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Journal of Social Studies Education Research

Sosyal Bilgiler Eğitimi Araştırmaları Dergisi

2024:15 (4), 338-373

The Role of Curriculum Implementation and Principal Leadership to Enhance Academic Performance in Islamic Boarding Schools

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Abstract

This research was conducted at an Islamic Boarding School to examine how the implementation of an innovative curriculum and effective leadership contributes to improving the quality of learning and academic competence among middle and high school students. The study aims to examine the impact of curriculum implementation and school leadership on learning quality and its implications for the development of students' academic competencies at the 21st Century Islamic Boarding School in Indonesia. A quantitative approach, utilizing survey methods and statistical analysis, was employed to collect and analyze data from various respondents, including students, teachers, and school principals. The results show that a curriculum aligned with contemporary needs and the effective leadership of school principals considerably improves learning quality. Additionally, improved learning quality positively affects the development of students' academic competencies, particularly in critical thinking, creativity, and problem-solving skills. The study findings underscore the importance of adaptive curriculum design and visionary leadership in promoting academic progress within Islamic boarding schools. These findings provide a valuable foundation for policymakers and educators when formulating more effective educational strategies in the modern era.

***Keywords*:** Curriculum, competency development, leadership, Islamic boarding school

Introduction

Education is a fundamental pillar of national development, particularly in cultivating a competitive and capable generation. In the context of globalization and the 21st century, educational challenges have become increasingly complex, requiring innovation and adaptation (Wiranto & Slameto, 2021). These changes include curriculum enhancements that meet contemporary needs and educational leadership that is visionary and responsive to current dynamics. As one of the oldest educational institutions in Indonesia, Islamic boarding schools play a crucial role in developing

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students with both academic proficiency and strong moral and spiritual values. To address the challenges of 21st-century education, Islamic boarding schools must embrace transformation, particularly in terms of curriculum implementation and leadership by school principals (Baffour et al., 2023). Implementing a curriculum aligned with contemporary developments is essential for improving the quality of education in Islamic boarding schools (Larios & Zetlin, 2023). An innovative and adaptive curriculum not only improves students' academic understanding but also strengthens critical thinking, creativity, and problem-solving skills, all of which are essential in today's world (Chiu et al., 2024). Additionally, effective leadership by school principals plays a key role in fostering a supportive learning environment and driving improvements in educational quality. Visionary, participative, and inspiring leadership can motivate both educators and students to achieve higher levels of performance and develop well-rounded competencies (Bray et al., 2020). In Tulungagung, Islamic boarding schools have historically served as educational hubs, integrating both religious and general knowledge. However, to stay relevant and competitive in the era of globalization, a more strategic approach to curriculum implementation and educational leadership is required. This research, therefore, focuses on how these two factors impact the quality of learning and the development of academic competencies among middle and high school students (Bourke et al., 2024).

This research aims to examine in depth the impact of curriculum implementation and school principal leadership on the quality of learning in Islamic boarding schools (Olmedo-Cifuentes & Martínez-le, 2024). Employing quantitative methods, data were collected from various respondents, including students, teachers, and school principals, to provide a comprehensive understanding of the educational dynamics within Islamic boarding schools. High-quality learning is expected to produce students who not only excel academically but also possess the necessary life skills to meet future challenges. Consequently, the development of students' academic competence is a central focus in efforts to enhance the quality of education in Islamic boarding schools (Kerr & Averill, 2024).

The implications of improving the quality of learning are substantial for the development of students' academic competence (Tso et al., 2022). Students who receive a high-quality education are expected to think critically and creatively, and possess strong problem-solving skills, preparing them to meet the challenges of globalization. This research also aims to offer recommendations for policymakers and educators in designing and implementing more effective educational

strategies. By understanding the impact of curriculum implementation and school principal leadership, it is anticipated that a more conducive educational environment will be created, one that maximally supports student development (Hsieh et al., 2024).

Overall, it is hoped that this research will make a meaningful contribution to improving the quality of education in Islamic boarding schools, particularly in Tulungagung. By doing so, Islamic boarding schools can continue to play an important role in shaping a generation that excels both academically and morally, and is well-prepared to meet the challenges of the 21st century (Hiratsuka & Nall, 2023). Previous research highlights a gap concerning independent and intervening variables that affect the quality of student learning. For instance, Lundberg (2022) found that curriculum implementation has an impact on the quality of student learning, a conclusion supported by Falloon (2024), who also demonstrated that proper curriculum implementation can substantially improve learning outcomes. However, Keung & Cheung (2023) present a contrasting perspective, arguing that curriculum implementation does not significantly affect learning quality and suggesting that other factors may play a more critical role in improving student learning. This discrepancy shows the need for further exploration of additional variables that contribute to learning quality. Based on the background, the following research questions were formulated to identify the research gap:

1) Does curriculum implementation significantly impact the development of students' academic competence at Tulungagung's 21st-century Islamic boarding schools?
2) To what extent does the leadership of Tulungagung's Islamic boarding school principals affect students' academic competence in the 21st century?
3) Does curriculum implementation significantly affect the learning quality of students at Tulungagung's 21st-century Islamic boarding schools?
4) In Tulungagung's 21st-century Islamic boarding schools, does principal leadership have a significant impact on students' learning quality?
5) Does instructional quality significantly impact students' academic growth and development at Tulungagung's modern Islamic boarding schools?
6) Does the instructional quality at Tulungagung's 21st-century Islamic boarding schools play an essential role in shaping students' academic competence?
7) Has the leadership of Tulungagung's modern Islamic boarding school principals fostered academic competence by improving the quality of student learning?

This study is essential as it addresses the existing knowledge gap regarding the impact of curriculum implementation and principal leadership on the enhancement of academic competence and learning quality in 21st-century Islamic boarding schools, particularly in Tulungagung. Few studies have examined the impact of these factors on the educational quality of Islamic boarding schools, which are evolving in the context of contemporary education. The findings of this study are expected to significantly contribute to the development of Islamic education theory by clarifying the relationship between curriculum implementation, school leadership, learning quality, and academic competence. Moreover, the results can serve as a foundation for educational policymakers in Islamic boarding schools, helping to improve academic quality and student outcomes through curriculum refinement and strengthened principal leadership. This study will provide valuable insights and solutions for advancing Islamic education, focusing on key elements that define modern education in Islamic boarding schools.

