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The Influence of Learning Environment, Lecturer Knowledge, and Personal Initiative on Learning Process and Graduate Quality: a Structural Equation Modeling Approach

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A B S T R A C T

This study aims to analyze the influence of the learning environment, lecturer knowledge, and personal initiative on the learning process and graduate quality in higher education institutions. The methodology employed is Structural Equation Modeling (SEM) to test the relationships among these variables. The results indicate that a conducive learning environment and adequate lecturer knowledge significantly contribute to the learning process. Additionally, students' personal initiative also positively impacts graduate quality. These findings provide essential insights for educational managers to create a better learning environment and enhance teaching quality in efforts to improve graduate outcomes.

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INTRODUCTION

The quality of higher education has long been a focal point for institutions worldwide, as it plays a critical role in shaping the future workforce. Among the various factors that contribute to the success of educational outcomes, the learning environment, lecturer knowledge, and personal initiative of both students and educators have emerged as crucial determinants. The relationship between these elements and the overall quality of the learning process is essential in understanding how to enhance graduate competence. In recent years, educators have increasingly turned to Structural Equation Modeling (SEM) to explore these relationships, allowing for a comprehensive analysis of the factors that influence academic success (Lukman, Setiani, & Muhassanah, 2020). The learning environment encompasses both the physical and psychological conditions in which students engage with educational content. A supportive learning environment fosters student engagement, enhances motivation, and promotes deeper understanding of the material. Universities that prioritize creating conducive learning spaces—whether through technology integration, collaborative learning platforms, or effective classroom management—can significantly impact student performance. Additionally, a positive environment encourages critical thinking, problem-solving, and innovation, all of which are essential skills for graduates entering the workforce (Langlais & Bent, 2018).

Lecturer knowledge is another cornerstone of the educational process. The expertise and pedagogical skills of educators directly affect the quality of instruction delivered to students. Lecturers who are well-versed in their subjects and stay updated with current trends and research are better equipped to deliver content that is relevant, comprehensive, and engaging. Furthermore, the ability of lecturers to adapt their teaching methods to accommodate different learning styles can significantly enhance the learning process. This adaptability, combined with a deep understanding of subject matter, helps foster a culture of continuous learning and improvement among students (Rahman, 2023). Personal initiative, particularly on the part of students, is also critical to the learning process. Students who exhibit a strong sense of personal responsibility and initiative tend to perform better academically. This self-driven approach to learning not only leads to higher academic achievement but also prepares students for the challenges of professional life. Similarly, educators who take the initiative to continuously improve their teaching methods, seek professional development opportunities, and innovate within the classroom contribute to a more dynamic and effective learning process (Heilporn, Lakhal, & Bélisle, 2021).

The interaction between these factors—learning environment, lecturer knowledge, and personal initiative—can be complex. Each factor can independently influence educational outcomes, but their combined effect often leads to more significant improvements in the learning process and graduate quality. Structural Equation Modeling (SEM) offers a robust analytical approach to examine these interactions (Cancino & Capredoni, 2020). By using SEM, researchers can simultaneously assess multiple variables and their

relationships, providing a clearer understanding of how these factors contribute to academic success and graduate preparedness. As the global economy continues to evolve, the expectations for university graduates are also changing. Employers are increasingly looking for graduates who not only possess technical knowledge but also the soft skills necessary to succeed in dynamic work environments (Stoian, Fărcaşiu, Dragomir, & Gherheş, 2022). These soft skills, such as communication, teamwork, and adaptability, are often developed through a combination of a supportive learning environment, knowledgeable educators, and personal initiative. Higher education institutions must therefore focus on fostering these elements to ensure that graduates are well-equipped for the demands of the modern workforce (Hidayat, Sudarman, Alfurqan, & Doni, 2021).

