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Lecturer Leadership as a Predictor of Student Engagement, Motivation, and Learning Performance: Evidence from Jambi University

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ABSTRACT

At Jambi University, Indonesia, lecturer leadership affects student engagement, motivation, and learning results. Effective lecturer leadership is widely acknowledged as crucial to student engagement and academic achievement in higher education. By combining lectures, mentoring, and exemplary behavior, lecturers can boost students' motivation and performance. The main goal was to objectively study these links to fill a void in Indonesian university research. SEM-PLS was used to analyze data in a quantitative research approach. G*Power program recommended 262 participants for statistical power of 0.95, assuming a medium effect size and alpha level of 0.05. Jambi University selected 262 undergraduates from several faculties using stratified random sampling. Lecturer leadership (visionary, supportive, and transformational styles), student interest (curiosity and involvement in subjects), motivation (intrinsic and extrinsic factors), and learning outcomes (self-reported grades and mastery indicators) were measured using a validated online questionnaire. Scales were adapted, with Cronbach's alpha (>0.70) and confirmatory factor analysis confirming reliability and validity. The SEM-PLS analysis showed that lecturer leadership positively impacts student engagement, motivation, and learning outcomes, accounting for 32-48% of variance ($\beta = 0.42$, $p < 0.001$). Prior research have shown that transformative leadership in education increases student agency and persistence. The study concludes that lecturers are diverse leaders who inspire and exemplify greatness. Leadership training should be prioritized in university professional development programs to increase student engagement and achievement. It highlights context-specific dynamics in developing nations to improve higher education leadership models. To confirm these findings, further study could examine mediating variables like classroom environment or longitudinal impacts.

Keywords: leadership, interest, motivation, learning outcomes

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INTRODUCTION

Education in Indonesia, according to Law Number 20 of 2003 concerning the National Education System, Article 3 states that national education aims to educate the nation's life by developing the ability and character of the nation's character and civilization with dignity. The purpose of national education is for students to become people who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens (Siburian &; Sianturi, 2023). Lecturers have a significant role in national development because lecturers themselves are agents of change in the field of education (Piscayanti &; Mahayanti, 2015). The quality and success of higher education one of the determinants is inseparable from the role of a lecturer (Enoh, 2006). Therefore, special attention is needed both in terms of quality and quantity. Because, basically in this case lecturers are required to produce quality human resources as the next generation of the nation. education. Lecturers have responsibilities in the teaching and learning process on campus. They are an important part of the coherence process for improving the quality of higher education (Nisa, 2018). Lecturers have a very big role in changing civilization through the students they guide (Tasbih, 2021).

Because lecturers lead teaching and learning activities in the classroom, their leadership will greatly affect the students they educate. Leader (leader) that is, people who are able to move others to collaborate in achieving goals (Utari &; Hadi, 2020). Leadership is a person's ability to influence others in the way he wants (Fahri et al., 2022). In the process of leading, a leader has his own leadership style. Leadership style or Style of Leadership namely the form of the way a leader does in carrying out his management function (Mattayang Besse, 2019). The leadership style itself is divided into several namely: autoracic or dictatorial leadership, militaristic leadership, paternalistic leadership, participatory leadership, leadership laissez faire, freerein leadership, charismatic leadership, democratic leadership (Tambunan, 2015). The leadership style of the lecturer will affect the student's desire to learn as well. The psychological factor that drives a person to do something is called motivation (Oktiani, 2017).

The two types of motivation themselves are intrinsic and extrinsic. Intrinsic motivation is the drive that drives a person to do something without outside influence. While what is meant by extrinsic motivation is a person's encouragement in doing something based on outside influences (Prihartanta et al., 2015). According to Maslow, every individual willing to do something is driven based on the level of his need (Mendari, 2010). In this case, good leadership will also affect student learning motivation. According to research conducted by Julianda et al, that Teacher leadership affects student interest and learning outcomes (Heryanto et al., 2022). According to Simbolon (2013) Learning is the result of interactions that occur between educators and students in certain learning environments. While student learning motivation is a drive from within students that causes the desire to learn during the lecture process, based on the desired desire so that the goal of the learning project can be achieved (Masni, 2015) Learning interest is one of the supporting components that affect

student learning outcomes. Very dependent on the learning outcomes themselves (Pibriana & Ricoida, 2017).

