

# Effect of Constructivist Based Approach on Reading-writing and Kinaesthetic Learning Styles of Students' performance in social studies

J. I. Chiakyor<sup>1</sup> and E. M. Agba<sup>2</sup>,

<sup>1</sup>Department of Educational Foundation and General Studies, Joseph Sarwuan Tarka University, Makurdi, Nigeria.

<sup>2</sup>Department of Arts and Social Sciences Education, Benue State University, Makurdi, Nigeria.

Received 30 November 2023; Acceptance 28 December 2023; Published 20 January 2024

## Abstract

This study examined effect of constructivist-based approach (5Es) on reading-writing and kinaesthetic learning styles of students' performance in Social Studies in Benue State, Nigeria. Two research questions guided the study while two null hypotheses formulated and tested at 0.05 level of significance. The study adopted a quasi-experimental design of non-equivalent control group, pre-test and post-test design. The population of the study comprised 10,577 Upper Basic 2 students from 302 government secondary schools for the 2019/2020 academic session. The sample consisted of 124 Upper Basic 2 students selected from 4 intact classes located in 4 secondary schools. Multi-stage sampling technique which consisted of simple random, purposive and simple random sampling techniques was adopted for the study. Data were collected using researcher's developed Social Studies Performance Test (SSPT) and Learning Styles Preference Questionnaire (LSPQ). The SSPT, LSPQ and lesson plans were validated by 4 experts. Four research assistants were selected, trained and used for the treatment and data collection. The study lasted for 5 weeks. The Kuder Richardson (K-R<sub>21</sub>) was used to compute the reliability coefficient of SSPT and it yield the reliability coefficient of 0.97. The reliability coefficient of LSPQ was 0.87 using Cronbach alpha method. Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses. The finding of the study revealed a significant difference between the mean performance scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method ( $F = 51.67$ ;  $p = 0.00 < 0.05$ ). The study also showed a significant difference between the mean performance scores of kinaesthetic learning style of students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method ( $F = 5.45$ ;  $p = 0.02 < 0.05$ ). Based on the findings, it was recommended among other things that Social Studies teachers should intensively employ the use of 5Es learning model which incorporates different activities that appeal to students' learning styles and enhance their academic performance.

**Keyword:** *Constructivist Based Approach, 5Es Learning Model, Learning Styles, Performance.*

---

Correspondence to: J I. Chiakyor, e-mail: joyidowu7@gmail.com

**Copyright:** © 2024 The authors. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License. e/ISSN: 3027-060X.

How to Cite: Chiakyor and Agba (2024). Effect of Constructivist Based Approach on Reading-writing and Kinaesthetic Learning Styles of Students' Performance in Social Studies, *Scholar J*, 2(1). <https://scholarj.com/index.php/sj/article/view/14>

## Introduction

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education is the most powerful means through which the social life of people can be transformed for better living. Education in Nigeria is an instrument 'par excellence' capable of achieving rapid development, national integration and bringing about desirable change in all spheres of human endeavours.

In Nigerian educational system, Social Studies is one of the subjects that focus essentially on man, the society and the environment. National Teachers Institute (2010) conceptualizes social studies as a subject that deals with man's interaction with his environment in order for him to acquire the relevant skills, knowledge, attitudes and values that will make him live harmoniously with his environment. It is a subject that is expected to inculcate of appropriate skills, attitudes and values for national development.

Unfortunately, there is a continuous poor academic performance of students in Social Studies in Nigeria which has become a major source of worry to Social Studies educators and parents in general. For instance, from 2011 to 2020, the percentage of students that fail Social Studies in Nigeria was 60.26% in 2011, 62.58% in 2012, 54.54% in 2013, 53.82% in 2014, 53.57% in 2015, 57.62% in 2016, 54.31% in 2017, 52.89% in 2018, 55.85% in 2019 and 53.06% in 2020 (National Examination Council, 2020). This may be as a result of poor instructional strategies and failure of the teacher to give preference to different students' learning styles. Innovative strategies like 5Es learning models instructional strategy improve students' academic performance but the classroom situation in its application is yet to be determined especially in Social Studies.

The 5Es is a learning model based on the constructivist approach to learning, which states that learners build or construct new ideas on top of their old ideas. Each of the 5E's describes a phase of learning, and each phase begins with the letter "E": Engage, Explore, Explain, Elaborate, and Evaluate. The engagement is the first phase of 5Es. It is regarded as problem identification stage and the teacher intentionally presents challenging phenomenon or situation to learners. This stimulates their thinking thereby helping them to examine their existing or prior knowledge.

The second phase is the exploration. It is the experimenting and problem solving stage. The teacher provides experiences with the knowledge construction process. Students are expected to think, plan investigation and organise collected information. The third phase is explanation. It helps students explain the concepts they have been exploring. This phase also provides opportunities for teachers to introduce formal terms, definitions, and explanations for concepts, social values, skills, or behaviours.

