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Enhancing Students' Critical Thinking Through Active Teaching Methods: An Experimental Approach Integrating Inclusive Leadership in Higher Education

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Abstract

Based on survey data collected from 539 undergraduate students at public and private universities in Vietnam, this study applies foundational theories and previous research to analyze and evaluate the impact of active teaching methods and inclusive leadership on students' critical thinking and academic performance. By employing advanced data analysis techniques such as Cronbach's Alpha reliability testing, Exploratory Factor Analysis (EFA), and Partial Least Squares Structural Equation Modeling (PLS-SEM) using SPSS and SmartPLS software, the study presents several key findings. Specifically: (1) Active teaching methods have a significant and positive impact on enhancing students' critical thinking and academic performance; (2) Inclusive leadership plays a crucial mediating role in strengthening the relationship between active teaching methods and both critical thinking and academic performance; (3) Critical thinking has a strong and positive influence on students' academic performance. These findings highlight the importance of integrating active teaching methods and inclusive leadership in higher education to foster students' cognitive development and learning outcomes. The coordinated application of these elements not only contributes to improving educational quality but also lays the foundation for building an inclusive, equitable, and sustainable learning environment in the context of ongoing educational innovation.

Keywords: *Active Teaching Methods, Inclusive Leadership, Critical Thinking, Learning Outcomes, Higher Education.*

Introduction

In the context of ongoing higher education reform, improving the quality of education requires not only the transmission of knowledge but also the development of students' higher-order thinking skills, particularly critical thinking. Critical thinking is considered an essential competency that enables learners to go beyond passive information reception, empowering them to analyze, evaluate, and make well-founded decisions in both academic and real-life contexts (Facione, 1990; Paul & Elder, 2001). According to Halpern (1998), critical thinking plays a crucial role in helping students become responsible citizens who can evaluate information logically, objectively, and thoughtfully.

However, in many higher education institutions, traditional teaching methods remain prevalent, leading students to adopt passive learning attitudes with limited opportunities to actively explore and expand their knowledge (Stassen et al., 2011). This situation highlights the urgent need to shift from teacher-centered to learner-centered approaches, in which active teaching methods play a central role. These methods encourage students to engage in interactive learning activities, problem-solving, and critical reflection, thereby enhancing their higher-order thinking abilities

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(Bonwell & Eison, 1991; Freeman et al., 2014).

Notably, recent research by Bhuttah et al. (2024) demonstrates that, in addition to active teaching methods, instructors' inclusive leadership—characterized by openness, active listening, and the creation of a psychologically safe learning environment—is also a key factor that empowers students to express their viewpoints confidently, thereby fostering the development of critical thinking. Inclusive leadership is defined as leadership behaviors that encourage diverse participation and create conditions where all members feel respected and recognized (Carmeli et al., 2010). In educational settings, such leadership helps students feel safe to ask questions, engage in discussions, and present ideas without fear of judgment (Edmondson, 1999).

Moreover, Orhan's (2022) synthesis of 47 studies conducted between 2015 and 2020 confirms the positive and statistically significant relationship between critical thinking and students' academic performance across various educational levels and disciplines. This evidence highlights that enhancing critical thinking is not only a learning objective but also a factor that contributes to improving students' actual learning outcomes and academic success.

Based on these arguments, the integration of active teaching methods and inclusive leadership emerges as a promising approach to enhancing students' critical thinking and improving the overall quality of higher education. However, in the Vietnamese context, experimental studies examining this combined model remain scarce. Most existing research tends to investigate these factors separately, lacking an integrated assessment of their overall impact within the specific context of Vietnamese higher education.

For instance, Dao Thanh Binh An Le and John Hockey (2021) pointed out that the promotion of critical thinking in Vietnamese university classrooms is often constrained by power dynamics and cultural factors, posing challenges to the development of students' critical thinking skills. Similarly, Do (2012) emphasized that the promotion of critical thinking in Vietnamese universities faces several limitations due to the dominance of traditional teaching methods and the lack of initiatives to foster students' independent thinking.

Therefore, this study, titled "*Enhancing Students' Critical Thinking through Active Teaching Methods: An Experimental Approach Integrating Inclusive Leadership in Higher Education*," seeks to address this research gap by providing empirical evidence on the impact of active teaching methods on students' critical thinking and academic performance, while considering the mediating role of inclusive leadership. The findings of this study are expected to offer practical implications for instructors, educational managers, and policymakers in their efforts to enhance teaching and learning quality in higher education institutions.

Theoretical Background and Research Hypotheses

Theoretical Background

Social Constructivism Theory

Social Constructivism, introduced by Lev Vygotsky in the late 1970s, is recognized as one of the foundational theoretical frameworks in modern education. According to Vygotsky (1978), knowledge is not unilaterally transmitted from teacher to learner, but rather constructed through social interaction, the exchange of meaning, and collaboration within a structured learning environment. He emphasized the critical role of language, culture, and social context in shaping learners' cognition and the development of their thinking skills.

At the core of Social Constructivism is the assertion that learners play an active role in constructing and reconstructing knowledge, rather than passively receiving information delivered by instructors. This is achieved through collaborative learning activities such as group discussions, debates, problem-solving tasks, and experiential learning. These activities encourage learners to ask questions, analyze information, evaluate arguments, and engage in critical reflection—key manifestations of critical thinking (Palincsar, 1998).

Vygotsky also introduced the concept of the "Zone of Proximal Development" (ZPD), which suggests that learners can achieve higher levels of cognitive functioning when provided with appropriate guidance and support from instructors or peers. This theoretical principle underscores the importance of active teaching methods that create learning environments where students not only receive information but also participate in knowledge construction through interaction and mutual support (Hmelo-Silver, 2004).

Therefore, Social Constructivism offers a robust theoretical foundation to argue that active teaching methods—characterized by project-based learning, case-based learning, and debate-based learning—can stimulate and enhance students' critical thinking skills through socially and experientially rich learning activities (Jonassen, 1999).

Active Learning Theory

Active Learning Theory is a pedagogical approach that asserts students achieve higher learning outcomes when they actively engage in the learning process, rather than passively receiving information. According to Bonwell and Eison (1991), active learning occurs when students participate in activities such as discussions, writing reflections, problem-solving, debates, or collaborative group work, thereby developing higher-order thinking skills such as analysis, synthesis, and evaluation. The authors emphasize that "active learning requires students to do more than just listen; they must read, write, discuss, or engage in problem-solving activities."

Unlike traditional teaching methods—where instructors dominate as the central source of knowledge and students act primarily as passive recipients—active learning positions students at the center of knowledge construction. Instructional activities in active learning classrooms frequently require students to engage in critical thinking, self-reflection, explanation, and defense of their perspectives—core components of critical thinking (Prince, 2004).

An experimental meta-analysis by Freeman et al. (2014), which reviewed 225 studies across STEM disciplines, demonstrated that active learning significantly improves academic achievement and reduces student dropout rates compared to traditional lectures. These findings confirm that when learners are actively involved, they not only retain information better but also develop deeper understanding and apply knowledge flexibly, fostering sustainable critical thinking skills.

