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VARK Learning Styles and Their Relationship to Learning Outcomes in an Instructional Media Course

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Abstract

This study investigates the relationship between VARK learning styles (Visual, Auditory, Read/Write, and Kinesthetic) and student learning outcomes in the Instructional Media course within the Home Economics Education Program at the Faculty of Engineering, Universitas Negeri Semarang. Understanding diverse learning styles is essential to supporting effective instruction; however, mismatches between students' preferences and teaching approaches are frequently observed. A quantitative survey design was employed, in which students' learning styles were identified using the VARK questionnaire, while final course grades were obtained through academic records. Data were analyzed using the Spearman rank correlation and the Kruskal-Wallis test. The results indicated no statistically significant correlation between learning styles and learning outcomes ($\rho = 0.018$; $p = 0.916$), and no significant differences in outcomes across learning style groups ($H = 1.585$; $p = 0.663$). Despite the lack of statistical significance, descriptive analysis revealed that students with multimodal learning preferences tended to achieve higher average scores than their unimodal peers. These findings suggest the pedagogical value of accommodating diverse learning styles, particularly through flexible and multimodal instructional strategies.

Keywords: VARK learning styles, learning outcomes, instructional media course

INTRODUCTION

Higher education demands a learning process that not only focuses on delivering material but also takes into account the individual characteristics of students, one of which is their learning style (Dariyanti et al., 2021). Learning is an individual's tendency or preference in receiving, processing, and retaining information (Fleming, 1992). Each student has a different learning style, and these differences can affect their effectiveness in understanding course material.

In classroom practice, many lecturers still use a uniform teaching method for all students without considering the variations in learning styles. This leads to a mismatch between the method used and the diverse needs of the students (Romanelli et al., 2009). A lecturer's lack of understanding of their students' learning styles can hinder the achievement of optimal learning outcomes. This becomes a particular concern in the context of learning in vocational education environments, such as the Home Economics Education program at the Faculty of Engineering, Universitas Negeri Semarang, where the learning materials are often applicative and rely heavily on students' creativity and practical skills.

The use of learning strategies that do not align with students' learning styles can reduce motivation, hinder understanding, and negatively impact learning outcomes. Inappropriate learning strategies may also decrease the long-term effectiveness of the learning process (Liu & Widjaja, 2022). For secondary school students, receiving teaching strategies that do not align with their learning styles can affect their motivation, attitudes, and final learning outcomes in mathematics (Marvin G. Pizon & Shiryl T. Ytoc, 2022).

One approach that can be used to identify students' learning styles is the VARK model developed by Fleming. This model categorizes learning styles into four types: visual, auditory, read/write, and kinesthetic. Students with a visual learning style tend to absorb information through graphic displays such as images, diagrams, or colors (Fleming, 1992). Students with an auditory learning style understand material more easily through verbal explanations, discussions, or listening to presentations. The read/write learning style is characterized by a preference for text, both through reading and rewriting information. Meanwhile, students with a kinesthetic learning style are more comfortable learning through direct experience, hands-on practice, and physical activities that actively engage the senses.

In courses such as Instructional Media, students are required to develop teaching materials creatively, which demands active engagement of various learning modalities such as visual elements, hands-on practice, and the ability to organize and present content in an engaging way. Therefore, the alignment between students' learning styles and the teaching approaches used becomes a crucial aspect to consider when designing the teaching and learning process.

Various previous studies have shown a relationship between learning styles and learning outcomes. A multimodal learning style contributes to enhancing students' skills in laboratory practice (El-Saftawy et al., 2024). Students who have knowledge of individual learning styles tend to develop better learning strategies and achieve higher academic performance (Ojeh et al., 2013). Research on Primary School Teacher Education (PGSD) students shows that a kinesthetic learning style correlates with higher learning outcomes in practice-based courses (Zannah & Sari Dewi, 2020). Learning strategies that are responsive to VARK learning styles can enhance students' understanding, especially in the fields of technology and vocational education (Febriana et al., 2025).

While extensive research on the VARK learning model has been conducted, there is still very limited research specifically examining the relationship between the VARK learning style and student learning outcomes in the Home Economics Education cluster, particularly in the Instructional Media course. However, the learning characteristics in the Home Economics Education cluster, which emphasize practice, design, and skills, are highly relevant to the principles of the VARK model. This presents an important research gap that warrants further study.

Therefore, this study aims to analyze the relationship between VARK learning styles and student learning outcomes in the Instructional Media course within the Home Economics

Education program at the Faculty of Engineering, Universitas Negeri Semarang. This research is expected to contribute to the development of more effective learning strategies and to raise lecturers awareness of the importance of understanding their students' learning styles.

METHOD

This study employs a quantitative approach, as it focuses on analyzing the relationship between variables in the form of numerical data that can be processed statistically. A quantitative approach is appropriate for studies involving data measurement and hypothesis testing through statistical analysis (Creswell, 2014). This approach is used to obtain an objective and measurable overview of the relationship between students learning styles and their learning outcomes.

The type of research used is correlational research. Correlational research is conducted to determine the degree and direction of the relationship between two variables without any manipulation (Sugiyono, 2019). In this context, the research is aimed at examining the relationship between VARK learning styles (Visual, Auditory, Read/Write, and Kinesthetic) and students' learning outcomes in the Instructional Media course.

The conceptual framework of this study presents variable X (VARK learning styles) as the predictor and variable Y (the learning outcomes of students in the Home Economics Education program in the Instructional Media course) as the criterion being influenced. Hypothesis (H_0) It states that students learning styles do not have a significant effect on their learning outcomes, while the alternative hypothesis (H_1) states that students learning styles have a negative effect on their learning outcomes.

