Research Journal of Social Sciences & Economics Review
Vol. 2, Issue 3, 2021 (July – September)
ISSN 2707-9023 (online), ISSN 2707-9015 (Print)
ISSN 2707-9015 (ISSN-L)
DOI: https://doi.org/10.36902/rjsser-vol2-iss3-2021(126-135)

RJSSER
Research Journal of Social Sciences & Economics Review

Building Conceptual Understanding of Primary School Students in Science through 5E Instructional Model at Public Sector in Khyber Pakhtunkhwa

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Abstract

The research study "Building Conceptual Understanding of Primary School Students in Science through 5E Instructional Model at Public Sector in Khyber Pakhtunkhwa" aims to identify 5E Instructional Model effects on students' academic achievement in science, to determine 5E Instruction Model effects on students' ability to remember science concepts, to find out 5E Instruction Model effects on students' ability to understand the science concepts and to investigate 5E Instruction Model effects on students' ability to apply science concepts in a real-life situation. The research design adopted for study was quasi-experimental. One group of 30 students was formed named Experimental group. Another group of 30 participants was formed named the control group. Both groups were pretested. Experimental group students were taught through 5E Instructional Model for 4 months and control was treated as usual. Both groups were post-tested. The data were analyzed through SPSS 20. An independent sample t-test was utilized to determine the significance of the 5E instructional model by testing null hypotheses. The result of the study in form of descriptive and inferential statistics highlighted that the 5E learning cycle model has a substantial impact on students' ability to retain/remember, understanding, and applying science concepts. Based on these findings null hypotheses were rejected. Based on findings it was suggested that effort may be made to introduce the 5E learning cycle model at all school levels. The medium of instruction may be Urdu or mother tongue at the primary school level. Textbook revision is necessary. To familiarize teaches with the 5E instructional model, refresher courses may be arranged.

Keywords: 5E Instructional Model, Conceptual Understanding, Remembering, Understanding, Applying, Students Academic Achievement and Science Achievement Test

Introduction

Education plays a pivotal role in connecting people with the global world in the most desirable way. Developed countries had realized the power of education and invested in education to achieve the milestone of a 100% literacy rate. Pakistan is striving to improve the quality of education to place its name in developed countries' lists. Quality education is solely dependent upon the instructional practices offered at any school level. Primary education serves as a foundation stone for all types and levels of education. Education quality is dependent upon the quality of primary education. The quality of instruction at the primary school level could be improve by adopting such teaching methods that build students' conceptual understanding (Wallis, 2015)

According to Oteles (2020), learning cycle models play a pivotal role in enabling students to become active in teaching learning process. Learning can be made meaningful and understandable for the students through using different learning cycle models, especially 5E instructional model. 5E learning cycle model has a significant effect on students' academic achievement in science subject. Students have improved their academic performance through 5E instructional model.

A research study conducted to determine the long-term impact of 5E instructional model on learner' conceptual learning. Findings of the study reveals that 5E instructional model has positive effect on students conceptual learning. Concepts learned through 5E learning cycle model has long lasting effect on student academic performance (Garcia et al., 2021).

Ahmad, Shaheen and Gohar (2018) conducted a study on enhancing students learning through 5E instructional model. Findings of the study reveals that students' academic performance was

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enhanced through adoption of 5E instructional model. The experimental group showed a significant difference as compared to the control group students' academic performance in subject of science.

Hu, Gao, and Liu (2017) stated that 5E instructional model has a significant effect on novice teachers' performance. 5E model facilitate novice teachers to improv their teaching style and enhance students understanding level.

Dodge (2017) argued that 5E instructional model is very useful in improving students' engagement and transformation of knowledge. Findings of the study reveals that 5E instructional model is better in generating students' engagement. The transfer of knowledge can also be made fruitful through 5E learning cycle model.

Akar (2005) argued that conceptual understanding of the learners can be enhanced through creating an environment of learning, proposed by constructivists. Founders of constructivism worked for so many years to assist the learning and improve cognition. Different theories of constructivists have made efforts to enrich students' cognition. The 5E learning model based on constructivist philosophy was introduced by Bybee.