In the context of modern higher education, active learning is not only regarded as a teaching method but also as a comprehensive instructional philosophy aimed at empowering students and cultivating their self-directed learning and critical reflection—key competencies for lifelong learning (Michael, 2006).

In summary, Active Learning Theory provides a solid foundation for affirming that applying active teaching methods in university classrooms not only improves academic performance but also plays a crucial role in developing critical thinking—a core competency for students in the 21st century.

Inclusive Leadership Theory

Inclusive Leadership is a contemporary leadership style derived from behavioral leadership theories, aimed at creating environments where all members feel respected, heard, and empowered to participate in collective activities. According to Carmeli et al. (2010), inclusive leadership is characterized by three core behaviors: openness, supportiveness, and the encouragement of diverse perspectives. Inclusive leaders not only accept differences but also view diversity in opinions, backgrounds, and experiences as valuable resources for fostering innovation and creativity.

One of the key mechanisms through which inclusive leadership impacts organizational outcomes is by creating a sense of psychological safety for members (Edmondson, 1999). When learners feel psychologically safe, they are more willing to ask questions, express their opinions, and take learning-related risks without fear of being judged or criticized. This is particularly important in higher education, where students often hesitate to voice their perspectives or challenge instructors and peers due to cultural norms of power distance or fear of confrontation (Le & Hockey, 2021).

Carmeli et al. (2010), in their study of employees in high-tech organizations, demonstrated that inclusive leadership enhances participation in creative tasks through fostering psychological safety. Extending this model to higher education, Bhuttah et al. (2024) showed that instructors who practice inclusive leadership can amplify the effectiveness of active teaching methods, thereby enhancing students' critical thinking and improving academic performance.

Thus, Inclusive Leadership Theory is not only applicable in corporate settings but also serves as an important mediating factor in higher education, transforming the impact of active teaching methods into improved learning outcomes and the development of students' critical thinking skills. Understanding this mechanism has practical implications for designing safe, supportive, and inclusive learning environments that encourage students to take ownership of their learning and develop their full potential.

Research Hypotheses

Active Teaching Methods and Critical Thinking

Active teaching methods are considered one of the most effective approaches to promoting learners' active engagement in knowledge construction and the development of higher-order thinking skills, including critical thinking. According to Bonwell and Eison (1991), active learning involves student participation in activities such as discussions, debates, problem-solving, group work, and idea presentations, rather than passively listening to lectures. These methods encourage learners to continuously ask questions, analyze information, and defend their arguments—key manifestations of critical thinking.

Freeman et al. (2014), through a meta-analysis of 225 studies on teaching methods in the fields of science, technology, engineering, and mathematics (STEM), demonstrated that active learning not only improves academic performance but also fosters the development of higher-order thinking skills, including critical thinking. Their findings showed that students in active learning environments achieved higher success rates and lower dropout rates compared to those in traditional lecture-based settings.

Furthermore, Nold (2017), through an action research project conducted in business management courses, highlighted that integrating tasks requiring critical thinking—such as

essay writing, case analysis, and participation in discussion forums—significantly enhanced students' critical thinking capabilities. The study particularly emphasized the role of instructional strategies explicitly designed to develop critical thinking in boosting students' confidence and reasoning abilities.

These empirical findings collectively underscore the importance of active teaching methods in fostering students' critical thinking skills, thereby improving their academic performance and problem-solving abilities in both academic and professional contexts.

Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H1: Active teaching methods have a positive effect on students' critical thinking.

Active Teaching Methods and Learning Outcomes

In addition to promoting students' higher-order thinking skills, active teaching methods have also been recognized as having a positive impact on learning outcomes. Unlike traditional teaching methods, which primarily focus on one-way knowledge transmission, active learning encourages students to engage in interactive activities, exploration, and problem-solving. These activities not only help students to deeply understand the course content but also enhance their ability to apply knowledge in real-world contexts (Prince, 2004; Michael, 2006).

The meta-analysis conducted by Freeman et al. (2014) demonstrated that students in active learning environments achieved significantly higher academic performance compared to those in traditional lecture-based settings. Moreover, the study highlighted that the dropout rates were lower in active learning classes, suggesting that such methods not only improve performance but also foster student engagement and retention.

Notably, the experimental study by Bhuttah et al. (2024) in Pakistani universities extended these findings to higher education contexts. The study revealed that innovative teaching methods—including project-based learning, flipped classrooms, and strategies that promote active student participation—significantly improved student learning outcomes. Specifically, structural equation modeling analysis indicated a positive and statistically significant impact of innovative teaching methods on learning outcomes ($\beta = 0.551$, $p < 0.001$).

These results affirm that active teaching methods not only facilitate the development of critical thinking skills but also contribute to enhancing students' academic performance, thereby supporting the goal of improving the overall quality of higher education.

Based on these arguments and empirical evidence, the following hypothesis is proposed:

H2: Active teaching methods have a positive effect on students' learning outcomes.

The Mediating Role of Inclusive Leadership

Inclusive leadership is increasingly recognized as a key factor in creating psychologically safe learning environments that encourage student participation. According to Carmeli et al. (2010), inclusive leadership is characterized by three core behaviors: openness, active listening, and support for diversity. These behaviors make learners feel respected, acknowledged, and comfortable sharing their personal perspectives without fear of judgment or criticism. In higher education settings, this is particularly important as students often hesitate to voice dissenting opinions or challenge instructors due to cultural hierarchies and fear of making mistakes (Le & Hockey, 2021).

One of the key mechanisms through which inclusive leadership impacts learners is by fostering psychological safety—a state in which learners feel confident to engage in learning activities without fear of psychological harm (Edmondson, 1999). When students experience psychological safety, they are more likely to actively participate in learning activities such as discussions, debates, and group work, thereby maximizing the effectiveness of active teaching methods.

Furthermore, the experimental study by Bhuttah et al. (2024) provided empirical evidence of the mediating role of inclusive leadership in higher education contexts. The study found that inclusive leadership amplifies the positive effects of innovative teaching methods on both critical thinking and learning outcomes. Specifically, when students perceive their instructors as inclusive leaders, they tend to engage more actively in learning, which in turn enhances their critical thinking abilities and academic performance.

These findings highlight the importance of inclusive leadership as a mediating mechanism that transforms the effectiveness of active teaching methods into improved learning outcomes and critical thinking. Therefore, the following hypotheses are proposed:

H3: Inclusive leadership mediates the relationship between active teaching methods and students' critical thinking.

H4: Inclusive leadership mediates the relationship between active teaching methods and students' learning outcomes.

Critical Thinking and Learning Outcomes

In the context of contemporary higher education, critical thinking is regarded as a foundational competency that not only enables students to engage with knowledge more deeply but also enhances their academic performance and learning effectiveness. According to Facione (1990), critical thinking is a purposeful cognitive process in which learners employ skills of analysis, evaluation, and reasoning to arrive at well-founded and logical conclusions. This competency helps students develop a clearer understanding of issues, avoid rote memorization, and apply knowledge effectively in real-world situations.

