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The Effect of Learning Styles on Vocabulary Mastery among Second-Year Students

Alifiah Pratiwi[1*], Ray Suryadi[1], Susi Astiantih[1], Sultan[1], Eko Putra[1], Nur Syahria[1], Ince Rezky Naing[2]

[1] Universitas Sembilanbelas November Kolaka, Indonesia
[2] Universitas Cenderawasih, Jayapura, Indonesia

[*] *Corresponding author: Alifiah Pratiwi (alifiahpratiwi28@gmail.com)*

Abstract

This study investigates the relationship between students' learning styles and vocabulary achievement among second-grade students at Public Junior High School of 6 Buton Tengah. Employing a correlational research design, data were collected through a learning style questionnaire (covering visual, auditory, and kinesthetic preferences) and a vocabulary achievement test. The sample consisted of 25 students from Class C. Data analysis was conducted using the Pearson Product-Moment correlation formula. The findings reveal a significant positive correlation between each learning style and vocabulary achievement, with correlation coefficients of r = 0.838 for visual, r = 1.000 for auditory, and r = 0.923 for kinesthetic learning styles. These results indicate that students' preferred learning styles strongly influence their vocabulary mastery. The study highlights the importance for educators to recognize and integrate diverse learning styles in instructional strategies to enhance vocabulary acquisition. Future research is recommended to involve a larger and more diverse sample to generalize findings and explore causal relationships.

Keywords

Auditory Learning, Learning Style, Visual Learning, Vocabulary Achievement.

1. Introduction

Each student brings a unique way of processing information into the classroom, commonly referred to as learning styles. These styles visual, auditory, and kinaesthetic represent individual preferences in acquiring and understanding knowledge (Gilakjani, 2012; Chetty et al., 2019; Mašic et al., 2020; Rido et al., 2020). In the context of foreign language learning, especially English, recognizing these preferences is essential, as vocabulary mastery forms the foundation for communicative competence. Pritchard (2009) asserts that learning style reflects an individual's optimal method of processing, thinking, and demonstrating understanding. Furthermore, Ahmed (2012) emphasizes that learning styles significantly influence language learning success, while Obralic and Akbarov (2012) and Karthigeyan and Nirmala (2013) observe that such preferences shape both learning strategies and academic outcomes. According to Sinagatuliin (2009) and Oksattridywi (2017), learners often develop a dominant style over time, which underlines the importance of aligning instructional methods with students' preferred learning modalities to enhance learning effectiveness. However, despite these theoretical insights, a disconnect often exists between pedagogical practice and student learning preferences. In many classrooms, particularly in English as a Foreign Language (EFL) setting, teaching methods may not always accommodate diverse learning styles. An observation at Public Junior High School of 6 Buton Tengah revealed that several second-grade students face significant challenges in understanding spoken English and expressing their thoughts in English. This difficulty is largely attributed to their limited vocabulary knowledge, which is a vital component of language competence. Without sufficient vocabulary, students struggle to comprehend texts, participate in conversations, or convey ideas accurately, which hinders overall language acquisition and performance. This condition raises concerns about the effectiveness of teaching strategies in addressing individual learning preferences (Yang & Wu, 2015; Suaib, 2017).

The impact of learning styles on language performance has been highlighted in various studies. Ahmed (2012) and Kadaruddin (2016) both suggest that understanding one's learning style contributes significantly to academic achievement in foreign language learning. When students learn through methods that align with their preferred styles, they are more likely to retain information and apply it effectively. However, most empirical studies have focused on general language achievement or broader cognitive outcomes, rather than examining specific language components such as vocabulary. Furthermore, existing literature tends to focus on university or adult learners, leaving a gap in understanding how learning styles affect younger learners, particularly at the junior high school level in Indonesia. Given this context, there is a clear need for research that explores the correlation between students' learning styles and vocabulary mastery at the junior secondary school level. Understanding this relationship can help educators design more responsive and effective instruction tailored to student needs. Although theoretical discussions affirm the role of learning preferences in academic performance, practical evidence regarding their impact on vocabulary learning among Indonesian adolescents remains limited (Mehrabian & Salehi, 2019; Fakhirah et al., 2023).

