LEARNING STYLES AND ACADEMIC ACHIEVEMENT IN ENGLISH LANGUAGE OF FIRST YEAR UNDERGRADUATE STUDENTS OF BENUE STATE UNIVERSITY, MAKURDI

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Abstract

The study investigated the relationship between learning styles and academic achievement in English Language of first year undergraduate students of Benue State University, Makurdi, Nigeria. Using a sample of 761 out of a population of 4,677 first-year undergraduate students from eight Faculties during the 2024/2025 academic session, the study employed correlational design to investigate the relationship between learning styles and academic achievement. A survey was conducted to gather data using the Version 7.8 of the Visual, Auditory, Read and write, and Kinesthetic(VARK) questionnaire that was validated with the Kuder-Richardson formula yielding an internal consistency of 0.94. Data were analyzed using regression analysis to answer five research questions and test five hypotheses at 0.05 level of significance. Findings revealed that each learning style—visual, auditory, kinesthetic, and verbal—plays a crucial role in students' academic performance in English langauge although their impacts vary. This means no single learning style dominates academic achievement across the board, and students may benefit most when their specific preferences are acknowledged in the learning process. The joint predictive power of visual, auditory, kinesthetic, and verbal learning styles on academic achievement was 5.5%, with a significant F-value (p = 0.000). This means that the combination of these learning styles explains a small but significant portion of the variance in academic achievement. Individual analysis shows that verbal and auditory learning styles made the most significant contributions, while kinesthetic and visual learning styles were less predictive in combination. The relationship between learning styles and students' achievement in English is the basis for recommending that university lecturers need to vary their teaching methods and approaches to accommodate the students' preferred learning styles.

Key words: Learning styles, academic achievement, English language, VARK.

Introduction

Students do not learn in one single way. The concept 'learning style' has been used over time to refer to the various approaches or ways individuals prefer to learn and process information. Dunn and Dunn (2005) emphasized that matching instructional methods to students' learning styles can lead to improved academic outcomes. In general, understanding how students learn can be crucial in developing effective teaching strategies as a way of improving academic achievement. In the humanities and social sciences, individual differences in learning styles can impact students' performance, especially in a challenging subject like English language. Learners and users require proficiency in the major skills namely speaking, listening, reading and writing.

Learning styles evolved over centuries as researchers made concerted efforts and carried out different studies in order to understand how individuals acquire knowledge and process information differently. The development of learning styles theories can be traced through various educational and psychological frameworks. In particular, the VARK model, which is used in this study is often traced to the works of Neil Fleming (1995). Fleming developed the VARK model, categorizing learning preferences into four primary modalities:

- **Visual (V)**: Learners who prefer to see and observe things, such as pictures, diagrams, charts, and written directions. These learners understand information better when it is presented in a visual format.
- **Auditory (A)**: Learners who prefer listening to spoken information, such as lectures, discussions, and audio recordings. Auditory learners process information more effectively when it is presented through sound.
- **Reading/Writing (R)**: Learners who prefer to interact with text-based input. These learners comprehend information best by reading written material and writing notes, lists, or essays.
- **Kinesthetic (K)**: Learners who prefer hands-on, experiential learning. Kinesthetic learners absorb information better through physical activities, practical exercises, and experiences that involve movement.

Mfon (2019) describes learning styles as a set of cognitive, emotional and psychological factors that serve as relatively stable indicators of how a learner perceives, interact with and respond to the learning environment. Harris (2010), sees learning styles as learners' unique ways of grasping and transforming information into useful knowledge and action. Being aware of one's learning style enables them to take responsibility for their learning (especially when there is difficulty in comprehension). With this in mind, they can source for relevant materials that will facilitate their understanding of what is taught. This in turn enables students to expand on pre-existing knowledge of concepts and in the process boost academic performance. Vaughn and Baker (2008) state that learning style is the learning variation between individuals in the way they approach learning tasks. For Pashler, McDaniel, Rohere and Bjork (2008), it is the technique which each learner starts to concentrate, process, absorb and retain new and difficult information. Learning styles are therefore methods students adopt in acquiring a new concept or learning any other subject.

