

THE INFLUENCE OF LEARNING STYLES AND MOTIVATION ON ACADEMIC ACHIEVEMENT IN ECONOMICS AT POLITEKNIK PENERBANGAN SURABAYA

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ABSTRACT

This study explores the impact of motivation and learning styles on academic achievement in the Introduction to Economics course at Politeknik Penerbangan Surabaya. Despite a rigorous curriculum and effective teaching methods, cadets' academic performance has not met expectations, raising questions about the internal factors that may influence academic success. The study employs a descriptive quantitative approach, using multiple linear regression to analyze how intrinsic and extrinsic motivation, as well as visual, auditory, and kinesthetic learning styles, affect academic performance. The findings reveal that while motivation has a positive influence on academic achievement, its effect is not statistically significant. Conversely, learning style is found to have a significant impact on academic performance, with the regression analysis showing a stronger influence of learning style (0.702) compared to motivation (0.405). The simultaneous analysis of both motivation and learning style confirms that these factors together account for 85.3% of the variation in academic achievement. These results suggest that teaching strategies should be tailored to match students' learning styles, while also fostering motivation to enhance learning outcomes. The study provides insights for improving educational practices at Politeknik Penerbangan Surabaya and offers actionable recommendations for optimizing cadets' academic success.

Keywords: Learning-Motivation; Learning-Styles; Academic-Achievement; Introduction-to-Economics; Politeknik-Penerbangan-Surabaya.

INTRODUCTION

Politeknik Penerbangan Surabaya, a civil service educational institution under the Ministry of Transportation, is committed to producing competent, professional, and virtuous cadets who are capable of contributing to the aviation industry (Silvia et al, 2025). However, despite a rigorous curriculum and effective teaching methodologies, the academic performance of cadets, particularly in foundational courses such as *Introduction to Economics*, has not met expectations. This discrepancy raises important questions about the factors influencing academic success. While curriculum and teaching methods are critical, internal student factors such as motivation and learning styles may have a more substantial role in shaping academic outcomes.

The urgency of this study lies in the need to better understand these internal factors, as motivation and learning styles are often overlooked in academic research, yet are vital for student engagement, persistence, and performance. Motivation, as defined by (Islamuddin, 2012), is a change in energy within an individual, characterized by affective arousal and anticipatory goal reactions. (Ryan, R., and Deci, 2000) describe learning motivation as both internal and external forces that drive students toward achieving specific academic goals. This motivation consists of both intrinsic and extrinsic components. (Uno, 2006) further asserts that the core of learning motivation involves reinforcing behavior modification through both internal and external incentives.

Learning style, according to (Nasution, 2017), refers to how students retain knowledge through memory, reasoning, and problem-solving, which is linked to their personality, shaped by their educational and developmental experiences. (Susilo, 2006) suggests that a person's learning style is determined by how they process and absorb information from their environment. (Fleming and Mills, 1992) define learning style as the method by which individuals absorb and process knowledge. Furthermore, (Pangesti Wiediarti, 2018) defines learning style as the way individuals interpret and process information in a learning context. (Elawati et al, 2023) categorize learning styles into three types: kinesthetic, auditory, and visual. Similarly, (Kolb, 1984) emphasizes that learning styles whether visual, auditory, or kinesthetic significantly impact how students absorb, process, and retain information. If a mismatch occurs between teaching methods and students' preferred learning styles, it can hinder their understanding and academic performance.

Given that *Introduction to Economics* is a foundational course in the curriculum, understanding the relationship between motivation, learning styles, and academic achievement is crucial for improving cadets' learning outcomes. Academic achievement, as described by (Adiyo, 2010), is a result of a process typically expressed in quantitative terms, such as grades awarded at the end of the semester following the final exams. (Saraswati, 2013) further defines achievement as an individual's ability to understand the material being studied, enabling them to adapt and solve problems in various contexts. Academic success, as emphasized by (Slameto, 2003), is the product of activities carried out either individually or in groups that cannot be attained without active participation.

This research aims to explore the relationship between motivation, learning styles, and academic performance among cadets enrolled in the *Introduction to Economics* course at Politeknik Penerbangan Surabaya. Specifically, this study will examine how both intrinsic and extrinsic motivation, in addition to various learning styles (visual, auditory, and kinesthetic), collectively influence cadets' academic performance. By addressing these variables, this research seeks to identify ways in which teaching strategies and support programs can be optimized to improve learning outcomes and ultimately enhance academic success. The findings of this study will provide valuable insights into how motivation and learning styles, as integrated factors, influence academic achievement and offer actionable recommendations for improving educational practices at Politeknik Penerbangan Surabaya.