This study addresses this gap by investigating whether a significant relationship exists between learning styles specifically visual, auditory, and kinaesthetic and vocabulary achievement among second-grade students at Public Junior High School of 6 Buton Tengah. Employing a correlational research design, this study seeks to analyze the degree of association between students' dominant learning styles and their vocabulary test performance. By focusing on a specific educational level and linguistic skill, the research aims to produce findings that are both relevant and

actionable for practitioners in the field of English language education. The ultimate goal is to provide insights that can support teachers in aligning vocabulary instruction with students' preferred learning styles, thereby improving vocabulary acquisition and overall English proficiency. The findings are expected to contribute not only to academic literature on learning styles but also to the development of more personalized and effective language teaching strategies at the junior high school level.

2. Literature Review and Hypothesis Development

2.1. The Role of Learning Styles in Vocabulary Achievement

Learning style refers to an individual's preferred method of understanding and processing information, and it plays a crucial role in academic success, particularly in language learning. According to Pritchard (2009), a learning style reflects the most effective way for individuals to think, process, and demonstrate learning, while Kadaruddin (2016) describes it as the easiest method used to absorb and organize information. Karthigeyan and Nirmala (2013) and Al-Zayed (2017) assert that learning styles are innate preferences that not only shape how individuals learn a language but also significantly impact their academic performance. Furthermore, Oksattridywi (2017) emphasizes that students generally develop and rely on one dominant learning style over time. These insights underline the importance of recognizing individual differences in language learning preferences, particularly in vocabulary acquisition. Several empirical studies have also explored the correlation between learning styles and vocabulary achievement. Oksattridywi (2016) explain third-grade students at Madrasah Aliyah Khulafaur Rasyidin, found a significant correlation between visual and auditory learning styles and vocabulary achievement, although no such correlation was observed for the kinaesthetic style. Similarly, Rachman et al. (2019), and Maulana (2019), and Minda and Perdana (2023), found confirmed a significant relationship between learning style preferences and vocabulary mastery. Helty (2009) and Ahmed (2019) also found that students' vocabulary achievement in the first semester at IAIN Sultan Thaha Saifuddin Jambi was significantly influenced by their learning styles. These studies affirm that understanding and aligning with students' preferred learning styles whether visual, auditory, or kinaesthetic can effectively enhance vocabulary learning outcomes, making it a key consideration in language instruction strategies.

2.2. Types of Learning Styles

According to Aboe (2019), there are three main types of learning styles, namely visual, auditory, and kinesthetic. Visual learners learn best through sight. They tend to like reading books, watching demonstrations, and watching videos. Usually, they sit at the front of the class and often take notes to help absorb information better. Naning and Hayati (2011) state that visual learners rely on body language, facial expressions, and written materials to understand lessons. Meanwhile, auditory learners prefer to learn through hearing. They understand material better through verbal explanations, listening to audio materials, or reading aloud. Aboe (2019) highlights that auditory learners tend to rely on explanations from teachers or audio recordings. Gilakjani (2011) and Sarasin (2006) agree that auditory learners benefit from tone of voice, intonation, and oral repetition. Activities such as discussions, debates, and verbal repetition are very effective for them.

As for kinaesthetic learners or kinesthetic learners learn through movement and direct activities. They prefer to learn by doing, using physical movement and touch to understand concepts. Naning and Hayati (2011) describe kinesthetic learners as active participants who often use movement and physical involvement to understand information. According to DePorter, although all students have a combination of visual, auditory, and kinesthetic learning styles, there is usually one dominant style.

If learning is only focused on one style, especially auditory, it can cause imbalance and lack of involvement in the learning process. In line with this explanation, Kadaruddin (2016) and Faridah et al. (2020) provides additional characteristics for each learning style. Visual learners tend to be neat and orderly, like visual materials, but may have difficulty remembering verbal instructions. Auditory learners benefit from listening, rhythmic speech, and verbal humor. Meanwhile, kinesthetic learners learn by doing, using physical activity and movement to improve memory.

2.3. The Importance of Learning Style in Vocabulary Learning

There is some importance to discovering the learning style, especially for the students. The importance of learning style describes as follow: The first benefits of discovering learning style from the academic point of view, such as to give the students head starts and maximizing their learning potential, enabling the learner to succeed in a school, giving learner customized techniques to score better on the test and exams, allowing learners to learn best on their best way, and the last is expanding learning existing. The second benefits of discovering learning style, from a personal point of view such as improving learners' self-confidence, increasing their self-image, teach them how to the best their brain, giving them insight into their strength, enabling them to enjoy in learning process inspire and motivate for lifelong learning, showing them how to take advantage of their natural skills and inclinations.

