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Effectiveness of Instructions in Academic Achievements: an Experimental Study using 7E's Instructional Model

Faheemullah khan* | Salahuddin Khan† | Zia Ul Islam‡

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Abstract

The uneven temperament of the educational scheme has a subterranean impact on student's academics. Experts are determined to conceive alternatives to meet up with this confront. It necessitates the time that our education system must change the itinerary to prepare the new generation fully equipped with knowledge and skills. This is an experimental study and based on the constructivist approach of learning following 7E's instructional model. Key objectives, to assess the effectiveness of instructions based on 7E's instructional model in student's academic achievements, to compare experimental and controlled group at both pre and post-test phase. Hypotheses were analyzed using spss. It was concluded that 7E's instructional model based instructions are significantly effective in enhancing student's academic achievements in the subject of physical education. The experimental group treated with instructions based on 7E's instructional model made significant improvement as compared to the controlled group.

Key Words: Constructivist Approach, 7E's Instructional Model, Academic Achievements, Physical Education, Higher Secondary School Level

Introduction

This study is experimental in nature and based on a constructivist approach. Constructivism means the realization of knowledge in someone mind. This approach believes that every individual in a learning environment already has prior information. On the basis of pre-existing knowledge, an individual in a learning environment could be able to gain new knowledge. Ertmer & Newby (1993) define the process of active learning as; it is a process of progressive development that took place continuously. According to Ertmer & Newby (1993), in this process, the teacher tries to assemble the understanding of an individual to the environment by practising some specific experiences and interactions with the external environment. According to Rossum and Hammer (2010), the need for an activating nature of curriculum step to open the gateway to use the model for conceptual base students learning. Similarly, Roblyer (1997) added that the outcomes of an active process of learning are more productive in nature as compare to traditional learning when it took place in an active learning environment. Dolmans, Wolfhagen, Schmidt & Vander Vleuten (1994) find out that teacher presentation is closely responsible for the competence of the students in a subject and quality of the educational program. Similarly, the role of the teacher in the teaching and learning paradigm is not neglectable because it is all about the teacher who can flourish or crush the student's outcomes. So the teacher should be very vigilant in considering the students level of learning and student individual differences. Similarly, Santrock (2001) considers the students as a key aspect in the teaching and learning dimension. Santrok (2001) further suggested that the teacher must keep an eye on the gradual assessment of the student learning outcomes time by time. The study also suggested that the teacher should analyze the students learning outcomes with the learning objectives of the lesson. According to Davidson and Major (2014), the students learn more in the active learning environment as they engage themselves in paired discussions, problem-solving, or some type of role plays. Berk (2009) also argued the same as Davidson and Major. The author further adds that students assemble facts into understanding under the guidance of a teacher.

* SS&PE, Gomal University Dera Ismail Khan, KP, Pakistan. E mail: faheemawan585@gmail.com
† Professor, SS&PE, Gomal University Dera Ismail Khan, KP, Pakistan.
‡ SS&PE, Gomal University Dera Ismail Khan, KP, Pakistan.

It helps in learning practical skills also. Connell (2009) also supports the above authors. Similarly, in line with the above discussion, Kudryashova et al., (2016) state that it is the need of today age to give students an opportunity to experience things by manipulating them. Condon et al. (2016) argued that in an active learning process, the teacher assesses the level of understanding of students by both formal and informal, similarly pre and post, and it is possible only in an active learning environment. Through this way, students can fulfil their desire to do themselves. According to Tanaka (2015) and Cercone (2008) opine that teacher should understand the true nature of the active learning process and may experience it. It relies on the constructivist approach to active learning. According to this theory teacher only play his role as a facilitator. The teacher facilitates students during the whole investigation. An active learning environment ensures the student's motivation, and this motivation further leads towards curiosity. The student learns well when they are curious about something to learn.