The study by Shirazi and Heidari (2019) in the context of nursing education revealed that students with stronger critical thinking skills tend to achieve higher academic performance compared to those with lower levels of such skills. This finding is attributed to the role of critical thinking in fostering learners' abilities to self-assess, regulate their learning processes, and make more effective learning decisions.

Notably, the meta-analysis conducted by Orhan (2022), which synthesized findings from 47 studies involving a total of 13,687 participants across various educational levels and disciplines, confirmed a statistically significant and positive relationship between critical thinking and academic achievement. The results indicated an average effect size of 0.428, reflecting a relatively strong influence. The study further highlighted that this relationship was consistent across different regions and was not dependent on the type of critical thinking measured (whether skills-based or disposition-based).

These findings affirm that developing students' critical thinking not only enhances their academic understanding but also contributes significantly to improving their learning outcomes, thereby supporting the overall quality of higher education.

Based on the above arguments and empirical evidence, the following hypothesis is proposed:

H5: Critical thinking has a positive effect on students' learning outcomes.

Based on these hypotheses, the research model is proposed as follows:

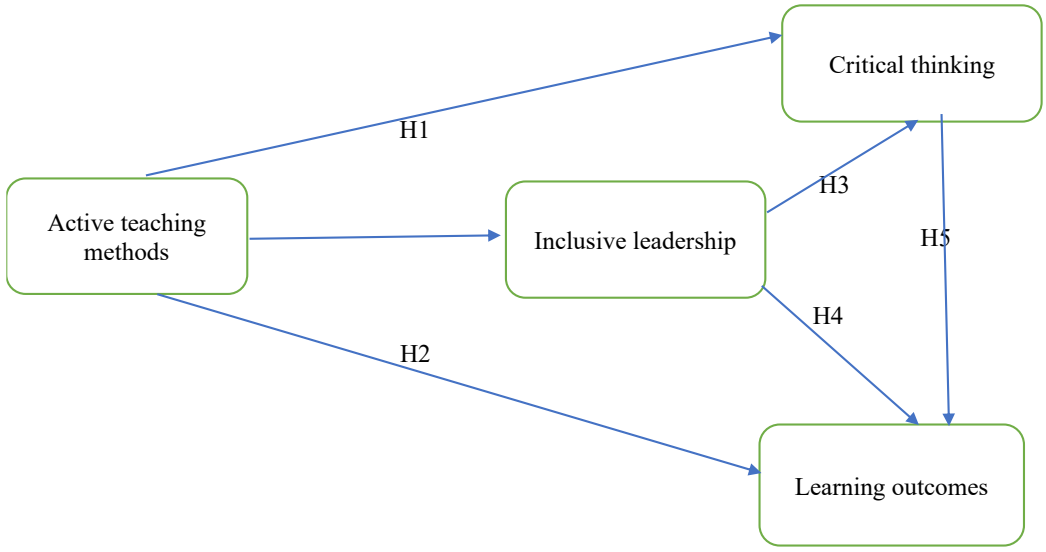

Figure 1. Proposed Research Model

Source: Proposed by the Author

Research Methodology

To conduct the study titled "Enhancing Students' Critical Thinking through Active Learning: An Experimental Approach Incorporating Inclusive Leadership in Higher Education", the author adopted a quantitative research approach. This approach was selected to empirically test the proposed hypotheses and assess the suitability of the research model within the context of higher education in Vietnam.

Research Method and Design

This study was designed as a quantitative investigation, employing Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships between the constructs in the proposed model, including active learning, inclusive leadership, critical thinking, and students' learning outcomes.

Data were collected through a structured survey questionnaire, utilizing measurement scales that had been previously validated in prior research. Specifically:

- The scale for active learning was adapted from the studies of Bonwell and Eison (1991) and Freeman et al. (2014).
- The scale for inclusive leadership was based on the work of Carmeli et al. (2010).
- The scale for critical thinking was derived from the research of Facione (1990) and

Orhan (2022).

- The scale for learning outcomes was adapted from the study by Bhuttah et al. (2024).

Target Population and Data Collection Method

The target respondents for this study were undergraduate students in their second to fourth years enrolled in both public and private universities. This selection was intended to ensure that participants had sufficient academic experience to evaluate teaching methods, instructor leadership styles, and their own development of critical thinking skills and learning outcomes.

Data collection was conducted using both face-to-face and online survey methods to ensure a diverse and representative sample of students from various universities.

Data Analysis Methods

After completing data collection, the author conducted data analysis following several steps to evaluate the reliability of the measurement scales and examine the relationships proposed in the research model:

- Descriptive Statistics: This analysis was performed to assess the demographic characteristics of the sample, including gender, year of study, field of study, and mode of learning, ensuring the representativeness of the data.

- Cronbach's Alpha Reliability Testing: Cronbach's Alpha was used to assess the internal consistency of the measurement scales, ensuring that the observed variables were reliable for subsequent analyses.

- Exploratory Factor Analysis (EFA): EFA was conducted to explore the underlying structure of the measurement scales, identify appropriate factor groupings, and evaluate the total variance explained and the convergence of the observed variables.

- Measurement Model Evaluation in PLS-SEM: The SmartPLS 4 software was used to assess Composite Reliability (CR), Average Variance Extracted (AVE), and to examine the convergent and discriminant validity of the constructs.

- Structural Model Analysis (PLS-SEM): The structural relationships among the constructs were tested, specifically:

✓ The effect of active learning on critical thinking and learning outcomes.

✓ The mediating role of inclusive leadership in these relationships.

✓ The impact of critical thinking on learning outcomes.

- Multicollinearity Assessment: Variance Inflation Factor (VIF) values were examined to ensure that the model did not suffer from multicollinearity issues.

- Model Predictive Power Evaluation: R^2 and adjusted R^2 values were analyzed to determine the extent to which the independent variables explained the variance in the dependent variables.

This analytical procedure ensured methodological rigor and provided robust empirical evidence to validate the proposed research model and hypotheses.

Expected Outcomes

The study is expected to offer empirical evidence clarifying the influence of active learning and the mediating role of inclusive leadership on students' critical thinking and learning outcomes. These findings will provide valuable insights for university instructors and educational administrators in designing teaching strategies and fostering inclusive learning environments. Ultimately, the results aim to contribute to enhancing the quality of higher education and promoting lifelong learning competencies among students.