The final advantage of identifying students' learning styles lies in the professional domain. For educators, understanding learning styles helps them remain professionally current, provides a competitive edge, enhances their ability to manage teams efficiently, and equips them to deliver impactful presentations to diverse groups. It also strengthens their persuasive abilities, fosters better collaboration with colleagues, and empowers them to transform learning into a personal strength (Kayalar & Kayalar, 2017; Ghofur et al., 2017; Egamnazarova & Mukhamedova, 2021). In summary, recognizing learning styles is crucial for both students and teachers, as it offers a wide range of benefits. These benefits can be categorized into three primary areas: academic, personal, and professional.

2.4. Correlation between Learning Style and Vocabulary Achievement

Vocabulary is fundamental to language learning and serves as the foundation for developing the four core language skills: speaking, listening, reading, and writing. A strong vocabulary not only facilitates comprehension and communication but also empowers learners to express ideas more clearly and accurately. One crucial factor that influences vocabulary acquisition is learning style. Recognizing and applying appropriate learning styles can significantly aid vocabulary retention and mastery. According to Soenardi (2018), factors such as confidence, comprehension, and learning style preferences play a significant role in vocabulary development. Reid in Kazemi, (2016) and Tight (2010) also emphasize that learning style preference is closely linked to vocabulary depth and overall success in language learning. Eisner (2012) further supports the notion that learning and communication are shaped by individual preferences, including learning styles. In line with this, several empirical studies have affirmed the connection between learning styles and vocabulary achievement. Oksattridywi (2016) found a significant correlation between visual and auditory learning styles and vocabulary achievement among third-grade students at Madrasah Aliyah Khulafaur Rasyidin, while the kinaesthetic style showed no significant relationship. Similarly, Maulana (2019), in a study conducted at Public Junior High School of 3 Tambang, identified a significant correlation between students' learning styles and their vocabulary mastery. Helty (2009) and Agustina et al. (2023) also concluded that students' vocabulary achievement is significantly influenced by their preferred learning styles.

Moreover, Widayanti (2013) asserts that learning outcomes are closely tied to the learners' style preference, while Ahmed (2012) confirms that aligning instruction with students' learning styles can lead to more successful foreign language acquisition. These findings suggest that both learners and educators benefit from understanding and utilizing learning style preferences to enhance vocabulary learning. Therefore, recognizing students' dominant learning styles—visual, auditory, or kinaesthetic can serve as an effective strategy in designing vocabulary instruction that improves language acquisition outcomes.

H1: Students' learning styles has a significant effect on vocabulary achievement

3. Methods

This study used a correlational research design to investigate the relationship between students' learning styles and their understanding achievement. The study was conducted at Public Junior High School of 6 Buton Tengah, Southeast Sulawesi, involving eighth grade students consisting of four parallel classes: VIII.A, VIII.B, VIII.C, and VIII.D. Before selecting the sample, a homogeneity of variance test was conducted using Levene's Statistic. The results showed a significance value of 0.789 ($p > 0.05$), indicating that all classes had relatively homogeneous academic abilities.

The sample was selected purposively, by taking class VIII.C consisting of 25 students. The selection of this class was based on observations and initial data showing that they had lower mastery of understanding compared to other classes. The data collection instruments consisted of a learning style questionnaire and a mathematics test. The questionnaire was arranged on a Likert scale with 30 statements divided equally into three categories of learning styles: visual, auditory, and kinesthetic. Students were asked to state their level of agreement with each item, so that each student's dominant learning style could be identified.

The comprehension test consists of 20 multiple-choice questions covering five main indicators: derivation words, vocabulary meaning, grammar usage, synonyms, and antonyms—each indicator is limited to four questions. The data were analyzed in two stages, namely descriptive and inferential analysis. Descriptive analysis was used to determine the frequency of dominant learning styles and the average value of students' understanding achievement. The dominant learning style was obtained from the highest score in each questionnaire category. To test the hypothesis, the Pearson Product-Moment correlation coefficient was used. The correlation coefficient (r) value ranges from -1 to +1, with positive values indicating a direct relationship and negative values indicating an inverse relationship. Decision making is done by comparing the calculated r (rcount) with the table r (rtable) at a significance level of 0.05 and degrees of freedom df = n - 2. If rcount> rtable then H_1 is accepted, indicating a significant correlation between students' learning styles and geometry.

4. Results

This study used two instruments: a learning style questionnaire and a vocabulary test. The questionnaire was used to identify students' dominant learning styles, while the vocabulary test measured their vocabulary achievement. In the initial stage, the questionnaire was distributed to 25 students of Class VIII.C at Public Junior High School of 6 Buton Tengah. Students' responses were scored manually. Each student's dominant learning style was determined by identifying the highest score among three categories: visual, auditory, and kinesthetic. The distribution of learning styles among students is presented in the following table.