Every Instructional model has different levels or phases through which learning take place in sequential form. 5E is a learning cycle model based on philosophy of constructivist consist of 5 phases like Engage, explore, explain, elaborate and evaluate. According to Newby (2004), previous knowledge plays an important role in learning different concepts. The model developed by Biological Science and Curriculum Studies focuses on improving instructional methods of instructors and also help to develop critical thinking of the learners. 5E encourage teachers and students to build their conceptual understanding in scientific way (Bybee, 2006).

Engage is the first phase in which the teachers motivate the students toward learning. Teachers ask questions from students to prepare them for the instructional process. To explore the prior knowledge of students about certain concepts teachers inquired from students to unfold their misconceptions. In the 3rd phase explanation, teachers deliver information to students about certain concepts and try to clear their misconceptions. In the 4th phase elaborate, teachers assist students in performing some additional tasks related to the current topic. It helps in enhancing students' critical thinking and conceptual understanding. At the end of the instructional task, the teachers assess their students to find out the learning progress (Wilder & Shuttleworth, 2004).

Life without scientific invention is incomplete. Every individual in the world is dependent on scientific invention. For the purpose to invent something you must have a clearer concept about science. 5E instructional model plays a significant role in building conceptual understanding of students in science. Different types of equipment are invented to facilitate teachers, students, and the teaching-learning process. Finally, the role of science in our life cannot be neglected (Lamb, Bornstein, & Teti, 2002).

Oliver (2007) contended that clarification and expectation based on information saw through faculties comparable to the standards of science to decide the explanation for the presence of the world and existence of life on it is called conceptual understanding. The capacity of an individual to recall, understand and apply learned concepts in practical life situations is called conceptual understanding. The knowledge which is acquired by an individual in such a way that he/she may use it properly is called conceptual understanding. Conceptual understanding is the sole source of promoting critical thinking.

Girad and Wong (2002) stated that transmitting and comprehending knowledge is of utmost necessity for building conceptual understanding. When students learn concepts by heart and also comprehend those concepts, then they can utilize those concepts in practical life situations. Productive knowledge is that which can be used for economic development, culture transmission, and preservation. Students know what I have learned and how I will apply it for the benefit of society (AAAS, 1993).

To develop critical thinking among science learners, it is important to build their conceptual understanding. Remembering, understanding, applying, analyzing, evaluating and creation of science concepts is dependent on the teaching method of teachers. If the instructional method is according to the needs of the learner, then the instructional process became productive. 5E instructional model plays a significant role in building conceptual understanding of students and enables students to think critically, act creatively and respond conceptually. The present study has focuses on enhancing students learning through 5E instructional model.

Statement of the Problem

Ergin, Kanli and Ünsal (2008) argued that teaching strategies, techniques, methods, and models have an everlasting effect on students learning and academic success, especially in a science subject. The different instructional model was introduced to enhance the quality of instructional practices (Açisli, 2010). Every instructional model has its phases to build students' conceptual understanding in different areas. The study in hand was on "Building Conceptual Understanding of Primary School Students in Science through 5E Instructional Model at Public Sector in Khyber Pakhtunkhwa".

Objectives

Objective of the study were to

a) Identify 5E Instructional Model effects on students' academic achievement in science.
b) Investigate 5E Instruction Model effects on students' ability to remember science concepts.
c) Find out 5E Instruction Model effects on students' ability to understand science concept.
d) Determine 5E Instruction Model effects on students' ability to remember science concept.

Hypotheses of the Study

H_{01} The 5E Instructional Model has no significant effects on students' academic achievement in science.

H_{02} The 5E Instructional Model has no significant effects students' ability to remember science concepts.

H_{03} The 5E Instructional Model has no significant effects students' ability to understand science concepts.

H_{04} The 5E Instructional Model has no significant effects students' ability to apply science concepts.

Significance of the Study

This scholarly work will be beneficial for all the stake holders belongs to teaching learning process. It will be useful for students to determine the ways of developing conceptual understanding. It will serve as a candle for teachers to improve their teaching methods and enhancing the quality of education.