Recent studies have shown that students who learn in environments that promote collaboration and critical thinking tend to perform better academically. This suggests that the learning environment is not just a backdrop for education but an active contributor to the learning process (Baldwin, 2021). When combined with lecturers who bring a wealth of knowledge and a commitment to student success, the learning environment becomes a powerful tool for educational development. Moreover, students who take the initiative to actively participate in their education—by asking questions, seeking help when needed, and engaging in extracurricular activities—are more likely to achieve academic success and, consequently, higher employability (Fauzi & Asri, 2021). However, the role of the lecturer extends beyond mere knowledge dissemination. Lecturers act as mentors and role models, influencing not only students' academic performance but also their professional attitudes and ethical considerations. Therefore, the continuous professional development of lecturers is crucial for maintaining high standards of education. Institutions that invest in training and development programs for their educators are likely to see improvements in both the teaching quality and the learning outcomes of their students (Ben Ouahi, Lamri, Hassouni, & Al Ibrahmi, 2022).

The concept of graduate quality is multifaceted, encompassing not just academic knowledge but also the ability to apply that knowledge in real-world settings. Universities must therefore create learning environments that bridge the gap between theory and practice (Bem, Coelho, & Dandolini, 2016). This can be achieved through experiential learning opportunities, such as internships, research projects, and industry collaborations. When combined with knowledgeable lecturers and motivated students, these opportunities help to ensure that graduates are well-prepared for the complexities of the modern workforce (Chukwuere, 2024). The aim of this research is to analyze the influence of the learning environment, lecturer knowledge, and personal initiative on the learning process and graduate quality in higher education institutions. By employing a Structural Equation Modeling (SEM) approach, the study seeks to identify the relationships between these factors and how they contribute to enhancing student learning outcomes and overall graduate competence.

THEORETICAL REVIEW

Social Cognitive Theory

Social Cognitive Theory (SCT) focuses on how individuals learn by observing others in their environment and how reciprocal interactions between personal, behavioral, and environmental factors influence learning. In the context of education, SCT highlights the importance of the learning environment as a critical determinant of student outcomes. A positive, well-structured learning environment fosters active engagement, observational learning, and self-regulation, all of which are essential for effective learning. Research suggests that the quality of the learning environment directly influences students' academic performance, satisfaction, and skill acquisition (Verma & Sengupta, 2024).

The application of SCT in higher education shows that interactive and supportive environments enhance students' ability to integrate knowledge and develop the skills necessary for professional success. Students exposed to environments that promote collaboration, critical thinking, and feedback are better equipped to face academic challenges and meet the demands of the workplace. Studies confirm that structured learning environments have a significant positive impact on graduate quality, as they prepare students to apply their knowledge effectively in professional settings.

H1: A conducive learning environment positively influences the learning process and graduate quality.

Transformational Leadership Theory

Transformational Leadership Theory posits that effective leaders inspire and motivate followers by fostering an environment of intellectual stimulation, individual consideration, and motivation toward higher goals. In an educational context, lecturers who display transformational leadership qualities can significantly impact the learning process by encouraging student autonomy, creativity, and critical thinking. The theory suggests that lecturers' deep subject knowledge and their ability to inspire students are key factors in enhancing the quality of the learning process and graduate outcomes.

Empirical evidence supports the notion that lecturers with transformational leadership traits create learning environments that challenge students intellectually while providing them with the support needed to excel. Such lecturers foster a sense of purpose and motivation in students, which is critical for academic success and professional development. In addition, lecturer knowledge plays a pivotal role in shaping how students perceive the relevance and applicability of their education, which directly correlates with the quality of graduates (Prasetyo, Ilham, & Asvio, 2022).

H2: Lecturer knowledge positively influences the learning process and graduate quality.

Self-Determination Theory

Self-Determination Theory (SDT) emphasizes the importance of intrinsic motivation in learning. According to SDT, students are more likely to engage in learning activities when their basic psychological needs—autonomy,

competence, and relatedness—are satisfied. Personal initiative, which reflects a student's intrinsic motivation to learn, plays a critical role in shaping academic outcomes. When students take the initiative, they actively engage with learning material, seek out resources, and take responsibility for their academic progress. Research has shown that personal initiative is positively associated with higher academic performance and better graduate outcomes (Abidin, Riyad, & Ali, 2022).