Eisenkraft (2003) stated that the 7E's model for instructions is composed of seven different phases. Elicit, engage, explore, explain, elaboration, evaluation and extend. According to Settlage, 2000; Cavallo & Laubach (2001), an instructional model is a complex of different phases. It has different activities based on the principle of discovery through the inquiry nature of learning. It leads towards the accomplishment of the leaning process in its true sense, which helps the learners to broaden and polish their calibre of knowledge. Advancement in every field, especially in education, is the ultimate goal of every society. In line with the statement, Safdar (2007) stated that a well developed and organized education system is the most logical and reliable tool in the progress of every developed nation. Similarly, Arends (2004) added that a developed education system depends on the skill of teaching, learning and the developed attitude of students towards the subject. School is a setup where students are highly affected by the teacher's encouragement regarding interest and talent development. Vighnarajah et al. (2008) claim that in the teaching and learning paradigm, the teacher plays a key role in both aspects. First, the teacher may nurture the students by his quality of giving instructions in the class room and second, the teacher may crush the student by crushing his abilities during the learning atmosphere. In this regard, many authors conducted different studies like Akaar in 2005; Brown & Sandra in 2007; Ceylan & Geban, in 2008; Gang, in 1995; Kaynar et al., in 2009; Kleindienst, in 1993; Lawson & Thompson, in 1988; Lord, in 1997; Marek et al., in 1994; Mecit, in 2006; Odom & Kelly, in 2001; Purser & Renner, in 1983; Shadburn, in 1990; Spencer & Guillaume, in 2006, Wilder & Shuttleworth, in 2005" in order to assess the effectiveness of the different instructional model in student achievements. The above authors highlighted that instructional model base teaching, help the learners to generate the sense of scientific approach, enable the students to perk up their logical reasoning abilities, develops attitude towards the subject, strengthen students engagement in the classroom and overcome on the student's misconceptions about the subject and practice to learn rather than to obtain. According to Corbin (2001), school children should be engaged in physical activities in order to keep them physically fit in their age of adulthood. Similarly, Rink (2006) claims that health and physical education and participation in physical activities is one of the prime goals of the school physical education program. Corbin et al., (2004) pointed out that even though admitting the importance of physical activity, the school administration shows negligence towards the promotion of physical activity culture in school. It has been observed that as students promote to a higher class, the level of physical activity decreases. Similarly, Sallis et al. (2000) also identify and considers all these discussed factors, which are bracket together with children participating in physical activity seems critical to promote. Richardson (2003) reports that In this new framework of education, emphasis will be on the environment of learning in which students will be able to understand things with a new approach by linking it with pre-existing knowledge. Gross (2002) further added that in this new reform in the teaching and learning process teacher plays a key role as the designer by providing strategies to the student to learn and think critically. In line with the discussed statement, numerous researchers Postner, Resnik, and Strike (1982) and (1983), also claim that different students in the class come to the classroom having a different view. Settlage (2000) and Cavallo & Laubach (2001), an instructional model is a complex of different phases having different activities based on the principle of inquiry through the discovery nature of learning. It leads towards the accomplishment of the leaning process in its true sense, which helps the learners to broaden and polish their calibre of knowledge skillfully.

Key Objectives

Following are the key objectives of the study.

1. To assess the effectiveness of instructions based on 7E's instructional model in student's achievements in Physical Education subject.
2. To compare the mean difference of the experimental group and controlled group at both pre-test and post-test level to assess the effectiveness of 7E's instructional model in student's achievements in Physical Education subject.

Hypotheses of the Study

In line with the objectives of the study following hypotheses were formulated

$H_0$1: There is no significant mean difference in pre-test student's academic achievements, between the experimental group and control group, with reference to physical education subject.

H_A2: There is a significant mean difference in post-test student's academic achievements between the experimental and control group, with reference to physical education subject.

H_A3: There is significant mean the difference in student's achievement between pre-test and post-test in the experimental group, with reference to physical education subject.

$H_0$4: There is no significant mean difference in student's academic achievements between pre-test and post-test in the controlled group, with reference to physical education subject.

Presentation of Literature

Academic Achievement

The main pedagogic goal of the instruction method in the education system is academic achievement. For the purpose of harmonious and overall development of an individual, academic achievement is considered a significant ingredient. Through academic achievements, it becomes easy to measure the learning outcomes of the students. It is a common practice observed in society that a student's efficiency or deficiency is assessed with his/her academic achievements level. In the present scenario, as we are observing, a rapid change that occurs day by day in our system produce different kinds of challenges for educationists. So educationists are striving their best to complete these challenges. They are trying to find that kind of variables which are challenging our education system. Due to the rapid change nature of the world, parents are always trying to educate their children with high educational goals, and it further leads towards the need and importance of academic achievements. That is why the researchers are trying to find such ways which can contribute to enhancing student's academic achievement. In the same context, Ganyaupfu (2013) opine that for the purpose to bring change in the learner is the primary aim of teaching. The author further argued that the teacher has a deep impact on students learning behavior. The teacher is the main source in the transmission of knowledge in students. So the teacher should apply appropriate instructional methods to facilitate the process of information transmission. Likewise, Echophyt, (2014) claim that besides the many factors which can cause poor academic achievement level, teachers are mostly responsible for this loss. Because teaching method is very important in students academic achievement and it is related to the teachers teaching method. The use of non-effective instructions methodologies directly affects the student's level of achievement in their academic.