The elaboration phase allows students to use their new knowledge and continue to explore its implications. At this phase, students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways. Evaluation which is the last phase allows the teacher to assess students' performance and/or understandings of concepts, skills, processes, and applications. It also encourages learners to assess their understanding and abilities.

The discussion method, on the other hands, engages students in sharing of ideas, experiences and knowledge. It is the major learner centred method used by social studies teachers. However, the discussion method is mostly benefited by auditory learners. Reading-writing and kinaesthetic learning style learners may not be carried along in a discussion class room.

Reading and writing learners prefer to take in information displayed as words. Learning materials that are primarily text-based are strongly preferred by these learners. Rajshri (2013) asserts that sometimes reading-writing is referred to as the second visual modality for learning. Reading and writing is a learning style where individuals are able to absorb and retain the most information through reading, writing text, versus imagery and symbolism. The kinaesthetic learners, on the other hand, process information best

through a “hands-on” experience. Fleiming (2006) explains that they prefer to learn via experience, moving, touching, and doing. Kinaesthetic learning tactile learning is a learning style in which learning takes place by the students carrying out physical activities.

Students with different learning styles will show preference towards classroom activities and instructional strategies that are in line with their learning styles and show dislike or negative attitude towards classroom activities that are at variance with their learning styles (Kolb, 2015). Chianson, Aligba and Jimin (2015) state that students with compatible learning style with the teaching strategy/method perform better than their counterparts who experience learning/teaching style mismatches. Therefore, this study investigated the effect of 5Es learning models on reading-writing and kinaesthetic learning styles students’ performance in Social Studies in Benue State, Nigeria.

### **Research Questions**

This study was guided by the following questions:

1. What is the difference in the mean performance scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method?
2. What is the difference in the mean performance 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 null hypotheses formulated and tested at 0.05 level of significance

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

### **Research Method**

The research design adopted for this study was quasi-experimental design of non-equivalent control group, pre-test and post-test design. The population of the study comprised 10,577 Upper Basic 2 students from 302 government secondary schools in Benue State for the 2019/2020 academic session (Directorate of Planning Research and Statistics, Benue State Teaching Service Board, Makurdi, 2020). The sample consisted of 124 Upper Basic 2 students selected from 4 intact classes located in 4 secondary schools within education Zone B. Multi-stage sampling technique which consisted of simple random, purposive and simple random sampling techniques was adopted for the study.

Two instruments were developed by the researcher and used for data collection. They were Social Studies Performance Test (SSPT) and Learning Styles Preference Questionnaire (LSPQ). The SSPT consisted of 30 multiple-choice questions with four options (lettered A to D). The LSPQ had 20 items. The items were on four Likert-type options of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD). For items indicating positive disposition towards a particular learning style the scores were

4 for SA, 3 for A, 2 for D and 1 for SD while for statements indicating negative disposition towards a particular learning style, the scores were 1 for SA, 2 for A, 3 for D and 4 for SD.

In addition, six lesson plans were developed by the researcher and used by the research assistants for instruction. Three lesson plans were for the experimental group while the other three lesson plans were for the control group. The lesson plans for the experimental group were developed based on the 5Es learning model while the ones for the control group were developed based on the conventional discussion method. Four experts validated the instruments. The SSPT was calculated using Kuder Richardson (K-R<sub>21</sub>) and it yielded the reliability coefficient of 0.97. The Cronbach Alpha was used to ascertain the reliability coefficient for LSPQ and was found to be 0.87.

Four qualified Social Studies' teachers of Upper Basic 2 from the sampled secondary schools were selected and trained by the researcher on how to teach drug abuse, home appliances and transportation using the strategies of 5Es learning model and the conventional discussion method. They were also trained on how to administer the instruments. Experimental group received treatment using the 5Es learning model, while the control group received instruction using the conventional discussion method. The groups received instruction for 40 minutes per day for two days in three weeks. First day of the first week of treatment was used for administration of pre-test. The learning style preference test was also administered on the first day of week one to ascertain students' learning styles. Treatment lessons began on the second day of week one and continue to the fifth week. The post-test was administered to all the groups on the last day of fifth week. Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 alpha level.

## Results

The two researcher questions were presented and interpreted before the two null hypotheses.

