' interest on the subject.
6. Effective lecturers can communicate the intrinsic interest of a subject through their enthusiasm.

According to Tambo (2012), the pure lecture teaching method has the following disadvantages

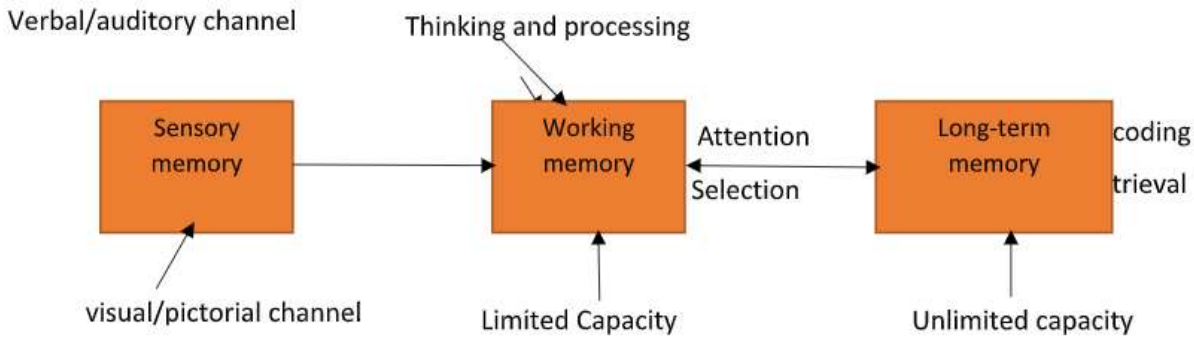
1. Most of the time students are inactive.
2. Students' involvement and participation are less.
3. The effectiveness of the lecture depends on the personality of the teacher. That is, some teachers are more charismatic and impressive than others.
4. In the dissemination of lessons involving high level of learning, the lecture method becomes ineffective.
5. Again, average students find it difficult to catch up using such a method.

Educational video has become an important part of the teaching learning process. It is integrated as part of traditional courses, serves as a cornerstone of many blended courses, and is often the main information delivery mechanism in MOOCs (Cynthia, 2017). Several meta-analyses have shown that technology can enhance learning (Shaila., 2011), and multiple studies have shown that video, specifically, can be a highly effective educational tool. According to Cynthia (2016), in order for video to serve as a productive part of a learning experience, it is important for the instructor to consider three elements for video design and implementation:

1. Cognitive load
2. Non-cognitive elements that impact engagement
3. Features that promote active learning

Together, these considerations provide a solid base for the development and use of video as an effective educational tool.

Figure 3
Cognitive Load Theory
This diagram represents the framework for the cognitive load theory.



Source: Mayer and Moreno (2007)

Sensory memory is transient, collecting information from the environment. Information from sensory memory may be selected for temporary storage and processing in working memory, which has very limited capacity. This processing is a prerequisite for encoding into long-term memory, which has virtually unlimited capacity. Because working memory is very limited, the learner must be selective about what information from sensory memory to pay attention to during the learning process, an observation that has important implications for creating educational materials (Mayer, 2001).

Based on this model of memory, cognitive load theory suggests that any learning experience has three components which are sensory, working and long-term memories. The first of these is intrinsic load, like a word pair, whereas grammar is a subject with a high intrinsic load due to its many levels of connectivity and conditional relationships.

The second component of any learning experience is germane load, which is the level of cognitive activity necessary to reach the desired learning outcome for example, to make the comparisons, do the analysis, elucidate the steps necessary to master the lesson. The ultimate goal of these activities is for the learner to incorporate the subject under study into a schema of richly connected ideas.

The third component of a learning experience is extraneous load, which is cognitive effort that does not help the learner toward the desired learning outcome. It is often characterized as load that arises from a poorly designed lesson (for example, confusing instructions, extra information), but may also be load that arises due to stereotype threat or imposter syndrome (Beheshti, et al., 2018).

It should be noted that videos are used as complementary components classroom sessions. Some studies have shown that when used as a complement, positive results are obtained in student performance whereas when used simply to replace class sessions there is not the same improvement in learning outcomes (Aminu, 2006).
According to Sitti (2016), educational videos can be divided into three categories depending on their use and purpose: demonstration videos, narrative videos and videos of keynote lecture sessions. Demonstration videos are relatively short videos that walk viewers through how a product or service works, telling the audience exactly what it does and why they need it. Narration in video editing refers to the use of voiceovers or commentary to provide additional information or context to the visual content. This can be used to guide the viewer's understanding of the video, explain complex concepts, or provide additional storytelling elements.