No.	Construct	Code	Description	References
1	**Active Learning Methods**	AL1	The lecturer creates opportunities for students to engage in classroom discussions	Bonwell & Eison (1991); Freeman et al. (2014)
		AL2	The lecturer employs learning methods such as case-based or project-based learning	Bonwell & Eison (1991); Freeman et al. (2014)
		AL3	The lecturer encourages students to ask questions and engage in debates	Bonwell & Eison (1991); Freeman et al. (2014)
		AL4	Students are required to apply knowledge to solve real-world problems	Bonwell & Eison (1991); Freeman et al. (2014)
2	**Inclusive Leadership**	IL1	The lecturer listens to diverse student perspectives without judgment	Carmeli et al. (2010); Bhuttah et al. (2024)
		IL2	The lecturer encourages all students, including less vocal ones, to participate in discussions	Carmeli et al. (2010); Bhuttah et al. (2024)
		IL3	The lecturer supports and motivates students to express their personal opinions	Carmeli et al. (2010); Bhuttah et al. (2024)
		IL4	The lecturer fosters a psychologically safe learning environment where all opinions are respected	Carmeli et al. (2010); Bhuttah et al. (2024)
3	**Critical Thinking**	CT1	I regularly ask questions to clarify the information provided	Facione (1990); Orhan (2022)
		CT2	I evaluate different viewpoints before making a conclusion	Facione (1990); Orhan (2022)
		CT3	I analyze reasons and evidence before accepting an argument	Facione (1990); Orhan (2022)
		CT4	I am able to reason logically and present my opinions persuasively	Facione (1990); Orhan (2022)
4	**Learning Outcomes**	LO1	I achieve better learning outcomes thanks to my active participation in class	Bhuttah et al. (2024); Freeman et al. (2014)
		LO2	I feel more confident in presenting	Bhuttah et al.

			ideas and explaining acquired knowledge	(2024); Freeman et al. (2014)
		LO3	I am capable of applying knowledge to real-life academic or professional contexts	Bhuttah et al. (2024); Freeman et al. (2014)
		LO4	I achieve higher learning outcomes compared to my previous performance	Bhuttah et al. (2024); Freeman et al. (2014)

Table 1: Measurement Scales for Constructs in the Research Model

Source: Compiled by the author from Bonwell & Eison (1991), Freeman et al. (2014), Carmeli et al. (2010), Bhuttah et al. (2024), Facione (1990), and Orhan (2022).

Based on the number of observed variables in the proposed research model and in accordance with the recommended minimum sample size for conducting Exploratory Factor Analysis (EFA), the required sample size is suggested to be four to five times the number of observed variables (Hoang & Chu, 2008). In this study, the proposed model includes 16 observed variables representing four constructs: active learning methods, inclusive leadership, critical thinking, and learning outcomes. Therefore, the minimum required sample size is determined to be 5 x 16 = 80 observations.

However, in order to enhance the reliability of the research findings and ensure the representativeness of the sample for undergraduate students at both public and private universities, the researcher expanded the survey to include 600 second- to fourth-year students from universities located in Ho Chi Minh City. After the screening process, which involved removing invalid responses due to incomplete or inconsistent answers, the study retained 539 valid responses. This sample size sufficiently meets the requirements for subsequent analyses and provides a robust data foundation for testing the proposed research model.

These results ensure statistical reliability for further analyses, including the evaluation of measurement reliability and the application of Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the impact of active learning methods and the mediating role of inclusive leadership on students' critical thinking and learning outcomes.

Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Gender	Male	223	41.4
	Female	316	58.6
Academic Year	Second-year	176	32.7
	Third-year	191	35.4
	Fourth-year	172	31.9
Field of Study	Economics and Management	232	43.0
	Engineering and Technology	227	42.1
	Social Sciences and Humanities	80	14.8
Mode of Study	Full-time	398	73.8
	Part-time	141	26.2

Table 2: Descriptive Statistics of the Respondents

Source: Author’s analysis based on SPSS outputs

In the study titled "Enhancing Students' Critical Thinking Through Active Learning: An Experimental Approach Integrating Inclusive Leadership in Higher Education", the author conducted a survey of 539 undergraduate students from the second to the fourth year at both public and private universities. According to the descriptive statistics, the sample comprised 223 male students (41.4%) and 316 female students (58.6%), reflecting the predominance of female students, which is consistent with the demographic characteristics of many academic disciplines in higher education institutions.

Regarding academic year distribution, third-year students represented the largest proportion (35.4%), followed by second-year (32.7%) and fourth-year students (31.9%). This distribution indicates that the sample predominantly consisted of students with sufficient academic experience to provide informed evaluations of teaching methods, faculty leadership styles, and their own development of critical thinking skills.

In terms of field of study, students majoring in Economics and Management accounted for the highest proportion (43.0%), followed by Engineering and Technology (42.1%), and Social Sciences and Humanities (14.8%). This relatively balanced distribution across disciplines enhances the representativeness of the findings for various academic fields in higher education.

With regard to the mode of study, most of the respondents were enrolled in full-time programs (73.8%), while part-time students accounted for 26.2%. This reflects the current reality of higher education institutions, where full-time enrollment remains dominant. However, the presence of a substantial proportion of part-time students suggests the inclusion of learners with diverse learning experiences and skill development needs.

The demographic characteristics presented in Table 2 not only illustrate the representativeness of the sample but also provide important contextual insights for understanding the research setting. These characteristics form the foundation for analyzing the impact of active learning and inclusive leadership on students' critical thinking and learning outcomes, recognizing that demographic factors may significantly influence how students engage with and evaluate educational approaches in higher education.

Research Results

Evaluating the reliability of the measurement scales using Cronbach's Alpha is a critical preliminary step in developing and validating the structural model in PLS-SEM. In this study, a total of 16 initial observed variables were categorized into four main constructs: Active Learning (AL), Inclusive Leadership (IL), Critical Thinking (CT), and Learning Outcomes (LO). The reliability test results are presented in Table 3.

Construct	Initial Items	Cronbach's Alpha	Retained Items
Active Learning (AL)	4	0.896	4
Inclusive Leadership (IL)	4	0.891	4
Critical Thinking (CT)	4	0.885	4
Learning Outcomes (LO)	4	0.900	4

Table 3: Summary of Cronbach's Alpha Coefficients

Source: Author's analysis using SPSS

The results indicate that all measurement scales achieved Cronbach's Alpha coefficients above

0.85, exceeding the commonly accepted threshold of 0.7 as suggested by Nunnally and Bernstein (1994), thereby demonstrating excellent internal consistency across the scales. Notably, the Learning Outcomes (LO) construct achieved the highest reliability coefficient (0.900), indicating that its observed variables consistently measure the same underlying concept. The construct with the lowest coefficient, Critical Thinking (CT), still reached 0.885, which is considered very good.

Therefore, all 16 initial observed variables were retained for further analysis through Exploratory Factor Analysis (EFA) to examine the factorial structure of the scales before proceeding with subsequent analyses using the PLS-SEM model. These results provide a solid foundation for testing the hypothesized relationships between active learning, inclusive leadership, critical thinking, and student learning outcomes.

Parameter	**Result**
KMO Value	0.865
Bartlett's Test of Sphericity	
- Chi-Square	6,718.676
- Degrees of Freedom (df)	120
- Significance (Sig.)	0.000

Table 4: Results of Exploratory Factor Analysis (EFA)

Source: Author's analysis using SPSS

During the data validation process for conducting Exploratory Factor Analysis (EFA), the results revealed a KMO value of 0.865, which is considered very good according to Kaiser's (1974) classification scale. A KMO value above 0.8 indicates that the data sample meets a high level of adequacy, fulfilling the necessary condition for factor analysis.

Additionally, Bartlett's Test of Sphericity yielded a Chi-Square value of 6,718.676 with 120 degrees of freedom and a significance level of 0.000, which is below the conventional threshold of 0.05. This result indicates that the observed variables are highly correlated with one another, and the correlation matrix is not an identity matrix. Therefore, the dataset is fully suitable for further exploration of the underlying factor structure.