Therefore, based on this background explanation, researchers will conduct investigations related to the influence of lecturer leadership on the interests, motivations and learning outcomes of Jambi University students.

The objectives of this study are:

1) To find out whether the leadership of lecturers affects the learning interest of Jambi University students.

2) To find out whether lecturer leadership affects the learning motivation of Jambi University students.

3) To find out whether the leadership of lecturers affects the learning outcomes of Jambi University students.

4) To find out whether interest affects the learning outcomes of Jambi University students.

5) To find out whether motivation affects the learning outcomes of Jambi University students

LITERATURE REVIEW

Leadership Towards Interests

Leadership is a translation of the English word "leadership", which comes from the word "leader". (Mukti, 2018). Leadership is etymologically from the root word "lead" which has a meaning of guidance or guidance (Wulandari et al., 2019). From this basic word, the word leader is born as an object that leads in an organization. Leader, according to the Big Indonesian Dictionary (KBBI), refers to the results of leading, guiding, or guiding (Fazillah &; Widyanto, 2019). According to Howell, et. al. (1993) To influence others, both individuals and groups, a leader uses power. This is called leadership. Leadership is a complex process in which a person as a leader encourages his subordinates to achieve the vision and mission. (Fitriani, 2015). Leadership is a person's ability to influence others in the way he wants. (Fahri et al., 2022). This is in line with Sujanto's opinion in Kristiawan (2016) which states that leadership is the way a leader directs, influences, and provides explanations to his subordinates so that they can work well together to achieve organizational goals. Reinforced again by colquit opinion in Trang (2013) The use of power and control to direct the actions of followers to achieve goals is known as leadership.. Just like in the campus environment, lecturers have a considerable role because basically lecturers themselves are leaders for students when in the classroom. That is, the success of students in the learning

process cannot be separated from the role of a lecturer who guides them. Mansur's (2015) research entitled "achievement of learning outcomes in terms of student learning attitudes" is in line with this, and the findings of this study show that how well a teacher delivers lessons will have an impact on student learning attitudes, which in turn impacts student learning outcomes.

Etymologically, interest can be interpreted as effort or the ability to find something and learn it. The definition of interest in terminology includes the desire, liking or willingness to do something (Pravesti, 2016). The interest in learning according to Laksono in Pratamawati et al., (2021) is a tendency to remember all activities consistently. Lack of interest in learning is the main cause of boredom during the learning process and how to overcome this, one of which is with awareness in students to desire to achieve goals (Utami et al., 2022). Boredom during the learning process causes low interest in learning. Interest in learning can be increased if people want to achieve their goals. Furthermore, Bernard in (Fauzy et al., 2019) argues that interest does not arise immediately because of spontaneous things but there are underlying factors, namely experience, participation or habits at learning time. This means that two factors are responsible for the emergence of interest: factors from within (internal) and factors from outside (external). Factors in students include intelligence, learning strategies, motivation, and so on. Learning facilities, teacher teaching styles, and feedback are outside factors. (Simbolon, 2013). In measuring the amount of interest in learning according to septiani in Yulyani (2022) it can be done with several indicators, namely, feelings of pleasure, interest in something, student attention, student participation. Some research results (for example, Wijaya et al., 2021; Prihatini, 2017). The results showed that interest had a significant effect on learning outcomes.