Sometimes, learning styles could work together or be in conflict with a given instructional methodology because teachers adopt various methods of teaching. When students' learning styles do no align with the methods teachers adopt to teach, students become bored, inattentive, perform poorly and demonstrate lack of interest in the subject. Oxford (2012) argues that if there is harmony between learning styles of students and instructional methodology, such students are likely to perform well, feel confident and experience low anxiety. Conversely if it clashes, students often perform poorly, lack confidence and experience significant anxiety (Udu & Viashima, 2024; Adi & Odula, 2024; Osuji, 2020). If students do not have interest in a subject, there is high probability that they will skip such classes and this may affect their overall performance. These clashes may be a source of breakdown in teacher – student interaction and lead to students' out rightly rejecting a teaching

methodology, teacher or subject. According to Oxford(2012), learning styles could be multiple for an individual, a continuum or intersecting. This means a student can utilize two or more learning styles or may have a style they adopt for easy subject matters and those they employ for more complex ideas. These styles have been developed into models and some include Kolb's learning style model, Dunn and Dunn learning style model, Gregorc learning style model, Butler learning style model, McCarthy learning style model and the Visual, Auditory/aural, Reading and Writing and Kinesthetic (VARK) learning model developed by Fleming (Osuji, 2020). While each of the learning style model identifies several learning styles, the Visual, Auditory, Read and write and Kinesthetic learning styles has been found to be common.

Theoretical Framework: VARK Learning Theory

This theory of learning was developed by Walter Burke Barbe and his colleagues (Nja, Umali, Asuquo & Orim, 2019). They proposed three modalities of learning namely visual, auditory and kinesthetic which resulted to the acronym VAK. Neil Fleming in 1987 after many studies added one more, the reading and writing learning theory and it became popularly known as VARK theory of learning(Mfon, 2019). This theory states that each individual learner experiences learning through different sensory channels which include; visual, auditory, reading/writing and kinesthetic (Osuji, 2020).

Visual learners prefer to obtain a great deal of information from visual stimulation. For them, oral instruction without visual stimulation can be very boring. According to Harris (2010) these learners learn better from seeing words written on the white board, work books etc. These students understand better as long as something is written down for them to take down in their note books. Some tools these learners employ to enable them learn better are; charts, animated videos, documentaries, paper handouts with lots of images and demonstrations (Mfon, 2019).

Auditory learners learn by listening to words spoken or oral explanations (Etleen 2001). These learners remember information by reading aloud or moving their lips especially when learning new material. Another characteristic with auditory learners is that they prefer unembellished lectures and sometimes have difficulty writing during lectures (Osuji, 2020). Tools that aid these learners retain information better are; class recordings, lectures with the lecturers present, personal tutoring, creating songs about new content (Mfon, 2019).

Read/write learners learn best when they read and write down on a paper or board what they have learnt (Etleen, 2001). These learners learn best when information is displayed on the board and often summarize information in ways best known to them. These learners memorize information by; reading and summarizing with notes, highlighting only important details, studying alone and getting creative with their notes. Their tools of choice are dictionaries, internet, power point and text signs (Harris, 2010).

Kinesthetic learners enjoy lots of movement and work with tangible objects, preferring frequent breaks as they dislike sitting down for too long (Etleen, 2001). These students prefer hands-on or practical lectures. They enjoy practice and directly manipulating objects and materials. The short breaks are important to keep the engaged. These learners learn better through flash cards, doing a physical activity while learning like playing with a biro or bouncing a small ball while reciting information.

Research has established that students learn effectively through one or two of the learning styles and tend to ignore information presented outside their preferred style of learning.

Learning Styles and Students' Academic Achievement Across Disciplines

Evidence from research suggests that learners' learning styles may be linked to their academic performance and this has been investigated in different disciplines. In the field of sciences, Moser and Wilson (2023) investigated whether learning style influenced academic achievement in science. The study focused on middle school students and used Kolb's Learning Style Inventory to categorize students into activist, pragmatist, theorist, or reflector types. The study

found no significant relationship between learning style and academic performance, with a regression analysis indicating that learning styles did not account for unique variance in academic outcomes.