The population in this study consists of all students from the 2023 cohort of the Home Economics Education program, totaling 61 individuals. This study uses a random sampling technique to ensure that each member of the population has an equal chance of being selected as a respondent. This approach was chosen to obtain representative data and to minimize the potential for bias in the sample selection process (Sugiyono, 2019).

The sample size was determined using the Slovin formula with a margin of error of 10 percent. Based on this calculation, a total of 38 students were selected as the sample for this study. This number is considered sufficient to represent the overall population.

Data collection in this study was carried out using two techniques: the VARK questionnaire and documentation of learning outcomes. Students learning styles were identified using the VARK Questionnaire developed by (Fleming, 1992). The questionnaire classifies learning preferences into four categories: Visual, Auditory, Read/Write, and Kinesthetic. Students were asked to complete the questionnaire based on their learning habits and were then categorized into either a dominant learning style or a multimodal type. Learning outcome data were obtained through documentation of final grades in the Instructional Media course, which served as an indicator of students academic achievement.

RESULT AND DISCUSSION

This study aims to examine whether the VARK learning style influences the learning outcomes of PKK students in the Learning Media course. Statistical Analysis Results This section presents the results of the data analysis that has been obtained and processed using the SPSS application. The analysis was conducted to determine the relationship between the VARK learning style and student learning outcomes. The analysis techniques used in this study include the Kruskal-Wallis test to determine differences in learning outcomes based on learning style categories, as well as the Spearman correlation test to see the level and direction of the relationship between the two variables.

Table 1. Mean Rank Kruskal-Wallis

Ranks			
	Learning styles	**N**	**Mean Rank**
Learning Outcomes of the Learning Media Course	1,00	7	21,86
	2,00	2	20,00
	3,00	21	17,52
	4,00	8	22,50
	Total	38	

Description: 1,00 = Aural; 2,00 = Visual; 3,00 = Kinesthetic; 4,00 = Multimodal

Table 2. Statistic Kruskal-Wallis

Test Statistics[a,b]	
	Learning Outcomes of the Learning Media Course
Kruskal-Wallis H	1,585
df	3
Asymp. Sig.	0,663

a. Kruskal Wallis Test
b. Grouping Variable: Learning Style

Based on the results of the Kruskal-Wallis test, a significance value of ρ = 0.663 was obtained, indicating that there is no significant difference in students learning outcomes based on their learning styles. Descriptively, kinesthetic and visual learning styles showed higher mean ranks compared to other styles. However, the difference is not statistically significant, and therefore, it cannot be concluded that a specific learning style has a clear impact on students learning outcomes.

Based on the results of the Spearman correlation test between VARK learning styles and learning outcomes in the Instructional Media course, a correlation coefficient of 0.018 was obtained with a significance value of 0.916. This indicates a very weak and statistically insignificant relationship between students learning styles and their learning outcomes in the course. In other words, differences in learning styles do not significantly correlate with students' academic achievement in the context of this study.

These findings are in line with several previous studies, such as the research conducted by (Mabruroh, 2021) showed that there was no significant difference in students academic performance based on VARK learning styles, with a significance value of 0.584. A similar result was found in Diploma III Midwifery students at STIKES Aisyiyah Yogyakarta, indicating that learning style is not a significant factor influencing academic achievement (Yulianti et al., 2015).

However, not all studies show similar results. Research by (Ahisya et al., 2020) found a significant difference between learning styles and academic performance among medical students at the Faculty of Medicine, Malahayati University, with a p-value of 0.000. In that study, visual, auditory, read/write, and kinesthetic learning styles were statistically proven to influence students academic performance. This suggests that the impact of learning styles can be highly contextual, depending on the characteristics of the course, the lecturer's approach, and the students backgrounds.

In line with that (Pashler et al., 2009) critically reviewed that there is no strong evidence supporting the effectiveness of instructional strategies tailored directly to individual learning styles. In fact, such an approach can be counterproductive if it leads students to feel confined to a single way of learning. Therefore, varied and activity-centered learning (active learning) tends to be more effective in improving academic achievement (Freeman et al., 2014).

Thus, the results of this study indicate that while understanding learning styles remains important as an individualized approach, the implementation of interactive, flexible, and student-centered learning strategies is more highly recommended to support the achievement of optimal learning outcomes.

CONCLUSION

Based on the results of the statistical analysis, it can be concluded that there is no significant effect between VARK learning styles and students' learning outcomes in the Instructional Media course. The results of the Kruskal-Wallis and Spearman correlation tests show that differences in learning styles are not significantly correlated with students' academic achievement. Although there are descriptive differences in average scores among learning styles particularly in kinesthetic and multimodal styles these differences are not statistically significant. This finding is consistent with several previous studies that reported no meaningful relationship between learning styles and academic performance, although it differs from other studies that found a significant influence. This suggests that the impact of learning styles is contextual and influenced by various other factors, such as teaching methods, course characteristics, and the learning environment.

For lecturers, it is recommended not only to align teaching methods with students' learning styles but also to implement diverse, interactive, and activity-based learning strategies such as discussions, case studies, and hands-on practice. This approach is considered more effective in enhancing student engagement and learning outcomes.

Future researchers are encouraged to expand the scope of variables by considering additional factors such as learning motivation, digital literacy, the role of lecturers, and instructional strategies. The use of mixed methods and a larger number of respondents is also recommended to obtain more comprehensive and representative results.

The findings of this study contribute to the development of learning strategies in higher education. While learning styles may serve as one reference point in instructional design, the primary focus should be directed toward improving the quality of the teaching and learning process itself. This research supports the importance of flexible, adaptive, and competency-based learning approaches to accommodate the diversity of student characteristics and to foster their active engagement in the learning process.

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