Delimitation

Due time and money constraint the research study was delimited to students of class 5^{th} studying in Government Primary School Bakar, Swabi.

Literature Review

Butler-Bowdon (2007) explored that Jean Piaget had been serving as a constructivist psychologist for many decades in wake of developing cognitive development theory. He stressed on definite questions, such as the main reasons of how does the child speak? What does a child incite to ask questions? Why do peers commit the same mistakes?

According to Shaughnessy and Zechmeister (2012), Piaget observed his own children during their lifespan from infancy to adulthood and noted that every child cognition improves in specific period of time. The development take place in sequential form and children performed certain tasks at certain age level proposed by the Piaget in his cognitive development theory.

Bernstein, Clarke and Roy (2008) stated that after passionate hard work, Piaget introduce his scholarly work as a constructivist psychologist to the world in form of a theory that is called "Cognitive Development Theory". This theory has four stages. These stages are sensory motor, preoperational, concrete operational and formal operational stage. In the developmental psychology the work of Piaget has been commendable in many aspects but due to certain problems his efforts did not take the place which deserved (Martin, Carlson, & Buskist, 2010).

Those substances which are not visible existing in the milieu. The newborn or fresh babies settled the skill of object perpetuity after 18 months, while they do not remember the name of objects less than the age of eighteen month. They begin identifying faces of their parents, sisters, brothers, and other household members after eighteen months. They started feeling nervous when somebody not familiar to him/her, touch or take them in lap. At this particular stage they develop strange nervousness and anxiety whenever the mental images of children parents and other family members are stored in their mind (Cacioppo and Freberg 2013).

According to Martin et al. (2010), sensory motor stage of cognitive development starts from birth to 2 years. At this stage children cannot speak till 18 months. After 18 months kids starts to utter the words. Their vocabulary is limited at that time. Children starts to speak short sentences at the age

of 2 years. The characteristic of imitation also developed at this stage. Children learn from their parents' actions and then they repeat at the time play.

The 2nd stage of cognitive development theory is preoperational stage and children cognitive development take place from 2 to 7 years. Children at this stage understand the physical world with the help of different schemas. Children have egocentric thoughts at this stage. They think about every event with their own perspective. They have no care for others opinion. Animism is present at this stage that they take the inanimate objects as living beings (Bjorklund & Blasi 2012).

In concrete operational stage children egocentric thoughts diminishes as their age lies within 7 to 11 years. Children learn about things when it is in concrete form. In preoperational stage characteristic of understanding conservation was absent, but in this stage children understand the conservation process. Children also know about the reversibility, centration, transitivity and seriation at this stage. Children at concrete operational stage become self-dependent Bjorklund (2012)

According to Feldman (2013), formal operational stage ranges from 11 years to adolescence is the last stage of Cognitive development. Mostly kids at this stage have the skill and ability to think logically and critically in an advanced way. Whenever they inter in this stage they begin to thing rationally and logically. Children are capable enough to deal with abstract things like mathematics. In addition, at this stage they are able to learn through inquiry-based teaching.

Bremner (2010) argued that constructivist philosophy of education has a significant role in building conceptual understanding of students in science. In constructivist classroom environment learning take place in collaboration and cooperation. Constructivist gave due importance to previous knowledge of the students, as it is work like a starter or stimulator. Once a child get stated then learning become easy for him. The new trends and competition in education can be cope up only with implication of constructivist philosophy of education in classrooms.

According to Sigelman and Rider (2012), it is mandatory for teachers to understand the constructivist philosophy of education in order to enhance the quality of instruction. Constructivist teachers have knowledge about individual differences. They understand that students have variation in grasping meaning of concepts. Students of constructivist classrooms learn concepts by their own with the help of utilizing their prior knowledge. Constructivist strictly oppose the traditional way instructional practices in which the teacher is active and student are passive. The role of teachers in constructivist paradigm is limited. He/she is only facilitator or stage setter. They involve student different instructional activities and provide them assistance when students needed.