A study conducted by Mfon (2019), on learning styles and students' achievement in Chemistry using 310 students established that there is no statistically significant difference in learning style preference among male and female students. The research also revealed that there is a weak relationship between learning style preferences and overall academic achievement.

The study by Masutimath and Surapur (2023) examined the influence of learning styles on academic achievement among secondary school students in Vijayapur, Karnataka, India. It focused on visual, auditory, and kinesthetic learning styles and their relationship to academic performance. The sample consisted of 200 students, and the findings indicated that kinesthetic learning was the most prevalent, followed by visual and auditory styles. A positive correlation was found between kinesthetic learning style and academic achievement.

In another study, Cimermanová (2018) determined the effect of learning styles on academic achievement in different forms of teaching including traditional and online methods, and whether these have significant effect on students' academic performance. The study employed the Grasha-Riechmann Learning Style Scales to classify students into six learning styles: independent, avoidant, collaborative, dependent, competitive, and participant. The study found no significant interaction between learning style and academic achievement across different forms of teaching, suggesting that learning style did not predict students success in either in-class or online settings?

Learning Styles and English As A Second Language Learning
A second language is a language studied in a setting where that language is the main vehicle of everyday communication and where abundant input exists (Oxford, 2012 in Celce-Murcia, 2018). In Nigeria and Makurdi, English language plays a double role of official and language of

daily communication among people of different ethnic groups. In a typical English as a Second Language (ESL) class, there are students of diverse learning abilities and most teachers adopt the lecture method in such a situation. If most students whose learning styles are not auditory or read/write, they find it difficult to understand taught concepts. Such students become bored and uninterested and may tend to disrupt the class because they have been ignored. Teachers need to find ways to vary methods of instruction so that most if not all students are carried along. To ensure all students follow, a teacher may teach some lessons using the lecture method for auditory learners and some classes bring visual aids and/or charts to accommodate visual learners and yet others dramatize or demonstrate for kinesthetic learners while notes can serve for read/write learners. By doing this, learners will develop interest in English language classes as they will pay rapt attention and this in turn will affect their academic performance (Mfon, 2019; Udu & Viashima, 2024; Harris, 2010; Osuji, 2020).

Studies by Magulod Jr. (2019), Slavin(2010), Nja et al., (2019) show that there is a relationship between learning styles of students and their academic performance. These researchers have shown that there is a correlation between learning styles and academic performance and since English is a mandatory subject for higher institutions, it is important that the proper foundations are laid so that students can build on it subsequently to improve or maintain their academic performance.

Exploring the issue of academic performance has gone beyond intelligence, it focuses more on how learners interact with learning materials (Mfon, 2019). Academic performance is defined as the yardstick used to measure students in determining the rate at which they absorb learning materials (Apeh & Nteh, 2020). It is measured in relation to what is attained at the end of a course, since it is the accomplishment of long term objective of education.

Academic achievement is evaluated in terms of students' remarkable scores across their subjects which can be accessed through formative

or summative evaluation. It can be influenced by learners' previous educational performance, parents' income and social status, students' emotional and social status, school environment, learners' attitude and encouragement and support students receive as they interact with their learning materials (Mfon 2019; Edrogan, Bayram & Dennis, 2008; Apeh, Gidado & Akinwade, 2023).

Magulod Jr. (2019) determined the perceptual learning style preferences, study habits and academic achievement of undergraduates in technology related courses at Cagayan State University, Philippines using 75 participants. The study revealed that there is a significant relationship between learning styles, study habits and academic performance of students in applied science courses. And students preferred visual, group and kinesthetic learning styles. Relatedly, Nja et al. (2019) investigated the influence of learning styles on academic performance among 200 science education undergraduates of University of Calabar using the learning styles questionnaire and raw scores of their second semester examination. Findings showed that there was a significant difference in students' choice of learning and a positive correlation between learning styles and academic performance.

