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**EFFECT OF 5E LEARNING MODEL ON READING-  
WRITING AND KINAESTHETIC LEARNING  
STYLES STUDENTS' RETENTION IN  
SOCIAL STUDIES IN BENUE STATE**

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**Abstract**

*This study conducted in Benue State examined the retention of material from social science courses among students who have a preference for learning by reading and writing, as well as those who prefer kinesthetic learning. A quasi-experimental methodology was employed. A total of 10,577 students were enrolled in Upper Basic 2 throughout 302 public high schools. A selection of four government high schools was made in order to obtain a representative sample of 124 Upper Basic 2 kids. The data was collected using the Social Studies Performance Test (SSPT), the Learning Styles Preference Questionnaire (LSPQ), and the Social Studies Retention Test (SSRT). The SSRT was an adaptation of the Social Studies Performance Test. The SSPT had a reliability coefficient of 0.97, determined using the Kuder Richardson21 approach. The LSPQ had a reliability coefficient of 0.87, determined using the Cronbach alpha method. The collected data were analysed using measures of central tendency (mean), variability (standard deviation), and a statistical technique called Analysis of Covariance. The critical value*

*employed in the evaluation of the null hypothesis was 0.05. The study's results revealed a notable disparity in the average retention scores between students with a reading-writing learning style and those with a kinaesthetic learning style, who were taught Social Studies themes utilising the 5Es learning model against the usual discussion technique. Teachers of Social Studies were recommended to utilise the 5Es learning model, which incorporates diverse activities to accommodate students' different learning styles and enhance their retention of Social Studies material.*

**Keywords:** 5Es learning model, Learning styles, retention.

### **Introduction**

One of the duties of Social Studies teachers is to facilitate the acquisition and retention of knowledge among students, which can be utilised in the future. If one's memory or ability to retain information fails, the stored information becomes meaningless if it cannot be accessed when required. In their study, Kundu and Tutoo (2002) define memory retention as "a cognitive process that preserves information." Sensation and perception furnish the intellect with the unprocessed materials necessary for acquiring knowledge. Retention, as described by Igboko and Ibeneme (2006), refers to the ability to retain and recall factual knowledge, abilities, processes, pictures, and numbers. Hence, the process of consolidation is needed for learning to occur. Igboko and Ibeneme (2006), Usman (2010), and Oludipe (2012) discovered that employing pedagogical approaches that stimulate many senses and actively engage learners' participation enhanced the recall of the taught topic. According to Woolfork (2008), three aspects, namely elaboration, organisation, and context, all play a role in retention. Emphasising learning in the outset will yield long-term benefits. Students exhibit enhanced comprehension and improved retention of information when provided with chances to creatively elaborate on and personalise previously unfamiliar subjects. This implies that the utilisation of

learning strategies such as the 5Es approach, which offer students multiple opportunities to expand upon and engage in discussions about their acquired knowledge, might enhance retention even more.

The 5Es approach of education can be applied to learners of all age groups, including adults. It consisted of five separate components. The 5Es learning approach consists of five stages: Engage, Explore, Explain, Elaborate, and Evaluate. Each stage is named after a letter “E” of the alphabet. Students and instructors can participate in collaborative activities, utilise and enhance their previous knowledge and experience, develop their own interpretations of topics, and routinely assess their progress towards mastery using the 5Es learning framework.

According to a study conducted by Nja, Umali, Asuquo, and Orim (2019), the use of the 5Es learning model teaching style has been proven to have a substantial impact on enhancing students’ long-term memory retention. Nevertheless, there is a lack of comparable study in the realm of Social Studies. Therefore, it is crucial to select students with diverse learning styles in order to have a deeper understanding of the effects of the 5Es technique.