According to Tutkun and Okay (2012), Benjamin S. Bloom a renowned person in field of education serves as an Associate Director of the Board of Examination in University of Chicago. He and his colleague decided to develop a question bank for assessing students learning outcomes. In this regard they collected data with help of many experts. Bloom and his colleagues participate in two meeting in year of 1949 to discuss the assigned task. The questions bank development process was completed in 1956. The document developed with their efforts was named as "Taxonomy of Educational Objectives"

Anderson work with some renowned psychologists to revised his teacher Taxonomy of Educational objectives. Rapid changes take place in field of education become the reason for revising Bloom's Taxonomy. Anderson introduce new version of Bloom's taxonomy as "Revised Bloom Taxonomy" (RBT) (Anderson, 2001).

According to Anderson (2001), the limitation present in Old version of Bloom's Taxonomy was corrected in new version. RBT become more effective and precise in respect of achieving learning outcome. It linked with all new learning theories. It has 6 level on hierarchical bases from easy to difficult. In old version synthesis level was replaced with evaluation and in place of evaluation in old version the level of creating was added (Franzoni, 2009).

Lawson (2002) argued that critical thinking and conceptual understanding are considered to be the core area of any education system. In 21st century a drastic change occurred in field of education. The traditional methods of teaching were obsolete and new methods emerged for the betterment of education quality. Inquiry based teaching help in promoting students critical thinking and concept formation. Different learning cycle model played its significant role in building students conceptual understanding. 5E instructional model is famous for enhancing the quality of instructional practices.

Bybee et al. (2006) stated that Biological Sciences and Curriculum Study (BSCS) developed an instructional model based on five phases called 5E. Insight had been taken from the previous learning cycle model. Knowledge transmit through 5E remains in mind for long time and students can easily apply it in real life situation. The five phases of model are: explore, explain, engage, elaborate and evaluate.

According to Martin (2015), learning become easy when teachers teach to the students following 5E instructional model phases. In first phase students are engaged by teacher with asking different type of motivating questions. This help in creating student interest in any instructional task. In 2nd phase teachers ask questions from the students concerning the topic to be presented. Phase 2nd helps in exploring students' ideas and misconception about the topic. In engage phase, teacher teach the topic involving students in different activities. In elaborate phase extra work gave to the students to build their conceptual understanding. In last phase evaluation, the learning progress is determined.

Research Methodology

The study conducted was quantitative in nature. A quasi-experimental research design was adopted. Through group formation process two groups control and experimental were formed. Treatment received by experimental group in form of forty minute's period for four months, and control group students learn science concepts in traditional way (Belapurkar, 2015; Acisli, Yalcin & Turgut; 2011 Ceylan, 2008; Campbell, 2006)

Pretest Posttest Control Group Design

Group	Pretest	Treatment	Posttest
Experimental group = E	O	X	O
Control Group =C	O		O

Variables

Independent variable = 5E instructional Model
Dependent variables = Conceptual understanding
Chance and Extraneous variable = Kept constant

Population of the study

Population of the study comprises all 13235 students of class 5th studying in 591 primary schools for boys at public sector in Swabi (ASC, 2016).

Sample of the study

Out of the total population one school, GPS Bakar was selected as a sample for the current study randomly. From class 5th, sixty participants were randomly selected. All sixty students were divided into two groups. Each group consists of 30 students.

Research Instrument

A science achievement test (SAT) was developed concerning the objectives of the study. The test consists of 30 items. All the 30 items were associated with remembering level, understanding level, and applying level of the cognitive domain.

Validity of the Research Instrument

Research instrument was validated through the expert opinion of the honourable supervisor, Prof Dr. Wazim Khan sb, and Dr. Rahim Khan sb. Construct validity of all the items were analyzed and concluded that the questions of the Science achievement test are easy to read and comprehend.

Reliability of Research Instrument

Reliability of the Science Achievement Test were determined through Cronbach Alpha reliability. Internal consistency of all 30 items was calculated through SPSS 20 and found that $\alpha = 0.82$, which proves that the research instrument is reliable.

