



IMPACT OF 5ES INSTRUCTIONAL MODEL OF TEACHING ON SPATIAL INTELLIGENCE, INTEREST AND ACHIEVEMENT IN GEOGRAPHY

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ABSTRACT: Current studies investigate how the 5Es instructional model influences students' spatial intelligence, curiosity, and performance in geography classes. The 5E Learning Cycle Model, created by Bybee, is a method of learning that relies heavily on actual experience (1997). Starting with the letter 'E,' teaching progresses through a series of five stages in this framework. Engage, Explore, Explain, Elaborate, and Evaluate make up the 5Es. The concept presented here is a recursive loop wherein one acquires knowledge via a series of encounters. To complete this study, an experimental methodology was used to examine how the 5E Learning Cycle Model influences students' spatial intelligence, interest, and performance in geography courses at the secondary level. The strongest research method for establishing causal relationships is the controlled experiment. Experimental procedures are characterised by manipulation and control. The researcher makes changes to the hypothesised causal variable and tracks the subsequent changes in the dependent variable. Hence, the alternative theory has been disproved by the use of a well-controlled experiment. The study's results suggest that the learning cycle model is related to students' spatial intelligence, interest, and performance in geography classes. Models and publications based on the 5E theory of learning make it possible for students to identify and make use of their preferred methods of learning in order to grasp population geography. According to the results, the learning cycle may be applied to fields outside of the hard sciences. If you want to get the most out of your model, your learning cycle should be accompanied with a well thought-through scenario of how to teach it. Ideally, the aid would help students make connections between what they know and what they will learn in the future. A larger sample size may be necessary to substantiate the results of this research. The 5E learning cycle may be used to evaluate students' critical thinking, communication, and other abilities in a variety of social science courses.

KEYWORDS: 5Es Instructional Model, Spatial Intelligence, Interest, Achievement, and Geography.

INTRODUCTION

Education is a process that enables a person's complete psychological, social, scientific, and philosophical growth, whether such progress occurs consciously or unconsciously. The most powerful tool for bringing about social change and fostering national growth is education. Education empowers people with the information, methods, and outlooks they need to reach their full intellectual and personal potential and enhance the standard of living not just in their own lives but also in their communities and the country as a whole. Humans can only meet the challenges of their physical, social, and spiritual circumstances via



education. The tenets of life, the demands of society, and the nature of a certain discipline all have an impact on the goals and ideals that schools strive to instill in their students. "The fundamental purpose of education is to develop individuals who are capable of accomplishing new things, not merely repeating what earlier generations have done," Piaget (1950) said. A complete paradigm change in the teaching and learning process is required if we want every kid to be an innovator rather than a follower. To better serve the hopes and dreams of a revitalised society, the educational system as a whole has to be rethought and redesigned.

Need and significance of the study

The purpose of education is not to increase the amount of information that is known; rather, it is to broaden a child's horizons so that they can invent and discover (Duckworth, 1964). Additionally, education should help students become better equipped to meet challenges and stay abreast of developments in geography. Nevertheless, the techniques of instruction that are currently being used in schools do not achieve these goals. The work of teaching geography at the school level is, in point of fact, more difficult than it has ever been before. This is because the young minds of today need to have the subject's enthusiasm and numerous possibilities instilled in them in an appropriate and constantly changing manner. Because of this, the whole scope of teaching geography will need to diverge significantly from its traditional form. In addition, in the modern world, where the amount of knowledge being produced is growing at an exponential rate, geography education will not be able to justify itself if it merely focuses on the goal of passing on a certain quantity of intelligence to its students, regardless of how large that quantity may be. The pace at which information becomes out of date is quite high, and as a result, it is necessary that the focus of geography education should be placed on the development of skills and attitudes about the topic, rather than just the transmission of outdated subject content.

Although while activities play a significant role in the educational process, careful advance planning is required in order to cut down on unproductive distractions. These hands-on explorations do not always equal to a profound, meaningful, or accurate knowledge of scientific subjects. Participation in the activities with full effort is one of the effective things that the instructor may do to pique the interest of the student in the subject of geography. Learners will develop a passion for the topic that will last a lifetime if they are actively encouraged to participate in activities that are linked to geography and to do so in a methodical manner. Students' academic achievements and interests are significantly impacted by students' spatial intelligence, although this aspect of learning is often undervalued in our current educational system. If the individual is imaginative when it comes to geography, then his interest will also be broadened. Because of this, his perspectives on geography will be more inventive and improvisational, which will ultimately lead to success.