Leadership towards Motivation

"Motivation" is an English root word that means a person's drive or goal to do something. (Wahyudi &; Tupti, 2019). There are several theories about learning motivation developed by psychologists which include three school frameworks, namely: behaviorism, cognitive psychology, and humanism (Pettalongi, 2008). Experts of behaviorism argue that pleasant situations, conditions and objects are a source of inspiration. Cognitives argue that a person's thought processes influence their behavior. This is because of their focus on how people process and interpret data in specific contexts. Humanists say that humans act in their environment and make choices about what they should do, but they are more concerned with the general path of a person's growth, which is activities that allow them to

develop and eliminate distractions that hinder their growth. (Muhammad, 2016). Motivation itself is divided into two components consisting of a person's motivation: factors from within and factors from outside.(Damanik, 2020) This opinion is supported by Wahjosumidjo in Damayani et al., (2020) stating that motivation comes from mental processes caused by two factors: intrinsic factors (inside oneself) and extrinsic factors (outside oneself). According to Maslow in Mendari (2010) argues that every individual willing to do something is encouraged based on the level of his needs. Furthermore, according to Mclelland in Albab (2019), one of his theories is known for his theory, namely the need to achieve achievements (the need to achieve) which argues that motivation varies depending on a person's ability to achieve their goals.

Leadership towards Learning Outcomes

Learning is the process of changing one's behavior by acquiring new knowledge, skills, and attitudes through various activities. The purpose of learning is to improve the human person as a whole (Nurrita, 2018). According to Mudjiono in (Nurmala et al., 2014) The interaction between learning acts and teaching acts produces learning outcomes. Furthermore, according to Handayani & Subakti (2020), changes resulting from the learning process are referred to as learning outcomes. According to Susanto in Darmawan (2021) Learning outcomes are shaped by three assessment components: cognitive, affective, and psychomotor abilities. Satisfactory learning outcomes, which are characterized by high grades, and activeness in the learning process, indicate individual understanding. (Ulfah &; Arifudin, 2021). Low learning outcomes are not necessarily determined by students' cognitive abilities, but can also be the result of lack of learning motivation (Abidin &; Ijrah, 2018). this is in line with several studies that have been conducted (e.g., Sari & Hendro, 2017; Gulo et al., 2020; Manurung et al., 2023) have expanded existing knowledge by exploring the impact of teacher leadership on student interest, motivation, and learning outcomes. In conclusion, a number of studies highlight the importance of the role of a teacher in increasing student interest, motivation and learning outcomes. This study provides evidence regarding the significant role of a teacher in improving student interest, motivation and learning outcomes.

METHOD

Researchers used quantitative techniques in this study. Because it is based on a positivist philosophy, this strategy is referred to as a positivistic approach.

Because it meets scientific standards including objective, quantitative, logical, methodical, and is based on actual experience and factual facts, it is accepted as a scientific approach. Quantitative research according to Creswell (2013) is a method to investigate correlations between variables. Sugiyono (2018) defines quantitative data as a research methodology based on positivistic (concrete) data; namely research data in numerical form relevant to the subject matter under study which will be measured using statistics as a calculation test instrument to draw a conclusion. Because, the researcher is a student of Jambi University, the respondents who are the main target of the study are Jambi University students. Therefore, the subject is chosen by the researcher because it will facilitate the collection of respondents. Questionnaires are the instruments used in this study. Google Forms are used to distribute questionnaires to collect data. According to Cresswell (2017), a questionnaire is a data collection method in which participants are given several written statements. In this study, the questionnaire was divided into two parts. In the first part, the researcher asked participants to provide demographic information, and the second part included 24 statements from 4 constructs. The construct includes lecturer leadership, motivation, interest and learning outcomes. To support institutional adoption and facilitate this research each item was measured using a Likert scale with several options namely "strongly agree", "agree", "disagree", "disagree", "strongly disagree". Each item that researchers collected was adopted from Arianti's (2010) research for interest and motivation variables, then Nur Nuaimi (2017 for leadership variables.

Data Collection and Samples

Google Forms are used to distribute and collect questionnaires. The sample population of 31,205 Jambi University students was used as the basis for a data collection procedure involving 262 respondents. Standard mean and deviation are used to interpret descriptive statistics, PLS-SEM equations, known as box structural equations, are used to determine strongly influencing factors. Cronbach Alpha is checked for data reality value. In addition, researchers use G Power to assess sample strength to determine sampling.