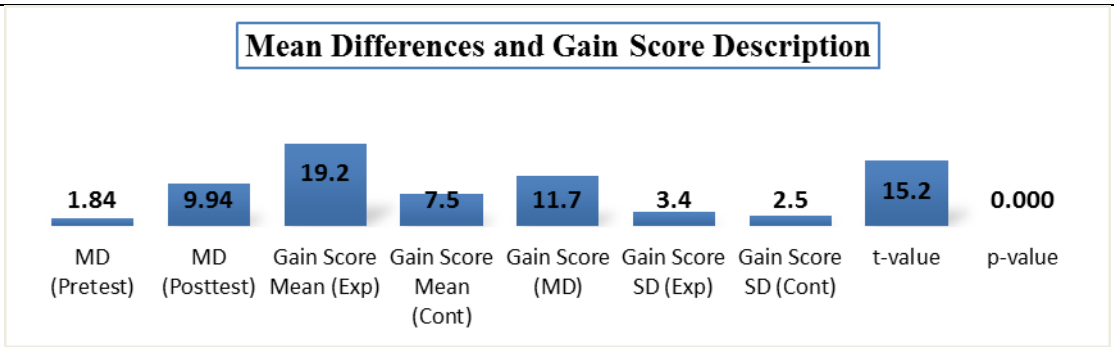
Data Analysis Techniques

Collected data from the pretest and post-test of Experimental and Control group was presented in tabulated and graphical form. Data was analyzed through descriptive and inferential statistics. Mean and standard deviation of the data were calculated. For testing hypotheses independent sample *t*-test was used. All the analysis of the study were done through statistical package for social sciences (SPSS) software version 20.

Academic achievement comparison in SAT

Table 4.1.1 Comparison of pretest and posttest results

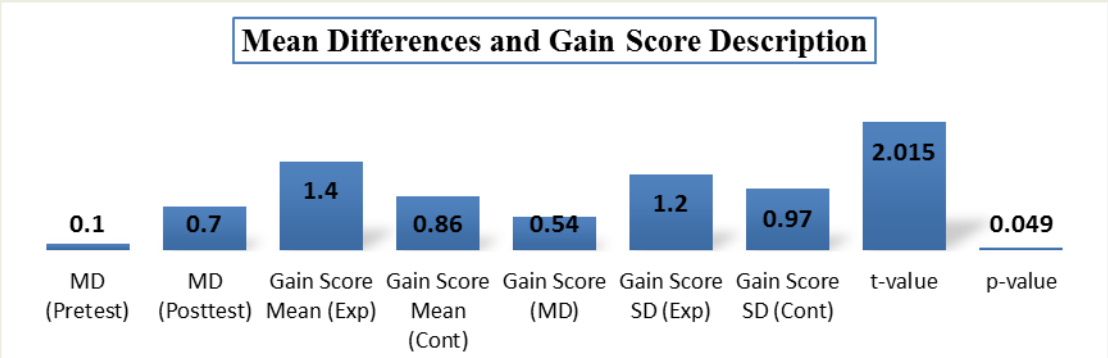
	Pretest					Posttest				
G	N	M	SD	*T*	*P*	M	SD	*t*	*p*	*df*
EG	30	31	5	-1.5	.15	51	4	9	.000	58
CG	30	33	5			41	5			



Above table & figure elaborated the students' academic achievements in SAT. The mean value of EG and CG in pretest is 31 & 33 respectively. The SD is 5.0 & 5.0. The *t-value* is -1.5 & *p-value* is .15, which shows that pretest results of EG and CG have no significant difference and proved that both groups are same. The Mean and SD value of EG after instructing science with 5E learning model is 51 and 4. *t-value = 9* and *p-value* = 0.000 at *df = 58*, so it is clear that the result of EG students was better than CG in posttest and the value of gain score *t = 15.2 & p = 0.000* also resembles with posttest findings. The values of *p = 000* in posttest and gain score shows a significant effect of 5E on learners' academic achievement, so null hypothesis was rejected.