These findings not only confirm the validity of the dataset but also provide a robust statistical foundation for constructing and validating the measurement scales of the study's key constructs, including active learning, inclusive leadership, critical thinking, and student learning outcomes.

With a KMO value of 0.865 and statistically significant Bartlett's Test results, the data fully meet the requirements to proceed with more advanced analyses. Specifically, these results support the identification of latent factors and the evaluation of measurement scale quality, serving as a basis for testing the proposed research model on the effects of active learning and inclusive leadership on critical thinking and student learning outcomes in the context of higher education in Vietnam.

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
IL4	.857			
IL1	.841			
IL3	.823			
IL2	.763			
AL4		.890		
AL3		.888		
AL2		.841		
AL1		.689		
LO2			.902	
LO1			.821	
LO3			.749	
LO4			.743	
CT3				.800
CT2				.798
CT1				.789
CT4				.645
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

Table 5: Total Variance Explained and Rotated Factor Loadings from EFA

Source: Author's analysis using SPSS

The results of the Exploratory Factor Analysis (EFA) indicate that the total variance explained reached 77.266% at the fourth component, significantly exceeding the standard threshold of 50%. This confirms that the extracted components collectively account for a substantial proportion of the variance in the data. Moreover, the eigenvalue of the fourth component is 1.100, surpassing the minimum cutoff of 1.0, thereby justifying the grouping of observed variables into four meaningful and statistically valid factors.

Using the Principal Component Analysis method with Varimax rotation, the results show that the observed variables were clearly grouped into four distinct factors, consistent with the theoretical structure of the proposed research model:

- ✓ Component 1 represents Inclusive Leadership (IL)
- ✓ Component 2 represents Active Learning (AL)
- ✓ Component 3 represents Learning Outcomes (LO)
- ✓ Component 4 represents Critical Thinking (CT)

The high loadings within each component suggest that the observed variables reliably represent their respective theoretical constructs. Furthermore, the total variance explained by the four components provides strong evidence of measurement adequacy and conceptual validity.

These findings confirm the robustness and appropriateness of the data and measurement structure, thereby providing a solid foundation for proceeding with confirmatory analyses using SMART-PLS. These subsequent analyses include evaluating indicator reliability, composite reliability, convergent and discriminant validity, and assessing multicollinearity.

Successfully completing the EFA with satisfactory results regarding scale structure and reliability permits the research to advance to testing the structural model. This involves examining the hypothesized effects of active learning, the mediating role of inclusive leadership, critical thinking, and learning outcomes in the context of higher education.

	AL	CT	IL	LO
AL1	0.860			
AL2	0.918			
AL3	0.874			
AL4	0.833			
CT1		0.894		
CT2		0.884		
CT3		0.867		
CT4		0.804		
IL1			0.896	
IL2			0.828	
IL3			0.859	
IL4			0.889	
LO1				0.839
LO2				0.898
LO3				0.863
LO4				0.906

Table 6: Evaluation of Indicator Reliability

Source: SMARTPLS Analysis Results

According to Hair et al. (2016), the outer loading of observed indicators should exceed 0.7 to ensure the reliability of the measurement scales. As presented in Table 6, all observed indicators in this study achieve outer loadings above the 0.7 threshold, ranging from 0.804 to 0.918, demonstrating a strong and stable association between the indicators and their respective latent constructs.

Specifically, the Active Learning (AL) construct shows outer loadings ranging from 0.833 to 0.918, confirming that items AL1 to AL4 effectively measure this construct. Similarly, the Critical Thinking (CT) construct presents outer loadings from 0.804 to 0.894, indicating that items CT1 to CT4 meet measurement reliability standards. The Inclusive Leadership (IL) construct has outer loadings between 0.828 and 0.896, reflecting high reliability for items IL1 to IL4. Lastly, the Learning Outcomes (LO) construct shows outer loadings ranging from 0.839 to 0.906, suggesting that items LO1 to LO4 are appropriate and effectively capture the intended construct.

Consequently, no indicators were removed, and all items meet the reliability criteria, allowing their inclusion in subsequent structural model assessments using PLS-SEM. The fact that all indicators meet reliability standards not only strengthens the measurement model's internal consistency but also enhances the overall quality and validity of the proposed research model.

	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**Average Variance Extracted (AVE)**
AL	0.897	0.925	0.927	0.760
CT	0.885	0.887	0.921	0.745
IL	0.891	0.892	0.925	0.754
LO	0.900	0.911	0.930	0.769

Table 7: Reliability and Convergent Validity Assessment of Constructs

Source: SMARTPLS Analysis Results

The results presented in Table 7 confirm that all constructs in the study satisfy the required thresholds for reliability and convergent validity when employing the PLS-SEM approach.

Specifically, the Cronbach's Alpha values range from 0.885 to 0.900, all exceeding the commonly accepted minimum threshold of 0.7 as recommended by Hair et al. (2016). This indicates excellent internal consistency for all measurement scales, ensuring that the observed variables within each construct consistently measure the same underlying concept.

The rho_A values, reflecting the reliability and stability of the constructs, range from 0.887 to 0.925. These results demonstrate a high degree of homogeneity among the items in each construct, reinforcing the measurement reliability and confirming the stability of the model.

In addition, the Composite Reliability (CR) values fall between 0.921 and 0.930, well above the 0.7 benchmark. This implies that the observed variables not only demonstrate internal consistency but also contribute meaningfully to the measurement of their respective constructs.

Moreover, the Average Variance Extracted (AVE) values range from 0.745 to 0.769, surpassing the recommended minimum threshold of 0.5. This confirms that the majority of the variance in the indicators is explained by the latent constructs, thereby supporting the convergent validity of the measurement model.

In summary, these results provide strong evidence that the measurement scales for the four core constructs—Active Learning (AL), Critical Thinking (CT), Inclusive Leadership (IL), and Learning Outcomes (LO)—demonstrate high reliability and convergent validity. This forms a robust foundation for the subsequent evaluation of discriminant validity among the constructs before testing the structural model using PLS-SEM to assess the hypothesized relationships.

Next, discriminant validity will be evaluated using the Fornell-Larcker criterion (Fornell & Larcker, 1981), by comparing the square root of the AVE for each construct with its correlations with other constructs. According to this criterion, the square root of the AVE of each construct should be greater than its highest correlation with any other construct, thereby confirming discriminant validity.

	AL	CT	IL	LO
AL	0.872			
CT	0.507	0.863		
IL	0.380	0.541	0.869	
LO	0.427	0.628	0.451	0.877

Table 8: Discriminant Validity Assessment of Constructs

Source: SMARTPLS Analysis Results

As shown in the table above, Active Learning (AL) has a square root of AVE of 0.872, which exceeds its correlations with Critical Thinking (0.507), Inclusive Leadership (0.380), and Learning Outcomes (0.427). Similarly, Critical Thinking (CT) has a square root of AVE of 0.863, which is higher than its correlations with Active Learning (0.507), Inclusive Leadership (0.541), and Learning Outcomes (0.628).

