

Influence of Reading and Writing and Kinesthetic Learning Styles on Academic Achievement of Senior Secondary Students in FCT, Abuja

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Abstract

The study examined the influence of Neil Fleming's VARK learning styles on the academic achievement of senior secondary school students in the Federal Capital Territory (FCT), Abuja, Nigeria. Specifically, it focused on how students' preferences for reading/writing and kinesthetic learning styles affected their academic Achievement. The study adopted a descriptive survey design, with a population of 24,771 Senior Secondary School 2 (SSS2) students in public schools across Abuja. A sample of 377 students was selected using multistage sampling based on Krejcie and Morgan's (1970) sampling table. Data were collected using the VARK Questionnaire (TVQ), English Mock Examination (EME), and Mathematics Mock Examination (MME). The data were analyzed using mean, standard deviation, and t-tests to test the hypotheses. The results indicated that both reading/writing and kinesthetic learning styles significantly influenced academic achievement. It was recommended that educators incorporate reading/writing strategies and kinesthetic activities to enhance students' academic outcomes. Furthermore, learning materials such as graphics and interactive art tools should be designed to cater to students' diverse learning preferences.

Keywords: Neil Fleming's VARK, Learning Styles, Academic Achievement, Reading/Writing, Kinesthetic.

Introduction

Globally, education is so paramount as the major key to acquisition of knowledge and skills in order to survive. It is well-established that one of the objectives of Nigeria's National Policy on Education (2014) is for secondary education to prepare students for valuable living in society and for advanced education in tertiary institutions. The curriculum of senior secondary school is designed to develop students' knowledge and outlook, academic ability and vocational interest but several factors, including the poor academic performance of students, have been affecting the achievement of these objectives.

Academic achievement is the degree to which students have accomplished their educational goals within the given time frame. In school, the efforts put into the educational enterprise by students are adjudged and evaluated as successful if student's academic achievement is satisfactory and as failure if not satisfactory. Academic Achievement describes the level of attainment of learning goals measured by scores obtained from examinations and continuous assessment. TopHat (2022) posits that academic achievement describes academic outcomes that indicate the extent to which

a student has achieved their learning goals. and is often measured through examinations or continuous assessment. It may be measured through student's grade point average, whereas for institutions, it may be measured through graduation rates. It also shows the extent to which a student or institution has achieved either short- or long-term educational goals. In assessing a student's academic achievement, marks and percentile play a key role. However, there are several contributory factors determining the academic achievement of students whether poor or successful academic achievement.

Factors such as school environment and pedagogy seem to affect students' academic achievement. Classrooms, libraries, technical workshops, laboratories, teachers' quality, school management, teaching methods, teaching aids, and peers are among the school environment factors that tend to affect academic achievement of students. These observed factors seem to be a reflection of poor qualities of education in Nigerian schools when considering ineffectiveness of classroom teachers; teachers-students' relationship, inadequate infrastructure and the nature and state of facilities. Pedagogical factors that affect academic achievement of students perhaps involve the use of outdated teaching practices, instructional methods/ teaching strategies and material/facilities that appear learner-friendly. Thus to enhance learning appears largely depend on availability and appropriate utilization of modern infrastructure and accessories that suit the learning style of the students during teaching and learning process. According to Ludigo, Mugimu and Mugagga (2019), the student-centred pedagogical strategy is quite important for academic achievement of students compare to the teacher-centered pedagogical strategy is less effective than the student-centered approach.

During teaching and learning process in schools, learning style refers to a person's typical method of learning and how they process and assimilate information. A person's learning style refers to how they focus, process, assimilate, and remember new and challenging material (Oweini & Daouk; 2016). In addition, according to Fleming in Hawk and Shah (2007), it is an individual's traits and preferred methods of gathering, organizing, and thinking about information. In other words, it describes the consistence in the way students behave and perform tasks during educational activities in school. Also, it can be explained as a person's concentration style and how they gather and process information, knowledge, or experience. Individual learning styles are typically influenced by cognitive, emotional, contextual, and prior experience variables. Neil Fleming developed a learning style model by categorizing students to four different modes of learning. The modes are based on different senses, namely visual, auditory, reading /writing and kinesthetic. The name of the model itself originated from the senses prefix letters, thus it is generally and popularly called the VARK model.

Reading/ writing learning style is a style in which students prefer reading printed words and text as a method to gain information. The researcher refers to the reading and writing learning style as the Verbal (Linguistic) learning style, involves both the written and spoken word. The reading and writing students find it easy to express their ideas, both in writing and speaking. They tend to love reading and writing. They like playing on the meaning or sound of words, such as in tongue twisters, rhymes, poems, limerick and the like. They seem to know the meaning of many words, and regularly try to find the meaning of new words. They apply these new found words when talking to others. Reading and writing appear to be a valuable tool in advancing academic achievement of senior secondary students. The Australian Christian College (2022) posit that this style of learning preference has wide-ranging cognitive and

literary-building benefits (which are important and necessary for academic achievement). As students read and write, reading engages the mind and stimulates more brain regions. Sometimes after reading sections of the book, students' found increased connectivity in the brain areas involved in receptivity for language plus physical sensation and movement. The Ministry of Education, Guyana in 2021 asserts that students who read, tend to do better at school and professionally; promotes critical thinking skills which are crucial in helping students perform more than a cursory understanding of any topic and helps them form their own opinions. The Ministry stressed that The more students read, the deeper their understanding becomes, and their writing strengthens their ability to make reasoned arguments on various topics.