Literature Review and Hypothesis Development

Implementation of the curriculum for developing academic competencies

Taylor et al. (2023) reported that curriculum implementation significantly affects the development of academic competence. Effective curriculum implementation plays a crucial role in enhancing students' academic competencies (Kurent & Avsec, 2023). A well-structured curriculum, designed to meet high educational standards, ensures that students acquire the essential foundational knowledge and skills (Millington et al., 2024). With a clear and well-organized curriculum, teachers can deliver material more efficiently, enabling students to comprehend and master the content. This structure also promotes the development of critical and analytical thinking skills, which are vital for academic success (Cattaneo et al., 2022). Falloon (2024b) explains that implementing a curriculum emphasizing active and participatory learning approaches can enhance student engagement and motivation. A curriculum that promotes class discussions, collaborative projects, and problem-based learning enables students to take an active role in the learning process. This method not only makes the material more engaging but also helps students develop essential skills such as communication, teamwork, and problem-solving, all of which are crucial for academic competence (Chi et al., 2023). Kranthi et al. (2024) found that flexibility in curriculum implementation plays a crucial role in developing students' academic competence. A curriculum that can be adapted to meet individual student needs allows for more personalized and adaptive

teaching (Zhang et al., 2024). For instance, students requiring additional support can receive the necessary assistance, while more advanced students can be provided with greater challenges. This flexibility ensures that each student progresses at their own pace, maximizing their academic potential (Dwivedi et al., 2023).highlight that integrating technology into curriculum implementation can have a significant positive effect on students' academic competence. The use of technology, such as computers, tablets, and educational software, allows the curriculum to be delivered in a more interactive and engaging way (Miguel et al., 2023). Technology provides access to a vast array of educational resources and innovative learning tools, which can help students in understanding complex concepts more effectively. Furthermore, it supports independent and research-based learning, enhancing students' overall learning skills (Ho et al., 2023).

Weng et al. (2022) emphasize that curriculum implementation incorporating continuous evaluation and constructive feedback is crucial for the development of academic competence. Regular and comprehensive evaluations enable teachers to identify students' strengths and weaknesses in their understanding of the material (Landa et al., 2021). The feedback provided helps students recognize areas for improvement and offers clear guidance on how to improve their performance. Continuous evaluation also facilitates curriculum adjustments, ensuring that teaching methods remain effective and relevant to students' needs, thus supporting their ongoing academic development (Jong et al., 2022).

H1: There is a significant relationship between curriculum implementation and the development of academic competence.

Principal leadership towards the development of academic competence

The principal's leadership plays an important role in developing students' academic competence (Chaula, 2023). An effective principal establishes a clear vision and mission for the school, prioritizing academic achievement (Agirdag & Muijs, 2023). By setting high standards and clear goals, the principal motivates the entire school community to collaborate in achieving these objectives. This visionary leadership fosters a school culture that promotes learning and the development of students' academic competencies (Dwyer et al., 2023). Schenzle and Schultz, (2024)note that school principals with strong managerial skills can efficiently manage school resources to support the learning process. This includes overseeing budget management,

procuring teaching materials, and ensuring the provision of adequate facilities (U-Sayee & Brenyah, 2021). Principals who ensure that resources are available and utilized effectively create a conducive learning environment for students. Such a supportive environment enables students to learn more efficiently and fully develop their academic skills (Denston et al., 2022).

Alismail (2023) explains that the principal's leadership has a significant impact on academic competence through teacher empowerment and professional development. Principals who actively support continuous professional development help teachers enhance their instructional skills and pedagogical methods (Braun et al., 2024). As teachers become more skilled and knowledgeable, classroom learning becomes more effective. Teachers who receive sufficient support and training are better equipped to guide students, identify individual needs, and provide targeted instruction to foster the development of students' academic competencies (Kwangmuang et al., 2021).

Macmillan et al. (2023)emphasize that effective interaction and communication between the principal and the school community are crucial for developing students' academic competence. Principals who actively engage with students, teachers, and parents foster strong, mutually supportive relationships (Hana et al., 2021). This open communication enables the principal to identify and address emerging issues or needs, while also encouraging the participation and involvement of all stakeholders in the educational process. Such collaboration creates a positive learning environment that supports students' academic development (Nadya et al., 2023).

García-Cabrera et al. (2023) explain that school principals who serve as role models and inspirational leaders can affect student attitudes and behavior. Principals who exhibit commitment, integrity, and a strong work ethic can inspire students to adopt these values in their academic pursuits (Ndabaga et al., 2023). Such leadership fosters discipline, motivation, and a sense of responsibility among students, all of which contribute to enhancing their academic competence. Therefore, effective school principal leadership can greatly improve the quality of education and help develop students' academic competencies (Jensen & Ottesen, 2022). H2: There is a significant relationship between the principal's leadership and the development of students' academic competence.

Implementation of the curriculum on the quality of student learning

Implementing a well-designed curriculum can significantly improve the quality of student learning. A well-designed curriculum sets clear learning objectives, providing direction and focus for both teachers and students (Lundberg, 2022). When students are aware of what they are expected to learn and achieve, they can more easily engage with and follow the learning process. This structured approach enables students to systematically build their knowledge and skills, ultimately leading to improved learning outcomes (Laguna-s, 2021).

Falloon (2024) explains that implementing a curriculum that is comprehensive and relevant to students' needs can make learning more engaging and meaningful. A curriculum that integrates various disciplines and connects them to real-world contexts helps students understand the relevance of what they are learning (Keung & Cheung, 2023). When students perceive that the subject matter has a direct connection to their lives, they are more motivated to learn and actively participate in class, which positively influences the quality of their learning (Wiranto & Slameto, 2021).

Baffour et al. (2023) state that incorporating innovative teaching methods into the curriculum can significantly improve the quality of student learning. A curriculum that utilizes active learning approaches, such as group discussions, collaborative projects, and problem-based learning, encourages students to think critically and creatively (Chiu et al., 2024). These methods not only make learning more dynamic and interactive but also help students develop essential skills like problem-solving, communication, and teamwork, which are key components of high-quality learning (Bray et al., 2020).

Larios and Zetlin (2023) claim that implementing a flexible and adaptive curriculum plays a crucial role in enhancing the quality of student learning. A curriculum that allows for adaptation to individual student needs and abilities ensures that each student receives personalized attention and instruction suited to their developmental level (Bourke et al., 2024). By offering additional support for struggling students and greater challenges for advanced learners, a flexible curriculum enables all students to learn in the way that best suits them, thereby improving the overall quality of learning (Olmedo-Cifuentes & Martínez-le, 2024).

In addition, Kerr & Averill (2024) emphasize that integrated evaluation and feedback in curriculum implementation are crucial for enhancing the quality of student learning. Through regular and comprehensive evaluations, teachers can identify students' strengths and weaknesses in understanding lesson material (Tso et al., 2022). Constructive feedback helps students identify

areas for improvement and provides clear guidance for making progress (Hsieh et al., 2024). Moreover, continuous evaluation allows for curriculum adjustments, ensuring that teaching methods remain effective and relevant to student needs. Effective evaluation in curriculum implementation ensures the learning process runs optimally, ultimately improving the quality of student learning (Hiratsuka & Nall, 2023). H3: There is a significant relationship between curriculum implementation and the quality of student learning.