Table 1. Classification of Students' Learning Styles

No	Classification	Frequency	Percentage
1	Visual	6	24%
2	Auditory	2	8%
3	Kinaesthetic	17	68%

Based on the data in Table 1, it can be observed that among the 25 students, 6 students (24%) exhibited a visual learning style, 2 students (8%) demonstrated an auditory learning style, and the majority, 17 students (68%), preferred a kinaesthetic learning style. The vocabulary test results were analysed using Microsoft Excel to calculate the mean and standard deviation of the students' scores. Based on the results of descriptive statistics of students' vocabulary achievement, it is known that of the 25 students who were the research sample, the lowest (minimum) score obtained in the vocabulary test was 40, while the highest (maximum) score was 90. The average (mean) value of students' vocabulary achievement was at 66.6, which indicates a moderate level of vocabulary mastery. Meanwhile, the standard deviation value of 12.724 indicates that there is quite a large variation in the level of vocabulary mastery between students in the class. Thus, it can be concluded that although some students show high vocabulary achievement, there are still other students who have low vocabulary mastery. The average vocabulary achievement score of the students was 66.6. This indicates a generally good level of vocabulary proficiency among the students.

Table 2. Classification of Students' Vocabulary Achievement

No	Classification	Score Interval	Frequency	Percentage
1	Very Poor	00–39	0	0%
2	Poor	40–55	5	20%
3	Fair	56–65	8	32%
4	Good	66–79	8	32%
5	Very Good	80–100	4	16%

From Table 2, it can be seen that none of the students fell into the "very poor" category. Five students (20%) scored in the "poor" range, eight students (32%) were categorized as "fair," another eight students (32%) as "good," and four students (16%) achieved "very good" scores.

The main objective of this study was to determine whether there is a statistically significant correlation between students' learning styles and their vocabulary achievement. Pearson's product-moment correlation coefficient was calculated using SPSS version 26.

Table 3. Coefficient Interval and Relationship Level

Coefficient Interval	Level of Relationship
0.00–0.199	Very low correlation
0.20–0.399	Low correlation
0.40–0.599	Medium correlation
0.60–0.799	Strong correlation
0.80–1.00	Very strong correlation

Table 3 shows the correlation coefficient intervals along with the corresponding levels of relationship. A correlation coefficient between 0.00 and 0.199 is categorized as a very low correlation, indicating almost no relationship between the two

variables. An interval between 0.20 and 0.399 indicates a low correlation, where there is a weak but still detectable relationship. Furthermore, a coefficient between 0.40 and 0.599 is included in the medium correlation category, indicating a fairly significant relationship between the variables. A range of 0.60 to 0.799 indicates a strong correlation, indicating a close and consistent relationship. Finally, a coefficient between 0.80 and 1.00 indicates a very strong correlation, meaning that the two variables have an almost perfect and very close relationship. This category helps in interpreting how much influence or relationship there is between the two variables being analyzed in a study.

Table 4. Correlation between Visual Learning Style and Vocabulary Achievement

Variable	Indicator	Learning style	Vocabulary
Learning style	Pearson Correlation	1	0.838*
	Sig. (2-tailed)		0.037
	N	6	6
Vocabulary	Pearson Correlation	0.838	1
	Sig. (2-tailed)	0.037	
	N	6	6

Table 4 shows the results of the Pearson correlation analysis between learning style and vocabulary achievement. The Pearson correlation coefficient value of 0.838 indicates a very strong relationship between the two variables, based on the correlation level category. The asterisk (*) indicates that the correlation is statistically significant. This is reinforced by the significance value (Sig. 2-tailed) of 0.037 which is smaller than the significance limit of 0.05 ($p < 0.05$), which means that the relationship between learning style and vocabulary achievement is significant. Thus, it can be concluded that the more students' learning styles match the learning approach given, the higher their vocabulary achievement. The number of respondents in this analysis was six students (N = 6).