In higher education, students who demonstrate strong personal initiative are more likely to overcome academic challenges and excel in their studies. These students are self-driven, setting high personal goals and taking proactive steps to achieve them. Studies further indicate that personal initiative fosters resilience and adaptability, qualities that are essential for success in both academic and professional environments. As such, personal initiative not only enhances the learning process but also contributes to producing high-quality graduates who are prepared to meet the demands of their chosen careers.

H3: Personal initiative positively influences the learning process and graduate quality.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) asserts that individuals' behaviors are guided by their attitudes, subjective norms, and perceived behavioral control. In the context of education, TPB suggests that students' attitudes toward learning, the influence of social norms (such as expectations from peers and lecturers), and their perceived control over their academic activities shape their engagement and performance. Students who have positive attitudes toward their education and believe they can control their learning process are more likely to succeed academically.

Research has shown that students with strong perceived control over their academic success are more motivated to engage in learning activities, leading to better educational outcomes. Additionally, positive social norms and expectations from lecturers and peers can enhance students' motivation to perform well, further influencing their academic success and graduate quality. Studies using TPB have demonstrated its effectiveness in predicting academic behaviors, such as study habits, course completion, and overall academic achievement (O'Brien, 2015).

H4: Students' attitudes and perceived control influence the learning process and graduate quality.

Expectancy-Value Theory

Expectancy-Value Theory (EVT) posits that students' motivation to engage in academic tasks is influenced by their expectations of success and the value they place on those tasks. EVT suggests that students are more likely to invest effort in their studies when they believe they can succeed and when they perceive the tasks as important for their future. In educational settings, students who see the relevance of their studies to their personal and professional goals

are more motivated to engage deeply with the material, leading to higher academic performance and graduate quality.

Research confirms that students who place high value on their academic work are more likely to perform better, as they are more invested in learning. Conversely, when students do not perceive the relevance of their studies, their engagement and performance suffer. Expectancy of success also plays a crucial role, as students who have confidence in their ability to succeed are more likely to put in the effort required to achieve their academic goals (Anggraeni, 2014).
H5: Expectancy of success and perceived task value positively influence the learning process and graduate quality.

In the context of higher education, the learning process and graduate quality are influenced by multiple interacting factors, including the learning environment, the lecturer's knowledge, personal initiative, and motivation theories like SDT and EVT. By employing a Structural Equation Modeling (SEM) approach, this study seeks to understand how these variables collectively impact student outcomes and identify the pathways through which these factors contribute to graduate quality. The SEM framework allows for the exploration of direct and indirect relationships between the constructs, providing a comprehensive understanding of how the interplay between individual, environmental, and instructional factors shapes academic success.

METHODOLOGY

The research will utilize a quantitative approach, employing Structural Equation Modeling (SEM) to examine the relationships between the learning environment, lecturer knowledge, personal initiative, and their impact on the learning process and graduate quality (Holte, 2024). SEM is chosen for its ability to analyze complex relationships between observed and latent variables, making it ideal for this study, which involves multiple interrelated factors influencing educational outcomes. The population for this study will consist of undergraduate students and lecturers from various higher education institutions. A purposive sampling technique will be used to select participants who have relevant experience and insight into the learning process, particularly in institutions known for their focus on graduate quality (Feng & Hancock, 2024). The sample size will be determined based on SEM requirements, ensuring it is sufficient to provide reliable results, with a target of 300-500 respondents to ensure statistical validity.