A student’s learning style refers to their favoured approach for assimilating and responding to information offered to them in educational environments. Pello’on, Nome, and Ara’an (2013) define a learner’s learning style as the amalgamation of their distinct cognitive, emotional, and physiological characteristics that serve as reliable indicators of how they absorb, analyse, and respond to information within a certain learning environment. An individual’s learning style refers to their distinct approach (or approaches) in acquiring and comprehending novel information. Cognitive processing refers to the manner in which individuals acquire, assimilate, and remember knowledge or skills, irrespective of the terminology used to describe this process. Hence, learning styles prioritise the learning process rather than the subject matter. These dispositions, commonly known as learning styles, determine a student’s unique preference for learning.

There is no method of learning that can be classified as inherently “ineffective.” It is crucial to customise educational tasks according

to the desired mode of instruction for each individual learner. This information can provide more precise predictions about individuals' learning capacities and the most efficient instructional techniques. The instructor has the ability to customise the learning environment according to their own tastes and the preferences of their students (Sünbül, 2014). Thus, this study was conducted to assess the influence of the 5Es learning model on the retention of Social Studies content among students with reading-writing and kinaesthetic learning preferences.

### **Objectives of the Study**

This study examined the impact of the 5Es learning model on the recall of Social Studies material for students with reading-writing and kinaesthetic learning styles. The specific objectives are to determine the:

- i. difference in the mean retention scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method; and
- ii. difference in the mean retention scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.

### **Research Questions**

This study was guided by the following research questions:

- i. What is the difference in the mean retention scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method?
- ii. What is the difference in the mean retention scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method?

## **Hypotheses**

The following hypotheses were tested in this study at 0.05 level of significance:

- i. There is no significant difference between the mean retention scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.
- ii. There is no significant difference between the mean retention scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.

## **Methods**

This study employed a quasi-experimental methodology to conduct research. According to the Directorate of Planning Research and Statistics, Benue State Teaching Service Board, Makurdi (2020), there were a total of 10,577 students registered in Upper Basic 2 across 302 government secondary schools in Benue State during the 2019/2020 academic year. The reason students in the upper level of Basic 2 were chosen is because they were not undergoing any standardised exam preparations. The study included a cohort of 124 high school freshmen selected from four public secondary schools. We employed a multi-stage sampling approach, incorporating both systematic and ad hoc sampling methods.

The researchers utilised three assessments devised by her to collect data: the Social Studies Performance Test (SSPT), the Learning Styles Preference Questionnaire (LSPQ), and the Social Studies Retention Test (SSRT). The SSPT was a 30-item multiple-choice examination that assessed knowledge in the field of social studies. The SSPT questions were chosen from content addressed in each of the three courses. The LSPQ consisted of 20 questions, with 10 focusing on students' inclinations towards reading-writing learning styles and the other 10 focusing on students' inclinations towards Kinesthetic learning styles. The authors of the study developed a set of educational materials. Both the control group

and the experimental group were provided with three lesson plans. Both the experimental and control groups were provided with scheduled lessons, however, the lessons for the experimental group were designed according to the 5Es learning paradigm. The instruments were evaluated by four experts. The reliability of LSPQ was assessed using the Cronbach Alpha coefficient, yielding a value of 0.87. By employing the Kuder Richardson (K-R21) method, we calculated a reliability coefficient of 0.97 for the SSPT. The null hypotheses were evaluated using Analysis of Covariance (ANCOVA), whereas the research issues were addressed using mean and standard deviation.

**Research Question One:** What is the difference in the mean retention scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method?