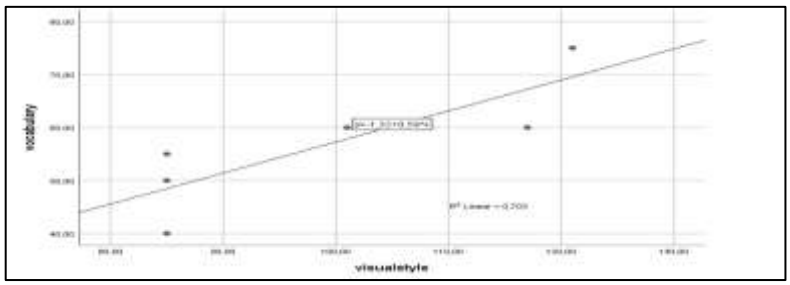

Figure 1. Graph of Correlation between Visual Learning Style and Vocabulary Achievement

The Figure 1 is a scatter plot diagram that illustrates the relationship between visual learning style and vocabulary achievement. Each point on the graph represents a student's data, with the horizontal axis showing the visual learning style score and the vertical axis showing the vocabulary achievement score. The linear regression line is shown in the graph with the equation $y = -1{,}32 + 0{,}59x$, which shows that every one unit increase in the visual learning style score is followed by an increase of about 0.59 points in vocabulary achievement. The coefficient of determination (R^2) value of 0.703 indicates that about 70.3% of the variation in vocabulary achievement can be explained by variations in visual learning style, indicating a strong and positive relationship between the two variables.

The Pearson correlation coefficient for visual learning style and vocabulary achievement was r = 0.838, indicating a very strong correlation. The significance value was 0.037, which is less than 0.05. Since r_{xy} (0.838) > r_{table} (0.4132), the null

hypothesis (H_0) was rejected and the alternative hypothesis (H_1) accepted. Thus, there is a significant correlation.

Table 5. Auditory Style and Vocabulary Correlation

Variable	Indicator	Learning style	Vocabulary
Learning style	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.
	N	2	2
Vocabulary	Pearson Correlation	1.000**	1
	Sig. (2-tailed)		
	N	2	2

Table 5 above shows the results of the Pearson correlation analysis between learning styles and vocabulary achievement in two respondents. The Pearson correlation coefficient value of 1,000 indicates a very strong and perfect correlation between the two variables. This means that changes in learning styles are perfectly proportional to changes in vocabulary achievement. However, it should be noted that the number of samples (N) is only two people, so statistical significance cannot be calculated validly, indicated by the absence of a value (indicated by a dot) in the significance column (Sig. 2-tailed). Therefore, although a perfect correlation is seen from this data, the results cannot be generalized and are not statistically strong enough to support a convincing conclusion due to the limited sample size.

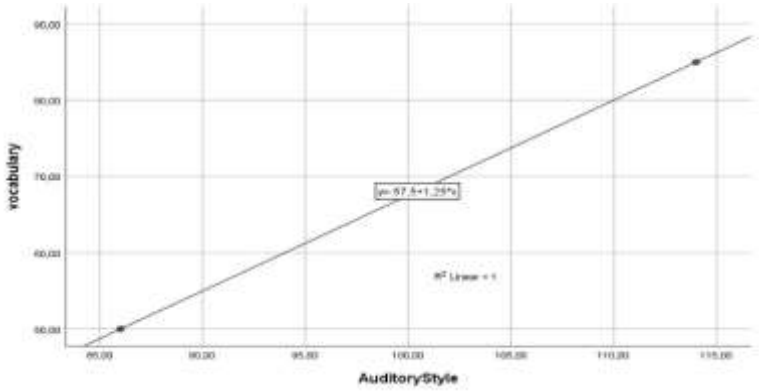

Figure 2. Graph of Correlation between Auditory Learning Style and Vocabulary Achievement

The correlation coefficient in Figure 2 for auditory learning style and vocabulary achievement is r = 1.000, indicating a perfect correlation. Although the sample size is small (N = 2), the results show a very strong correlation. The null hypothesis (H_0) is rejected and H_1 is accepted.

Table 6. Kinaesthetic Style and Vocabulary Correlation

Variable	Indicator	Learning style	Vocabulary
Learning style	Pearson Correlation	1	0.923**
	Sig. (2-tailed)		0.000
	N	17	17
Vocabulary	Pearson Correlation	0.923**	1
	Sig. (2-tailed)	0.000	
	N	17	17