For Inclusive Leadership (IL), the square root of AVE is 0.869, exceeding its correlations with Active Learning (0.380), Critical Thinking (0.541), and Learning Outcomes (0.451). Lastly, Learning Outcomes (LO) has a square root of AVE of 0.877, which surpasses its correlations with Active Learning (0.427), Critical Thinking (0.628), and Inclusive Leadership (0.451).

These results demonstrate that the constructs measured in this study are conceptually distinct and not overlapping, thereby confirming the discriminant validity of the measurement model. Combined with the reliability and convergent validity results presented in Table 7, these findings provide a robust foundation for proceeding with the PLS-SEM structural model assessment to test the hypothesized relationships proposed in this study..

	AL	CT	IL	LO
AL				
CT	0.544			
IL	0.409	0.608		
LO	0.450	0.699	0.493	

Table 9: Discriminant Validity Assessment Using HTMT Criterion

Source: SMARTPLS Analysis Results

In addition to the Fornell-Larcker criterion, this study also employed the Heterotrait-Monotrait Ratio (HTMT) to assess discriminant validity—a method proposed by Henseler, Ringle, and Sarstedt (2015), known for its higher sensitivity in detecting issues of insufficient discriminant validity between conceptual constructs.

According to commonly accepted thresholds, HTMT values should be below 0.85 to confirm that the constructs are conceptually distinct. The results presented in Table 9 indicate that all construct pairs meet this threshold:

The HTMT value between Active Learning (AL) and Critical Thinking (CT) is 0.544.

Between AL and Inclusive Leadership (IL) is 0.409.

Between AL and Learning Outcomes (LO) is 0.450.

Between CT and IL is 0.608.

Between CT and LO is 0.699.

Between IL and LO is 0.493.

All these values fall well below the strict 0.85 threshold, confirming that the constructs measured in this study are conceptually distinct and non-overlapping, meeting the required conditions for their inclusion in the PLS-SEM structural analysis.

The consistency between the HTMT and Fornell-Larcker results strengthens the evidence of discriminant validity at both evaluation levels. This reinforces the reliability of the measurement model and sets a solid foundation for proceeding to the next stage of structural model evaluation and hypothesis testing.

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
AL -> CT	0.353	0.353	0.038	9.358	**0.000**
AL -> IL	0.380	0.381	0.041	9.331	**0.000**
AL -> LO	0.126	0.126	0.044	2.865	**0.004**
CT -> LO	0.489	0.489	0.045	10.761	**0.000**
IL -> CT	0.406	0.406	0.038	10.818	**0.000**
IL -> LO	0.139	0.139	0.042	3.347	**0.001**

Table 10: PLS-SEM Structural Model Results

Source: SMARTPLS Analysis Results

The results of the PLS-SEM structural model presented in Table 10 reveal that all hypothesized relationships among Active Learning (AL), Inclusive Leadership (IL), Critical Thinking (CT), and Learning Outcomes (LO) are statistically significant and demonstrate meaningful levels of influence.

Specifically, Active Learning (AL) shows a positive and statistically significant effect on Critical Thinking (CT), with a path coefficient of 0.353, T = 9.358, and P = 0.000, indicating that active learning methods substantially enhance students' critical thinking abilities. Furthermore, AL also has a positive impact on Inclusive Leadership (IL) (β = 0.380, T = 9.331, P = 0.000), suggesting that active learning fosters instructors' inclusive leadership behaviors characterized by listening, supporting, and encouraging student engagement.

Additionally, AL exhibits a direct influence on Learning Outcomes (LO) with a coefficient of 0.126, T = 2.865, and P = 0.004, indicating that active participation in learning activities contributes to improved academic performance, although the effect size is moderate.

Importantly, Critical Thinking (CT) demonstrates the strongest effect on Learning Outcomes

(LO), with a coefficient of 0.489, T = 10.761, and P = 0.000, confirming the central role of critical thinking in enhancing students' academic achievement.

Moreover, Inclusive Leadership (IL) has a positive influence on Critical Thinking (CT) (β = 0.406, T = 10.818, P = 0.000) and also affects Learning Outcomes (LO) directly (β = 0.139, T = 3.347, P = 0.001), highlighting that inclusive leadership not only facilitates the development of critical thinking but also directly and indirectly improves learning outcomes.

These findings provide robust empirical evidence of the significant roles of active learning and inclusive leadership in promoting critical thinking and improving academic achievement. The statistically significant relationships confirm the scientific validity of the proposed model and offer practical implications for instructors and educational managers in designing inclusive and active learning environments, thereby enhancing the overall quality of higher education.

	AL	CT	IL	LO
AL		1.169	1.000	1.376
CT				1.663
IL		1.169		1.444
LO				

Table 11: Multicollinearity Assessment Results

Source: SMARTPLS Analysis Results

Subsequently, the study conducted a multicollinearity assessment among the constructs in the model by examining the Variance Inflation Factor (VIF). The results presented in Table 11 indicate that all VIF values are below the commonly accepted threshold of 3, ensuring that no serious multicollinearity issues are present.

Specifically, for Active Learning (AL), the VIF values range from 1.000 to 1.376, suggesting an acceptable level of correlation among the variables without negatively affecting the regression estimates. Critical Thinking (CT) shows a VIF value of 1.663, which is higher than the other constructs but still within the acceptable range. Similarly, Inclusive Leadership (IL) presents VIF values ranging from 1.169 to 1.444, indicating that the variables in the model maintain a reasonable degree of independence.

These results confirm that the constructs in the model are not excessively collinear and do not introduce severe multicollinearity. This provides a solid foundation for proceeding with the evaluation of the theoretical relationships within the PLS-SEM structural model, ensuring the accuracy and reliability of the estimation results.

Construct	R^2	Adjusted R^2
Critical Thinking (CT)	0.399	0.396
Inclusive Leadership (IL)	0.145	0.143
Learning Outcomes (LO)	0.424	0.421

Table 12: R^2 and Adjusted R^2 Values for Dependent Variables

Source: SMARTPLS Analysis Results

The results presented in Table 12 illustrate the explanatory power of the independent variables with respect to the dependent variables in the research model.

Specifically, Critical Thinking (CT) achieves an R^2 of 0.399, indicating that 39.9% of the variance in critical thinking is explained by Active Learning (AL) and Inclusive Leadership (IL). This represents a moderate to high level of explanatory power, highlighting the significant role of instructional and leadership factors in fostering students' critical thinking skills.

Furthermore, Inclusive Leadership (IL) exhibits an R^2 of 0.145, accounting for 14.5% of the variance. While this reflects a modest explanatory power, it still meets statistical significance within the research context. This suggests that Active Learning (AL) influences students' perceptions of their instructors' inclusive leadership style, although additional factors may also contribute to this perception and warrant further investigation.

Notably, Learning Outcomes (LO) achieves an R^2 of 0.424, meaning that 42.4% of the variance in students' academic performance is explained by Critical Thinking (CT), Inclusive Leadership (IL), and Active Learning (AL). This is considered a relatively strong explanatory power, confirming that these factors play essential roles in improving students' academic achievement.

