


The Influence of Transformational Leadership and Teachers' Information Technology Skills on the Quality of Learning at Public Junior High Schools in Boja District

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ABSTRACT

The purpose of this study is to: (1) determine the magnitude of the influence of transformational leadership on the quality of learning, (2) determine the magnitude of the influence of teachers' information technology skills on the quality of learning, and (3) determine the magnitude of the influence of transformational leadership and teachers' information technology skills together on the quality of learning. The research approach used is quantitative. This type of research uses correlation research. The population of this study was 140 teachers and the research sample was 104 teachers. Data collection was carried out using a questionnaire. The data analysis techniques used in this study were descriptive data analysis, prerequisite tests including normality tests, multicollinearity tests, heteroscedasticity tests, linearity tests and hypothesis tests including simple and multiple linear regression. The results of the study showed that: (1) the correlation of transformational leadership on the quality of learning was 0.940. The influence of transformational leadership had a significant effect on the quality of learning variable by 88.3%. (2) the correlation of teachers' information technology skills on the quality of learning was 0.699. The influence of teachers' information technology skills had a significant effect on the quality of learning variable by 68.8%. (3) A significant influence of transformational leadership and teachers' information technology skills on learning quality is shown in the equation $\hat{y} = 4.941 + 1.262 x_1 + 0.115 x_2$. The correlation coefficient r is 0.942. The coefficient of determination for the influence of variables x_1 and x_2 on y is 88.8%. The conclusion of this study is that transformational leadership and teachers' information technology skills significantly influence learning quality, at 88.8%.

Keywords: Transformational Leadership, Information Technology Skills, Learning Quality

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INTRODUCTION

Education plays a crucial role in improving the quality of human resources, which is key to facing today's global challenges. In this context, education serves not only as a process of transferring knowledge but also as a means of developing the character and values needed by students. According to Government Regulation of the Republic of Indonesia Number 57 of 2021 concerning National Education Standards (SNP), Article 1, education is a conscious and planned effort to create a learning environment that enables students to actively develop their potential. Therefore, quality education is the primary foundation for building a knowledgeable, character-based, and competitive society.

One important indicator in achieving educational goals is the quality of learning. Learning quality reflects the level of effectiveness of the teaching and learning process in achieving established objectives. According to Wahyono (2022), learning quality encompasses three main dimensions: the classroom learning process, teacher pedagogical competence, and student learning outcomes. Learning quality can be seen in terms of both process and outcomes.

Learning is considered quality when students are actively involved physically, mentally, and socially, demonstrate high motivation and enthusiasm for learning, and experience positive behavioral changes as a result of the learning process.

Physics on the ground indicate that the quality of learning has not fully met expectations. Learning quality is greatly influenced by teachers' ability to manage the classroom, provide psychological support, and implement varied, student-centered learning methods. (Sudjana, 2020) emphasizes that improving the quality of learning can be achieved through optimizing learning activities and improving student achievement. However, in practice, learning processes still tend to be conventional, teacher-centered, and lack space for active student participation. Therefore, teachers are expected to utilize all learning components optimally to effectively achieve learning objectives.

Based on the evaluation results of the Boja District Public Junior High School Supervisor, various problems were still found in the implementation of learning. These problems include teachers still lacking optimal classroom management, as evidenced by unorganized classrooms and the low implementation of positive discipline. Furthermore, not all teachers provide psychological support to students and do not provide feedback during learning. Furthermore, not all teachers provide psychological support to students and do not implement feedback effectively during the learning process. This condition is reinforced by the 2025 Boja District Public Junior High School Education Report, which shows that learning quality is in the moderate category and has decreased compared to the previous year (2025 Boja District Public Junior High School Supervisor Evaluation Results). This is known based on the scores obtained from the recapitulation results at each school, as follows:

Table 1 Learning Quality at Public Middle Schools in Boja District

No.	Indicator	Achievement Value in 2024	Achievement Value in 2025	Change in achievement value
1	Learning quality	62,18	62	Turun 0,18
2	Classroom management	65,89	67,47	Naik 1,58
3	Psychological support	62,55	61,09	Turun 1,46
4	Learning methods	58,08	57	Turun 1,08