To assess the capacity in the analysis of this study, G Power was used to determine the small enough size needed The test showed a sample count of 262, and obtained a strength of 0.95. Data is analyzed using SEM-PLS which is based on Smart PLS Version 3.2.9 for specific processes. Measurement model testing is the initial stage in determining construct validity and reliability. Evaluation of the structural model in the second stage tests the direct correlation between exogenous and endogenous variables. Hair, Randolph, Chong, & Holingworth (2017).

INPUT		OUTPUT	
Tail(s)	Two	Noncentrality parameter δ	3.6193922
Effect size f^2	0,05	Critical t	1.9692739
α err prob	0.05	Df	256
Power (1-β err prob)	0.95	Total sample size	262
Number of predictors	5	Actual power	0.9500993

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RESULT

Table 1 Demographic Profile of participants

Variable	Demographics	Frequency (N-1719)
Courses	Education Administration	131
	Other	131
	Total	262
faculty	FKIP	131
	Other (6)	131
	Total	262
Force	2020	80
	2021	35
	2022	120
	2023	27
	Total	262

Based on table 1 above, it can be seen that most of the population are students of the faculty of teacher training and education, educational administration study programs, Class of 2022.

3.1.2 Data Analysis

PLS-SEM is used for data analysis and hypotheses proposed using Smart PLS software because of its strong predictive capabilities. (J. Hair et al., 2017). This study created a model that describes the relationship between variables that affect student learning outcomes with PLS-SEM. For effective research design on Smart PLS, valid instruments must be used because they have the ability to measure what they are supposed to measure. (Hair Jr. et al., 2017). The validity procedure of the study was tested by convergent and discriminant validity methods with Smart PLS 3.2.7. First, import the raw data in comma-separated exel CSV format. After completing the raw data import, the following steps can be performed afterwards:

Table 2 Statistical Description of Questionnaire, loading factor, VIF, AVE and Cronbach's

Construct	Statement	Mean	Loading	VIF Goods	Ave	Composite	Cronbach's
Leadership	Your professor enters class on time	4,237	0,791	1,763	0.616	0,889	0.844
	Your lecturers are friendly and authoritative in the learning process	4,202	0,801	1,898			
	Your lecturer provides motivation to learn before starting a learner	4,134	0,761	1,644			
	Your lecturer explains the lecture material using appropriate and interesting methods	4,275	0,815	1,879			
		4,080	0,754	1,651			
Interest		4,111	0,636	1,436	0,564	0,885	0,843
	You always follow and play	4,145	0,709	1,632			

	an active role during lectures						
	You don't feel bored to attend lectures	4,439	0,761	1,757			
	You always pay attention to the explanation given by the lecturer	4,462	0,763	1,999			
	You are responsive in the learning process	4,374	0,822	2,391			
	You can divide your study time well	4,321	0,798	2,077			
Motivation	You always try to always be diligent in doing the tasks that have been given by the lecturer	4,126	0.730	1.751	0,590	0,920	0,900
	You are always trying to find new things to increase your knowledge	4,332	0,821	2,352			
	You strive for hard work wholeheartedly to achieve achievements	4,149	0,822	2,394			
	The drive to succeed makes you always fast in completing tasks	4,103	0,772	2,033			
	The weight of the lecture encourages you to get the best grades	4,008	0,668	1,595			
	Sudara always tries to do the tasks given by the lecturer on time	4,298	0,814	2,398			
	In doing tasks that are competitive you try to be superior to friends	4,282	0,763	1,985			

	During the exam you try to answer the questions on your own.	4,420	0,743	1,896			
Learning Outcomes	Appreciation for achievements encourages you to study harder.	4,337	0,781	1,744	0,647	0,901	0,863
	The lecturer's discipline can affect my learning achievement	4,487	0,767	1,821			
	Mastery of materials and methods can improve my learning achievement.	4,439	0,818	2,026			
	The friendly and authoritative attitude of a lecturer can affect my learning achievement	4,221	0,774	1,788			
	The professional attitude of lecturers in the learning process greatly affects the improvement of student achievement.	4,344	0,878	2,634			

From the table above shows the average score at the highest mean level (mean 4.48) namely on the variable of learning outcomes, and on the variable of interest (mean 4, 46) and at the third level especially on motivation (average 4.42) and the lowest variable of leadership (average 4.08)