Geography educators of today feel that the methods of teaching and studying geography should be rethought in order to make geography learning interesting to students. This is in accordance with the requirements of current digital era, which geography educators believe should be met. According to the investigator, who also has experience in the classroom as a teacher of geography, there are significant differences between teaching geography and teaching other subjects. The students' sense of inquiry, inventiveness, objectivity, and sensitivity, as well as their willingness to ask questions, should form the foundation of the teaching of geography. He is of the opinion that the majority of kids in today's schools memorise definitions of ideas without really comprehending what it is that they are learning. The students in the classroom are not active listeners, and they lack the mental operations necessary to comprehend the significance of new material



and incorporate it into their existing knowledge base. In this regard, the investigator looked for a teaching model that may give a suitable framework for the generation of particular learning goals, will uncover each child's capacity for learning, and will bring a new creative dimension to the experiences of children.

The 5E Learning Cycle Model is a cycle that would be routinely organised, brings real 's geographic personal experience that contribute to the development of wisdom, encompasses hands-on operation, reading a spatial text, led discussion, and decision making, and gives pupils a chance to establish their own wisdom. These are some of the key features of the 5E Learning Cycle Model. According to the 5E Learning Cycle, the process of gaining new information does not include the receptive absorption of material that is provided to the learner, but rather the dynamic interaction with a variety of objects and ideas. The learner has been the person who develops new information on his or her own herself, and even the teacher is the one who offers activities for the child that engage the children 's imagination along with his or her skills while offering help to the improvement of the child's cognitive abilities. This model of both the learning cycle carries a humanistic approach to education, which holds that learning should be rooted on the personal experience that students themselves have had and is founded on the concept that students should develop his\her own information within the regard of socially controlled environments.

The 5E Learning Cycle Model is a social constructionist paradigm which thus aims to promote participants' aspirations in research also while attacking the invention and the causative link of novel ideas with classmates' foreknowledge. These goals can be accomplished by focusing on the revelation and the association of new ideas of students' existing understanding. Students have the opportunity to develop their own little knowledge on a specific topic by taking part in instructional and educational endeavors which are also planned and carried out in the classroom. Reading deeper into the 5E Learning Cycle Model inspired a natural and natural interest in it, which ultimately drove the investigator to study the usefulness of the approach when it was applied to instructional settings. Every significant attempt that is made to build a new technique of schooling will be of immense aid and will serve like a solution to the existing method of learning, which is tedious. This is because every initiative that is made may serve as a replacement to the monotonous way that students learn.

RESEARCH METHODOLOGY

Method adopted

Experimentation was chosen as the technique of inquiry since the purpose of the research was to determine whether or not the 5E Learning Cycle Model improved students' spatial intelligence as well as their interest and achievement in the subject of geography at the secondary level. The controlled experimental research technique is without a doubt the most effective research method, since it is able to produce concrete data about cause and effect correlations, something that no other research method is able to do. The terms "manipulation" and "control" best describe the distinguishing characteristics of the experimental procedure. The investigator will make changes to the hypothesised causative factor and then investigate how those changes affect the dependent variable, which is a measurement of the behaviour of interest. So, the alternative explanation of the outcome may be discounted when the experiment is exact and carefully controlled.

Sample selected for the study

In light of the exploratory character of the research, the investigator made the decision to use a sample method known as purposive random sampling. The first sample will consist of fifty different pupils.



Following the elimination of students who failed both the pre-test and the post-test, the total number of students who participated in the research was 45. Of these 45 students, 40 were assigned to the Methodology group, 20 were assigned to the Experimental group, and the remaining 20 students were assigned to the Control group .

Tools used for the study

The tools make use of unique approaches to defining and measuring data, and they are especially suitable for specific sources of data. As a result, they provide information of a sort and in a format that can be utilised more efficiently.

This particular research makes use of the following instruments:

Pre-test:- Lavene’s Test for homogeneity

Experimental Group: Lesson transcripts based on 5E Learning Cycle Model

Control Group: Traditional method assisted with common used socio-demography

Post-test: Data Analysis; (t-test)

Pre- and post-tests were employed as instruments in this research. There were 5 essay questions total on both exams. Earlier testing and analysis confirmed the gadgets' validity and dependability. The gain score of the experimental group was compared to that of the control group using an independent sample t-test at a 5% level of significance. Learning occurred over the course of four weeks, with each class meeting twice weekly for eight hours. Population movement was included as part of the education. We administered the pre-test during the first hour of the first meeting, and the post-test at the last meeting. Two distinct audiences were taught by the same professor. The experimental group was taught using the 5E instructional model. Incorporating the 5E model's phases into activities and lessons allowed for a more effective and comprehensive educational experience. At this phase, the instructor asks questions designed to get the students thinking and talking about the topic of population movement. Students' spatial intelligence, curiosity, and accomplishment in geography were used in a group setting during the investigation phase, when they investigated the idea of population movement. This gives pupils something to think about and talk about. Next, after some more group discussion and input, students presented their findings. During the development stage, students were presented with a scenario that required them to apply the notion of population movement in the actual world. Students were able to do some self-assessment of their knowledge and skills using the exam administered at the evaluation stage.