Narration in video editing plays a crucial role in conveying the story or message of the video to the audience. It provides context, guides the viewer through the content, and helps to explain complex ideas or concepts that may not be easily understood through visuals alone. Narration can also be used to set the mood or tone of the video, provide commentary, or offer insights that can enhance the viewer's understanding and appreciation of the content. Moreover, narration can help in maintaining the flow and continuity of the video. It can fill in gaps between scenes, ensuring a smooth transition and preventing any confusion or misunderstanding. It also helps in engaging the audience, keeping their attention focused on the video. A keynote in lecture session is a talk that establishes a main underlying theme.

In corporate or commercial settings, greater importance is attached to the delivery of a keynote speech or keynote address. This can be used to guide the viewer's understanding of the video, explain complex concepts, or provide additional storytelling elements. These videos mention key features and emphasize benefits with engaging visuals and clear explanations. Video is also a motivating tool for learning (Wasagu, 2005), which could be justified by the power of attraction of audio-visual language and its influence on emotions which can serve to reinforce other less attractive activities. This motivation should result in an increase in the number of hours spent on various subjects, through viewing multimedia content and using the opportunity to combine this with other resources such as text, graphics, debates, (Manuel and Federico, 2017). This phenomenon is described

by the Premack principle coined by the American psychologist David Premack whereby when two stimuli are linked together, the one that is most likely to occur positively reinforces the one that is least likely to occur.
The potential of digital technologies help teaching innovation and autonomous learning (Steffens, 2001) as it is evident that students are very used to this type of technologies which enable good quality visualization in different media and devices like computers, tablets, smartphones, iPods, and are even exchangeable through bluetooth. In this way students are ensured access to quality, low-cost materials and as often as they wish from anywhere and from multiple platforms, which is a very interesting possibility in the context of autonomous learning (Manuel and Federico, 2017). This flexibility enables methodologies to be combined in a critical manner in order to develop a sea-change transformation in students' learning.

According to Mayer (2001), Educational videos are important in the following ways; Build authority**:** When learners or an audience is taught using videos, the teacher establishes his/herself as a reliable source of information. Irrespective of how basic or specific you may think your knowledge is, someone is going to find it useful. And when that happens, you can be recognized as an expert in the subject matter. Foster trust: From a prospect's perspective, there are few things more reliable than a brand selflessly sharing expertise and knowledge with their customers. Especially if it solves problems and makes their lives easier. When learners are taught using video, they turn to recall these ideas more easily. They are capable of seeing what the teacher is explaining in the videos as such foster trust. Increase conversions: Again, the quality of conversation between the learners and the teacher increases when they are taught using videos. They have the opportunity to see how things are been done or connected to bring out quality results.
Keamey (2002), said teachers need to be aware of some challenges (problems) that might appear during the teaching and learning activities by using video:

1. Nothing new syndrome can influence the effectiveness of using video in the class. It happens because the teacher cannot facilitate the teaching and learning activities in more interesting way, so the students just consider that the teaching and learning activities by using video are just the same like the other common learning activities. Therefore, the teachers need to bring out new aspects during lesson to keep the learners focus.
2. Poor quality video is also another factor that influences the effectiveness of employing videos in the class. For example, the students will have problems to see how the language is used in real context of communication.
3. Poor viewing condition can affect the effectiveness of using video. When using video in the class, the teacher has to ensure that the situation in the class will facilitate the students to see the video clearly. In some cases, the video is just brought into the class without considering the eligibility of the condition in the class.
4. Stop and start technique in using video might also fail to get the students' interest in learning because the teacher does not know very well how to apply the technique.
5. The length of the video used in the classroom should be counted. It is not going to be effective if the duration of the video takes too long, they may fall asleep or lose their attention. Using short video will be one of the ways to get the students' attention in learning activities.
6. Technical problems might appear during the teaching and learning activities. The teachers should get familiar with all the tools that will be used to support the classroom activities.