Data will be collected through a structured questionnaire, designed to measure variables related to the learning environment, lecturer knowledge, personal initiative, the learning process, and graduate quality. The questionnaire will consist of both closed and Likert-scale questions to capture the perceptions and experiences of participants (Nordhoff, Malmsten, Arem, Liu, & Happee, 2021). Additionally, demographic information such as age, gender, and academic background will be gathered to control for external factors. Before distribution, the questionnaire will undergo pilot testing to ensure its clarity and reliability. Once the data is collected, it will be analyzed using SEM to assess the hypothesized relationships. This involves several stages: first, confirmatory factor analysis (CFA) will be conducted to validate

the measurement model. Following this, the structural model will be analyzed to determine the strength and direction of the relationships between the variables. Fit indices such as CFI, TLI, RMSEA, and chi-square will be used to evaluate the overall model fit. This method will allow for an in-depth understanding of how the learning environment, lecturer knowledge, and personal initiative interact to influence the learning process and graduate quality (Aboytes, 2020).

RESULTS

Outer Loadings

Table 1. Outer Loadings

	KD	KL	LB	PB	PI
KD1	0.800				
KD2	0.885				
KD3	0.903				
KD4	0.852				
KD5	0.805				
KD6	0.907				
KL1		0.651			
KL2		0.703			
KL3		0.171			
KL4		0.810			
KL5		0.851			
LB1			0.655		
LB2			0.686		
LB3			0.793		
LB4			0.793		
LB5			0.761		
LB6			0.771		
PB1				0.707	
PB2				0.744	
PB3				0.889	
PB4				0.872	
PB5				0.879	
PI1					0.638
PI2					0.586
PI3					0.900
PI4					0.843

Six indicators were used to measure lecturer knowledge, with high factor loadings ranging from 0.800 to 0.907. These values are above the acceptable threshold of 0.7, indicating that all indicators (KD1 to KD6) have strong validity in measuring the knowledge construct. This suggests that lecturer expertise, subject mastery, and their ability to translate knowledge effectively to students are key elements of their overall knowledge. The quality of graduates was

measured using five indicators, but the analysis revealed a low factor loading for KL3 (0.171), well below the acceptable threshold. This suggests that KL3 does not adequately reflect the construct of graduate quality and may need to be excluded in future models. Other indicators, such as KL4 (0.810) and KL5 (0.851), show strong loadings, making them reliable indicators of graduate quality.

The process of learning was assessed using five indicators, all of which demonstrated strong loadings between 0.707 and 0.889. This indicates a high level of reliability in measuring the learning process as an intermediary variable between lecturer attributes and graduate quality. Four indicators were used to assess personal initiative, with two showing moderate to low loadings (PI1 = 0.638 and PI2 = 0.586). However, PI3 (0.900) and PI4 (0.843) exhibit very strong loadings, suggesting that proactive behaviors such as engaging in professional development and student mentorship are critical elements of lecturer personal initiative.