Impact of Instructional Method Upon Students Achievements

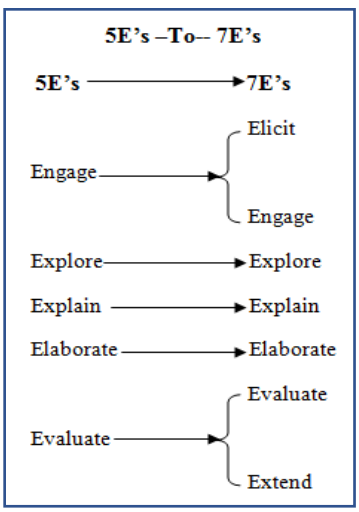
There are many variables that can impact successful student achievement, but the most critical is classroom instruction and method of teaching. It is important to remember that all students do not learn the same way or at the same rate. Students are like leaves on a tree; there are no two exactly the same. Just as a leaf comes in unique colors, shapes and sizes, each student has their own unique learning style (Trendowski, 2014). Classroom instruction or teaching method is the most important factor that impacts student achievement. Teaching is a Continuous process that involves bringing about desirable changes in learners through the use of appropriate methods. Gyamtso and Maxwell (2012) and Reyes et al. (2012) also claim the same results that student's

academic achievements are closely linked with the teacher method of instructions. Singh and Jha, (2013), Benfer and Shanahan (2013) and Farrington et al. (2012) also support the above concept and state that different instructional methods are needed to different grades students, so educator is required to use appropriate teaching method. The authors further added that quality and appropriateness would surely increase the level of a student's academic achievement level. Following studies Osborne, et al., (2013), Balcıkanlı, (2010), Murphy and Wolfenden (2013), Hallinger and Lu (2013) Borko, Jacobs and Koellner (2010), Ezenwafor and Molokwu, (2015), Garrett (2008), Farrington et al. (2012), Rosaen et al., (2008) and Ganyaupfu (2013) strongly claim that instructional method is the key source of enhancement in academic achievement.

The 7E's Instructional Model and its Distinguishing Phases

7E's instructional model was constructed under the guidance of Piaget's mental functioning model. According to Eisenkraft (2003), many research studies has been done in the discipline of education, especially on the process of learning mechanism that how it take place. The integration of these studies into the purpose of lesson plane and link of these studies with researches in how a way the individual becomes able to learn, understand and incorporation these studies for preparing and assembling lesson plans. Therefore the requirement of development during curriculum development stresses the expansion of 5E's model into a 7E's model of instruction. According to Karplus & Their (1969), the first edition of the model integrated three phases at the beginning called primary exploration, invention and discovery but later on revised to exploration, concept introduction and concept application for the purpose to increase the level of expressiveness.

In the 7E's model of instruction, the "*engage*" phase of 5E's model is further divided into two phases "*elicit*" and "*engage*". Likewise, the "*evaluate*" phase is further expanded to "*evaluate*" and "*extend*". The objective behind the changes does not means to bring complexity to the model, but it was intended that it will be easy for the instructor to do not skip the critical phases during planning lesson accordingly to the model for teaching.



Eliciting Phase

In elicit phase the teacher first try to make understanding of the concept for the purpose to make the concept familiar for the students. According to Eisenkraft (2003) it helps to grasp the student's attention towards the lesson and prove helpful for the teacher to engage the students in class. The pre existing knowledge of the students plays an important role as background information. Through this way students become able to assimilate the new information. According to Bransford, Brown and Cocking (2000) in cognitive science the prior understanding of the topic is very compulsory. So the elicit phase is too much necessary to make an understanding of the topic during teaching. The "e*licit*" phase of 7E's instructional model hub the learners to re call the pre existing knowledge that is associated with new lesson information. According to Balci, Cakiroglu, and Tekkaya (2006) the teacher must ask some critical thinking based questions from the learners in order to recall their prior

knowledge about the topic. Huang, Liu, Greeff, & Lin (2008) supported the observations of Balci, Cakiroglu, and Tekkaya. Furthermore, Bentley, Ebert, and Ebert (2007) elaborated that it is simply assessing pre-existing information means asking students what do you know about?. According to Hansen and Sanders (2010), student's pre-existing knowledge is very important to be noticed. It may be possible that students have some misconceptions that need to be corrected or to be provided with alternative concepts. Similarly, Wang and Degol (2016) added that it is necessary for a teacher to find the ideas, beliefs and opinion which student brings in the class room. It is a type of investigation. This is also a type of formative evaluation of the students. It helps instructors in assessing the pre-existing information of the students. It also helps the teacher to decide what and how to teach before initiating the process of instruction. Furthermore, Bhattacharyya, Volk and Lumpe (2009) argued that eliciting before engaging enables the teachers to identify the misconceptions of the students. It is right to say that it is a time taking activity be has a positive impact on students learning outcomes. Hodges (2015) and Treagust (2012) opines the same.