Based on the cumulative quality of learning scores at Boja District Public Middle Schools, it is known that the quality of Boja District Public Middle Schools in 2024 achieved a score of 62.18 and in 2025, it achieved a score of 62. This result decreased by 0.18. Furthermore, the classroom management indicator in 2024 achieved a score of 65.89 and in 2025, it achieved a score of 67.47, a result that increased by 1.58. Furthermore, the psychological support indicator in 2024 achieved a score of 62.55 and in 2025, it achieved a score of 61.09, a result that decreased by 1.46. The learning method indicator in 2024 achieved a score of 58.08 and in 2025, it achieved a score of 57.

This result decreased by 1.08. Furthermore, 50% of teachers have not mastered IT, especially in the use of digital learning platforms. Therefore, the learning process is still sourced from teachers and returns to conventional learning. Based on these conditions, the quality of learning at public junior high schools in Boja District still requires continuous improvement. Previous studies have generally focused on learning quality in terms of teacher methods and pedagogical competencies, but few have examined in-depth other factors that could potentially influence learning quality systematically. Thus, there is a research gap: the lack of optimal empirical studies linking the actual condition of learning quality in schools with supporting factors of a managerial and professional nature to teachers, particularly in the junior high school context. Furthermore, limited research utilizes report card data. Given these findings, leadership styles from principals are needed to foster and provide direction to improve learning quality. One factor that can influence learning quality is transformational leadership.

Transformational leadership plays a strategic role in encouraging improvements in the quality of learning in schools. Effective transformational leadership can foster teacher commitment to carrying out their professional duties and encourage innovation in the learning process. Through a clear vision, motivation, and role model, principals can motivate teachers to improve their teaching skills and contribute optimally to achieving learning objectives. Therefore, transformational leadership is a crucial factor influencing the quality of learning in schools.

In line with Mulyasa's statement (2022), which emphasizes that the success of education and learning in schools is greatly influenced by the principal's ability to manage various educational components, such as teachers, students, curriculum, and infrastructure. A principal who is able to manage all these elements effectively will create a conducive learning environment, allowing the learning process to proceed optimally and leading to improved learning quality.

However, empirical conditions at public junior high schools in Boja District indicate that the implementation of transformational leadership has not been fully implemented. Based on the results of the guidance provided by the Boja District Public Junior High School Supervisor, not all principals involved the entire school community in setting school goals. Furthermore, not all principals managed and developed the curriculum. Furthermore, some principals provided mentoring and educated teachers on improving classroom learning (Results of the Guidance for Public Junior High School Supervisors in Boja District in 2025).

These findings align with research conducted by Hallinger (2020), which shows that transformational leadership is a key factor influencing learning quality through three mechanisms: (a) continuous teacher professional development, (b) effective instructional supervision, and (c) fostering conducive teacher information technology skills. Data from National (2023) supports these findings by showing that schools with strong transformational leadership have a 28% higher learning quality than schools with conventional leadership.

However, there is a gap between the ideal concept of transformational leadership and the reality on the ground. Theoretically, transformational leadership emphasizes the involvement of the entire school community, ongoing mentoring for teachers, and adaptive curriculum management. However, empirical evidence shows that community involvement is suboptimal, teacher mentoring is not carried out consistently, and curriculum development is not a primary focus for some principals. The concept of transformational leadership emphasizes continuous mentoring for teachers, but the reality in schools shows that only a small percentage of principals consistently provide mentoring. This gap impacts the suboptimal quality of learning in schools.

The quality of learning in schools is suboptimal because principals have not fully implemented their transformational leadership role. There remains a gap between normative expectations (based on theory and research findings) and empirical conditions (the results of coaching in Boja District). This indicates the need for strategies to increase the capacity of school principals to implement transformational leadership, particularly in the areas of participation, curriculum development, and teacher mentoring.

Based on this description, a research gap can be identified: the limited number of empirical studies that fully explore the relationship between a principal's transformational leadership and learning quality based on real-world school conditions. Furthermore, few studies have examined the extent to which the implementation of a principal's transformational leadership directly contributes to improving learning quality, particularly in the context of public junior high schools at the sub-district level.