Relationship	**f^2 Effect Size**
AL → CT	0.177
AL → IL	0.169
AL → LO	0.020
CT → LO	0.250
IL → CT	0.235
IL → LO	0.023

Table 13: f^2 Effect Size (Individual Impact of Relationships)

Source: SMARTPLS Analysis Results

In addition to the R^2 values, the f^2 effect size is used to assess the individual contribution of each relationship in the model. The results presented in Table 13 show that Active Learning (AL) exerts a moderate effect on Critical Thinking (CT) ($f^2 = 0.177$) and Inclusive Leadership (IL) ($f^2 = 0.169$). Although the effect of AL on Learning Outcomes (LO) is low ($f^2 = 0.020$), it remains statistically significant. Critical Thinking (CT) demonstrates the strongest effect on Learning Outcomes (LO) ($f^2 = 0.250$), confirming its role as a key mediating factor in enhancing students' academic achievement. Inclusive Leadership (IL) shows a moderate effect on Critical Thinking (CT) ($f^2 = 0.235$) and a low effect on Learning Outcomes (LO) ($f^2 = 0.023$), suggesting that IL primarily influences learning outcomes indirectly through the enhancement of critical thinking.

Overall, the results of R^2, Adjusted R^2, and f^2 indicate that the research model provides a good explanatory power for the dependent variables, especially Critical Thinking and Learning Outcomes. Additionally, the f^2 effect sizes highlight the varying degrees of impact of each factor, with Critical Thinking playing a pivotal role in connecting Active Learning and Inclusive Leadership to Learning Outcomes. These findings provide robust empirical support for the validity and practical value of the proposed research model, while also offering actionable insights for improving instructional methods and leadership practices in higher education.

Fit Index	Saturated Model	Estimated Model
SRMR	0.075	0.075
d_ULS	0.763	0.763
d_G	0.435	0.435
Chi-Square	1383.798	1383.798
NFI	0.796	0.796

Table 14: Overall Model Fit Assessment

Source: SMARTPLS Analysis Results

To evaluate the overall fit of the research model, several indices were considered, including SRMR, d_ULS, d_G, Chi-Square, NFI, and rms Theta. The results presented in Table 14 indicate that the Standardized Root Mean Square Residual (SRMR) is 0.075, which is below the acceptable threshold of 0.08 as suggested by Henseler et al. (2014), confirming a good model fit.

Additionally, the d_ULS and d_G values for both the saturated and estimated models are identical (0.763 and 0.435, respectively), indicating that the model structure does not deviate from the optimal theoretical model. The Normed Fit Index (NFI) achieves a value of 0.796, which is close to the recommended threshold of 0.8, and is considered reasonably acceptable, especially in exploratory studies within the social sciences and education contexts.

Overall, these results affirm the adequate fit of the research model, providing a solid foundation for proceeding with the analysis and discussion of the findings.

	Specific Indirect Effects
AL -> IL -> CT	0.155
AL -> IL -> CT -> LO	0.076
AL -> IL -> LO	0.053

Table 15: The Mediating Role of Inclusive Leadership

Source: SMARTPLS Analysis Results

The results of the indirect effect analysis presented in the table above indicate that Inclusive Leadership (IL) plays a significant mediating role within the proposed research model.

Specifically, Inclusive Leadership (IL) mediates the relationship between Active Learning (AL) and Critical Thinking (CT), with an indirect effect size of 0.155. This finding suggests that the implementation of active learning not only directly enhances students' critical thinking but also fosters instructors' inclusive leadership behaviors, which in turn indirectly improve students' critical thinking capabilities.

Additionally, IL also mediates the relationship between AL and Learning Outcomes (LO) through two pathways: a direct pathway (AL → IL → LO) with an effect size of 0.053, and an indirect pathway (AL → IL → CT → LO) with a higher effect size of 0.076.

Notably, the indirect pathway through Critical Thinking (CT) demonstrates a stronger impact, reinforcing the argument that inclusive leadership not only directly contributes to learning outcomes but also indirectly enhances these outcomes by fostering students' critical thinking

abilities.

These findings confirm the mediating role of inclusive leadership in transforming the effects of active learning into improved learning outcomes and enhanced critical thinking. This clarification of the underlying mechanism offers valuable insights for proposing strategies to strengthen inclusive leadership practices among instructors, with the goal of optimizing teaching effectiveness and improving learning outcomes in higher education settings.

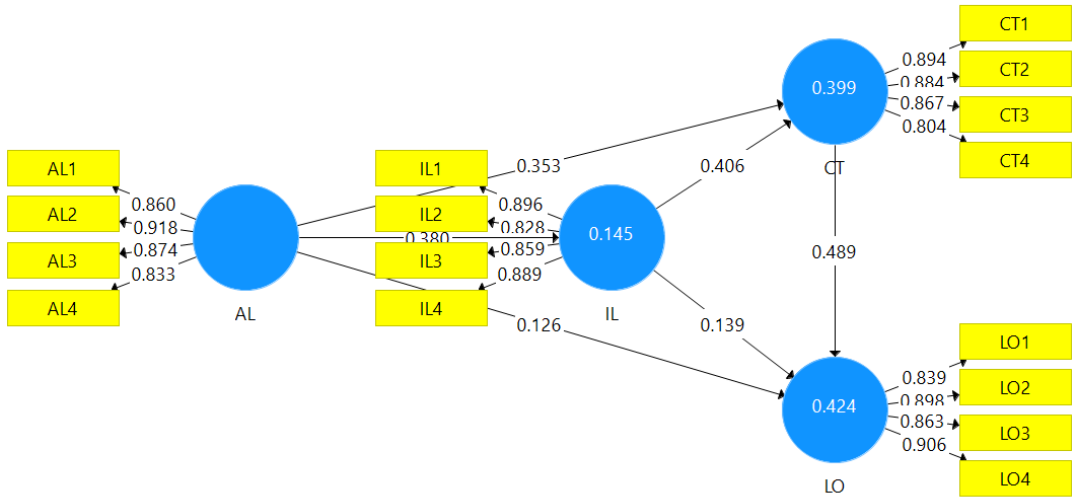

Figure 2: Structural Model Results of PLS-SEM Showing the Impact of Key Factors

Source: SMARTPLS Analysis Results

Figure 2 presents the results of the structural model assessment using PLS-SEM, aimed at evaluating the relationships between Active Learning (AL), Inclusive Leadership (IL), Critical Thinking (CT), and Learning Outcomes (LO) among university students. The results demonstrate that Active Learning (AL) has a positive and statistically significant impact on Inclusive Leadership (IL) with a path coefficient of 0.380, on Critical Thinking (CT) with a coefficient of 0.353, and on Learning Outcomes (LO) with a coefficient of 0.126. These findings suggest that the application of active learning methods not only directly enhances students' critical thinking and learning outcomes but also encourages instructors to adopt an inclusive leadership style.