Engage Phase

The phase of engagement of 7E's instructional model means to imprison the attention of the students towards the activity going on in the class. Capturing students attention towards the class is very important, and it takes diversion in eliciting phase. Engage phase is completely about taking advantages of the student's attention and curiosity being raised in eliciting phase. According to Eisenkraft (2003), this phrase works as an assessing phase for pre-existing knowledge and in the generation of enthusiastic behavior among the students. In this phase, the teacher can use different methods to engage students, likewise offering some objects to work with, offering a short clip of cartoon related to the concept and offering paper pencil for the purpose to write down information about the topic according to their concept. Furthermore, Bentley, Ebert, and Ebert (2007) elaborated that it is simply arousing and capturing student interest.

Exploration Phase

The phase of exploration in 7E's instructional model intends to provide an opportunity for the students to explore things by observing the phenomenon. Different types of material can be provided to complete this phase, like designs and graphs etc. According to Eisenkraft (2003)teacher needs to frame some types of questions, and by asking these questions, the teacher must try to take suggestions to assess their approach towards the lesson. During this process, the teacher must provide the necessary feedback to the student. Furthermore, Bentley, Ebert, and Ebert (2007) elaborated that it is the time when students participate actively. Similarly, students working with different models are asked to make observations and investigate the questions that arise in their minds. So in this way, students work and make predictions.

Explain Phase

According to Eisenkraft (2003), the founder of the 7E's instructional model debated as in this phase, the students will bring the information they collected and will show it to their teacher. The teacher will briefly study the outcomes which students reported and then will judge the scenario as students are on the right path or they are diverted from the exact line. After making assessments of the students provided results, the teacher will notice the concept of students and also the corrections to be made. In line with students results, if it is necessary to make changes, then the teacher, with the help of student's reports, will clarify the concepts and may add something more if necessary. Furthermore, Bentley, Ebert, and Ebert (2007) elaborated that in explaining phase the teacher will collect the findings reported by the students and discoveries they made.

Elaboration Phase

Eisenkraft (2003) states this phase as the phase of linking the gathered knowledge with other same problems having the same nature. In this phase, the students try to implement their obtained knowledge of different new items. In this process, the student may face a new problem or difficulty and which may lead to new questions. So to bring an answer to the raised question is now a new task. Student search again and try to find a suitable answer,

and when they get success in this regard, it means that they obtained more new information. That vary phase also can be called transfer of learning, and it belongs to the psychological base of knowledge, and that is the true example of lifelong learning. Hilard & Bower (1975) and coking (2000) supported the concept.

Evaluation Phase

Eisenkraft (2003) states that according to this concept of model-based teaching teacher role is also very important as it is a fact that the teacher is the best evaluator of the students. That a student is obtaining something or not, what is the level of understanding of the students, like summative evaluation or formative evolution. According to eisenkraft, the teacher will evaluate the student's position in each and every stage and at the end of this cycle. Evaluation is very necessary, and it is the only evaluation that enables us to identify the position of an individual. Furthermore, Bentley, Ebert, and Ebert (2007) elaborated that in this phase, the formative evaluation is done at the elicit phase, now a point to measure the improvement made. Similarly, at the end of the lesson by evaluating the student's knowledge level will give a clear indication of the student's level. This phase of evaluation enables the teacher to measure the student's level of understanding about the concept as what it was in the beginning and what it is at the end.

Extend Phase

Similarly, Eisenkraft (2003), according to that model, try to explain how much it is necessary to extend the topic to the next one. This will help the student to understand the next topic easily. Because linking the lecture with coming one provide the student with a base and act like pre-existing knowledge for the next one. Similarly, it helps the students to understand the next ideas easily.

Method and Materials

Research Design

Pre-test, post-test and control group design was used for the study, and this is a type of experimental designs. The scheme of the design is as under.

R O T O
R O _ O (Creswell, 2009; Gay, 1996)

"R" stands for random assignment of subjects to groups, "O" stands for Pre-test, Post-test. "T" stands for "treatment". Instructions were designed according to 7E's instructional model and administer to the experimental group. The researcher himself provided the instructions for the purpose to ensure clarity in the experiment. The study was conducted over eight weeks, and the teaching session was comprised of 45 minutes. At the start of the experiment and before the treatment process, in order to check the equality in the achievements level of the students, the physical education achievement test (PEAT) was administered to the students. The same tests were also taken after the completion of the experiment.

Proposed Workplace

This particular research study was conducted in Islamabad Model College for boys Bhara Kahu federal area Islamabad, in the vicinity of Islamabad capital territory of Pakistan.