Path Coefficients

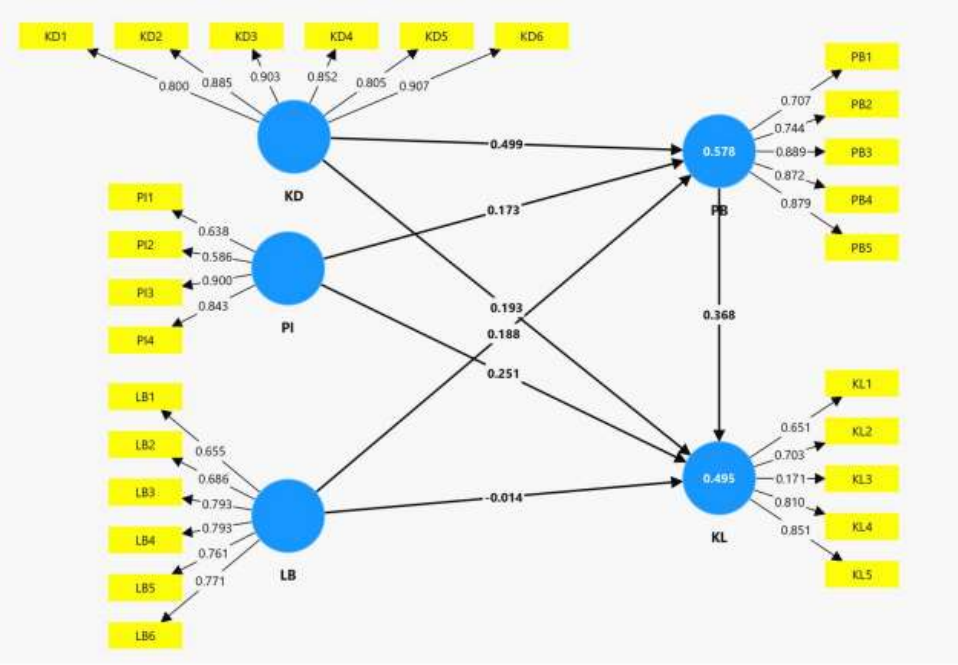

Figure 1. The Relationship Model between Constructs

Lecturer Knowledge (KD) has a direct effect on graduate quality (KL), as indicated by a path coefficient of 0.193, reflecting a moderate positive influence. KD also has a strong positive relationship with the learning process (PB), demonstrated by a path coefficient of 0.499. Furthermore, the learning process (PB) significantly impacts graduate quality (KL), with a coefficient of 0.368, confirming its mediating role between KD and KL. Personal Initiative (PI) also plays an important role, positively influencing both KL (0.251) and PB (0.173). In contrast, the Learning Environment (LB) has a negligible effect on graduate quality (-0.014) but shows a moderate positive influence on the learning process (0.188)

Direct Effects

Table 2. Path Coefficient (Direct Effect)

	Path coefficients
KD -> KL	0.193
KD -> PB	0.499
LB -> KL	-0.014
LB -> PB	0.188
PB -> KL	0.368
PI -> KL	0.251
PI -> PB	0.173

The results of the path coefficient analysis reveal the direct influence of lecturer knowledge and personal initiative on the learning process and graduate quality in higher education. Lecturer knowledge has a moderate positive relationship with graduate quality, with a path coefficient of 0.193, indicating that while higher levels of lecturer knowledge positively impact the quality of graduates, other factors may also play a role in shaping this outcome. Additionally, the influence of lecturer knowledge on the learning process is more significant, with a path coefficient of 0.499, suggesting that lecturers with deep subject matter expertise and effective teaching strategies greatly enhance the student learning experience. This strong impact highlights the importance of lecturer knowledge in improving student engagement and educational outcomes.

The learning process, as a mediator, has a path coefficient of 0.368 in relation to graduate quality, underscoring its significant role in bridging lecturer attributes and student outcomes. Structured, well-facilitated learning processes positively influence graduate quality, reinforcing the value of engaging teaching methodologies. Personal initiative also plays a crucial role, with a path coefficient of 0.251 showing a moderate positive effect on graduate quality. Lecturers who take the initiative to enhance their teaching methods and actively engage with students contribute meaningfully to the success of their graduates. This aligns with the view that intrinsic motivation and proactive behavior are key drivers of educational quality improvements. Personal initiative also positively influences the learning process, albeit to a lesser degree than lecturer knowledge, with a path coefficient of 0.173. This suggests that while personal initiative is valuable, its impact on student learning is not as strong as the direct influence of lecturer knowledge.

The learning environment, however, demonstrates a minimal negative effect on graduate quality, with a path coefficient of -0.014, and a moderate positive impact on the learning process, with a coefficient of 0.188. These findings suggest that while a supportive learning environment contributes to enhancing the learning process, its direct role in shaping graduate quality is limited, implying that other institutional factors may play a more significant part in determining student success.