Table 4.1.2 Comparison of Pretest and Posttest Result (Remembering Level)

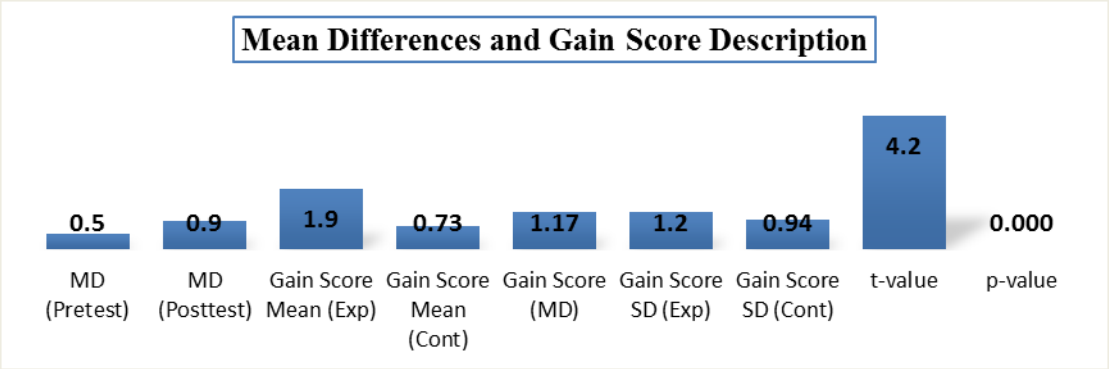
	Pretest					Posttest				
G	N	M	SD	*t*	*p*	M	SD	*t*	*p*	*df*
EG	30	7.5	1.0	-1.2	.90	9.4	.70	3.0	.004	58
CG	30	7.5	1.0			8.5	.93			



Above table & figure highlighted the students' academic achievement on remembering level of cognitive domain in SAT. The mean value of EG and CG in pretest is 7.5 & 7.5 respectively. The SD is 1.0 & 1.0. The *t-value* is -1.2 & *p-value* is .90, which shows that pretest results of EG and CG have no significant difference and proved that both groups are same. The Mean and SD value of EG after instructing science with 5E learning model is 9.4 and .70. *t-value = 3.0 p-value* = 0.000 at *df = 58*, so it is clear that the result of EG students was better than CG in posttest. The values of *p = 000* in posttest shows a significant effect of 5E on students' ability to retain/remember science concepts, so null hypothesis was rejected.

Table 4.1.3 Comparison of pretest posttest Result (Understanding Level)

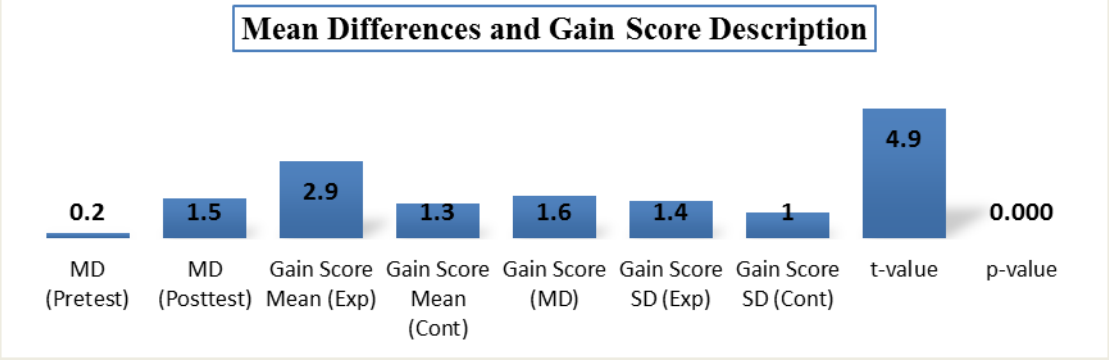
	Pretest					Posttest				
G	N	M	SD	*t*	*p*	M	SD	*t*	*p*	*Df*
EG	30	7.4	1.2	-1.5	.130	9.4	.50	6.0	.000	58
CG	30	8.0	1.1			9.0	.70			



Above table & figure shows the students' academic achievement on understanding level of cognitive domain in SAT. The mean value of EG and CG in pretest is 7.4 & 8.0 respectively. The SD is 1.2 & 1.1. The *t-value* is -1.5 & *p-value* is .130, which shows that pretest results of EG and CG have no significant difference and proved that both groups are same. The Mean and SD value of EG after instructing science with 5E learning model is 9.4 and .50. *t-value = 6.0 p-value* = 0.000 at *df = 58*, so it is clear that the result of EG students was better than CG in posttest and the value of gain score *t = 4.2 & p = 0.000* also supported the posttest result. The values of *p = 000* in posttest and gain score shows a significant effect of 5E on students' ability to understand the science concepts, so null hypothesis was rejected.