### Research Question One

What is the difference in the mean performance 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 Performance Scores of Reading-Writing Learning Style Students taught Social Studies using 5Es Learning Model and Conventional Discussion method

| Group                          | N  | Pre SSPT<br>Mean | SD   | Post SSPT<br>mean | SD   | Mean Gain |
|--------------------------------|----|------------------|------|-------------------|------|-----------|
| 5Es Learning Model             | 29 | 15.52            | 3.27 | 23.44             | 6.08 | 7.92      |
| Conventional Discussion Method | 27 | 14.13            | 3.10 | 18.92             | 6.01 | 4.79      |
| Mean difference                |    |                  |      |                   |      | 3.13      |

Table 1 reveals that the mean performance scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model is 15.52 with a standard deviation of 3.27 during pre-test

and 23.44 with a standard deviation of 6.08 in post-test. The mean performance scores of reading-writing learning style students taught Social Studies using conventional discussion method is 14.13 with a standard deviation of 3.10 during pre-test and 18.92 with a standard deviation of 6.01 in post-test, Table 1 further shows that the mean gain of reading-writing learning style students that were taught Social Studies using 5Es learning model is 7.92 and those of visual learning style students taught Social Studies using conventional discussion method is 4.79. The difference in mean performance scores of reading-writing learning style students taught Social Studies using 5Es learning model and those taught using the conventional discussion method is 3.13 in favour of reading-writing learning style students taught Social Studies using 5Es learning model.

## Research Question Two

What is the difference in the mean performance scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method?

**Table 2:** Mean and Standard Deviation of Performance Scores of Kinaesthetic Learning Style

| Students taught Social Studies using 5Es Learning Model and Conventional Discussion method |    |                  |      |                   |      |           |
|--|----|------------------|------|-------------------|------|-----------|
| Group  | N  | Pre SSPT<br>Mean | SD   | Post SSPT<br>mean | SD   | Mean Gain |
| 5Es Learning Model   | 33 | 15.08            | 2.54 | 26.91             | 5.72 | 11.83     |
| Conventional Discussion Method   | 35 | 14.07            | 2.99 | 21.48             | 4.76 | 7.41      |
| Mean difference  |    |                  |      |                   |      | 4.42      |

Table 2 indicates that the mean performance scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model is 15.08 with a standard deviation of 2.54 during pre-test and 26.91 with a standard deviation of 5.72 in post-test. The mean performance scores of kinaesthetic learning style students taught Social Studies using conventional discussion method is 14.02 with a standard deviation of 2.99 during pre-test and 21.48 with a standard deviation of 4.76 in post-test. Table 2 further reveals that the mean gain of kinaesthetic learning style students that were taught Social Studies using 5Es learning model is 11.83 and those of kinaesthetic learning style students taught Social Studies using conventional discussion method is 7.41. The difference in mean performance scores of kinaesthetic learning style students taught Social Studies using 5Es learning model and those taught using the conventional discussion method is 4.42 in favour of kinaesthetic learning style students taught Social Studies using 5Es learning model.

## Hypothesis One

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

| Source            | Type III Sum of Squares | Df       | Mean Square     | F            | Sig.       |
|-------------------|-------------------------|----------|-----------------|--------------|------------|
| Corrected Model   | 266.15                  | 2        | 133.0750        | 94.06        | .00        |
| Intercept         | 2720.78                 | 1        | 2720.78         | 192.13       | .00        |
| <b>Strategies</b> | <b>13635.96</b>         | <b>1</b> | <b>13635.96</b> | <b>96.31</b> | <b>.00</b> |
| PreSSPT           | 7316.14                 | 1        | 7316.14         | 51.67        | .12        |
| Error             | 2137.99                 | 53       | 40.33           |              |            |
| Total             | 371910.00               | 56       |                 |              |            |
| Corrected Total   | 48012.14                | 55       |                 |              |            |

a. R Squared = .555 (adjusted R Square = .549)

Table 3 reveals that  $F(1, 55) = 96.31$  with p-value of 0.00 which is less than 0.05 level of significant set for this study. The hypothesis is therefore rejected. This implies that there is a significant difference between the mean performance scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.

### Hypothesis Two

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

**Table 5:** ANCOVA of performance 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   | 13590.24                | 2        | 6795.12         | 106.51        | .00        |
| Intercept         | 12057.20                | 1        | 12057.20        | 188.99        | .00        |
| <b>Strategies</b> | <b>10159.47</b>         | <b>1</b> | <b>10159.47</b> | <b>159.25</b> | <b>.00</b> |
| PreSSPT           | 347.95                  | 1        | 347.9           | 5.45          | .02        |
| Error             | 5167.50                 | 65       | 79.50           |               |            |
| Total             | 265975.00               | 68       |                 |               |            |

|                 |          |    |
|-----------------|----------|----|
| Corrected Total | 48012.14 | 67 |
|-----------------|----------|----|

---

a. R Squared = .555 (adjusted R Square = .549)

Table 5 shows that  $F(1,67) = 159.25$  with p-value of 0.00 which is less than 0.05 level of significant set for this study. The hypothesis is therefore rejected. This implies that there is a significant difference between the mean performance scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method.