Osuji (2020) assessed the learning styles among Open and Distance learners in Nigeria for promotion of learning in the 21st Century using 600 students from 6 study centers of National Open University of Nigeria. Findings revealed that the Open and Distant Learners possess different learning styles and there is no significant difference in learning styles of students based on gender.

Stahl (2010) investigated the efficacy of using learning style theories in classroom teaching especially English Language. His study was centered on students' learning styles because of teachers' failure to determine and consider students' learning styles that match instructional methods in the classroom. He cautioned that considering students' learning style in teaching may have a negative effect on the students' performance. He noted that learning is a fluid processes that changes overtime as new skills are developed and recommended that teachers should

accommodate those differences as they become evident. In another research, Apeh et al, (2023) investigated the effects of learning styles and learning environment on academic achievement of Senior Secondary School Students in North-Central Nigeria using 393 students while adopting the survey design. Results show that students preferred visual, auditory and kinesthetic learning styles in that particular order and there is an existence between learning styles and academic achievement.

A study by Erton (2010) using 102 freshman students at Bilkert University who responded to Jeffery Barsch's learning style inventory whose test scores were used to calculate statistical coefficient between two variables showed that there was a weak statistical positive statistical relationship between learning styles of students and their achievement in English Language.

Using a sample of 300 senior school students in Imo State, Obiefuna and Oruwari (2015) determined whether aligning teaching methods with students' preferred learning styles leads to better academic outcomes in English language. The study was framed on Kolb' Learning Style Inventory (KLSI) framework and quasi-experimental design was used as research design. Using this procedure, data were collected through the English Achievement Test (EAT), administered as both pre-test and post-test measures. The use of descriptive and inferential statistics, including ANCOVA determined whether a relationship between learning styles and performance exists. The study found that the most dominant learning style preference among students was the "converging" style implying that students performed better in problem-solving and practical applications of knowledge when these methods were employed. Additionally, the study found that when teaching methods align with students' learning preferences, there is a significant improvement in performance. The study recommended that teachers should always explore teaching methods that match students' learning styles.

Statement of the Problem

A requisite requirement of students to be admitted in higher institutions is a pass in O' Level English

Language in Senior School Examinations hence it is important for students to have a strong foundation in the subject. Even though English language is a subject and a medium of instruction and students have been exposed to the language most of their schooling life, many students still struggle to be competent users of the language. Oxford (2012) posits that students have various ways they learn and there is a chance that students are not taught with teaching methods that align with their learning style which results to their inability to be competent users of the language.

Benue State University is located in the middle belt region of Nigeria and is university of attraction to many students from different educational backgrounds and parts of the country. This means students admitted to Benue State University, Makurdi are from diverse academic backgrounds and learning preferences. Recognizing and addressing these preferences can potentially enhance students' engagement, motivation, and overall academic achievement. This study therefore, investigated the relationship between learning styles and academic performance among first-year undergraduate students at Benue State University, Makurdi using the VARK model as a framework. Some studies have been identified but none to the best of the researchers' knowledge, has on purpose investigated the relationship between learning styles and academic achievement in English language of undergraduate students and its effect on their academic performance.

Purpose of the Study
With the increasing recognition that students have diverse learning preferences, the purpose of this this study was to investigate the relationship between learning styles and academic achievement among first-year undergraduate students of Benue State University, Makurdi

Objectives
Specific objectives were to:
1. Determine the predictive power of visual learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
2. Determine the predictive power of auditory learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
3. Determine the predictive power of kinesthetic learning style on the academic achievement in English language first year undergraduate students of Benue State University Makurdi.
4. Determine the predictive power of verbal learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
5. Determine the joint predictive power of visual, auditory, kinesthetic and verbal learning styles on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.

Research Questions
1. What is the predictive power of visual learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi?
2. What is the predictive power of auditory learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi?
3. What is the predictive power of kinesthetic learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi?
4. What is the predictive power of verbal learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi?
5. What is the joint predictive power of visual, auditory, kinesthetic and verbal learning styles on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi?