Students' achievement in physics depends on a variety of factors and shows how well the students are doing. According to Ljiubojievic at el. (2004), achievement appears generally to be the fundamental goal behind every life struggle, but the positive platform has consequential effects of improving the worth of the learners and can only be achieved through acquisition of positive learning attitudes. The attitudes of a student trigger his/her behaviour. Attitudes are antecedents which serve as inputs or stimuli that trigger actions. In other words, attitude is an emotional state of individuals towards an object or situation.

Wasagu (2005), pointed out that educators and teachers have often assumed that success in solving physics problems should indicate mastery of the physics concepts. Wasagu(2005), also points out the best way for students to learn physics as well as other sciences is to experience challenging problems and thoughts and actions associated with solving them. Awandia (2021) examined the relationship between teaching methods and attitude of students and found out that inquiry method, lecture demonstration are more motivating than traditional pure lecture method.

Academic achievement is important because it is strongly linked to the positive outcomes of learners' values. Adults who are academically successful and with high levels of education are more likely to be employed, have stable employment, have more employment opportunities than those with less education and earn higher salaries, are more likely to have health insurance, are less dependent on social assistance, are less likely to engage in criminal activity and above all they feel happy to achieve more (Regina, at. el. 2015). Hence, a child who achieve more in a physics lesson becomes motivated to do more in subsequent lessons.

Again, academic achievement is important because working people will need higher levels of education to tackle the technologically demanding occupations of the future. Now a day people need a post-secondary education in order to get a job. This cannot be the case if the learner achieves poorly in his or her academics.
Students who achieve high in their academics have higher self-esteem, have lower levels of depression and anxiety, are socially inclined, and are less likely to abuse alcohol and engage in substance abuse. Positive self-esteem and self-confidence are critical factors in commitment to academic.

III. RESEARCH METHODOLOGY

The study used the quasi-experimental research design. The target population of the study was made up of 4126 physics students in two selected secondary schools. The accessible population was made up of 293 form four physics students and the sample size was the same as the accessible population. The learners in the experimental group were taught using videos while those in the control group were taught using pure lecture method. Both groups were taught current electricity for one month. The instrument for data collection was a teacher made test. Data were analysed using both descriptive and inferential statistics. The descriptive statistics used percentages and frequencies to describe the demographic information. For inferential statistics, the mean scores, standard deviation and student t-test were used to test the hypotheses.

IV. ANALYSES / RESULTS

Research Question: What is the difference between students taught using educational videos and those taught using pure lecture in secondary schools in the Limbe I Municipality?

Descriptive Analysis

Table 1 ***Table showing the mean and standard deviation of the control and experimental groups.***

Variable	N	Mean	Standard Deviation
Control Group	200	8.83	2.48
Experimental Group	93	12.85	3.37

The table shows that the mean of the experimental group taught using videos 12.85 was higher than that of the control group 8.83.

Verification of the Hypothesis

Testing of Hypothesis (H_o): There is no significant difference between students taught using videos and those taught using pure lecture in secondary schools in the Limbe I Municipality.
Inferential Analysis: A two tailed paired samples t – test was done to compare the mean score of students taught using videos and those taught using pure lecture in secondary schools in the Limbe I Municipality. The results are presented on tale 2 below.

Table 2
T-test analysis showing the relationship between students taught using videos and those taught using pure lecture method in secondary schools in the Limbe I Municipality.

Variable	N	$\bar{x}$	d	t-cat	t-tab	Std	df
			8.086		1.645	0.497	291
Control group	200	8.83					
Experimental group	93	12.85					

T -value is significant at the 0.05 level (2-tailed).

The result of the analysis revealed that the calculated t -value of 8.086 is higher than the table -value of 1.645 at .05 level of significance with 291 degrees of freedom. Also, the mean of the experimental group is 12.85 while that of the control group is 8.83 with a standard error of 0.497. With the result of this analysis, the null hypothesis was rejected and the alternative hypothesis retained. Therefore, the null hypothesis which states that there is no significant difference between students taught using videos and those taught using pure lecture in secondary schools in the Limbe I Municipality was rejected and the alternative hypothesis which states that there is a significant difference between students taught using videos and those taught using pure lecture in secondary schools in the Limbe I Municipality was retained. A further exploration of the effect showed that the mean of the experimental group was high 12.85 with a standard deviation of 3.37 while the mean of the control group was low 8.83 and the standard deviation 2.48 showing that there was more mastery for those in the experimental group than those in the control group. This indicates that when students are taught using videos, they understand

better than when taught using pure lecture method. That is videos have more positive impact on students learning than pure lecture method.