Population and Sample

The target population for this research study comprised all the XI class students having Physical Education subject in their syllabus. That enrolled in different colleges in the vicinity of Islamabad capital territory, under the administrative unit of Federal Directorate of Education (FDE) Islamabad. Accessible population for this particular research study comprised all (50) students and randomly distributed into two groups. Each group comprised 25 participants, experimental group (25) and controlled group (25) having Physical education in their syllabus in Islamabad Model College for boys Bhara Kahu federal area Islamabad, Located in the premises of Islamabad

Capital Territory. Further, it is also necessary to explain that the result obtained from this study are generalized to the distinct target population.

Instrument and Instrumentation

The physical education achievement test (PEAT) was prepared by the researcher himself as the researcher is himself a physical education teacher and presently teaching physical education subject at a higher secondary level. The researcher put great attention to prepare the instrument for vivid and free of ambiguity. For the purpose of face validity, content validity and construct validity of the test, it was discussed with fifteen experienced physical education teachers and ten expert professors from the sports sciences and physical education discipline. The items which were accepted by the panellists were considered as it was. Similarly, the items which were accepted with minor changes were changed in line with suggested changes by the panellists. The items which were rejected by The panellist were expelled from the draft. Furthermore, content validity ratio of each item included in the scale was then calculated by using Lawshe (1975) method. The validation process of the test was entirely carried out under the kind consideration and value able guidance of the research supervisor. For reliability, Cronbach's Alpha, correlation and reliability coefficients were checked. The Cronbach's Alpha obtained was 0.84, which shows moderate reliability and in an acceptable range. The final version was administered to both groups (experimental group and controlled group) separately at the Pre-test phase. The test was about to subject knowledge having multiple choice questions aiming to gauge the level of student's knowledge in physical education subject and to select the participants of the same capacity keeping in view the normality threats for the study. The Pre-PEAT results of both experimental group and controlled group were kept as a record. Similarly procedure was adopted at Post-PEAT phase and the results were kept in record. Furthermore the obtained results were used for statistical analysis.

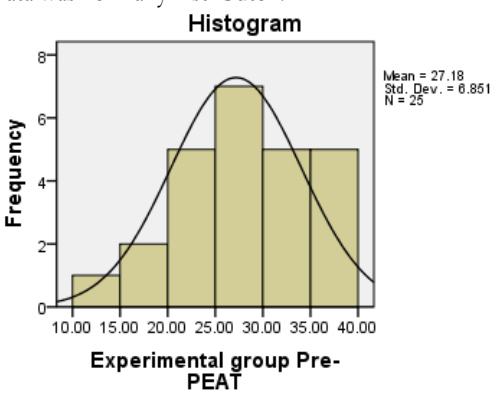
Analysis

Descriptive Statistics

Table 1. Descriptive Statistics Related to Physical Education Achievement test (PEAT), Experimental Group at Pre-test Phase.

Test	N	Min%	Max%	Mean	SD	Skewness	Kurtosis
Pre-PEAT	25	13.75	37.50	27.184	6.850	-.095	-.495

The above table showing Pre-test results of physical education achievements tests (PEAT) scores of students in experimental group. The scores showed ranging from 13.75% to 37.50%, with a mean of 27.184. The said table further represented that skewness of the test score was found -.095, and also Kurtosis of the test score was -.495. This indicated that the data was normally distributed.

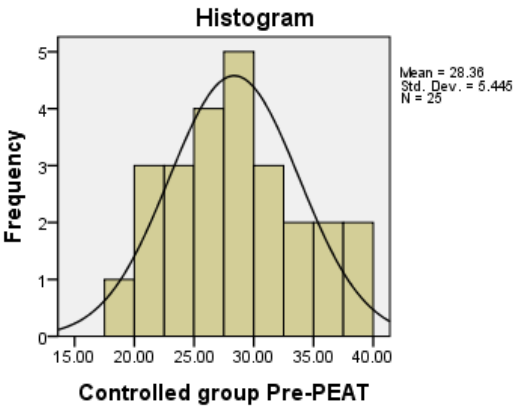


Histogram indicates that pre-test scores in physical education academic achievements (PEAT) of experimental group which depicted that data rested on the normal curve.

Table 2. Descriptive statistics related to physical education achievement test (PEAT), controlled group at pre-test level.

Test	N	Min%	Max%	Mean	SD	Skewness	Kurtosis
Pre-PEAT	25	18.00	37.50	28.359	5.445	.187	-.765

The above table showing Pre-test results of physical education achievements tests (PEAT) scores of students in controlled group. The scores showed ranging from 18.00% to 37.50%, with a mean of 28.359. The said table Further represented that skewness of the test score was found .187, and also Kurtosis of the test score was -.765. This indicated that the data was normally distributed.