In school, some students tend to easily understand and learn better when they are given instructional materials to work with most especially the concrete object they can touch for carrying out their given tasks. Nepean (2016) noted that a large portion of the student population excels through kinesthetic learning; that they prefer a "hand on" or "doing" approach to build understandings, that they are most successful when they are engaged in hands on activity. Nepean further emphasized that because kinesthetic learning helps students gain self-knowledge (by letting them learn at their own comfort level, confidence level and with their creative potentials, they develop problem solving skill. Nepean concluded that because of the advantages of kinesthetic learning preference, education is now shifting to the idea of interactive teaching techniques as it is beneficial for all students and can aid in overall cognitive development. This study is designed to investigate the influence of Neil Fleming's learning style preference on the academic achievement of senior secondary school students in the Federal Capital Territory Abuja.

Objectives of the Study

The general purpose of the study is to establish the influence of Neil Fleming learning style on the academic achievement of senior secondary school students in the FCT, Abuja. Specifically, the study sought to find out the followings:

1. ascertain the influence of reading and writing learning style preference on academic achievement of senior secondary school students in the FCT, Abuja.
2. determine the influence of kinesthetic learning style preference on academic achievement of senior secondary school students in the FCT, Abuja.

Null Hypotheses

The following hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

HO₁: There is no significant influence of reading/writing learning style preference on academic achievement of senior secondary school students in FCT, Abuja.

HO₂: There is no significant influence of kinesthetic learning style preference on academic achievement of senior secondary school students in FCT, Abuja

Method

The descriptive survey research design was employed because it is effective for gathering information from a sample of secondary school students. The study adopted the survey research design to gather information from a sample of the secondary school students in the FCT, Abuja. The design is more efficient because it established the influence of Neil Fleming learning styles on academic achievement of secondary school students in FCT, Abuja. The population for the study consisted of 77 public secondary schools in the Federal Capital Territory (FCT), Abuja, with a total of 24,771 senior secondary students Two (statistics from FCT Secondary school board 2021/2022). A sample of 377 students was sampled for the study using Krejcie and Morgan (1970)

sampling table. Multistage sampling techniques were used to draw the sample for this study. Cluster sampling technique was used to cluster FCT, Abuja to six area council, followed by using simple random sampling to select 3 schools each from the six area council. In all 18 schools and 377 students were sampled for the study. The researcher made use of three instruments in collecting data from the respondents. One of the three instruments was an adapted VARK questionnaire (version 8), which consisted of 16 statements. The items on VARK are based on 4-point rating scale given as follows: SA= Strongly Agree (4), A= Agree (3), D= Disagree= (2), and SD= Strongly Disagree (1). Then, the other two instruments used were the achievement test in Mathematics and English Language adopted Mock questions which comprised of 20 each. The Mock questions had options A-D for the students to choose the most correct answers. The questionnaire was validated by experts, yielding a validity index of 0.77 and a reliability index of 0.84. Mean and standard deviation were used to answer the research questions and t-test statistic was employed in testing the hypotheses formulated at the 0.05 level of significance using statistical package for social sciences (SPSS) in order to arrive at statistical decision.

Results

Research Question 1: To what extent does reading and writing learning style influence academic achievement of senior secondary school students in the FCT, Abuja?

Table 1 Mean and standard deviation on respondents' views on the influence of reading and writing on the academic achievement of senior secondary school students in the FCT, Abuja.

S/ N	Items	Strong ly Agree	Agre e	Disagr ee	Strongl y Disagr ee	Me an	Std . De v
1.	Jotting down point during lessons improves my academic achievement.	119	214	24	20	3.20	0.75
2.	Studying textbooks improves my academic achievement.	118	95	144	20	2.93	0.86
3.	Making summaries of my note in preparation for my examination increases my academic achievement.	107	84	83	103	2.52	1.06
4.	Reading handouts enhances my academic achievement.	60	190	83	44	2.71	0.67
Average Mean/Standard Deviations						2.80	0.82

Table 1 shows that the mean responses of items on the influence of reading and writing learning style on academic achievement of senior secondary school students in the FCT. The average mean value of items 1, 2, 3 and 4 is given as 2.80 and is above the cut-off

point of 2.50, indicating that reading and writing style has a high influence on the academic achievement of senior secondary school students in the FCT, Abuja.

Research Question 2: To what extent does kinesthetic learning styles influence academic achievement of senior secondary school students in the FCT, Abuja

Table 2: Mean and standard deviation on respondents' views on the kinesthetic learning style on the academic achievement of senior secondary school students in the FCT, Abuja.