A review of the existing literature highlights the pivotal role of motivation in academic success. (Sardiman, 2003) suggests that motivation drives students to engage in educational activities, sustains learning continuity, and directs their efforts toward achieving academic goals. Conversely, a lack of motivation can lead to disengagement and reduced academic performance. Moreover, learning styles, as argued by (DePorter, B., and Hernacki, 2007), reflect the unique ways in which individuals absorb and process information. A mismatch between students' preferred learning styles and the teaching methods employed can lead to comprehension difficulties, even when students exhibit high academic potential. (Indriani, 2016) also states that if cadets are not motivated to learn

and have unsuitable learning styles, they will not be interested in the subjects, will feel dissatisfied with their learning outcomes, and ultimately find the learning process meaningless.

Therefore, understanding the motivational characteristics and learning preferences of each cadet is essential for creating a more effective and inclusive learning process (Casella, G., and Berger, 2001) at Politeknik Penerbangan Surabaya.

RESEARCH METHODS

Approach

This study utilized a descriptive quantitative approach aimed at systematically describing the impact of learning styles and motivation on the academic performance of cadets enrolled in the Introduction to Economics course at Politeknik Penerbangan Surabaya (Johnson and Wichern, 2007). The approach focuses on analyzing existing variables without involving experiments or altering the variables being studied, instead observing and examining their interactions as they naturally occur (Bungin B., 2005).

Activity Design

The activity design included a thorough review of relevant literature to form a theoretical framework supporting the research. The first step involved a systematic analysis of previous studies and theories related to motivation, learning styles, and their effects on academic achievement (Darmawati, 2013)(Amalina, 2015)(Soares et al, 2018) (Bire et al, 2014)(Kafita et al, 2023). After establishing a theoretical foundation, data collection was conducted through questionnaires, followed by data analysis using multiple linear regression (Johnson and Wichern, 2007) to assess the simultaneous and partial effects of motivation and learning styles on academic performance.

Scope/Object

The object of the research is the academic performance of cadets in the Introduction to Economics course at Politeknik Penerbangan Surabaya. Specifically, the study examines the effects of intrinsic and extrinsic motivation, as well as visual, auditory, and kinesthetic learning styles, on the cadets' academic achievements.

Main Materials and Tools

Materials: Literature review sources, theoretical frameworks, and research questionnaires.

Tools: SPSS 27 for data analysis, multiple linear regression for examining statistical relationships, and research questionnaires for data collection.

Place

The study was conducted at Politeknik Penerbangan Surabaya, specifically focusing on cadets from the Diploma 3 Air Transportation Management study program.

Data Collection Techniques

Data were collected through questionnaires (Rifa'i et al, 2023) distributed to 32 cadets from the Diploma 3 Air Transportation Management study program. The questionnaire used is a choice type, where respondents are given alternative answers to choose one of the four answers provided (Silvia, 2021). This method ensured standardized responses across participants (Subagyo dan Djarwanto, 2005).

Operational Definitions of Research Variables:

Independent Variables

1. Motivation (X_1) – Including both intrinsic and extrinsic motivation factors.
2. Learning Styles (X_2) – Including visual, auditory, and kinesthetic learning styles.

Dependent Variable

1. Academic Achievement (Y) – Measured based on cadets' performance in the Introduction to Economics course.

Analysis Techniques

Data analysis was performed using multiple linear regression to examine the simultaneous and partial effects of motivation and learning styles on academic performance. The analysis was conducted using SPSS 27, with the aim of testing the significance of the independent variables (motivation and learning styles) on the dependent variable (academic performance).

Hypotheses

Null Hypothesis (H₀): Cadets' academic achievement (Y) in the Introduction to Economics course is not significantly impacted by motivation (X₁) and learning styles (X₂), either simultaneously or partially.

Alternative Hypothesis (H₁): Cadets' academic achievement (Y) in the Introduction to Economics course is significantly influenced by motivation (X₁) and learning styles (X₂), either simultaneously or partially.

RESULTS AND DISCUSSION

Validity and Reliability Test

This study utilized SPSS 27 for data testing and analysis. The validity test results showed that the Sig. (2-tailed) value for all items was 0.000 < 0.05, and the Pearson Correlation values for all items were positive, thus the questionnaire items were declared valid.

The results of the reliability test revealed a Cronbach's Alpha score of 0.976 > 0.60 and a N of Items (the number of items or questionnaire questions) of 20. The questionnaire items for the variable " Thus, it was determined that "The Influence of Motivation and Learning Style on Academic Achievement" was reliable and consistent.