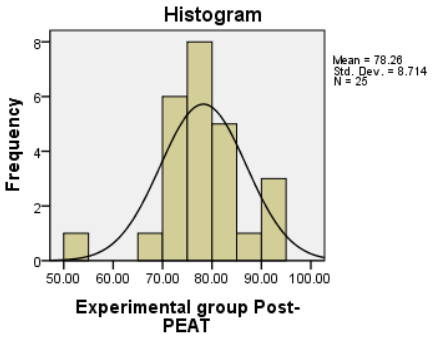


Histogram indicated the pre-test scores in physical education academic achievements (PEAT) of the controlled group, which depicted that data rested on the normal curve.

Table 3. Descriptive Statistics Related to Physical Education Achievement Test (PEAT), taken by Experimental Group at Post-test Phase.

Test	N	Min%	Max%	Mean	SD	Skewness	Kurtosis
Post-PEAT	25	53.25	94.25	78.256	8.714	-.454	2.011

The above table is showing Post-test results of physical education achievements tests (PEAT) scores of students in the experimental group. The scores showed ranging from 53.25% to 94.25%, with a mean of 78.256. The said table further represented the skewness of the test score, and it was found -.454, and also Kurtosis of the test score was 2.011. This indicated that the data were normally distributed.

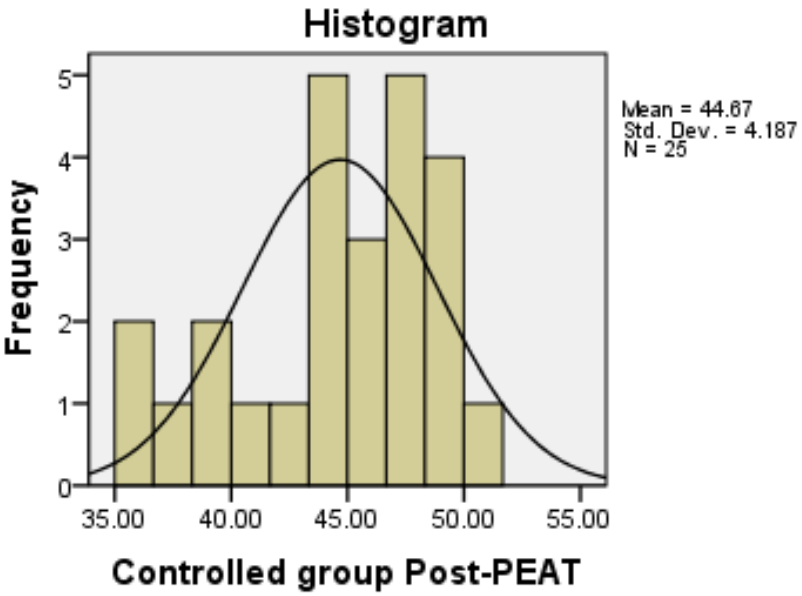


Histogram indicated post-test scores in physical education academic achievements (PEAT) of experimental group, which depicted that data rested on the normal curve.

Table 4. Descriptive Statistics Related to Physical Education Achievement test (PEAT), taken by Controlled Group at Post-test Level.

Test	N	Min%	Max%	Mean	SD	Skewness	Kurtosis
Post-PEAT	25	36.00	51.25	44.674	4.186	-.658	-.425

The above table showing Post-test results of physical education achievements tests (PEAT) scores of students in controlled group. The scores showed ranging from 36% to 51.25%, with a mean of 44.674, the said table further represented that skewness of the test score was found -.658, and also Kurtosis of the test score was -.425, This indicated that the data was normally distributed.



Histogram indicated pre-test scores in physical education academic achievements (PEAT) of controlled group which depicted that data rested on the normal curve.

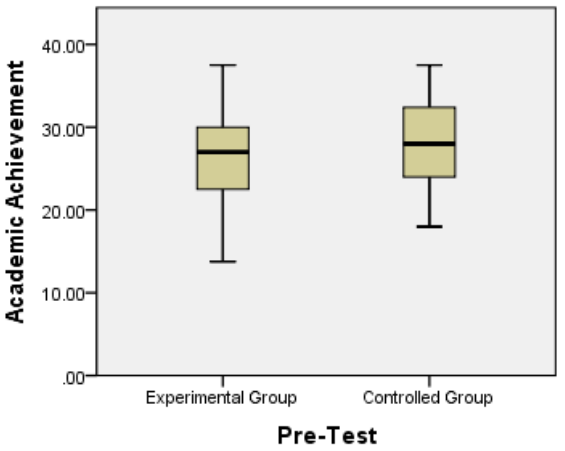
Section C: Inferential Statistics (Testing of Hypotheses)

$H_0$1; There is no significant mean difference in pre-test student's achievements, between experimental group and control group, with reference to physical education subject.