Furthermore, Inclusive Leadership (IL) plays a key mediating role, showing positive effects on Critical Thinking (CT) with a coefficient of 0.406 and on Learning Outcomes (LO) with a coefficient of 0.139. These findings indicate that instructors' inclusive leadership behavior helps create a supportive learning environment that promotes the development of higher-order thinking skills and improves students' academic performance.

Notably, Critical Thinking (CT) emerges as the strongest predictor of Learning Outcomes (LO) with a coefficient of 0.489, highlighting that the development of critical thinking skills is a key driver for improving academic achievement. This provides empirical evidence reinforcing the central role of critical thinking within the research model.

In addition to these direct effects, the analysis also identifies significant indirect effects. Specifically, Active Learning (AL) indirectly influences Critical Thinking (CT) through Inclusive Leadership (IL) with an indirect effect of 0.155. Similarly, AL also exerts indirect effects on Learning Outcomes (LO) through Critical Thinking (CT) with an effect of 0.172, and through both IL and CT with an effect of 0.076. Notably, IL also enhances Learning Outcomes (LO) through CT with an effect of 0.199.

These results indicate that the pathway from Active Learning to Learning Outcomes operates not only through direct influence but also through the mediating roles of Inclusive Leadership and Critical Thinking. This reinforces the importance of student-centered instructional approaches, combined with inclusive leadership practices, in fostering critical thinking and improving academic achievement in the context of contemporary higher education.

Conclusion and Policy Implications

Conclusion

This study aims to clarify the role of active learning methodologies and inclusive leadership in enhancing students' critical thinking skills and learning outcomes in higher education institutions. The research adopts a quantitative experimental design, utilizing the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to test the proposed hypotheses. Survey data were collected from 539 undergraduate students (second to fourth-year) at both public and private universities. The analyses included reliability testing, exploratory factor analysis, and structural model assessment.

The findings reveal that active learning has both direct and indirect impacts on critical thinking and learning outcomes. Specifically, inclusive leadership plays a key mediating role, transforming the effects of active learning methods into higher-order thinking skills and improved academic performance. Additionally, critical thinking is confirmed as the strongest predictor of learning outcomes, highlighting its central role in enhancing educational quality.

These findings illuminate the mechanism connecting teaching methods, leadership styles, and learning outcomes, providing practical foundations for formulating policy recommendations and strategic solutions aimed at improving the quality of higher education.

Policy Implications

Strengthening the Implementation of Active Learning Strategies

The findings of this study confirm the significant impact of active learning methods on enhancing both critical thinking and learning outcomes among university students. Therefore, higher education institutions should intensify the implementation of various active learning strategies, such as project-based learning, collaborative learning, group discussions, debates, and flipped classrooms. According to Prince (2004), active learning encourages students to engage more deeply in the learning process rather than passively receiving information, thereby fostering the development of higher-order thinking skills. Supporting this view, Freeman et al. (2014) demonstrated that active learning methods significantly improve academic performance in science, technology, engineering, and mathematics (STEM) disciplines, outperforming traditional lecture-based teaching. Accordingly, designing curricula centered on learner engagement and encouraging students to interact actively and solve real-world problems should be considered a key strategy for improving the quality of higher education.

Beyond teaching methods, this study also highlights the mediating role of inclusive leadership in promoting critical thinking and academic performance. Inclusive leadership helps create a psychologically safe learning environment, encouraging students to confidently share their perspectives and engage in academic activities (Carmeli, Reiter-Palmon, & Ziv, 2010). To achieve this, universities should develop training programs for instructors focused on inclusive leadership skills, particularly active listening, encouraging diversity, and supporting students' holistic development. Nishii (2013) emphasized that inclusive leadership not only fosters greater engagement among diverse student groups but also enhances institutional learning outcomes. Therefore, investing in the development of inclusive leadership capacities among instructors can improve teaching quality and foster a more equitable and inclusive learning environment.

Enhancing Critical Thinking Training for Students

Critical thinking has been identified as the most influential factor affecting students' academic performance. Thus, higher education institutions should integrate the development of critical thinking as a core objective in their curricula. According to Facione (1990), critical thinking involves the ability to analyze, evaluate, and draw reasoned conclusions, playing a vital role in problem-solving and decision-making. Courses aimed at developing critical thinking should be integrated across disciplines, combining practical activities such as debates, analytical writing, and argumentation exercises within specialized subjects. Nold (2017) argues that providing students with opportunities to practice critical thinking in an active learning environment helps them develop self-evaluation and reasoning skills, ultimately improving academic achievement and professional competence.

Reforming Learning Outcome Assessment Policies

One of the major barriers to developing critical thinking is the persistence of knowledge-recall-based assessment systems. To overcome this limitation, universities should shift from traditional assessment methods to assessments that evaluate higher-order thinking skills, including analysis, synthesis, and evaluation. According to Brookhart (2010), assessments that target higher-order thinking not only measure academic achievement but also promote the development of practical problem-solving skills. Assessment criteria should be designed to be open-ended, encouraging students to articulate personal viewpoints and defend their arguments logically and persuasively. Reforming assessment policies in this direction will motivate students to engage more proactively in their learning and foster comprehensive critical thinking development.

Creating Supportive and Inclusive Learning Environments

Finally, to maximize the effectiveness of active learning and inclusive leadership, universities need to establish supportive and inclusive learning environments where all students feel respected and encouraged to participate. According to Shore et al. (2011), inclusive learning environments reduce feelings of exclusion and enhance student engagement, particularly for underrepresented or disadvantaged groups. Universities should develop two-way feedback mechanisms between instructors and students, provide academic support services and psychological counseling, and implement policies that promote diversity and inclusion in teaching and learning activities. These efforts not only improve educational quality but also contribute to building a fair, inclusive, and sustainable higher education system.

Research Limitations

Despite the meaningful results obtained in testing the proposed model on the effects of active learning methods and inclusive leadership on students' critical thinking and learning outcomes, several limitations should be acknowledged.

First, this study focused solely on surveying second- to fourth-year students from a limited number of universities in Vietnam. As such, the findings may not fully capture the characteristics and context of the entire higher education system nationwide, nor can they be generalized to other educational levels or geographic regions.

Second, data collection relied on self-reported surveys, which may introduce the risk of social desirability bias or inaccuracies due to the subjective perceptions of respondents. Moreover, the study employed a cross-sectional design, capturing data at a single point in time, without considering longitudinal changes or the evolution of learning experiences over the students' academic journey.

To address these limitations, future research should consider expanding the sampling frame to include a more diverse range of universities, training formats, and geographic locations to improve the generalizability of the findings. Additionally, integrating multiple data collection methods—such as direct observations, in-depth interviews, or objective assessments of learning outcomes—could enhance the validity and reliability of the data. Conducting longitudinal studies is also recommended to examine how the relationships between the studied variables evolve over time as students progress through their academic programs.

In conclusion, this study provides valuable empirical evidence on the role of active learning methods and inclusive leadership in enhancing critical thinking and learning outcomes in higher education. These findings contribute not only to the theoretical discourse on teaching and educational leadership but also offer practical implications for universities in designing curricula and faculty development programs aimed at improving educational quality and better meeting the demands of educational reform in the current context.

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