Classical Assumption Tests included Normality, Linearity, and Multicollinearity

One-Sample Kolmogorov-Smirnov Test, a normality test, showed a significance value of 0.200 (Asymp.Sig.) (2-tailed) of 0.200, exceeding the significance level of 0.05. Consequently, it was determined that the data had a normal distribution. As a result, the regression model's normalcy assumption or criterion was satisfied.

The ANOVA Table for Motivation (X₁) received a Deviation from Linearity Sig. of 0.052, which is larger than 0.05, according to the linearity test utilizing the ANOVA Table for each X variable. Thus, it may be said that the Academic Achievement variable (Y) and the Motivation variable (X₁) have a significant linear relationship. The Anova Table of Learning Style (X₂) has a Deviation from Linearity Sig. value of 0.396, which is greater than 0.05. Therefore, it can be concluded that there is a significant linear relationship between the Learning Style variable (X₂) and the Academic Achievement variable (Y).

For the Motivation (X₁) and Learning Style (X₂) variables, the multicollinearity test yielded a tolerance value of 0.168, which was higher than 0.10. Conversely, the Learning Style (X₂) and Motivation (X₁) variables had VIF values of 5.965, which was below 10.00. Consequently, the multicollinearity test's premise of decision-making implies that the regression model does not exhibit any multicollinearity symptoms.

Multiple Linear Regression Analysis

The following is a summary of the results of the multiple linear regression test for motivation, learning style, and academic achievement, processed using SPSS:

Table 1. Summary of Multiple Regression Analysis

Variable	Regression Coefficient	t _{test}	Sig.
Constant	-0.456		
X ₁	0.405	1.877	0.071
X ₂	0.702	0.553	0.001
F _{test}	84.467		0.000
R Square	0.853		

The Coefficients table provides information about the regression model generated in this analysis or research: $Y = -0.456 + 0.405 X_1 + 0.702 X_2$. This regression equation indicates that academic achievement is positively impacted by both learning motivation and learning style. The coefficient of Learning Style (X₂) of 0.702 is greater than Motivation (X₁) of 0.405, which means that Learning Style (X₂) has a greater influence on Academic Achievement (Y) than Motivation (X₁), if the independent variables are of the same scale.

Although the effect of motivation on achievement is smaller than that of learning style, both still contribute to improving cadets' academic achievement. Motivation plays a role in providing encouragement to learn, which helps cadets continue to strive to achieve their academic goals.

Learning styles showed a greater influence, meaning that the way cadets process and absorb course material significantly influences how well they complete academic assignments and understand the material taught. The results of this regression model indicate the importance of considering both factors motivation and learning styles—in improving academic achievement, both in curriculum design and in teaching approaches at the Surabaya Aviation Polytechnic.

Academic achievement is significantly impacted by motivation and learning styles, as indicated by the R-square value of 0.853, or 85.3%. According to this figure, Academic Achievement (Y) is influenced by Motivation (X1) and Learning Style (X2) simultaneously (together) to the tune of 85.3%. The remaining 14.7% ($100\% - 85.3\% = 14.7\%$) is affected by factors that were not looked at or that were not included in this regression equation.

F Test

The F test yielded a Sig. value of 0.000, which is less than 0.05, according to the ANOVA table. The calculated F value of 84.467 was greater than the F table value of 3.327.. These two findings suggest that motivation (X1) and learning style (X2) have a simultaneous impact on academic achievement (Y), with hypothesis H0 being rejected and hypothesis H1 being approved. Stated otherwise, a regression model that uses only one constant (intercept) is less able to explain variation in Academic Achievement (Y) than one that uses all of the predictors for Motivation (X1) and Learning Style (X2).

t-Test

The t-test indicates that the significance (Sig.) value of motivation (X1) is $0.071 > 0.05$ probability. With Ho being accepted and H1 being denied, it can be concluded that Motivation (X1) has a minor effect on Academic Achievement (Y). Meanwhile, the significance (Sig.) value for Learning Style (X2) is $0.01 < 0.05$ probability. Given that H1 was accepted and Ho was refused, it can be said that Academic Achievement (Y) is slightly impacted by Learning Style (X2).

The computed t-value for Motivation (X1) is $1.877 < t$ -table of 2.045 when the computed t-value from the preceding table is compared with the t-table ($\alpha/2 = 0.025$; df residual = 29). This indicates that Academic Achievement (Y) is somewhat unaffected by Motivation (X1). H1 is denied, while Ho is accepted. Learning Style (X2), on the other hand, has a somewhat significant impact on Academic Achievement (Y), as indicated by the computed t result of $3.553 > t$ table of 2.045, where H1 is accepted and Ho is rejected.