**Table 1:** Mean and Standard Deviation of Retention Scores of Reading-Writing Learning Style Students taught Social Studies using 5Es Learning Model and Conventional Discussion method

<b>Group</b>	<b>N</b>	<b>Pre SSPT Mean</b>	<b>SD</b>	<b>Retention mean</b>	<b>SD</b>	<b>Mean Gain</b>
5Es Learning Model	29	15.52	3.27	19.94	4.28	<b>4.42</b>
Conventional Discussion Method	27	14.13	3.10	16.92	4.21	<b>2.79</b>
Mean difference						<b>1.63</b>

Students with a reading-writing learning style who were taught Social Studies ideas using the 5Es learning model had mean retention scores of 15.52 (SD = 3.27) and 19.94 (SD = 4.28) on the pre- and post-tests, respectively (Table 1). The mean retention scores of reading-writing learning style students taught Social Studies using conventional discussion technique is 14.13 with a standard deviation of 3.10 during pre-test and 16.92 with a standard deviation of 4.21 in retention test. Students with a reading-writing learning style who

were taught Social Studies using the 5Es learning model had a mean retention increase of 4.42, while students with a visual learning type who were taught using the standard discussion technique had a mean retention gain of 2.79, as seen in Table 1. Students with a reading-writing learning style who are taught Social Studies using the 5Es learning model outperform students with other learning styles who are taught using the traditional discussion technique by a factor of 1.63.

**Research Question Two:** How do students with a kinaesthetic learning style who are introduced to Social Studies subjects through the 5Es learning model fare in comparison to those who are taught through the more traditional discussion method?

**Table 2:** Mean and Standard Deviation of Retention Scores of Kinaesthetic Learning Style Students taught Social Studies using 5Es Learning Model and Conventional Discussion method

Group	N	Pre SSPT Mean	SD	Retention mean	SD	Mean Gain
5Es Learning Model	33	15.08	2.54	22.51	4.92	<b>7.43</b>
Conventional Discussion Method	35	14.07	2.99	17.60	4.66	<b>3.53</b>
Mean difference						<b>3.90</b>

Students with a kinaesthetic learning style who were taught Social Studies ideas utilising the 5Es learning paradigm had mean pre-test scores of 15.08 (SD = 2.54) and post-test scores of 22.51 (SD = 4.92). Students with a kinaesthetic learning style who were taught Social Studies using a traditional discussion approach had a mean retention score of 17.60 and a standard deviation of 4.66 on the retention exam, with a pre-test score of 14.07 and a standard deviation of 2.99. Students with a kinaesthetic learning style made a mean gain of 7.43 when taught Social Studies utilising the 5Es learning model, compared to a loss of 3.53 when taught using the traditional discussion technique (see Table 2). Students with a

kinaesthetic learning style who were taught Social Studies utilising the 5Es learning model had a 3.90 point performance score advantage over students who had been taught using the traditional discussion method.

**Hypothesis One:** There is no significant difference between the mean retention scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.

**Table 3:** ANCOVA Result of retention scores of reading-writing learning style students taught Social Studies using 5Es learning model and conventional discussion method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1364.070 <sup>a</sup>	2	682.035	27.839	.000
Intercept	7567.556	1	7567.556	308.885	.000
<b>Strategies</b>	<b>1337.422</b>	<b>1</b>	<b>1337.422</b>	<b>54.589</b>	<b>.000</b>
PreSSPT	105.612	1	105.612	.229	.633
Error	6369.899	53	120.18		
Total	183293.000	56			
Corrected Total	7733.970	55			

a. R Squared = .176 (Adjusted R Squared = .170)

The results may be shown in Table 3, where  $F(1, 55) = 54.58$ ;  $p=0.00 < 0.05$ . The assumption of no effect is thus rejected. This suggests that when teaching Social Studies subjects, students with a reading-writing learning style fare better in terms of long-term recall when using the 5Es learning model than when using the more traditional discussion approach. Analysis of the data shows that the 5Es learning model is more effective in helping students retain information when teaching Social Studies concepts to individuals with a reading-writing learning style than the more traditional discussion-based approach.



**Hypothesis 4:** Students with a kinaesthetic learning style who were taught Social Studies concepts using the 5Es learning model showed no significant improvement in retention over students who were taught using the traditional discussion method.