Table 5. T-test Showing Pre-test mean Differences in Academic Achievement's Between Experimental Group and Controlled Group.

Testing variable	Group/Test	N	Mean	SD	Df	F	Sig.	T	Sig.
Achievements	Experimental pre-test	25	27.174	6.850	48	.980	.327	-.672	.505
	Controlled pre-test	25	28.359	5.445					

α=.05, n=respondents, S. D=Standard Deviation, df=Degree of freedom, T=Calculated , Sig=Significant value.



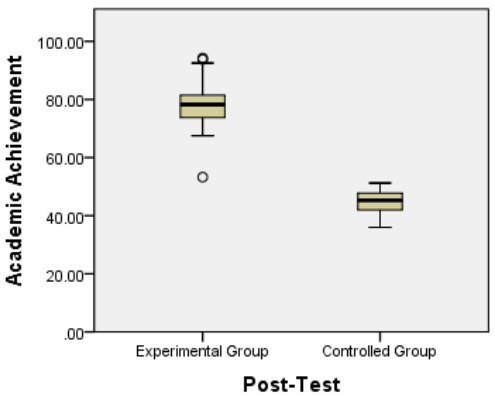
The above table and figure show the pre-test mean the difference in achievements between the experimental group and the controlled group. Here t(48)= -.672, P(.505)>.05. It indicates that there is no significant difference in the attitude of both groups participant's (experimental and controlled). The experimental group (M=27.184, SD=6.850) is statistically less but not significantly than the Controlled group (M=28.359, SD=5.445). The result indicates that the null hypothesis is accepted.

H_A2: There is a significant mean difference in post-test student's achievements between the experimental and control group, with reference to physical education subject.

Table 6. T-test showing the post-test mean difference in achievement's between experimental and controlled group**.**

Testing variable	Group/Test	N	Mean	SD	df	F	Sig.	T	Sig.
Achievements	Experimental Post-test	25	78.256	8.714	48	4.252	.045	17.368	.000
	Controlled Post-test	25	44.674	4.186					

α=.05, n=respondents, S. D=Standard Deviation, df=Degree of freedom, T=Calculated , Sig=Significant value



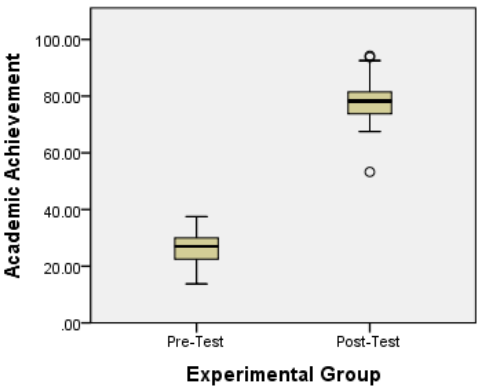
The above table and figure shows the post-test mean difference in student's academic achievements between experimental group participants and controlled group participants. Here t(48)=17.368, P(.000)<.05. It indicates that there is a significant difference in the attitude of both groups participant's (experimental group and controlled one). The experimental group (M=78.256, SD=8.714) is statistically and significantly greater than then Controlled group (M=44.674, SD=4.186). The above figures also indicate the effectiveness of instructional model-based teaching. The result indicates that the hypothesis is accepted.

H_A3: There is a significant mean difference in student's achievement between experimental group pre-test and experimental group post-test, with reference to physical education subject.

Table 7. Paired t-test Showing Pre-test and Post-test Achievement's Mean Difference of Experimental Group.

Testing variable	Group/Test	N	Mean	SD	df	R	T	Sig.
Achievements	Experimental Pre-Test	25	27.184	6.850	24	-.121	-21.790	.000
	Experimental Post-Test	25	78.256	8.714				

*α=.05, **n**=respondents, S. D=Standard Deviation, df=Degree of freedom, r=Relation, T=Calculated,Sig=Significant value*



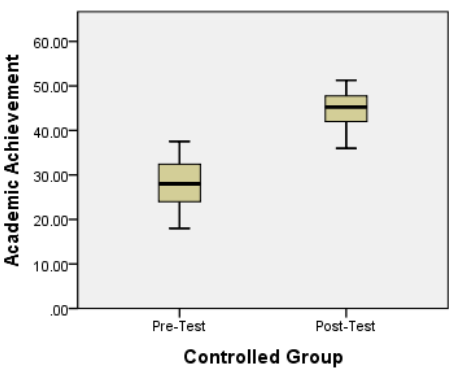
The above table and figure show that t(24)= -21.790, P(.000)<.05, which indicates that there is a significant difference in the achievements of the experimental group between pre-test and post-test in the physical education achievements test. The post-test (M=78.256, SD=8.714) is statistically and significantly greater than pre-test (M=27.184, SD=6.850), (r= -.121). The result shows that the experimental group made greater achievements in the post-test as compared to the pre-test. Therefore, the hypothesis is accepted.