Hypotheses

1. There is no significant predictive power of visual learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
2. There is no significant predictive power of auditory learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
3. There is no significant predictive power of kinesthetic learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
4. There is no significant predictive power of verbal learning style on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.
5. There is no significant joint predictive power of visual, auditory, kinesthetic and verbal learning styles on the academic achievement in English language of first year undergraduate students of Benue State University Makurdi.

Research Design

The study employed a descriptive correlational design to investigate the relationship between learning styles and academic achievement. The choice of a design is appropriate for investigating relationships between variables, in this case, learning styles and academic achievement.

Furthermore, this design allows the researchers to examine the predictive power of visual, auditory, kinesthetic, and verbal learning styles on academic performance. The use of surveys to collect data from the students proved helpful in ensuring that a broad representation of the population provided a robust dataset for correlational analysis?

Population and Sample of Study

The population of the study consisted of all the 4,677 first-year undergraduate students of Benue State University, Makurdi, during the 2024/2025 academic session. Using simple random sampling, 761 students were selected to participate in the study ensuring that students from various Faculties and Departments participated in the study.

Instrument of Study

The researchers adapted the VARK questionnaire version 7.8 which explores learning styles by changing the words and examples cited in the questionnaire to suit the demographic of the respondents but maintained the scoring chart indicated by the four types of learning styles for each category. The 12-item questionnaire elicited information on the different learning styles of students with each question addressing the various VARK learning styles. In terms of achievement, the respondents were assessed using their cumulative grade point average (CGPA) which is a common metric for academic performance in Universities in Nigeria.

RESULTS

RQ1. What is the predictive power of visual learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi?

$H_0 1$ There is no significant predictive power of visual learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

Table 1: Predictive Power of Visual Learning Style on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	33.954	1.197		28.356	.000
	visual learners	.433	.427	.317	1.013	.037

Table 1 shows the summary of stepwise regression analysis of visual learning style on the academic achievement in English language of first year undergraduate students of Benue State University, Makurdi. The analysis implies that the predictive power of visual learning style is 0.317. This implies that 31.7 percent of the variation in academic achievement of first year undergraduate students of Benue State University Makurdi can be attributed to visual learning style. The table further shows that the probability associated with the calculated value of t (1.013) is 0.037. Since the probability value of 0.037 is less than 0.05 level of significance, visual learning style had significant predictive power on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

RQ2: What is the predictive power of auditory learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi?

$H_0 2$ There is no significant predictive power of auditory learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

Table 2: Predictive Power of Auditory Learning Style on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	31.489	1.188		26.511	.000
	auditory learners	1.293	.410	.114	3.156	.002

Table 2 shows the summary of stepwise regression analysis of auditory learning style on the academic achievement of first year undergraduate students of Benue State University Makurdi. The analysis implies that the predictive power of auditory learning style is 0.114. This implies that 11.4 percent of the variation in academic achievement of first year undergraduate students of Benue State University Makurdi can be accounted for by auditory learning style. The table further shows that the probability associated with the calculated value of t(3.156) is 0.002. Since the probability value of 0.002 is less than 0.05 level of significance, auditory learning style had significant predictive power on the academic achievement of first year undergraduate students of Benue State University Makurdi.

RQ3: What is the predictive power of kinesthetic learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi?

$H_0 3$: There is no significant predictive power of kinesthetic learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

Table 3: Predictive Power of Kinesthetic Learning Style on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	35.000	.423		82.838	.000
	kinesthetic learners	.046	.109	.674	.421	.015

Table 3 shows the summary of stepwise regression analysis of kinesthetic learning style on the academic achievement of first year undergraduate students of Benue State University Makurdi. The analysis implies that the predictive power of kinesthetic learning style is 0.674. This implies that 67.4 percent of the variation in academic achievement of first year undergraduate students of Benue State University Makurdi can be attributed to kinesthetic learning style. The table further shows that the probability associated with the calculated value of t(3.156) is 0.015. Since the probability value of 0.015 is less than 0.05 level of significance, kinesthetic learning style had significant predictive power on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

RQ4: What is the predictive power of verbal learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi?