**Table 4:** ANCOVA of retention scores of kinaesthetic learning style students taught Social Studies using 5Es learning model and conventional discussion method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	783.286 <sup>a</sup>	2	391.643	44.363	.000
Intercept	3105.693	1	3105.693	351.797	.000
Strategies	708.278	1	708.278	80.230	.000
PreSSPT	43.297	1	43.297	4.905	.028
Error	2295.300	66	8.828		
Total	57868.000	68			
Corrected Total	3078.586	67			

a. R Squared = .254 (Adjusted R Squared = .249)

$F(1, 67) = 80.23$ ;  $p=0.000 < 0.05$  as shown in Table 4. The assumption of no effect is thus rejected. This suggests that when compared to students who were taught the same Social Studies subjects through the more traditional discussion technique, kinaesthetic learners whose teachers employed the 5Es learning model had significantly higher mean retention ratings. Data analysis shows that the average retention scores of students with a kinaesthetic learning style who were taught Social Studies concepts using the 5Es learning model differ significantly from those of students who were taught using the traditional discussion method.

## Discussions

Students with a reading-writing learning style, who were instructed in Social Studies concepts using the 5Es learning model, exhibited considerably higher average retention scores compared to students who were taught using the conventional discussion technique. These

findings indicate that students who have a predilection for reading and writing who were instructed in Social Studies utilising the 5Es learning model achieved higher levels of achievement in the subject compared to those who were taught using the conventional discussion method. Our findings align with Mohammed's (2016) study, which demonstrated that students instructed utilising the 5Es learning model achieved higher average retention scores compared to those taught using the traditional technique. Contrary to the findings of Falode, Adewale, Ilobeneke, Falode, and Robinson (2015), our data challenge the notion that student engagement in class discussions enhances information retention. This result is valid because the 5Es learning model effectively presents concepts to learners through various media, hence meeting the learning needs of students with varied learning styles, ultimately enhancing the retention of acquired knowledge.

Those exhibiting a kinaesthetic learning style, when instructed in Social Studies ideas utilising the 5Es learning model, demonstrated notably superior average retention scores compared to those instructed by the conventional discussion technique.

These findings indicate that students with a kinaesthetic learning style achieved better results when taught Social Studies compared to their peers who were taught using a more traditional discussion-based method. This finding aligns with the research conducted by Mohammed (2016), which revealed that students who were instructed using the 5Es learning model had a higher mean score for retention compared to those who were taught using the conventional technique. Students that possess a kinaesthetic learning style can derive advantages from this finding due to the inclusion of the exploration and extension stages in the 5Es learning model. Currently, in the 5Es process, students are actively involved in taking charge of their own education. This has the capacity to assist pupils in their ability to remember and understand course material. The last phase of the 5Es learning strategy, extension (elaboration), facilitates the application of students' knowledge in a practical context and enhances their comprehension of the subject matter. During this stage, students participate in activities that

promote the practical application of acquired concepts in real-life scenarios, thereby enhancing and expanding their understanding of the subject matter. The students get a deeper and more refined comprehension of core concepts, expand their knowledge on subjects that personally interest them, and enhance their skills via their exposure to unfamiliar circumstances. Students can use what they've learned, make decisions and ideas, build new problems, and provide logical consequences in 5Es class. The current study posits that all of these acts collectively contributed to the substantial range observed in the average retention scores.

### **Conclusion**

According to the findings of this study, students who prefer learning through reading and writing will gain advantages by utilising the 5Es learning paradigm. By implementing the 5Es learning model, Social Studies educators can effectively assist students with limited reading and writing retention. Students that possess a kinaesthetic learning style exhibit an enhanced likelihood of retaining information acquired in the field of Social Studies when the 5Es model is employed. These findings indicate that the 5Es paradigm is efficacious for children who possess a kinaesthetic learning style.

### **Recommendation**

Social Studies teachers should extensively employ the 5Es learning strategy, which incorporates a range of activities to actively include students' many intelligences and enhance their capacity to remember information.

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