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Principal leadership towards the quality of student learning

The principal's leadership plays a crucial role in determining the quality of student learning (Geaquinto & Alves, 2024). A principal with a clear vision and a focus on improving the quality of education can inspire the entire school community to collaborate toward achieving these goals. By setting high standards and clearly communicating expectations, principals can motivate both teachers and students to strive for academic success. A strong vision from the principal offers clear direction and ensures consistency in the implementation of learning programs (Cufer et al., 2023).

Taylor et al. (2023) explain that effective school principal leadership ensures the optimal management of school resources. Principals with strong management skills can ensure that school facilities, instructional materials, and educational technologies are readily available and utilized in the most effective ways. A well-resourced and supportive learning environment allows students to learn more comfortably and efficiently, thereby enhancing the quality of learning (Denston et al., 2022). Effective resource management also involves appropriate budget allocation for programs that enhance learning, such as teacher training and curriculum development (Braun et al., 2024). Hana et al., (2021) explain that school principals committed to teacher professional development contribute to improving the quality of student learning. By offering opportunities for teachers to attend training and workshops, principals ensure that educators stay updated on the latest teaching methods and effective pedagogical strategies (Nadya et al., 2023). Teachers who continue to grow professionally are better equipped to implement innovative and effective teaching techniques in the classroom, directly improving the quality of student learning. Additionally, principals who support teacher development foster a positive work environment, where teachers feel valued and motivated to give their best (García-cabrera et al., 2023).

Macmillan et al. (2023)highlight that school principal leadership emphasizing collaboration and communication is essential for improving the quality of learning. Principals who actively engage with teachers, students, and parents foster an open and inclusive school culture (Macmillan et al., 2023). Effective communication enables principals to understand the needs and challenges of the school community and collaborate to find solutions (Hsieh et al., 2024). The collaboration between teachers, students, and parents in supporting the learning process creates a positive synergy, where all parties work together toward achieving better educational outcomes (Hiratsuka & Nall, 2023). Cufer et al. (2023) suggest that a school principal who serves as a role model can affect the attitudes and behavior of the entire school community. Principals who exemplify commitment, integrity, and a strong work ethic become role models for both teachers and students (Geaquinto & Alves, 2024). This inspiring leadership fosters positive values such as discipline, responsibility, and motivation in students. When students are inspired by exemplary school principals, they tend to be more enthusiastic about learning and more driven to achieve higher academic success. As a result, effective principal leadership can significantly improve the quality of learning and improve student academic outcomes (Braun et al., 2024).

H4: There is a significant relationship between the principal's leadership and the quality of student learning.

The quality of student learning towards the development of academic competence

The quality of student learning has a direct impact on the development of their academic competencies (Kwangmuang et al., 2021). High-quality learning provides students with effective teaching methods, relevant materials, and a conducive environment (Hana et al., 2021). With clear instructions and diverse teaching strategies, students are better able to understand course content and apply their knowledge effectively. Quality learning ensures that students go beyond memorizing information to developing a deep understanding and the ability to think critically and analytically (Nadya et al., 2023). In addition, high-quality learning involves continuous support and guidance from teachers (García-Cabrera et al., 2023). Quality teachers not only deliver subject matter but also serve as mentors and guides for students. They offer constructive feedback, help students identify areas for improvement, and provide strategies to enhance their performance (Macmillan et al., 2023). This ongoing support helps students develop stronger study skills and boosts their confidence in overcoming academic challenges. Consequently, students become more independent and motivated to continue learning, further developing their academic competencies

(Geaquinto & Alves, 2024). Taylor et al. (2023) assert that high-quality learning fosters a positive and inclusive learning culture. A learning environment that values diversity and encourages active student participation enhances students' sense of ownership and involvement in their education (Cattaneo et al., 2022). When students feel respected and supported, they are more likely to participate actively, take learning risks, and show strong commitment to their studies (Kurent & Avsec, 2023). This, in turn, directly contributes to the development of their academic competencies, as actively involved students tend to achieve better outcomes and cultivate the skills necessary for future success (Millington et al., 2024). Additionally, research by Falloon (2024) highlights that mediating variables can affect the development of students' academic competence. Effective curriculum implementation plays a crucial role in fostering academic competence by enhancing the quality of learning (Chi et al., 2023). A well-structured curriculum sets clear learning objectives, incorporates innovative teaching methods, and includes ongoing evaluation, thereby creating a conducive learning environment (Kranthi et al., 2024). Teachers can apply diverse and relevant learning strategies while offering the support students need to deeply understand and apply lesson material. This approach helps students not only acquire theoretical knowledge but also develop critical thinking, analytical, and problem-solving skills, all of which contribute to strong academic competence (Zhang et al., 2024). Effective school principal leadership significantly affects the development of students' academic competence by improving the quality of learning (Dwivedi et al., 2023). Visionary and education-focused principals can create a conducive learning environment, manage school resources effectively, and promote teacher professional development (Gale et al., 2022). Under supportive and inspiring leadership, teachers are more motivated to adopt innovative teaching methods and provide effective guidance to students (Miguel et al., 2023). This leads to a more dynamic and interactive learning process, where students are actively engaged and motivated, allowing them to develop their academic competence to its fullest potential (Lundberg, 2022).

H5: There is a significant relationship between the quality of student learning and the development of academic competence.

H6: There is a significant relationship between curriculum implementation and the development of student competence, mediated by the quality of learning.

H7: There is a significant relationship between the principal's leadership and the development of student competence, mediated by the quality of learning.

Methods

Research Design

This study employs a quantitative methodology that involves the collection and analysis of numerical data using statistical methods (Bloomfield & Fisher, 2019). Survey techniques are used to explore the relationships between variables in the study, with questionnaires distributed to respondents for data collection (Hair & Brunsveld, 2019). Specifically, a correlational approach is applied to clarify the impact of various concepts, variables, or strategies within the research model (Ferdinand, 2014; Geaquinto & Alves, 2024). The study examines the impact of different factors, and conclusions are drawn based on the relationships between variables (Ferdinand, 2014). The research subjects were students from an Islamic boarding school in Tulungagung, East Java, Indonesia, with data collection taking place between January 2023 and April 2024.

Study Population and Sample

The study population consists of all elements, including events, objects, or individuals that share common characteristics and serve as the focal point of the research, often referred to as the research universe (Ferdinand, 2014). The total number of students at the Islamic boarding school in Tulungagung, East Java, Indonesia, is 9,371 (Table 1).