Table 4.1.4 Comparison of pretest and posttest result (Applying Level)

	Pretest					**Posttest**				
G	N	M	SD	*T*	*p*	M	SD	*t*	*p*	*df*
EG	30	7.0	2.0	-.50	.60	9.0	1.0	5.2	.000	58
CG	30	7.0	2.0			7.0	1.2			



Above table & figure shows the students' academic achievement on applying level of cognitive domain in SAT. The mean value of EG and CG in pretest is 7.0 & 7.0 respectively. The SD is 2.0 & 2.0. The *t-value* is -.50 & *p-value* is .60, which shows that pretest results of EG and CG have no significant difference and proved that both groups are same. The Mean and SD value of EG after instructing science with 5E learning model is 9.0 and 1.0. *t-value = 5.2 p-value* = 0.000 at *df = 58*, so the result of EG students was better than CG in posttest and the value of gain score *t = 4.9 & p = 0.000* also supported the posttest result. The values of *p = 000* in posttest and gain score shows a significant effect of 5E on students' ability to apply science concepts, so null hypothesis was rejected.

Findings

Result interpretation (Pretest, Posttest and Gain Score)

1. Pretest Result, Mean and Standard Deviation of Experimental Group are 31 and 5.0, Mean and Standard Deviation of Control Group are 33 and 5.0, *t-value* = -1.46, *p-value* = .150 shows that pretest results of EG and CG have no significant difference and proved that both groups are same
2. Posttest Results, Mean and Standard Deviation of Experimental Group are 51 and 4.0, Mean and Standard Deviation of Control Group are 41 and 5.0, *t-value* = 9.0, *p-value* = .000 so the result of EG students is better than CG in posttest due to intervention of 5E instructional model.

3. Gain Score Results Mean and Standard Deviation of Experimental Group are 19.2 and 3.4, Mean and Standard Deviation of Control Group are 7.5 and 2.5, *t-value* = 15.2, *p-value* = .000 so the result of EG students was better than CG in posttest due to intervention of 5E instructional model.

Result interpretation of Remember Level (Pretest, Posttest & Gain Score)

1. Pretest Result, Mean and Standard Deviation of Experimental Group are 7.5 and 1.0, Mean and Standard Deviation of Control Group are 7.5 and 1.0, *t-value* = -1.2, *p-value* = .90 shows that pretest results of EG and CG have no significant difference and proved that both groups are same
2. Posttest Results, Mean and Standard Deviation of Experimental Group are 9.4 and .70, Mean and Standard Deviation of Control Group are 8.5 and .93, *t-value* = 3.0, *p-value* = .004 so it is clear that the result of EG students is better than CG in posttest due to intervention of 5E instructional model. The value of *p=0.004* in posttest elaborate that 5E instructional model has a significant on students' ability to remember science concepts.

Result interpretation of Understanding Level (Pretest, Posttest & Gain Score)

1. Pretest Result, Mean and Standard Deviation of Experimental Group are 7.4 and 1.2, Mean and Standard Deviation of Control Group are 8.0 and 1.1, *t-value* = -1.5, *p-value* = .130 shows that pretest results of EG and CG have no significant difference and proved that both groups are same
2. Posttest Results, Mean and Standard Deviation of Experimental Group are 9.4 and .50, Mean and Standard Deviation of Control Group are 9.0 and .70, *t-value* = 6.0, *p-value* = .000 so it is clear that the result of EG students is better than CG in posttest due to intervention of 5E instructional model.
3. Gain Score Results Mean and Standard Deviation of Experimental Group are 1.9 and 1.2, Mean and Standard Deviation of Control Group are 0.73 and 0.94, *t-value* = 4.2, *p-value* = .000 so the result of EG students was better than CG in posttest due to intervention of 5E instructional model. The value of *p=0.000* in posttest and gain score shows that 5E learning cycle model has a substantial on students' ability to comprehend science concepts.