The Influence of Motivation on Academic Achievement

Academic Achievement (Y) is positively impacted by Motivation (X1) by 0.405, according to the regression coefficient value. However, the computed t-value of 1.877 is less than the t-table of 2.045, and the t-test results reveal a significance value of 0.071, larger than 0.05, suggesting that motivation has no meaningful impact on academic accomplishment in this regression model.

The process of learning motivation gives learning behavior zeal, focus, and perseverance. To put it another way, motivated action is vivacious, intentional, and persistent (Santrock and Roehrig, 2024). Academic achievement is positively impacted by motivation, however this effect is not statistically significant in the context of this study.

These findings run counter to studies by (Amalina, 2015) and (Darmawati, 2013), which demonstrated that academic achievement is significantly impacted by learning motivation. Despite its influence, motivation did not significantly affect academic achievement in this study. This could be due to other, more powerful factors, like the cadets' own learning styles, variations in the population or context, or other elements that affect learning outcomes.

This is supported by research by (Soares et al, 2018), whose results showed that learning motivation had a significance value of 0.574, greater than the probability of 0.05, indicating that learning motivation did not significantly influence the GPA of students in the Electrical Engineering Education Study Program at Nusa Cendana University, Kupang.

The Influence of Learning Style on Academic Achievement

With a calculated t-value of 3.553, which is higher than the t-table value of 2.045, and a significance value of 0.01, which is less than 0.05, the t-test findings show that Learning Style (X2) has a significant impact on Academic Achievement (Y). This suggests that in this regression model, learning style significantly affects academic attainment. The learning style regression coefficient is 0.702, meaning that, under the assumption that motivation is constant, academic achievement will rise by 0.702 for every unit increase in learning style.

The research findings align with the theory that learning styles are the unique ways individuals absorb, process, and remember information. These learning styles reflect how individuals interact

with their environment and how they respond to the teaching or information provided. Each person has a different learning style, which influences how they understand, process, and remember the material they learn. This learning style encompasses aspects such as preferences for listening, seeing, or doing things directly during the learning process (DePorter, B., and Hernacki, 2007).

Research conducted by (Darmawati, 2013) indicates that learning styles have both partial and simultaneous effects on academic achievement. This finding is further supported by (Bire et al, 2014), who suggest that the implementation of appropriate learning styles can enhance student learning outcomes, even under challenging health conditions. Their analysis revealed that visual, auditory, and kinesthetic learning styles significantly influenced student achievement. In addition, a study by (Zannurain et al, 2023) identified the kinesthetic learning style as the most dominant, with a significant relationship observed between learning styles and mathematics learning outcomes. These findings align with the results of the present study, which confirm that learning styles play a crucial role in improving cadets' academic performance.

Simultaneous Analysis of Motivation and Learning Style on Academic Achievement

The results of the ANOVA test revealed an F-count of 84.467, higher than the F-table of 3.327, and a significant value of 0.000, less than 0.05. This suggests that Academic Achievement (Y) is significantly impacted by both Motivation (X1) and Learning Style (X2) at the same time. This means that both motivation and learning style together can better explain variations in academic achievement. The results of this study align with Albert Bandura's theory, which states that motivation and learning style are key factors in the learning process that contribute to good academic outcomes (Bandura, 1977). Research conducted (Kafita et al, 2023) also supports this finding by finding that learning motivation and learning style simultaneously influence student academic achievement in mathematics.

This research has important implications for education, particularly in improving cadet academic achievement through understanding and applying appropriate motivation and learning styles. Based on the results, although learning motivation has a positive influence on academic achievement, the effect is not significant in this regression model. Conversely, learning style was shown to have a significant influence on academic achievement, indicating that an appropriate learning style can contribute significantly to cadets' academic success.

CONCLUSIONS

The findings of the study suggest that cadets' academic success is influenced by their desire and preferred method of learning. However, the influence between the two shows a significant difference. Motivation had a positive effect on academic achievement, but its effect was not significant in the regression model used in this study. The t-test results indicate that motivation did not contribute significantly to academic achievement, although theoretically, motivation is an important factor in learning. Learning style, on the other hand, was shown to have a significant influence on academic achievement. Learning styles that align with an individual's way of processing information, whether visual, auditory, or kinesthetic, can improve learning outcomes. The influence of learning style was more dominant than motivation, indicating that cadets' learning styles play a significant role in their academic achievement. The ANOVA test found that motivation and learning style simultaneously (together) had a noteworthy impact on academic performance, indicating the significance of both elements in attaining the best possible learning results.

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