DATA ANSLYSIS

Table 1 Pretest and Posttest Result

	Mean ± Standard Deviation		F	p
	Experimental Group	Control Group		
Pretest	30.34 ± 4.55	38.10 ± 5.04	1.58	.17
Posttest	69.43 ± 9.39	64.15 ± 8.29		

Table 1 displays the results of both the pre-test and the post-test for both the experimental group and the control group. The mean of the pretest for the experimental group was 30.34, and the standard deviation was 4.55, while the mean for the control group was 38.10, and the standard deviation was 5.04. The results of the test administered by Lavene on the pretest indicated that there was not a significant difference between the two groups ($p = .17 > .05$). As a result, we may infer that both the experimental group and the



control group have the same characteristics. After the treatments, the experimental group and the control group both had rising mean values. The mean posttest score for the experimental group was 69.43, with a standard deviation of 9.39, whereas the mean score for the control group was 64.15, with a standard deviation of 8.29.

Table 2 Gain Score

<u>Mean ± Standard Deviation</u>		<i>t</i>	<i>P</i>	
Gain Score	38.00 ± 9.58	25.19 ± 9.30	4.03	.00

The experimental group and the control group both have their gain scores, which are the differences between their pre-test and post-test results, shown in Table 2. The average increase for the experimental group was 38.00 points, with a standard deviation of 9.58. At the same time, the average gain score for the control group was 25.19 with a standard deviation of 9.30. Even though the value of *p* was somewhat close to zero (*t* = 4.03, *p* = .00), the experimental group had a considerably greater gain score than the control group. Based on these findings, it was clear that the experimental group had much higher levels of accomplishment than the control group. As a result, the implementation of the 5E learning cycle does, in fact, have impacts on boosting the accomplishment of pupils .

The conventional technique and the 5E learning cycle aided with spatial intelligence, interest, and accomplishment in geography were compared in a study. The traditional method was shown to be significantly superior. That is in line with the results that were released before, which said that pupils who used the learning cycle had superior academic accomplishment. In this study, the academic success of students is affected by a number of factors, including the following: the nature of the 5E learning cycle; the application of spatial intelligence; interest and achievement in geography; and the implementation of the 5E learning cycle with the assistance of spatial intelligence; interest and achievement in geography.

The 5E learning cycle is designed to improve the learning process, leading to deeper comprehension and greater success. The professor offered several everyday questions on population geography in the Engagement phase to arouse students' preconceptions. It's crucial since it has a direct bearing on one's ability to learn if one's preconceived notions are erroneous. As a result, students may be resistant to change if they are simply informed that their current viewpoint is erroneous, especially if they are unaware of their own error. As a result, during the exploratory stage, students might engage in exercises that can help them either modify or confirm their existing worldview. Students may build on prior knowledge by doing exploratory learning activities and analysing the data they acquire. To fix their conceptual mistakes, the exercises challenge children to question their priorities and see things from alternative angles. A student's explanation comes after he or she has learned the subject. As they explain, students have the opportunity to think about and even improve upon their original concept or findings. Ideas gain public visibility and enduring significance via the act of communicating them. Students may learn a lot by just listening to the explanations of others. It's important for the instructor to say something, since it might help the pupils grasp the material better. Thus, the elaboration stage is when students' understanding is deepened. There are a wide variety of ways to elaborate. Students can remember what they've learned through the simplest forms of elaboration (paraphrasing and summarising), while a higher level of elaboration (problem solving, application, and analysis) requires more complex thinking, which in turn leads to a deeper understanding



and more easily retrievable memory structures. At the conclusion of the unit, students will take an assessment test to see how much they have learned. Students may learn to take responsibility for their education by using a metacognitive pedagogy that encourages individuals to set learning objectives and evaluate their own performance. Teachers may use it to gauge their students' level of understanding as they work towards learning goals.

CONCLUSION

There is a strong correlation between students' interest, aptitude, and application of the learning cycle model in geography classes. The 5E learning cycle and the books that describe it shape the course, making sure that each student has many chances to identify, practise, and expand upon the strengths and weaknesses of his or her own personal approach to learning in order to fully grasp the population geography topic. The findings imply that the learning cycle is applicable to disciplines other than the natural sciences, such as the social sciences. To get the most out of a learning cycle's potential, an organised lesson plan is essential. The aid should also help pupils make connections between what they now know and what they will study in the future. Despite the study's tiny sample size, other research may expand upon it to confirm the finding. Students' critical thinking, communication skills, and so on may all be evaluated using the 5E learning cycle, which can then be used to other social science courses.

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