Result interpretation of Applying Level (Pretest, Posttest & Gain Score)

1. Pretest Result, Mean and Standard Deviation of Experimental Group are 7.0 and 2.0, Mean and Standard Deviation of Control Group are 7.0 and 2.0, *t-value* = .50, *p-value* = .60 shows that pretest results of EG and CG have no significant difference and proved that both groups are same.
2. Posttest Results, Mean and Standard Deviation of Experimental Group are 9.0 and 1.0, Mean and Standard Deviation of Control Group are 7.0 and 1.2, *t-value* = 5.2, *p-value* = .000 so the result of EG students is better than CG in posttest due to intervention of 5E instructional model.
3. Gain Score Results Mean and Standard Deviation of Experimental Group are 2.9 and 1.4, Mean and Standard Deviation of Control Group are 1.3 and 1.0, *t-value* = 4.9, *p-value* = .000 so the result of EG students was better than CG in gain score due to intervention of 5E instructional model. The value of *p=0.000* in posttest and gain score elaborate that 5E instructional model has a significant on students' ability to apply science concepts.

Discussion

The research study "Building Conceptual Understanding of Primary School Students in Science through 5E Instructional Model at Public Sector in Khyber Pakhtunkhwa" aims to identify 5E Instructional Model effects on students' academic achievement in Grade-V Science, to determine 5E Instruction Model effects on students' ability to remember science concepts, to find out 5E Instruction Model effects on students' ability to understand the science concepts and to investigate 5E Instruction Model effects on students' ability to apply science concepts in a real-life situation. The research design adopted for study was quasi-experimental. One group of 30 students was formed named Experimental group. Another group of 30 participants was form named the control group. Both groups were pretested. Experimental group students were taught through 5E Instructional Model for 4 months and control was treated as usual. Both groups were post-tested. The data were analyzed through SPSS 16. An independent sample t-test was utilized to determine the significance of the 5E instructional model by testing null hypotheses. The result of the study in form of descriptive and

inferential statistics highlighted that the 5E learning cycle model has a substantial impact on students' ability to retain/remember, understanding, and applying science concepts. Based on these findings null hypotheses were rejected. *(Ceylan, 2008; Siddiqui 2016; Campbell, 2006).*

Conclusion

Findings of the study highlighted that 5E Instructional Model is most productive in building students conceptual understanding, especially in science subject. This model work under constructivist philosophy of education, which helps in developing student interest in any science related instructional task. The significance of 5E model has been proved by the current study. The finding of the research study has demonstrated that 5E Instructional Model is exceptionally helpful in working on learners' capacities of holding science ideas for long time. Learners become great listener because of learning every idea in stages. 5E demonstrated as a valuable technique in upgrading students' capacities to comprehend science ideas by connecting their prior information about an idea to the information on the current ideas. The result of the study reveals that 5E instructional model is one of the best among all, which creates varieties in instructional practices. It plays a commendable role in enhancing quality of education in form of remembering, understanding, and applying science concept in real life situation.

Recommendations

1. Effort might be made to introduce 5E instructional model in all school level.
2. Medium of instruction might be Urdu or mother tongue at primary school level.
3. Textbook revision is necessary for fruitful implication of 5E instructional model.
4. To familiarize teaches with 5E instructional model, refresher courses may be arranged for the teachers.
5. The school may make efforts to facilitate teachers and students in respect of implementing practical activities for building students conceptual understanding
6. A special kind of financial aid might be allocated to the teachers for their encouragement and motivation.
7. Teachers may utilize all five phases of the instruction model in developing lesson plans.
8. Government may provide a conducive environment to the students for the implementation of 5E instructional model in instructional process.

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