Table 1

Population

No	Subdistrict	Population	Sample
1	Besuki	337	8
2	Bandung	419	10
3	Pakel	70	2
4	Campurdarat	921	22
5	Rejotangan	628	16
6	Ngunut	2.480	59
7	Sumbergempol	424	11
8	Boyolangu	927	23
9	Tulungangung	285	8
10	Kedungwaru	1779	42
11	Ngantru	45	2
12	Karengrejo	339	9
13	Kauman	662	16
14	Sendang	55	2
Total		9.371	230

Source: BPS 2024

The study sample is a subset of the population, consisting of multiple members from the larger group (Moleong, 2021). This subset is selected because it is often impractical to evaluate the entire population; therefore, a representative portion, known as a sample, is established (Ferdinand, 2014). In this study, the purposive sampling technique was used to select 230 respondents. Purposive sampling is a non-probability sampling method in which units are selected based on specific characteristics required for the study. The sample is chosen intentionally based on predetermined criteria that align with the study's objectives.

Research Instruments

Researchers used Google Forms to distribute a research questionnaire consisting of 42 items, each rated on a 5-point Likert scale, to collect data. The questionnaire items were developed using a grid to identify variables and indicators. The first independent variable (X1) represents curriculum implementation, while the second independent variable (X2) pertains to the principal's leadership. The quality of learning serves as the mediating variable (Z), and the development of academic competence is the dependent variable (Y). Table 2 illustrates the indicators for each variable. Once the variables and indicators were identified, relevant questions were crafted for each indicator. This approach ensures that the questionnaire accurately measures all the variables under investigation, providing comprehensive and reliable data for the study.

Table 2

Data Collection Instrument (Grid)

No	Variable	Indicator	No Item
1	Curriculum implementation	Curriculum planning	1,2
		Curriculum implementation	3
		Curriculum evaluation	4,5
		Curriculum follow-up	6,7
2	Principal leadership	Ability to make plans	1,2
		Ability to implement	3,4
		Ability to evaluate activities	5,6,7
		Ability to make follow-ups based on evaluation results	8.9.10
3	Quality of learning	Quality of learning process	1,2
		Quality of academic supervision	3,4
		Quality of learning plans	5,6
		Quality of lesson materials	7,8,9
		Quality of evaluation tools	10,11,12
		Quality of feedback to students	13,14,15
4	Development of academic competence	Soft skill skills	1,2
		Hard skill skills	3,4
		Leadership skills	5,6,7
		Language or communication skills	8,9,10

Validity and Reliability of the Instrument

Appendix 1 presents a 42-item questionnaire, measured on a 5-point Likert scale, which has been tested for both validity and reliability (Ferdinand, 2014). Out of the 42 items, 40 were found to be valid, while 2 were invalid. The constructs of the invalid items were revised, and they were included in the further development of the instrument for continued use in the research. Table 3 shows that the majority of the research questionnaire items are valid, with only two items—KP 4 and KP 6—found to be invalid.

Table 3

Cronbach's Alpha

	Cronbach's alpha
Curriculum implementation	0.904
Development of academic competence	0.980
Principal leadership	0.974
quality of learning	0.955

Source: result of SEM PLS analysis 2024

Based on Table 3, the instrument test results show a loading factor value of greater than 0.70, indicating that each instrument demonstrates high validity.

Table 4

Reliability

	Composite reliability
Curriculum implementation	0.924
Development of academic competence	0.983
Principal leadership	0.977
Quality of learning	0.960

Source: SEM PLS analysis 2024

Based on Table 4, the reliability test results show values greater than 0.70, indicating that the research instrument has high reliability and can be confidently used as a measuring tool in this study. Researchers distributed the questionnaires online to members of the population who were part of the research sample.

Data Analysis Techniques

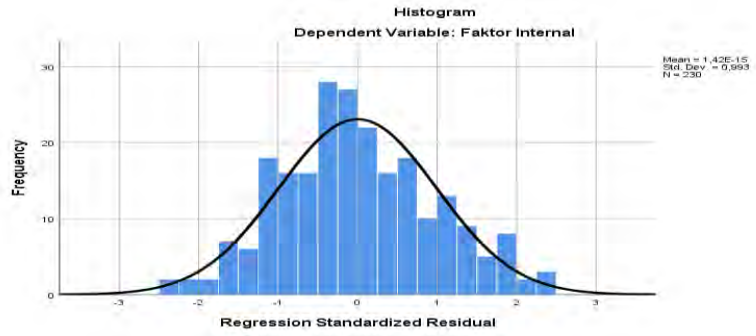
Data analysis in this study utilizes the Smart Partial Least Square (SmartPLS) application, which is based on Structural Equation Modeling (SEM). The analysis is conducted in three steps: analyzing the outer model, analyzing the inner model, and testing hypotheses. According to Hair et al. (2017), PLS can serve as an alternative to SEO, particularly when the theoretical basis is weak. Using the SEM model, PLS is well-suited for addressing complex variable relationships, even with a small data sample. Ghozali & Latan (2017) recommend a minimum sample size of 100 for studies using the SEM method. Before processing the primary data collected from the questionnaires, the researchers conducted validation tests, including tests for validity, reliability, normality, multicollinearity, and linearity (Hair et al., 2010). The study's results are presented using descriptive statistics and hypothesis testing procedures, such as multiple regression analysis, partial t-tests, and multiple correlation F-tests, as suggested by Ghozali & Latan (2017).

Normality test

Based on the histogram display illustrated by Figure 1, the dependent variable and regression standardized residual curves form a bell-shaped pattern, indicating a normal distribution. Therefore, according to the normality test, regression analysis is appropriate for use in this study, as the data meets the assumption of normal distribution.

Figure 1

Normality Test



Sources: Primary data analysis 2024

Homogeneity

The homogeneity test is a crucial step in statistical analysis to determine whether two or more groups have equal variance. This test helps researchers assess whether the differences observed

between groups are statistically significant or simply due to variance differences (Geaquinto & Alves, 2024).

Table 5
Homogeneity Test

Test	Levene statistic	Df-1	Df-2	Sign	Conclusion
X1-Y1	3.452	1	230	0.034	Homogenous
X1-Y2	3.342	1	230	0,064	Homogenous
X1-Z	3,651	1	230	0,701	Homogenous
X2-Z	3,543	1	230	0,652	Homogenous
Y-Z	2.341	1	230	0,762	Homogenous

Sources: Primer data analysis 2024

Table 5 shows that the overall homogeneity testing of all variable pairs was very good, indicating no significant variance differences between the groups. This result suggests that the data are homogeneous. The homogeneity test is a critical tool in research, enabling researchers to draw more valid and reliable conclusions about the instrument (Geaquinto & Alves, 2024).

Multicollinearity

Table 6
Multicollinearity Test Results

Model		Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
		B	Std. error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	42,522	4,034		10,541	,000		
	Curriculum Implementation	,020	,135	,009	,139	,889	,991	1,009
	Development of academic competence	,025	,255	,019	,120	,366	1,000	1,000
	Principal leadership	,030	,202	,016	,247	,805	,991	1,009
	quality of learning	,029	,150	,009	,250	,822	,921	1,000

a. Dependent Variable: Faktor Internal

Sources: Primer data analysis 2024

Based on Table 6, the VIF values are less than 10 and the TOL (Tolerance) values are greater than 0.1 for all variables. This indicates that the multiple linear regression model does not exhibit symptoms of multicollinearity, meaning there is no strong correlation between the independent variables. Therefore, the model is appropriate for use in this research.