H_04 There is no significant predictive power of verbal learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi.

Table 4: Predictive Power of Verbal Learning Style on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	27.991	1.207		23.188	.000
	verbal learners	2.621	.431	.215	6.074	.000

Table 4 shows the summary of stepwise regression analysis of verbal learning style on the academic achievement of first year undergraduate students of Benue State University Makurdi. The analysis implies that the predictive power of verbal learning style is 0.215. This implies that 21.5 percent of the variation in academic achievement of first year undergraduate students of Benue State University Makurdi can be accounted for by verbal learning style. The table further shows that the probability associated with the calculated value of t(6.074) is 0.000. Since the probability value of 0.000 is less than 0.05 level of significance, verbal learning style had significant predictive power on the academic achievement of first year undergraduate students of Benue State University Makurdi.

RQ5: What is the joint predictive power of visual, auditory, kinesthetic and verbal learners on the academic achievement in English of first year undergraduate students of Benue State University Makurdi?

Table 5: Joint Predictive Power of visual, auditory, kinesthetic and Verbal Learning Styles on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	.235[d]	.055	.050	7.55358

Table 5 shows the regression analysis of the joint predictive power of visual, auditory, kinesthetic and verbal learning styles on the academic achievement of first year undergraduate students of Benue State University Makurdi. The analysis implies that, the joint correlation between visual, auditory, kinesthetic, verbal learning styles and academic achievement of first year undergraduate students of Benue State University Makurdi is 0.235 with a coefficient of determination of 0.055. This implies that 5.5 percent of academic achievement in English of first year undergraduate students of Benue State University Makurdi can be explained by the combination of joint variation in visual, auditory, kinesthetic and verbal learning styles.

H_o5 There is no significant joint predictive power of visual, auditory, kinesthetic and verbal learners on the academic achievement of first year undergraduate students of Benue State University Makurdi.

Table 6: ANOVA ofJoint Predictive Power of visual, auditory, kinesthetic and Verbal Learning Styles on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	2523.103	4	630.776	11.055	.000^e
	Residual	43191.773	757	57.057		
	Total	45714.877	761			

Table 6 reveals that $F(4,761) = 11.055; p = 0.000 < 0.05$. Thus, the null hypothesis is rejected. This implies that visual, auditory, kinesthetic and verbal learning styles have joint significant predictive power on academic achievement in English of first year undergraduate students of Benue State University Makurdi.

Table 7: Joint Predictive Power of visual, auditory, kinesthetic and Verbal Learning Styles on the Academic Achievement of First Year Undergraduate Students of Benue State University Makurdi.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
4	(Constant)	25.265	1.822		13.863	.000
	Visual Learning Style	-.048	.425	-.004	-.113	.910
	Auditory Learning Style	1.070	.408	.094	2.623	.009
	Kinesthetic Learning Style	.043	.106	.014	.408	.683
	Verbal Learning Style	2.516	.435	.207	5.782	.000

Table 7 shows standard multiple regression analysis of the joint predictive power of visual, auditory, kinesthetic and verbal learning styles on the academic achievement in English of first year undergraduate students of Benue State University, Makurdi. The table shows that visual learning styles has a predictive power of 0.004 making 0.4 percent contribution to academic achievement in English of first year undergraduate students at $P = 0.910 > 0.05$. This means that visual learning styles does not make significant contribution to academic achievement

of first year undergraduate students. Auditory learning style has a predictive power of 0.094 making 9.4 percent contribution to academic achievement of first year undergraduate students at P = 0.009 < 0.05. This means that auditory learning style made significant contributions to academic achievement of first year undergraduate students. Kinesthetic learning style has a predictive power of 0.014 making 1.4 percent contribution to academic achievement of first year undergraduate students at P = 0.683 > 0.05. This means that kinesthetic learning style does not make significant contribution to academic achievement of first year undergraduate students. Verbal learning style has a predictive power of 0.207 making 20.7 percent contribution to academic achievement of first year undergraduate students at P = 0.000 < 0.05. This means that verbal learning style made significant contribution to academic achievement of first year undergraduate students.