$H_0$4; There is no significant mean difference in student's achievements between controlled group pre-test and controlled group post-test, with reference to physical education subject.

Table 8. Paired T-test Showing Pre-test and Post-test Achievement's mean Difference of Controlled Group.

Testing variable	PEAQ	N	Mean	SD	Df	R	T	Sig.
Achievements	Controlled Pre-Test	25	28.359	5.445	24	.530	-17.00	.000
	Controlled Post-Test	25	44.674	4.186				

α=.05, n=respondents, S. D=Standard Deviation, df=Degree of freedom, r=Relation, T=Calculated ,Sig=Significant value



The above table and figure show that t(24)= -17.004, P(.000)<.05, which indicates that there is a significant difference in the achievements of the controlled group between pre-test and post-test in the physical education achievements test. The post-test (M=44.674, SD=4.186) is statistically and significantly greater than the pre-test (M=28.359, SD=5.445), (r=.530). The result shows that the controlled group made reasonable achievements in the post-test as compared to the pre-test. Therefore, the hypothesis is rejected.

Discussion

7E's model of instruction was designed to fulfil the true sense of education. It not only yields quality education but also improves the level of achievements among the students. In this research study, it was found out that 7E's instructional model-based teaching has a deep impact upon student's achievements and cause significant acquisition in the subject of physical education as compare to traditional or old lecture method because experimental group, which was given instruction according to 7E's instructional model significantly improved achievement as compare to the controlled group. It means that instructional model-based instruction provides an active learning environment for the students, In which students like to participate and learns more. The results of this study were supported by many research studies. Like Roblyer et al. (1997), an active learning atmosphere is a key ingredient of quality education. It contributes more to the production of fruitful results as compare to any other traditional method of instruction. Similarly, Santrock (2001) concluded that knowledge could be gained best when a learner actively constructs it. It means that it is necessary for a learner to attend the teaching and learning session actively. Furthermore, an active learning nature will help him to discover new knowledge and ability to understand its reflections. Similarly, it will also mould the attention of students towards critical thinking. Other studies were done by Sunal & Sunal (2003), Yenilmez & Ersoy (2008), Bybee et al., (2006), Perrier & Nsengiyunva (2003), and Sasmaz & Tezcan (2009) also support the same phenomenon as discussed above. Comparable findings were found in a study conducted by Shaheen & Kayani (2015). Turgut et al.(2016) found very good results in students achievements after the application of 7E's instructional model based instructions. The author further claim that if the method of instructions followed accordingly and the material assembled accordingly, then it gives more fruitful results in achieving expected educational goals like high achievements and a positive attitude. In line with the findings of the current study, few more parallel outcomes are seen from many other research dissertations like Acisli (2010), Erugul (2008), Ernass (2008), Ersahaan (2007), Gurbuoz (2012), Hirsa (2008), Kanli (2007), Kilavuaz (2005), Kurtt (2002), Ozsevegec (2007), Saka (2006), Sengul (2006), Turgut and Gurbuz, (2011), Akerson et al. (2009), Bayrakceken et al.,(2009) Boddy et al.(2003) Bozdogan and Altuncekic, (2007). In these studies, the authors suggested that there is a positive contribution of the constructivist approach on which 7E's model is constructed, towards improvement in strong communication skill, strong hand skills, strong self-confidence, strong thinking skills, and it gives fruitful outcomes in students achievements if constructivist approach followed. Further, Bailey et al. (2009) also added that the attitude of students at higher secondary school level towards physical education is mainly determined by a few things, which are outline or curriculum, class atmosphere, teacher's behavior, and self-perception.

Conclusion

It was concluded that instructions based on 7E's instructional model have significant positive effects in enhancing student's academic achievements in physical education subject. At the post-test level, a positive and significant mean difference was observed between the experimental group and the controlled group, as for as concerned to students achievements in physical education subject. Likewise, in light of post-test results, it was also noted that the mean score of the experimental group was significantly and positively greater as compared to the controlled group physical education academic achievement test result, and that ensures the effectiveness of 7E's instructional model. Furthermore, as for as concerned to data normality, it is noted that the pre-test physical education academic achievement test results were found the same. That indicates both, experimental group and the controlled group were of the same ability. Hence it proves that the data were distributed normally. The researcher noted that the instructions based on 7E's instructional model are equally effective for all the students.

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