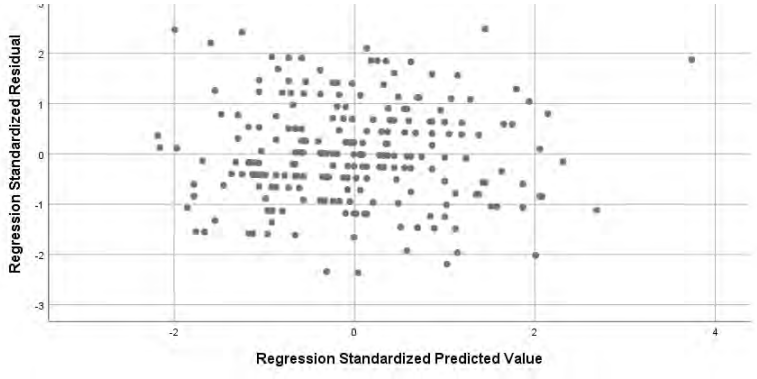
Table 7
Heteroscedasticity Test Results

Coefficients						
		Unstandardized coefficients		Standardized coefficients		
Model		B	Std. error	Beta	t	Sig.
1	(Constant)	1,607	2,418		,665	,507
	Curriculum Implementation	,047	,081	,038	,576	,545
	Development of academic competence	,040	,085	,040	,500	,500
	Principal leadership	,099	,121	,054	,815	,416
	Quality of learning	,088	,100	,042	,750	,750
a. Dependent variable: ABRESID						

Sources: Primer data analysis 2024

Table 7 indicates that each variable has a significance level greater than 0.05: Positive Psychology (X1) at 0.545, Stress Control (Y1) at 0.500, Depression Control (Y2) at 0.416, and Learning Success (Z) at 0.750. Therefore, it can be concluded that there is no heteroscedasticity problem in the regression model used.

Figure 2
Linearity Test Results



Sources: Linearity test based on primary data 2024

From the scatterplot image, the plot spreads randomly both above and below zero on the standardized residual regression axis. Therefore, based on the linearity test using the graphic analysis method, the regression model is confirmed to be linear.

Hypothesis testing

Hypothesis testing in this research was conducted by examining the t-statistic, p-values, and path coefficient values (Ghozali & Latan, 2017). A research hypothesis is considered accepted if the p-values are greater than 0.05, the path coefficient value is greater than 0, and the t-statistic value exceeds 1.973 at a 5% significance level (Hair et al., 2017; Ghozali & Latan, 2015).

Results

Descriptive Statistics

Respondents in this study were students from Islamic boarding schools in Tulungagung, East Java, Indonesia. A total of 230 students were purposively selected. Of the participants, 42% were female and 58% were male. The participant criteria included students of various levels and ages. Demographic data and participant characteristics were identified and documented for further analysis.

Table 8
Number of Respondents by Gender

Sex/gender	Total	%
Male	119	58
Female	111	42
Total	230	100

Sources: Primer data analysis 2024

Table 8 shows that the majority of respondents were male, totaling 119 individuals, or 58%.

Table 9
Number of Respondents by Age

Old	Total	%
< 18	65	29
18-20	85	35
>20	80	36
Total	230	100

Sources: Primer data analysis 2024

Table 9 shows that the majority of respondents are aged 18-20 years, with 85 individuals (35%) falling within this age group.

Table 10
Number of Respondents by Study Program

Program of study	Total	%
Science	64	28
Humaniores	84	38
Social	82	34
Total	230	100

Sources: Primer data analysis 2024

Table 10 shows that the majority of students are enrolled in humanities programs, with 84 individuals (38%) pursuing this field of study.

Table 11
Number of Respondents According to Semester Credit Units Taken

Semester	Total	%
1-2	79	37
3-4	88	36
5-6	63	27
Total	230	100

Sources: Primer data analysis 2024

Table 11 shows that the majority of respondents are in their 3rd or 4th semester, totaling 88 individuals, or 36%.

Table 12
Central Tendency

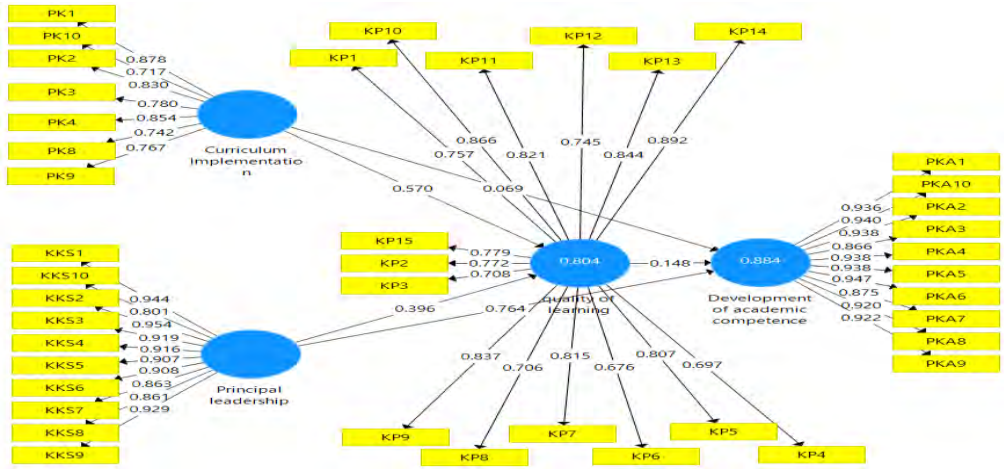
Aspect	Curriculum implementation	Principal leadership	Quality of learning	Development of academic competence
N	230	230	230	230
Mean	18,2	19,3	24,3	15,5
Median	14,4	17,8	23,1	14,8
Mode	14,0	17,0	22,0	14,0
Range	13	14	9	6
Minimal	12	11	24	15
Maximal	24	24	32	20
Skewness	0,543	0,436	0,452	0,423
Kurtosis	12,6	13,7	13,9	12,6