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std. Dev
5.	Working as a group when completing a class project improves my academic achievement.	74	205	73	25	2.87	0.80
6.	Take home assignments improves my academic achievement.	205	48	62	62	3.05	1.17
7.	Engaging in class practical enhances my academic achievement.	126	138	75	38	2.93	0.97
8.	Assembling a puzzle enhances my academic achievement.	100	89	102	86	2.54	1.11
Average Mean/Standard Deviations						2.85	1.01

Table 2 show that the mean responses of items on the influence of kinesthetic learning style on academic achievement of senior secondary school students in the FCT, Abuja. The average mean value of items 5, 6, 7, and 8 is given as 2.85 and is above the cut-off point of 2.50, indicating that kinesthetic style has a high influence on the academic achievement of senior secondary school students in FCT.

Hypotheses

In this section t-test statistic was employed in testing the hypotheses formulated in order to arrive at a statistical decision. To achieve this, the P-values (probability values) obtained from SPSS (Statistical Package for Social Sciences) applications were compared with the level of significance at 0.05 levels. In cases where the P-values were found to be lower than 0.05 level of significance, the hypotheses were rejected while in cases where the P-values are higher than 0.05 level of significance, the hypotheses were accepted. Results on the test of hypotheses are included in tables 3 and 4.

Hypothesis One: There is no significant influence of reading/writing learning style on the academic achievement of senior secondary school students in FCT, Abuja.

Table 3: T –Test statistic showing the influence of reading/writing learning style on the academic achievement of senior secondary school students in FCT, Abuja.

S/N	Variables	N	Mean	Std Dev	df	t cal	P-value	sig	Decision
1	Reading /Writing Style	377	2.88	0.89	376	21.00	0.001	0.05	Significant
2	Academic achievement	377	50.31	16.77					

****Significant at $\alpha = 0.05$**

Table 3 shows the t-test statistic for determining reading/writing learning style on the academic achievement of senior secondary school students in the FCT, Abuja. Results show that at the sample size of 377 students, the mean values are 2.88 and 50.31 for variables of reading and writing learning style and academic achievement respectively. The p-value of t-test at 0.001 was found to be less than 0.05 level of significance. Since the p-value value less than the 0.05 level of significance, hypothesis three is rejected implying there is a significant reading/writing learning style on the academic achievement of senior secondary school students in FCT, Abuja.

Hypothesis Two: There is no significant influence of kinesthetic on academic achievement of senior secondary school students in the FCT, Abuja.

Table 4: T-Test statistic showing the influence of kinesthetic Learning Style on the academic achievement of senior secondary school students in the FCT, Abuja.

S/N	Variables	N	Mean	Std Dev	df	t -cal	P-value	sig	Decision
1	Kinesthetic style	377	2.85	1.01	376	33.35	0.000	0.05	Significant
2	Academic achievement	377	50.31	16.77					

****Significant at $\alpha = 0.05$**

Table 4 shows the t-test statistic for determining the influence of kinesthetic learning style on the academic achievement of senior secondary school students in the FCT, Abuja. Results show that at the sample size of 377 students, the mean values are 2.85 and 50.31 for variables of kinesthetic learning style on academic achievement respectively. The p-value of t-test at 0.000 was found to be less than 0.05 level of significance. Since the p-value value less than the 0.05 level of significance, hypothesis four is rejected implying there is a significant influence of kinesthetic learning style on the academic achievement of senior secondary school students in the FCT, Abuja.

Discussion of findings

The findings of this study have been discussed based on the hypothesis. The findings from hypothesis one revealed that there is a significant influence of reading/writing style on the academic achievement of senior secondary school students in the FCT, Abuja.

Hijazi (2018) showed in his findings that there is a significant influence of students' reading comprehension and their academic achievement in English at Yarmouk University. Further findings from the study of Lizote, Alves, Teston and Olm (2019) indicated significant influence between reading and writing learning styles, academic

achievement and teaching evaluation in Southern Brazil. Smith (2022) asserts that Read/Write style has the advantage of making students more independent. With note taking, they can learn and retain more of the concepts on their own with learning style that work for them.

The findings from hypothesis two revealed there is a significant influence of kinesthetic learning style on the academic achievement of senior secondary school students in the FCT, Abuja. Similar result was reported by Budin, Othman, Ismail (2016) indicated that there is a statistically significant influence between kinesthetic, verbal and visual intelligence and students learning styles and academic achievement. Similar findings from the study of Sauro (2022) showed the influence of kinesthetic learning on learning outcomes and on- task behaviour positively affected their perception of Social studies class.

Conclusion

Based on the findings that emerged from this study conclusion are made as follows: Neil Fleming's learning style preference has a significant influence on students' academic achievement. This means that students' preferred learning style plays a significant role in teaching and learning process as shown in their academic achievement. The study strongly advised teachers to employ instructional resources and methods that suits students' preferred learning style if they are to have effective teaching.

Recommendations

Based on the findings of this study the researcher recommends that:

1. The use of reading/writing learning styles should be emphasized and encouraged in order to enhance students' academic achievement in school.
2. Learning materials such as designing as graphics and interactive art tools should be designed to cater to students' diverse learning preferences and academic achievement.

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