Indirect Effect

Table 3. Path Coefficient (Indirect Effect)

	Specific indirect effects
PI -> PB -> KL	0.064
KD -> PB -> KL	0.184
LB -> PB -> KL	0.069

In terms of indirect effects, lecturer knowledge indirectly influences graduate quality through the learning process, with an effect of 0.184, reinforcing the importance of the learning process as a mediator. Personal initiative also has an indirect effect on graduate quality via the learning process, though to a lesser extent, with an indirect effect of 0.064. This demonstrates that while personal initiative positively impacts graduate outcomes, its indirect influence is relatively smaller.

Total Effects

Table 4. Path Coefficient (Total Effect)

	Total Effect
KD -> KL	0.377
KD -> PB	0.499
LB -> KL	0.055
LB -> PB	0.188
PB -> KL	0.368
PI -> KL	0.314
PI -> PB	0.173

The total effects, which combine both direct and indirect effects, reveal that lecturer knowledge has a total effect of 0.377 on graduate quality, demonstrating a meaningful overall impact, both directly and through its influence on the learning process. Personal initiative has a total effect of 0.314 on graduate quality, underscoring its importance in driving student success, though its indirect contribution is more modest compared to lecturer knowledge.

Reliability and Validity

Table 5. Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
KD	0.929	0.934	0.944	0.739
KL	0.664	0.759	0.792	0.466
LB	0.848	0.877	0.882	0.555
PB	0.877	0.887	0.912	0.675
PI	0.746	0.826	0.836	0.568

The analysis of reliability and validity shows that constructs like lecturer knowledge, personal initiative, and the learning process all exhibit high composite reliability, with values above 0.8, and satisfactory Average Variance Extracted (AVE) values exceeding 0.5, indicating strong reliability and validity. However, the graduate quality construct shows lower reliability, with a Cronbach's Alpha of 0.664, and an AVE of 0.466, suggesting that some refinement may be necessary, such as removing weaker indicators like KL3.

R-Square Values

Table 6. R-Square

	R-square	R-square adjusted
KL	0.495	0.487
PB	0.578	0.573

The R-Square values further reveal that the model explains 49.5% of the variance in graduate quality and 57.8% of the variance in the learning process. This indicates that while the model effectively accounts for a significant portion of what influences these outcomes, there are still other factors outside the model that impact graduate success and learning.

Model Fit

Table 7. Model Fit Results

	Saturated model	Estimated model
SRMR	0.105	0.105
d_ULS	3.862	3.862
d_G	0.743	0.743
Chi-square	1018.052	1018.052
NFI	0.765	0.765

The model fit is assessed using the Standardized Root Mean Square Residual (SRMR), which is 0.105, indicating that the model fit is less than ideal, as it exceeds the recommended threshold of 0.08. The Normed Fit Index (NFI) of 0.765 further suggests room for improvement, as values above 0.90 are typically considered acceptable for a good fit.

T-Statistics

Table 8. T-Statistics and P-Values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
KD -> KL	0.193	0.187	0.095	2.032	0.042
KD -> PB	0.499	0.498	0.065	7.726	0.000
LB -> KL	-0.014	-0.016	0.095	0.143	0.887
LB -> PB	0.188	0.192	0.062	3.046	0.002

PB -> KL	0.368	0.382	0.111	3.303	0.001
PI -> KL	0.251	0.246	0.066	3.778	0.000
PI -> PB	0.173	0.175	0.065	2.652	0.008

Lecturer Knowledge has a strong and statistically significant effect on both the learning process and graduate quality. Its impact on the learning process is particularly significant, as shown by a high T-statistic (7.726) and a very low P-value (0.000). Personal Initiative also plays an important role, positively influencing both the learning process and graduate quality, with moderate T-statistics and low P-values reflecting its strong significance. In contrast, the Learning Environment only has a statistically significant effect on the learning process and does not directly impact graduate quality, as evidenced by its very low T-statistic (0.143) and high P-value (0.887).

The T-statistics and P-values confirm the strength of the relationships among the variables, with lecturer knowledge and personal initiative standing out as the most important factors influencing both the learning process and graduate quality. The learning process serves as a critical mediator, enhancing the effects of lecturer attributes on student outcomes.