## Discussion of Findings

The finding revealed a significant difference between the mean performance scores of reading-writing learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method. This finding agrees with Tuna and Kacar (2013) who found that students taught using 5Es learning model perform better than those taught using the conventional discussion method. The finding also collaborates with Agogo and Naakaa (2014) that 5Es learning model is effective in enhancing students' academic performance. This finding could be because the 5Es enhance students understanding of the concept by demanding to know what the students call the concept in their own local language. Students are also expected to give example of a real life application of the concept learnt. This helps students to become proficient at applying the concept to everyday life. The evaluation stage of the 5Es also encourages learners to assess their understanding and abilities and lets teachers evaluate students' understanding of key concepts and skill development which are capable of enhancing students' academic performance.

The finding also showed a significant difference between the mean performance scores of kinaesthetic learning style students taught Social Studies concepts using 5Es learning model and those taught using the conventional discussion method. This implies that the use of 5Es learning model enhanced visual learning style students' academic performance more than the conventional discussion method. This finding agrees with Bethel-eke and Eremie (2017) who found that kinaesthetic learning style students perform higher when taught using 5Es learning model. The finding is in agreement with that of Gary, Mazurek, and Marone (2016) that kinaesthetic learning style students' academic performance is enhanced when exposed to instructional strategies that provide that with opportunities to explore and manipulate things. The finding also collaborates with Madu and Ezeamagu (2013) that the use of 5Es learning model enhance students understanding of concepts which go a long way in also improving their academic performance. This is possible because the exploration and extension stages of the 5Es learning model provide kinaesthetic learning style students with opportunities to experiment and practical solve problems. In this exploration stage of the 5Es, students take the responsibility of managing their learning. This phase of the 5E's provides students with a common base of experiences. They identify and develop concepts, processes, and skills. During this phase, students actively explore their environment or manipulate materials. These activities are in line with the learning needs of kinaesthetic learning style students who like manipulating things during learning.

The extension (elaboration) stage further expands and solidifies students' thinking and applies it to a real-world situation. This stage involves activities that allow students to apply concepts in contexts, and build on or extend understanding and skill. Through new experiences, the learners develop deeper and broader understanding of major concepts, obtain more information about areas of interest, and refine their skills. In 5Es class, students can practice their new knowledge, suggest solutions, create new problems and make decisions and/or introduce logical implications. All these activities may be responsible for the significant difference found in the present study.

## Conclusion

This study concludes that 5Es learning model can improve academic performance of students with reading-writing and kinaesthetic learning styles in Social Studies. However, the conventional discussion method is not suitable for reading-writing and kinaesthetic learning styles students in Social Studies. This means that the use of 5Es learning model enhanced reading-writing and kinaesthetic learning styles students' academic performance more than the conventional discussion method. Therefore, Social Studies teachers should adopt the use of 5Es learning model during their lessons for students with reading-writing and kinaesthetic learning styles students.

## References

- Agogo, P. O. & Naakaa, D. A. (2014). Effects of 5Es constructivist instructional strategy on students' interest in senior secondary genetics in Gwer local government area, Benue state, Nigeria. *Global Journal of Environmental Science and Technology*, 1(2), 015-019.
- Bethel-eke, O. A. & Eremie, M. (2017). Learning styles and academic performance of junior secondary school student in rivers state: Implications for counselling. *International Journal of Innovative Development & Policy Studies*, 5(3), 52-61.
- Chianson, M. M., Aligba, S. O. & Jimin, N. (2015). Prevalent learning style among secondary school mathematics students and its influence on gender and age in Benue State, Nigeria. *British Journal of Applied Science and Technology*, 8(4), 389-399.
- Directorate of Planning Research and Statistics, Benue State Teaching Service Board, Makurdi. (2020). Population of upper basic 2 students in public secondary schools in Benue State. Retrieved on 25th November, 2020 from her office computer.
- Fleming, N. D. (2006). *V.A.R.K visual, aural/auditory, read/write, kinesthetic*. New Zealand: Bonwell Green Mountain Falls.
- Gary, J. F, Mazurek, E. & Marone, J. R. (2016) Learning Style Versus Time Spent Studying and Career Choice: Which is Associated with Success in a Combined Undergraduate Anatomy and Physiology Course. *Anatomy Science Education*, 9(2), 121–131.
- Madu B. C. & Ezeamagu, M. U. (2013). Effect of constructivist based approach (5Es) on the pupils' achievement in primary mathematics in Enugu state, Nigeria. *International Journal of Educational Science and Research* 2(1) 23-31.
- Rajshri, V. (2013). Learning Styles and Academic Achievement of Secondary School Students. Retrieved on 23/8/2018 from <http://www.voiceofresearch.org/doc>.