V. CONCLUSION

This study aimed at finding out the impact of Physics teaching methods on students' academic achievement in the Limbe I municipality. The study was guided by the research objective which was to find out if there was any significant difference between learners taught using educational videos and those taught using the pure lecture method.

Result showed that students taught using educational videos understood the concepts better compared to students taught using the pure lecture method.

This result ties with that of Ilker (2016) who argued that students taught using educational videos enrich their understanding as well as concentration during lessons and also improve memory of learners. To him, these videos should be goal oriented, that is related to the goals of the learning.

Again, this study is in line with the work of Tabot (2023) who argued that video lessons reinforce reading and lecture material as well as aid in the development of a common base among students. In fact, videos enhance students' comprehension and discussion and also provides greater accommodation of diverse learning styles.

Again, this work is in line with that of Mayer (2001). He explained that viewing, while it may appear to be passive, can involve the high cognitive activity necessary for active learning: "well-designed multimedia instructional messages can promote active cognitive processing in students, even when learners seem to be behaviourally inactive" (p. 19). To him, the content and context of the viewing are both crucial elements for engaging students as active learners.

Beheshti, M. et.al., (2018) also supported these findings as they argued that videos are playing an integral part in our classrooms. To them, videos serve as the principal delivery system of information and that it is a powerful tool leading to satisfactory result. Hence, the use of educational videos cannot be under estimated as students turn to recall what they have seen more than what they have heard. Notwithstanding, the results of this study are also in one accord with the results of Cynthia (2016) who argued that teaching with the use of educational videos help learners to remain focus and active throughout the class and that this is possible if the teacher uses guide questions throughout the lesson.

Furthermore, the results of this study are also in line with that carried out by Manuel and Federico, (2017). They argued that sstudents consider educational videos as supplementary material which complement traditional methodologies and favour self-learning as well as offering flexibility at no additional cost. They went further to explain that teachers can produce their own high-quality multimedia material, which in turn requires a consistent evolutionary process in elaborating within the changing possibilities that information technologies offer.

RECOMMENDATIONS

From the results of the study, the following recommendations are made; Physics teachers should regularly use videos to teach their students so as to improve on their teaching learning process. School administrators, should enable to prove videos teaching aids to physics teachers. Pedagogic Inspectors should organize seminars/workshops regularly to train teachers on the use of computers and videos to stimulate lessons. The government should enable to prove the financial resources to schools so as to ease the purchase of the video equipment so as to facilitate teaching of physics using videos.

REFERENCES

[1]. Agbor, T. T. (2023). A Dissertation Submitted to the Department of Curriculum Studies and Teaching, Faculty of Education of the University of Buea in Partial Fulfilment of the Requirements for the Award of the Master of Education (M.Ed) Degree in

[2]. Alemnge, F.L. (2021). The New Syllabi for Cameroon Secondary Education: A Description of the Organisation of Salient Elements. *Open Access Library Journal*, 8, 1-22. doi: 10.4236/oalib.1106994 (https://doi.org/10.4236/oalib.1106994).

[3]. Aminu, Y.U. (2006). Physics education as a challenge to teacher education. A conference paper presented at F.C.E Katsina.

[4]. Atkinson, R.C. and Shiffrin, R.M. (1968). 'Human memory: A Proposed System and its Control Processes. *The psychology of learning and motivation*, 2(1).

[5]. Awandia, J.T. (2021). Impact of Teaching Methods on Students Negative Attitudes towards Physics. *Greener Journal of Educational Research*, 11(1): 11-23.

[6]. Beheshti, M., Taspolat, A., Kaya, S.O. & Sapanca, F. H. (2018). Characteristics of instructional videos. *World Journal on Educational Technology: Current Issues. 10*(1), 061-069.

[7]. Blazar, D. (2016). Teacher and Teaching Effects on Students' Academic Performance, Attitudes, and Behaviours. Doctoral dissertation, Harvard Graduate School of Education.Available online on http://nrs.harvard.edu/urn-3:HUL.InstRepos:27112692.

a. Curriculum Studies and Teaching.