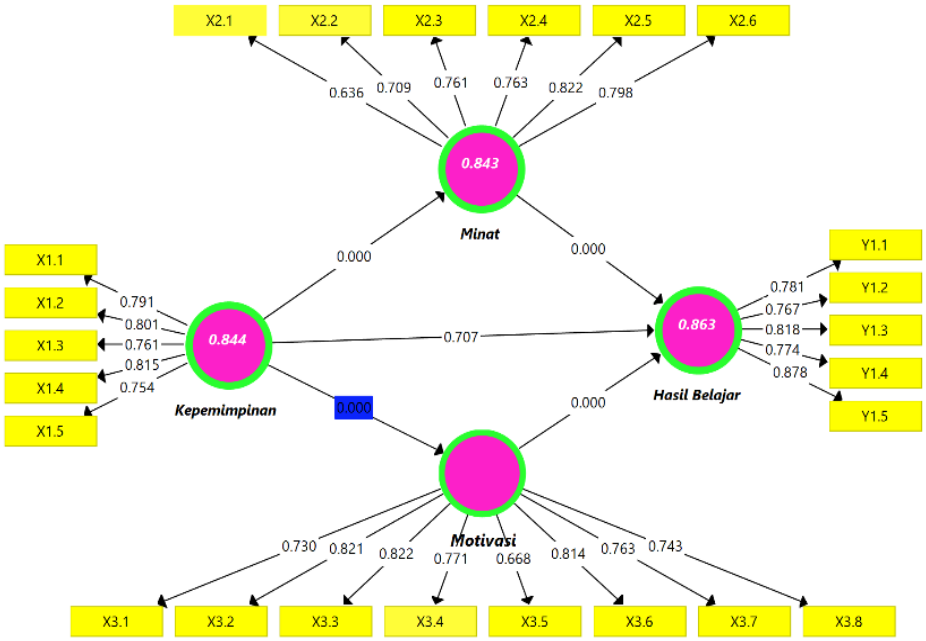

Figure 1. PLS Algorithm processing results

Evaluation of Measurement Models

Validity of discriminants

Table 3 *Fornell-Larscher* Criterion

	Learning Outcomes (Y)	Leadership (X1)	Interest (X2)	Motivation (X3)
Learning Outcomes (Y)	0,804			
Leadership (X1)	0,680	0,785		
Interests (X2)	0,765	0,753	0,751	
Motivation (X3)	0,857	0,776	0,812	0,768

Table 4 Heterotrait-Monotraite Ratio (HTMT)

	Learning Outcomes (Y)	Leadership (X1)	Interest (X2)	Motivation (X3)
Learning Outcomes (Y)				
Leadership (X1)	0,792			
Interests (X2)	0,896	0,891		
Motivation (X3)	0,898	0,890	0,893	

The criteria for the validity of the Fornell-Larcker discriminant and cross-loading are as follows. The off-diagonal values in Table 3 show the relationship between each variable, while the diagonal values are the squared values of the average which show the AVE (Average Variance Extracted) value of the variable is higher than other variables. Therefore, if the square root of AVE for each variable is greater than the value of the relationship between that variable and the other variables tested, then the research instrument has good discriminant validity. (Hair, *et al.*, 2011). Therefore, research is worth continuing. In this study, discriminant validity testing was carried out using the Heterotrait-Monotrait Ratio technique as listed in Table 4. HTMT values less than 0.9 are considered as limits to ensure discriminant validity between two reflective variables (Henseler *et al.*, 2015). Based on the results of the data contained in the table above, it was found that the overall HTMT value was less than 0.9. This indicates that the research instruments used in the study have good validity. Thus, based on the results of evaluation using the HTMT method, it can be concluded that the research instrument used is valid in measuring the variables studied.