DISCUSSION

This study aimed to explore the influence of the learning environment, lecturer knowledge, and personal initiative on the learning process and graduate quality within higher education through Structural Equation Modeling (SEM). The findings reveal significant relationships among these variables, highlighting their collective impact on educational outcomes. The results indicate that lecturer knowledge is crucial for shaping both the learning process and graduate quality. The strong path coefficient (0.499) from lecturer knowledge to the learning process suggests that knowledgeable lecturers enhance student engagement and learning experiences. This supports existing literature that emphasizes the role of expert instructors in fostering critical thinking and skill acquisition, suggesting that investments in lecturer training can substantially benefit student outcomes.

The learning process serves as a significant mediator between lecturer knowledge and graduate quality, with a path coefficient of 0.368. This emphasizes the importance of structured learning experiences in translating lecturer expertise into student success. Educational institutions should enhance pedagogical practices to promote active engagement and collaborative learning, ensuring that students can effectively apply the knowledge they acquire. Personal initiative also plays a positive role in influencing both the learning process (0.173) and graduate quality (0.251), albeit with a lesser impact compared to lecturer knowledge. This finding highlights the importance of intrinsic motivation among students for achieving academic success. Educational institutions can foster personal initiative by creating environments that encourage self-directed learning and exploration.

Interestingly, the learning environment's direct influence on graduate quality was negligible (-0.014), despite its positive effect on the learning process (0.188). This suggests that while a supportive learning environment enhances

student engagement, it may not directly translate into improved graduate outcomes. Further investigation is needed to understand how specific elements of the learning environment interact with pedagogical approaches and student characteristics. This study underscores the interconnectedness of lecturer knowledge, personal initiative, and the learning process in determining graduate quality. By prioritizing knowledgeable instructors, engaging learning experiences, and motivated learners, educational institutions can enhance teaching and learning strategies, ultimately leading to improved outcomes for students in higher education.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that lecturer knowledge and personal initiative significantly influence the learning process and the quality of graduates in higher education institutions. The analysis results indicate that lecturer knowledge contributes not only directly to graduate quality but also through enhancing the learning process. This underscores the importance of investing in lecturer competency development to improve the student learning experience and their academic outcomes. Additionally, student personal initiative positively impacts the learning process, although its influence is smaller compared to lecturer knowledge.

Based on these findings, it is recommended that higher education institutions focus on enhancing lecturer capacity through ongoing training and professional development. Furthermore, it is essential to create a supportive learning environment that encourages students to take initiative in their learning processes. Programs promoting independent and collaborative learning can strengthen student engagement, leading to better academic achievements. Through these efforts, it is expected that graduate quality will improve, aligning with the increasingly complex demands of the job market.

FURTHER STUDY

This study has certain limitations, particularly in its focus on a specific group of lecturers and students within a single higher education institution. The findings may not be fully generalizable to other contexts or institutions with different academic cultures and environments. Additionally, the study primarily used a quantitative approach, which may limit deeper insights into the underlying reasons behind certain behaviors or decisions. For future research, it is recommended to conduct similar studies across multiple institutions, including those from various regions or educational systems, to enhance generalizability. A mixed-methods approach, combining both quantitative and qualitative data, could provide richer insights into how lecturer knowledge and personal initiative influence learning outcomes and graduate quality. Moreover, investigating additional factors such as technological resources, institutional support, and student diversity could offer a more comprehensive understanding of the learning process in higher education.

REFERENCES

Abidin, Z., Riyad, M., & Ali, A. N. (2022). Hubungan antara kepribadian dengan engagement dosen di Institut Ummul Quro Al Islami (Iuqi) Bogor. *6(2)*, 152-165.

Aboytes, J. R. (2020). Transformative learning in the field of sustainability: a systematic literature review (1999-2019). *International Journal of Sustainability in Higher Education, 21(5)*, 993-1013.