Sources: Primer data analysis 2024

Hypothesis Testing

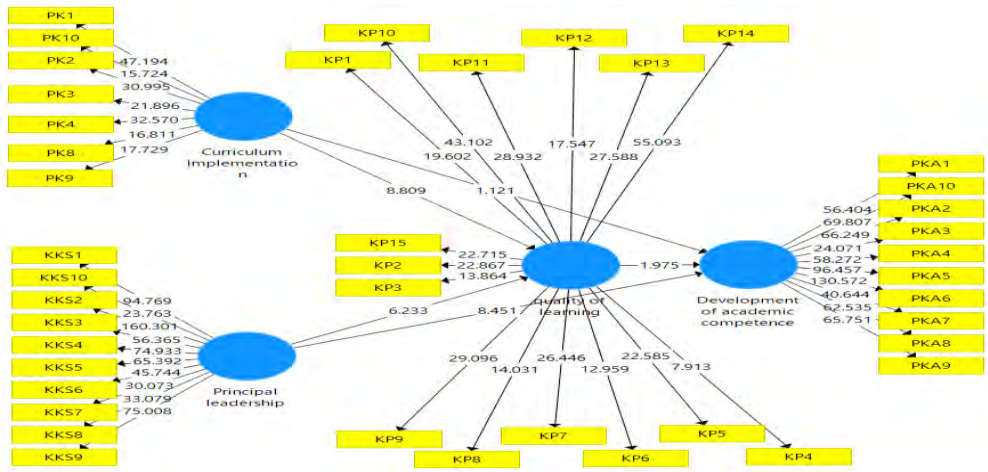
The hypothesis testing results are based on bootstrapping, as defined in both the outer and inner models of the SEM analysis using SMART-PLS, as shown in Figure 3 and Figure 4.

Figure 3
Result of Outer Model



Source: SEM PLS analysis 2024

Figure 4
Result of Inner Model



Source: SEM PLS analysis 2024

Table 13.

Test Result of Path Coefficient

	T Statistics (|O/STDEV|)	P Values
Curriculum implementation -> Quality of learning	8.809	0.000
Principal leadership -> Quality of learning	6.233	0.000
Curriculum implementation -> Development of academic competence	1.121	0.263
Principal leadership -> Development of academic competence	8.451	0.000
quality of learning -> Development of academic competence	1.975	0.049

Source: SEM PLS analysis 2024

Hypothesis 1

Based on Table 13, the path coefficient analysis results for the direct effect hypothesis show that the t-statistic for curriculum implementation on quality of learning is 8.809, which is greater than 1.96, and the p-value is 0.000, which is less than 0.05. Thus, Hypothesis 1 is accepted, indicating a significant relationship between curriculum implementation and the quality of learning.

Hypothesis 2

Based on Table 13, the results of the path coefficient analysis for the direct effect hypothesis show that the t-statistic for principal leadership on quality of learning is 8.809, which is greater than 1.96, and the p-value is 0.000, which is less than 0.05. Therefore, Hypothesis 2 is accepted, indicating a significant relationship between the principal leadership and the quality of learning.

Hypothesis 3

Based on Table 13, the path coefficient analysis results for the direct impact hypothesis show that the t-statistic for curriculum implementation on the development of academic competence is 1.121, which is less than 1.96, and the p-value is 0.263, which is greater than 0.05. Thus, Hypothesis 3 is rejected, indicating that there is no significant relationship between the curriculum implementation and development of academic competence.

Hypothesis 4

Based on Table 13, the path coefficient analysis results for the direct impact hypothesis show that the t-statistic for principal leadership on the development of academic competence is 8.451, which is greater than 1.96, and the p-value is 0.000, which is less than 0.05. Therefore, Hypothesis 4 is

accepted, indicating a significant relationship between the principal leadership and development of academic competence

Hypothesis 5

Based on Table 13, the path coefficient analysis results for the direct impact hypothesis show that the t-statistic for quality of learning on the development of academic competence is 6.233, which is greater than 1.96, and the p-value is 0.000, which is less than 0.05. Therefore, Hypothesis 5 is accepted, indicating a significant relationship between the quality of learning and development of academic competence.

Table 14

Test Result of Path Coefficient

	T Statistics (|O/STDEV|)	P Values
Curriculum implementation -> Quality of learning -> Development of academic competence	1.918	0.056
Principal leadership -> Quality of learning -> Development of academic competence	1.832	0.068

Hypothesis 6

Based on Table 13, the results of the indirect effect hypothesis test show that the t-statistic for curriculum implementation on the development of academic competence through quality of learning is 1.918, which is less than 1.96, and the p-value is 0.056, which is greater than 0.05. Thus, Hypothesis 6 is rejected, indicating that the mediating variable (quality of learning) is not effective in mediating the influence of curriculum implementation on the development of academic competence.

Hypothesis 7

Based on Table 13, the results of the indirect effect hypothesis test show that the t-statistic for curriculum implementation on the development of academic competence through quality of learning is 1.918, which is less than 1.96, and the p-value is 0.056, which is greater than 0.05. Thus, Hypothesis 6 is rejected, indicating that the mediating variable (quality of learning) is not effective in mediating the impact of curriculum implementation on the development of academic competence.

Discussion

Implementation of the curriculum toward the development of academic competencies

The results of hypothesis testing show that the effect of curriculum implementation on learning outcomes is not significant, leading to the rejection of the first hypothesis. The t-statistic is 1.121, which is less than 1.96, and the p-value is 0.236, which is greater than 0.05. The lack of a significant effect of curriculum implementation on the development of students' academic competence may be attributed to several key factors. First, a curriculum that is not well-aligned with students' needs can hinder the learning process (Chi et al., 2023). If the curriculum does not account for the students' characteristics, interests, or the real-world context, the material may fail to engage students fully. This lack of engagement can lead to a superficial understanding of the material, which ultimately affects students' ability to develop the desired academic competencies (Laguna-s, 2021).

Second, improper implementation of the curriculum or insufficient support from the school and teachers can also be significant obstacles (Kranthi et al., 2024). Even when a well-designed curriculum is in place, its successful implementation depends on effective teaching strategies, a solid understanding of evaluation methods, and continuous support from all stakeholders. Without adequate resources, professional development for teachers, and strong supervision from school leadership, the curriculum may not be implemented effectively in classrooms, diminishing its impact on the development of students' academic competencies (Dwivedi et al., 2023).Finally, inadequate evaluation and feedback can also impede the positive influence of curriculum implementation on the development of academic competence (Gale et al., 2022).An unsystematic or incomplete evaluation process fails to provide enough information to assess whether the curriculum has achieved its intended learning objectives. Additionally, feedback that is not constructive or not given in a timely manner does little to help students and teachers improve the quality of learning. Therefore, to ensure that curriculum implementation positively impacts the development of students' academic competencies, greater attention must be paid to comprehensive and continuous curriculum design, implementation, and evaluation (Miguel et al., 2023).

Principal leadership towards the development of academic competence

The results of hypothesis testing indicate that the effect of principal leadership on the development of academic competence is highly significant, with a t-statistic of 8.451 (greater than 1.96) and a p-value of 0.000 (less than 0.05). Therefore, the second hypothesis is accepted. Schenzle & Schultz (2024) explain that principals with strong managerial skills can efficiently manage school resources to support the learning process. This includes overseeing budget management, procuring teaching materials, and ensuring adequate facilities (U-Sayee & Brenyah, 2021). Principals who ensure these resources are available and used effectively create a conducive learning environment, allowing students to learn more effectively and develop their academic skills optimally (Denston et al., 2022). Alismail (2023) highlights that a principal's leadership significantly impacts the school through teacher empowerment and professional development. Principals who encourage continuous professional development for teachers help them enhance their teaching skills and pedagogical methods (Braun et al., 2024). As teachers become more skilled and knowledgeable, the effectiveness of the classroom learning process improves. Teachers who receive sufficient support and training are better equipped to guide students, identify their individual needs, and provide tailored instruction that fosters the development of students' academic competencies (Kwangmuang et al., 2021).