[8]. Cynthia, B. (2016). Effective Educational Videos. Impact on the Classroom. Retrieved from http:// cft.vanderbilt.edu/guides-sub-pages/effective-educational-videos on the 20/10/2021.

[9]. Cynthia, B. (2017). Effective Educational Videos. Impact on the Classroom and the effects of video podcasting on psychomotor and cognitive performance, attitudes and study behaviour of student physical therapists. Innovations in

[10]. Dzah, L. (2014). An Investigation into Physics Practical Lessons in Senior High Schools in the Cape Coast Metropolis. Thesis submitted to the Department of Science and Mathematics Education of the College of Education Studies, University of Cape Coast, in partial fulfillment of the requirements for award of Master of Philosophy Degree in Science Education.

[11]. Fuller, R. & Lang, C. (Eds) (1992). *Physics: Cinema Classics*. Videodiscs produced by American Association of Physics Teachers.

[12]. Ilker, K. (2016). Student Views on Learning Environments Enriched by Video Clips. *Universal Journal of Educational Research* 4(2): 359-369, 2016. http://www.hrpub.org. DOI: 10.13189/ujer.2016.040207

[13]. Kay, R. H., & Kletskin, T. (2012). Exploring the use of video podcasts in education: a comprehensive review of the literature. *Computers in Human Behavior*.

[14]. Kearney, M. (2002). *Using digital video to enhance authentic technology-mediated learning in science classrooms.* Paper presented at the Australian Computers in Education Conference, Hobart. Available: http://www.tasite.tas.edu.au/acec2002

[15]. Lilian, F.W. (2021). "The Competency Based Approach in Cameroon Public Secondary Schools: Modes of Appropriation and Constrains". *International Journal of Humanities Social Sciences and Education (IJHSSE), vol 8(1). Pp.92-103.* Doi: https://doi.org/10.20431/2349-0381.0801011.

[16]. Ljubojevic, M., Vaskovic, V., Stankovic, S. & Vaskovic, J. (2014). Using Supplementary Video in Multimedia Instruction as a Teaching Tool to Increase Efficiency of Learning and Quality of Experience. *International Review of Research in Open and Distributed Learning*, *15*(3), 275–291. https://doi.org/10.19173/irrodl.v15i3.1825.

[17]. Manuel, R., Federico, G. (2017). Educational videos: After the why, the how. Intangible Capital, 13, (5), pp. 902-922 Universitat Politècnica de Catalunya Terrassa, España. https://doi.org/10.3926/ic.1042

[18]. Mayer, R. E. (2001). *Multimedia learning*. New York: Cambridge University Press.

[19]. Nagy, L. & Bernsch*ü*tz, T. (2015). Practical teaching methods. *Universal Journal of Educational Research.*

[20]. Regina, M., Emmanuel E., Asabe E., & Stella O. (2015). Fostering Students' Critical Thinking and Achievement in Basic Science Using Graphic.

[21]. Reiner, D.S. (2009). Guided notes and interactive methods for teaching with videotapes. Teaching of Psychology 24, 183-185.

[22]. Salomon, G., Perkins, R., & Globerson, T. (1991). *Interaction of media, cognition and learning*. San Francisco, CA: Jossey-Bass.

[23]. Sani, A. (2012). Role of Physics Education for Technological Development for Employment and Self Productivity in Nigeria. *Journal of Educational and Social Research Vol. 2 (10). Doi*:10.5901/jesr.2012.v2n10p166.

[24]. Shaila, B. (2011). The role of practical work in teaching and learning physics at secondary level In Bangladesh. A thesis submitted to the University of Canterbury College of Education in partial fulfilment of the requirement for the degree of Master of Education. The College of Education, University of Canterbury, New Zealand.

[25]. Sitti, H. (2016). Teaching by Using Video: Ways to Make It More Meaningful in EFL Classrooms. https://www.researchgate.net/publication/320146544

[26]. Tambo, I.L. (2012). *Principles and Methods of Tesaching*. ANUCAM.

[27]. Wasagu, M. (2005). Course materials for science and technology teaching method. A presentation at a workshop for Heads of department and Principals of JSS in Kebbi State, held at Grand Fishing Hotel Argungu.