Discussion

The study determined whether a relationship exists between students' learning styles and achievement in English of first year undergraduate students of Benue State University, Makurdi. The study found that visual learning style has a significant predictive power on the academic achievement of first-year undergraduate students. Specifically, visual learning style explained 31.7% of the variation in academic achievement, with a probability value (p = 0.037), which is less than the 0.05 significance level? This suggests that students who prefer visual learning tend to perform better academically when visual elements are incorporated into teaching. Students who favor visual and auditory learning styles experience significant academic benefits when instructors incorporate these elements into their teaching. Visual learners benefit from diagrams, videos, and written notes, while auditory learners thrive in discussions and lectures. This findings aligns with the study by Mfon (2019), which shows that combining multiple learning styles like visual and auditory enhances learning outcomes? On auditory learning style, it also showed significant predictive power, explaining 11.4% of the

variation in academic achievement (p = 0.002). This indicates that students who prefer to learn through listening, discussions, or auditory materials can benefit academically when their preferred learning style is harnessed.

Regarding kinesthetic learning style, the result showed that it accounted for 67.4% of the variation in academic achievement (p = 0.015), showing a significant impact on performance. This implies that students who prefer hands-on, experiential learning perform better when given opportunities to engage in physical activities or practical exercises? Kinesthetic learning, despite being more action-oriented, had a relatively large influence on academic achievement (67.4%). This supports the study by Masutimath and Surapur (2023), who found that students who learn by doing perform well when given practical, hands-on tasks?

Verbal learning style had a predictive power of 21.5% and a highly significant p-value (p = 0.000), indicating that students who prefer reading, writing, and verbal expression significantly benefit when these methods are used in instruction? Verbal learning style had one of the strongest predictive powers, showing that students who engage with text-based learning or verbal activities perform better. This confirms findings by Osuji (2020), who also observed that learners excel when they can engage in reading and writing-based learning?

The study further investigated the joint predictive power of all the learning styles. The joint predictive power of visual, auditory, kinesthetic, and verbal learning styles on academic achievement was 5.5%, with a significant F-value (p = 0.000). This means that the combination of these learning styles collectively explains a small but significant portion of the variance in academic achievement? However, individual analysis shows that verbal and auditory learning styles made the most significant contributions, while kinesthetic and visual learning styles were less predictive in combination? The findings contrasts with Moser and Wilson (2023) who found no statistically significant relationship as existing between learning styles and students' academic achievement of participants.

The results demonstrate that each learning style—visual, auditory, kinesthetic, and verbal—plays a role in students' academic performance, although their impacts vary. The findings suggest that no single learning style dominates academic achievement across the board, and students may benefit most when their specific preferences are acknowledged in the learning process.

Conclusion

The study has revealed empirically that a relationship exists between learning styles and students' academic achievement, which goes to stress that selection of teaching methods and materials should take into cognizance students' preferred learning styles for improved learning outcomes.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. University lecturers are encouraged to change their teaching methods and vary their instructional strategies to align with the learning styles (visual, auditory, kinesthetic, and verbal) of their students. They have the duty to determine their students' learning styles preferences as a basis for selecting learning experiences.

2. Teaching and learning should be supported with concrete visual aids such as diagrams or videos for visual learners, group discussions for auditory learners, and practical exercises for kinesthetic learners.

3. In the 21st century, university lecturers should endeavor to make provision for and indeed incorporate multi-modal teaching techniques. Multi-modal teaching allows for the combination of various s teaching methods—like using audio-visual resources along with practical demonstrations to make learning engaging, interesting and hands-on.

4. Lecturers should ensure cordial teaching-learning relationships with their students, where students will feel at home to freely discuss their preferences and choices regarding learning.

5. University authorities should equip the classrooms with modern teaching and learning equipment for 21st learning that encourages hands-on, collaboration, creativity, innovation, and active participation in learning.

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