Implementation of the curriculum on the quality of student learning

The results of hypothesis testing show that the effect of curriculum implementation on the quality of learning is highly significant, with a t-statistic of 8.809 (greater than 1.96) and a p-value of 0.000 (less than 0.05). Therefore, the third hypothesis is accepted. Falloon (2024) explains that implementing a curriculum that is comprehensive and relevant to students' needs makes learning more engaging and meaningful. A curriculum that integrates various disciplines and connects them to real-world contexts helps students perceive the relevance of what they are learning (Keung & Cheung, 2023). When students see a direct connection between the subject matter and their lives, they tend to be more motivated and actively participate in class, which positively affects the quality of their learning (Wiranto & Slameto, 2021). Baffour et al. (2023)explain that innovative teaching methods integrated into the curriculum can improve the quality of student learning. A curriculum that incorporates active learning approaches, such as group discussions, collaborative projects, and problem-based learning, encourages students to think critically and

creatively (Chiu et al., 2024). These methods not only make learning more dynamic and interactive but also help students develop essential skills such as problem-solving, communication, and teamwork, all of which are key components of quality learning (Bray et al., 2020).

Principal leadership toward the quality of student learning

The results of hypothesis testing show that the effect of principal leadership on the quality of learning is highly significant, with a t-statistic of 6.233 (greater than 1.96) and a p-value of 0.000 (less than 0.05). Therefore, the fourth hypothesis is accepted. Taylor et al. (2023) explain that effective school principal leadership ensures optimal management of school resources. Principals with strong management skills can ensure that school facilities, instructional materials, and educational technology are available and used effectively. A supportive learning environment enables students to learn more comfortably and efficiently, ultimately improving the quality of learning (Denston et al., 2022). Effective resource management also includes appropriate budget allocation for programs that enhance learning, such as teacher training and curriculum development (Braun et al., 2024).Hana et al. (2021) explain that school principals committed to teacher professional development contribute greatly to the quality of student learning. By offering opportunities for teachers to attend training and workshops, principals ensure that teachers stay updated with the latest teaching methods and effective pedagogical strategies (Nadya et al., 2023). Teachers who continuously develop professionally are better equipped to implement innovative and effective teaching techniques in the classroom, directly enhancing the quality of student learning. Principals who support teacher development also foster a positive work environment, where teachers feel valued and motivated to perform at their best (García-cabrera et al., 2023).

The quality of student learning towards the development of academic competence

The results of hypothesis testing show that the effect of the quality of learning on the development of academic competence is highly significant, with a t-statistic of 1.975 (greater than 1.96) and a p-value of 0.049 (less than 0.05). Therefore, the fifth hypothesis is accepted. According to Taylor et al. (2023), high-quality learning creates a positive and inclusive learning culture. A learning environment that supports diversity and encourages active student participation enhances students' sense of ownership and involvement in their education (Cattaneo et al., 2022). When students feel valued and supported, they are more likely to participate actively, take learning risks,

and show strong commitment to their studies (Kurent & Avsec, 2023). This active engagement directly contributes to the development of their academic competencies, as involved students tend to achieve better outcomes and acquire the skills necessary for future success (Millington et al., 2024).The quality of student learning directly impacts the development of their academic competencies (Kwangmuang et al., 2021). High-quality learning provides students with access to effective teaching methods, relevant materials, and a conducive learning environment (Hana et al., 2021). With clear instructions and diverse teaching strategies, students can better comprehend course material and apply their knowledge effectively. Quality learning not only helps students memorize information but also fosters a deeper understanding, encouraging them to think critically and analytically (Nadya et al., 2023).

The sixth and seventh hypotheses are rejected. The effect of curriculum implementation on the development of academic competence through the quality of learning has a t-statistic of 1.918, which is less than 1.96, and a p-value of 0.056, which is greater than 0.05, indicating no significant effect. Similarly, principal leadership's impact on the development of academic competence through the quality of learning as an intervening variable is also not significant, with a t-statistic of 1.832 (less than 1.96) and a p-value of 0.068 (greater than 0.05).

When there is no visible effect of curriculum implementation on the development of academic competence through the quality of learning, it may be due to a misalignment between curriculum objectives and the actual needs and realities of students (Egenius et al., 2020). A curriculum that fails to respond to students' characteristics, is less relevant to their socio-cultural context, or does not account for individual learning differences may struggle to inspire and engage students actively in the learning process. Additionally, inadequate curriculum implementation—such as insufficient teacher training, limited resources, or lack of support from the school—can hinder the expected quality of learning, ultimately failing to positively impact the development of students' academic competencies (Rinny et al., 2022).

When there is no visible impact of the principal's leadership on the development of academic competence through the quality of learning, several factors could be responsible (Hajiali et al., 2022). One key factor is ineffective leadership in managing resources and fostering teacher professionalism. School principals who fail to provide clear strategic direction or lack the ability to motivate and engage staff may reduce the effectiveness of the curriculum. Furthermore,

insufficient support and supervision from school leadership in evaluating and improving the learning process can also hinder efforts to improve the quality of learning, ultimately impacting the development of academic competence (Badrianto & Ekhsan, 2019).

Curriculum implementation on quality of learning and its implications for the Development of academic competence

The obtained t-statistic of 1.918 indicates that the indirect effect of curriculum implementation through learning quality does not reach the required significance threshold of 1.96. Additionally, the p-value of 0.056, which is higher than 0.05, confirms that the result is not statistically significant. This suggests that the mediator variable, learning quality, does not have a strong effect on the relationship between curriculum implementation and the development of academic competence. The rejection of hypothesis 6 shows that learning quality does not serve as an effective mediator in the relationship between curriculum implementation and the development of academic competence Several factors could contribute to this, including inconsistent learning (Nadya et al., 2023).. Variations in the quality of learning that students receive may impact their ability to develop academic competence. Additionally, external factors such as the learning environment, parental support, or available resources may also influence academic competence, potentially obscuring the effect of learning quality (Taylor et al., 2023). Furthermore, if teachers are not adequately trained in curriculum implementation, the resulting learning quality may not be optimal, which could limit its ability to mediate the expected influence (Millington et al., 2024).
To improve the effectiveness of learning quality as a mediator, several steps can be implemented. First, ongoing training programs for teachers should be provided to ensure they can implement the curriculum more effectively. Additionally, periodic evaluations of the quality of learning should be conducted to identify areas for improvement, incorporating the use of technology and innovative teaching methods. Creating a positive and supportive learning environment is also crucial, as it helps students develop their academic competence (Kwangmuang et al., 2021). The results of this hypothesis testing indicate that learning quality does not currently function as an effective mediator in the relationship between curriculum implementation and academic competence development (Baffour et al., 2023). Therefore, it is essential to conduct further research and take strategic actions to enhance learning quality, enabling it to contribute more significantly to the development of students' academic competence.