Structural Model Evaluation

Table 5 Summary of Hypothesis Test Results

Hypothesis	Path Coefficient	P Value	
H1: Leadership →Learning Outcomes	0.207	0,000	Supported
H2: Leadership → Interest	0.753	0,000	Supported
H3: Leadership →Motivation	0.776	0,000	Supported
H4: Interests→Learning Outcomes	0.210	0,000	Supported
H5: Motivation→Learning Outcomes	0.708	0,000	Supported

Table 6 R Square

	R Square	R Square Adjusted
Learning Outcomes	0,749	0,746
Interest	0,567	0,566
Motivation	0,602	0,600

Table 7 Effect Size (F2)

	Learning Outcomes (Y)	Leadership (X1)	Interest (X2)	Motivation (X3)
Learning Outcomes (Y)				
Leadership (X1)	0,045		1,312	1,510
Interests (X2)	0,053			
Motivation (X3)	0,556			

Table 8 *Q2* Square

	SSO	SSE	Q2 (=1-SSE/SSO)
Learning Outcomes	1310.000	684.947	1.477
Satisfaction (Y2)	1310.000	1310.000	
Commitment (Y1)	1572.000	1084.469	0,310
Motivation (Y3)	2096.000	1361.723	0,350

The first step, the evaluation of structural models relies on the concepts and characteristics of multiple regression analysis. The initial step is to assess the model to identify multicollinearity problems. If the Variance Inflation Factor (VIF) value is

below 3.0, multicollinearity may not be a problem. Alternatively, bivariate correlations between construct scores can be checked, and if higher than 0.50, multicollinearity can affect path coefficients. If multicollinearity becomes a problem, the solution is to create high-level constructs by combining separate constructs into lower level constructs that are conceptually similar and theoretically supportive (Bassellier, *et al.*, 2009). The table shows that no VIF values exceed 5.0, which means multicollinearity was not an issue in this study (Hairet, al., 2017). The second step, after making sure multicollinearity is not a problem, involves checking the size and significance of the path coefficient. The path coefficients, which are standardized, reflect the strength of the relationship between the constructs. Values close to $+1$ or -1 are rare in complex models. The closer the value is to 0, the weaker its ability to predict dependent constructs, while the closer to the absolute value of 1, the stronger its ability. The structural model was evaluated by bootstrapping method (500 sub-samples) for all five research hypotheses, the results are in Table 5. As in multiple regression, a common metric for assessing structural model predictions is R2, or coefficient of determination. R2 measures predictive ability in a sample for all endogenous constructs, but it is important to remember that prediction includes only the sample of data used to calculate it, and R2 cannot be applied to a population (Rigdon, 2012; Sarstedt *et al.*, 2014). As in multiple regression, adjusted R2 is useful when researchers include too many insignificant predictor constructs in structural models (Hair, *et al.*, 2017). For example, if the R2 values are 0.75, 0.50, and 0.25, then it indicates that the model has strong, medium, and weak levels of strength in explaining the variability of endogenous variables (Sarstedt, *et al.*, 2017). Study by Hair, *et al.* (2020) provides R2 value criteria of 0.67, 0.33, and 0.19 which can generally be interpreted as strong, medium, and weak strength levels. In this study, measurements using the coefficient of determination (R2) are shown in Table 6 below. The data in Table 6 show that leadership on motivation has a strong test of determination, while the variable of leadership on learning outcomes has a weak test of determination. Thus, based on the measurement results in this study, the leadership variable on motivation has a strong level of strength in explaining its variability, while the leadership variable on learning outcomes has a weak level of

strength in explaining its variability. The fourth step, the second measure of predictivity of the structural model is the effect measure, which estimates the predictive ability of each independent construct. To calculate it, each predictor construct is removed one by one, and a new R2 is calculated without that predictor (SmartPLS automatically does so). A comparison between R2 with and without predictors shows whether the omitted construct is a significant predictor of the dependent construct (Hair, et al., 2017). Effect sizes (f2) are categorized as small (0.02-0.15), medium (0.15-0.35), and large (0.35 and above) (Cohen, 1988). The effect size is also considered a predictive metric in the sample. The value of f2 is presented in table 7 below. The fifth step, the third metric used to assess predictions is the Q2 value, also known as blindfolding (Geisser, *et al.*, 1974). Some scholars see this metric as an out-of-sample assessment of predictive power. Although Q2 provides an indication of the relevance of predictions, the prediction power of the model is not comparable to PLSpredict, which will be explained next. Q2 is considered relevant if the value is greater than 0.25 or 0.50, while a value of 0 indicates a lack of relevance of predictions in the PLS-SEM model. Redundant cross-validation (Q2) is used to evaluate the predictive significance of the model.If the value of $Q2 > 0$, it indicates that the model has accurate predictive ability for a particular variable. Conversely, if the value of $Q2 < 0$, evidence that the model has no significant predictive value (Sarstedt *et al.*, 2017). In this study, measurements using broadly validated redundancy (Q2), are shown in Table 8.