Anggraeni, R. D. (2014). Increasing lecturer competence as the quality assurance of lecturer performance. *Management Studies, 2(5)*, 309-329.

Baldwin, C. (2021). Autoethnographic Dance and Transformative Learning: Exploring Self-Reflexive Identity Work and Change. *Journal of Transformative Education, 19(2)*, 107-126.

Bem, R. M., Coelho, C. C., & Dandolini, G. A. (2016). Knowledge management framework to the university libraries. *Library Management, 37(4)*.

Ben Ouahi, M., Lamri, D., Hassouni, T., & Al Ibrahmi, E. M. (2022). Science Teachers' Views on the Use and Effectiveness of Interactive Simulations in Science Teaching and Learning. *International Journal of Instruction, 15(1)*.

Cancino, M., & Capredoni, R. (2020). Assessing pre-service EFL teachers' perceptions regarding an online student response system. *Taiwan Journal of TESOL, 17(2)*, 91-118.

Chukwuere, J. E. (2024). The future of generative AI chatbots in higher education. *Computers and Society*.

Fauzi, R. A., & Asri, Y. (2021). Barriers and solutions in online learning during the COVID-19 pandemic, Indonesian language education students at the Riau Islamic University. *In Ninth International Conference on Language and Arts (ICLA 2020)*, 14-18.

Feng, Y., & Hancock, G. R. (2024). A structural equation modeling approach for modeling variability as a latent variable. *Psychological Methods, 29(2)*, 262-286.

Heilporn, G., Lakhal, S., & Bélisle, M. (2021). An examination of teachers' strategies to foster student engagement in blended learning in higher

education. *International Journal of Educational Technology in Higher Education, 18(1)*, 1-25.

Hidayat, A. T., Sudarman, S., Alfurqan, A., & Doni, S. (2021). Understanding level of UIN Imam Bonjol Padang's lecturers towards the privacy policy application used in academic activities during the COVID-19 pandemic period. *Journal of Physics: Conference Series, 1779(1)*.

Holte, A. (2024). A Structural Equation Modeling Approach to Understand the Dynamics of Smartphone Attachment and Problematic Smartphone use. *Journal of Technology in Behavioral Science*.

Langlais, P. J., & Bent, B. J. (2018). Effects of training and environment on graduate students' self-rated knowledge and judgments of responsible research behavior. *Ethics & Behavior, 28(1)*, 64-80.

Lukman, H., Setiani, A., & Muhassanah, N. (2020). Structural Equation Modelling of Teaching Quality on Students' Satisfaction. *Journal of Physics: Conference Series*.

Nordhoff, S., Malmsten, V., Arem, B., Liu, P., & Happee, R. (2021). A structural equation modeling approach for the acceptance of driverless automated shuttles based on constructs from the Unified Theory of Acceptance and Use of Technology and the Diffusion of Innovation Theory. *Transportation Research Part F: Traffic Psychology and Behaviour*, 58-73.

O'Brien, B. (2015). An exploration of student perspectives of quality teaching at multi-level education environments. *Dissertation*.

Prasetyo, M. A., Ilham, M., & Asvio, N. (2022). Lecturer professionalism in improving the effectiveness of higher education institutions. *International Journal of Educational Review, 4(1)*, 140-153.

Rahman, R. (2023). Komunikasi antar pribadi dosen dan mahasiswa dalam memotivasi belajar mahasiswa ilmu komunikasi universitas hang tuah pekanbaru. *Jurnal Sosio-Komunika, 2(1)*.

Stoian, C., Fărcaşiu, M., Dragomir, G., & Gherheş, V. (2022). Transition from Online to Face-to-Face Education after COVID-19: The Benefits of Online Education from Students' Perspective. *Sustainability, 14(19)*.

Verma, S., & Sengupta, S. (2024). New way to shaping India's academic environment: An assessment of the mechanism of integration of education 4.0 to industry- centric learning. *Computer Applications in Engineering Education*.