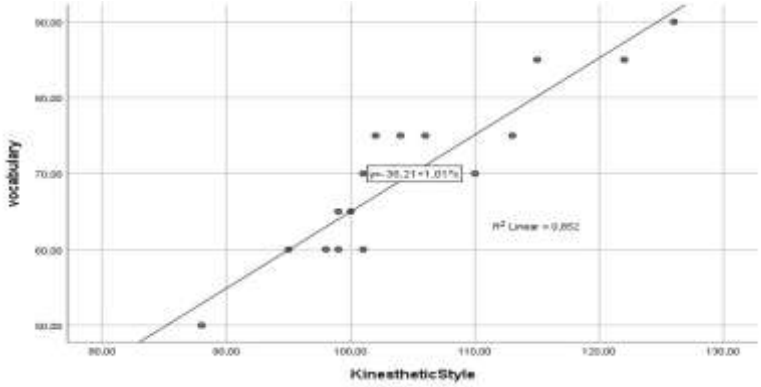

Figure 3. Graph of Correlation between Kinaesthetic Learning Style and Vocabulary Achievement

The correlation between kinesthetic learning style and vocabulary achievement in table 6 is r = 0.923, which is also interpreted as a very strong correlation. The significance value is 0.000, indicating a statistically significant result. Since $r_{xy} > r_{table}$, the null hypothesis is rejected in favor of the alternative hypothesis.

5. Discussion

Based on the results of the hypothesis testing, the null hypothesis (H_0) which states that there is no correlation between students' learning styles and vocabulary achievement is rejected. On the other hand, the alternative hypothesis (H_1) which states that there is a positive and significant correlation between students' learning styles and vocabulary achievement is accepted. The findings revealed a statistically significant relationship between students' learning styles—visual, auditory, and kinesthetic—and their vocabulary achievement. Each learning style contributed to students' vocabulary performance; however, the kinesthetic learning style was the most dominant among the participants. The correlation coefficient between kinesthetic learning style and vocabulary achievement showed a very strong positive correlation. This implies that students with kinesthetic preferences tend to perform better on vocabulary tests. Similarly, students with visual learning styles showed a very strong correlation with vocabulary achievement, with a Pearson correlation coefficient of. Furthermore, auditory learning styles showed the highest correlation. Although this correlation was based on only two students, it still showed a perfect positive relationship, indicating that students who prefer auditory learning can benefit significantly in vocabulary acquisition when taught using auditory strategies.

The results of this study are consistent with previous research. For instance, studies conducted by Helty (2009), Maulana (2019) and Julianto et al. (2023) also demonstrated a significant positive correlation between students' learning styles and vocabulary mastery. These findings reinforce the conclusion that an alignment between learning styles and instructional strategies can enhance vocabulary achievement. Interestingly, while Oksattridywi (2016) reported a significant correlation between visual and auditory styles with vocabulary achievement, she found no significant relationship for kinaesthetic learners. This discrepancy may be due to contextual differences such as learning environment, instructional methods, or sample characteristics.

The results of the present study suggest that students with stronger alignment between their preferred learning style and the mode of instruction tend to achieve higher vocabulary scores. This reinforces the idea that learning style can be an influential factor in vocabulary development. This is supported by Kadaruddin (2016), who stated that learning styles are the most natural and effective ways through which individuals absorb, organize, and process information. Choosing the appropriate learning style is essential for academic success. Results support the alternative hypothesis by demonstrating a significant and positive relationship between students' learning styles and their vocabulary achievement among eighth-grade learners at Public Junior High School of 6 Buton Tengah. This indicates that recognizing and applying students' dominant learning preferences can improve their vocabulary acquisition. The chart below visually depicts the aligned trend between the three learning styles visual, auditory, and kinaesthetic and vocabulary achievement, showing a consistent directional movement between the two variables.

6. Conclusion

Learning styles have a significant relationship to students' vocabulary achievement. Each student shows different learning preferences, and when the learning process is adjusted to these preferences, academic achievement tends to be more optimal. An appropriate learning style can increase students' motivation, attention, and understanding of the material being taught, especially in mastering foreign language vocabulary. The results of this study underline the importance for teachers to understand and identify students' learning styles early on. A varied and student-centered learning approach will be more effective if adjusted to the learning characteristics of each individual. Teaching strategies that accommodate visual, auditory, and kinesthetic can create a more interesting and productive learning atmosphere. The application of learning styles in vocabulary learning also encourages students' active involvement in the learning process, helps them absorb information more efficiently, and minimizes learning barriers that arise due to inappropriate teaching methods. This study still has limitations, especially in terms of the relatively small number of samples and the location context which is limited to one school. Therefore, further research is recommended to involve a larger number of respondents and cover various school backgrounds in order to obtain more general results. In addition, experimental research with different treatments according to learning styles can also be conducted to see the direct impact of adapted learning methods on vocabulary achievement. In-depth qualitative research is also recommended to explore students' perceptions of the learning methods they find most effective.

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