Discussion

This study aims to examine the extent of the influence of lecturer leadership on the interests, motivation and learning outcomes of Jambi University students using a sample of 262 respondents where these respondents are Jambi University students from various faculties and study programs. It can be seen the influence of each variable, namely leadership, motivation, interest and learning outcomes by formulating five hypotheses related to the research question. In this study the hypothesis proposed has a significant influence. Hypotheses related to research questions are explained in detail by researchers hoping to provide a more complete

understanding. There is a positive influence of leadership on learning outcomes. (Salat, 2014; Hariroh &; Soleha, 2022; Pulungan& Arda, 2019; Samuel, 2014; Idrus, 2021). Based on the research conducted, it was found that lecturer leadership has a significant effect on student learning outcomes. Thus, this study provides an understanding that lecturer leadership has an overall effect on student academic performance. Leadership has a positive effect on interest in learning, which is in line with previous research findings. (Hernama &; Hermawati, 2022; Ismiati et al., 2021; Turisia et al., 2021; Araniri, 2018; Nurhikmah, 2019). By considering the results of the research that has been done, it can be concluded that the leadership of an educator will affect student interest. Thus, this research also provides an understanding that the leadership of a lecturer will also affect student learning interest. There is a positive influence of leadership on learning motivation. This is in line with previous research (e.g., Marimin & Sari, 2006; Utari &; Widodo, 2018; Okta et al., 2022; Rahino et al., 2022; Kasmawati, 2017). Based on the research that has been done, it can be concluded that the leadership of an educator will affect student learning motivation. There is a positive influence of interest on learning outcomes. This is in accordance with research that has been done (for example, Falah, 2019; Sirait, 2016; Wilda et al., 2017; Siagian, 2012; Islamiah, 2019). Based on the research conducted, it can be concluded that interest will affect student learning outcomes. There is a cycle that influences each other between leadership and learning motivation. That is, high interest in learning will affect learning outcomes. Motivation affects learning outcomes. This is in accordance with the research that has been done. (e.g., Mediawati, 2010; Mustaqim, 2019; Pratiwi, 2017; Safitri &; Yuniwati, 2016; Yusup et al., 2023). Studies show that learning outcomes are influenced by high motivation. There is a cycle that influences each other between motivation and learning outcomes.

Conclusion

Based on the results of our research on Jambi University students as many as 262 respondents who have been processed data, it was concluded that lecturer leadership has a significant effect on student interest, motivation and learning

outcomes. Which is where it is proven by a positive value in each variable. For this reason, it is expected that every lecturer during teaching and learning activities is able to position themselves as multirole and able to be a good example. Because, based on the results of research that I conducted on several Jambi University students, it was found that the lecturer's leadership was very influential both on the cognitive, affective, and psychomotor aspects.

The Availability Statement

This study's anonymized dataset, analytical code, and survey instruments are accessible from the corresponding author upon reasonable request. To protect participant privacy, data are de-identified and restricted to non-commercial academic use under an ethical data-sharing agreement.

The research was undertaken without external, specific financing.

No funding bodies impacted study design, data collection, analysis, interpretation, manuscript writing, or publishing.

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Generative AI Statement

Language refining, methodical summary, and table formatting were done selectively with generative AI tools like Grok. The authors carefully evaluated, corrected, and checked all AI outputs against the original data to ensure accuracy and integrity. Due to data protection standards, Grok was not credited as an author and no sensitive or personal information was released.

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