Principal leadership on quality of learning and its implications on development of academic competence

The results of the hypothesis testing, as presented in Table 14, show that the impact of principal leadership on the development of academic competence through the quality of learning as an intervening variable is not significant. The obtained t-statistic is 1.832, which is smaller than the critical value of 1.96, and the p-value is 0.068, exceeding the 0.05 threshold. Thus, Hypothesis 7 is rejected, indicating that the quality of learning does not function effectively as a mediator in the relationship between principal leadership and the development of academic competence. This rejection raises important questions about the dynamics between principal leadership and the quality of learning.

Although strong leadership is typically expected to improve the quality of learning and, in turn, develop students' academic competence, these results suggest that the impact may not be as strong as anticipated. Several factors could contribute to this outcome. First, the quality of learning in the classroom may not fully reflect the principal's leadership. For example, if the principal is not actively involved in the learning process or fails to provide adequate support to teachers, the resulting quality of learning may fall short of expectations (Badrianto & Ekhsan, 2019).

Furthermore, the school context plays a significant role. Schools with limited resources or substantial environmental challenges may find it difficult to implement policies that support high-quality learning, even with strong leadership in place (Badrianto & Ekhsan, 2019).

Rinny et al. (2022) reported that principal leadership does affect student learning outcomes, but this impact is often shaped by the context and conditions within the school. Additionally, external factors such as parental support and community involvement can play a critical role in the development of students' academic competencies. If such support is lacking, even a principal with a clear vision and strong leadership may not achieve noticeable improvements in students' academic competencies (Rinny et al., 2022).

With this hypothesis rejected, it becomes important to reassess how principal leadership can more effectively affect the quality of learning. A more holistic approach may be necessary, where the principal not only focuses on policy-making but also actively engages in the day-to-day practice of learning. Direct involvement in classroom activities, teacher mentoring, and curriculum implementation could strengthen the relationship between leadership and learning quality. Additionally, further research could explore other contributing factors, such as teacher-student

interactions, peer collaboration, or external support, to identify more effective strategies for improving student learning outcomes and academic competence development.

Implication

This research shows that effective curriculum implementation and strong principal leadership play a significant role in enhancing students' academic competence. The study findings reveal that continuous improvements in curriculum design and implementation are essential to maintain its relevance and effectiveness. A well-designed curriculum should set clear learning objectives, incorporate innovative teaching methods, and include ongoing evaluation. Additionally, continuous teacher training is necessary to ensure that educators can effectively understand and implement the curriculum. These improvements will create a more dynamic and conducive learning environment, ultimately enabling students to develop stronger academic competencies.

In addition, effective school principal leadership is essential for improving the quality of learning and developing the development of students' academic competencies. Therefore, leadership development programs for school principals should be a priority in education policy. These programs should include training in resource management, the development of educational vision, and communication and collaboration skills. A well-trained and committed principal can cultivate a supportive school culture, efficiently manage resources, and inspire both teachers and students to achieve high academic standards. Consequently, enhancing the leadership capabilities of school principals will positively affect the quality of learning and, ultimately, contribute to the development of students' academic competence.

Conclusion and Suggestions

Based on the analysis results, it would be safe to say that there is a significant relationship between principal leadership and the development of students' academic competence, as well as a significant relationship between curriculum implementation and the quality of learning, and principal leadership and the quality of learning. However, no significant relationship was observed between curriculum implementation and the development of academic competencies. This may indicate the need for the need for curriculum adjustments to better align with competency development requirements. Additionally, the quality of learning does not appear to function as a mediating variable showing relationship between curriculum implementation and principal leadership, and the development of student competence. For future research, a more in-

depth approach is recommended to explore the relationship between principal leadership and the development of students' academic competence through learning quality. Based on the study findings, here are some suggestions to focus on:

Conducting multi-site case studies involving schools with different characteristics can provide more comprehensive insights into various principal leadership styles and their impact on the quality of learning and students' academic competence. Comparing leadership practices across school contexts can highlight contextual factors that influence academic outcomes.

Deeper measurement of learning quality should involve using more structured and holistic tools to explore various aspects such as teacher-student interactions, students' understanding of concepts, and the application of knowledge in real-world contexts. This approach will provide a deeper understanding of how different facets of learning quality affect the development of students' academic competence.

Conducting a more in-depth analysis of mediating factors may moderate the relationship between principal leadership and the development of student academic competence. For example, examining how factors such as student motivation, parental support, and teacher characteristics affect the effectiveness of leadership in the context of learning quality.

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Appendix 1. Validity Test Results

	R	Sign	Conclusion
KKS1	0.944	0,000	Valid
KKS10	0.801	0,000	Valid
KKS2	0.954	0,000	Valid
KKS3	0.919	0,000	Valid
KKS4	0.916	0,000	Valid
KKS5	0.907	0,000	Valid
KKS6	0.908	0,000	Valid
KKS7	0.863	0,000	Valid
KKS8	0.861	0,000	Valid
KKS9	0.929	0,000	Valid
KP1	0.757	0,000	Valid
KP10	0.866	0,000	Valid
KP11	0.821	0,000	Valid
KP12	0.745	0,000	Valid
KP13	0.844	0,000	Valid
KP14	0.892	0,000	Valid
KP15	0.779	0,000	Valid
KP2	0.772	0,000	Valid
KP3	0.708	0,000	Valid
KP4	0.697	0,540	Un-Valid
KP5	0.807	0,000	Valid
KP6	0.676	0,643	Un-Valid
KP7	0.815	0,000	Valid
KP8	0.706	0,000	Valid
KP9	0.837	0,000	Valid
PK1	0.878	0,000	Valid
PK10	0.717	0,000	Valid
PK2	0.830	0,000	Valid
PK3	0.780	0,000	Valid
PK4	0.854	0,000	Valid
PK8	0.742	0,000	Valid
PK9	0.767	0,000	Valid
PKA1	0.936	0,000	Valid
PKA10	0.940	0,000	Valid
PKA2	0.938	0,000	Valid
PKA3	0.866	0,000	Valid
PKA4	0.938	0,000	Valid
PKA5	0.938	0,000	Valid
PKA6	0.947	0,000	Valid
PKA7	0.875	0,000	Valid

PKA8	0.920	0,000	Valid
PKA9	0.922	0,000	Valid

Source: result of SEM PLS analysis 2024