Transformational leadership has a significant impact on improving learning quality. This leadership helps teachers develop more effective teaching methods and encourages them to continuously improve their professional skills. With the right support, teachers can create a dynamic learning environment that is tailored to students' needs, resulting in significantly improved learning outcomes. Furthermore, transformational leadership influences various aspects that determine learning success, with principals focusing on teacher attitudes and

actions in activities directly related to student development. Through careful supervision and constructive feedback, principals can ensure that all learning elements function harmoniously to achieve optimal educational goals.

Learning quality is not only influenced by transformational leadership but can also be influenced by teachers' information technology skills. Teachers' information technology skills are a crucial factor in creating an effective and conducive learning process. Mastery of information technology enables teachers to design, implement, and evaluate learning more innovatively and encourages more dynamic interactions between teachers and students. According to (Djamarah, 2020), good teacher information technology skills can improve the quality of interactions between teachers, students, and the school environment, thereby increasing student motivation to learn. Furthermore, the use of information technology provides easy access to learning resources and teaching materials that can be used anytime and anywhere as long as an internet connection is available (Baser, 2020).

In line with this, (Wahyuni, 2020) emphasized that adequate teacher information technology skills have a positive impact on the quality of learning. Teachers who are able to optimally utilize information technology tend to be more creative in selecting learning methods, media, and strategies, making the learning process more engaging, interactive, and student-centered. Thus, teacher information technology skills are closely related to improving the quality of learning, both in terms of process and learning outcomes.

Improving teachers' information technology skills is inseparable from the principal's role in providing guidance, supervision, and professional development. The principal acts as a supervisor, encouraging teachers to improve their competencies and skills, including mastery of information technology. According to (Edy, 2021), information technology management skills are the ability to operate technology to process data, process information, and utilize technology effectively to support the achievement of organizational goals, including in the educational context. Therefore, teachers' information technology skills are a crucial part of the school's vision and development to improve the quality of learning.

Empirical conditions at public junior high schools in Boja District indicate that teachers' information technology skills are not yet fully optimized. Based on interviews with the principals of public junior high schools in Boja District, researchers concluded that many teachers still lack IT skills, particularly in the use of digital learning platforms. Therefore, teachers may have accounts on the Merdeka Mengajar Platform, but they have not utilized them for the learning process, and the learning process still relies solely on teachers, reverting to conventional learning. Furthermore, there is a lack of facilities and infrastructure to support innovative learning processes (Interview with the Principal of a Public Junior High School in Boja District, 2025).

This situation demonstrates a gap between the demands of learning in the digital era and the reality of teachers' information technology skills in schools. Theoretically, teachers are required to possess adequate information technology skills to be able to deliver innovative and relevant learning. However, empirically, teachers still lack adequate information technology skills and competencies, resulting in low learning innovation and low quality of learning in schools.

Based on this description, a research gap can be identified: the limited empirical research that in-depth examines the relationship between teachers' information technology skills and learning quality based on real-world conditions in schools, particularly at the public junior high school level. Furthermore, there are few studies utilizing field data and principal interviews to reveal the extent to which teachers' information technology skills contribute to improving learning quality. This is due to the lack of mentoring and training for teachers, resulting in a lack of professional skills and the ability to innovate and achieve. Information technology skills are crucial for every teacher, as teacher competence and abilities are inseparable from the learning process in schools.

Therefore, this research is crucial to analyze the influence of transformational leadership and teachers' information technology skills on learning quality. The results are expected to

provide theoretical contributions to the development of teacher competency studies and practical contributions for schools and stakeholders in formulating strategies to improve learning quality by strengthening transformational leadership and teachers' information technology skills.

METHOD

This research is quantitative. This research also has a correlational design. The location analyzed is SMP Negeri Boja District. The population analyzed was 140 respondents who were teachers and the sample was determined by the Slovin formula taken through a proportional random sampling technique of 104 teachers. Data were collected through a questionnaire. The questionnaire used consisted of three instruments arranged based on indicators and dimensions in each variable. The transformational leadership variable consisted of 36 statements, the teacher's information technology ability variable consisted of 45 statements, and the learning quality variable consisted of 42 statements. The instruments that had been prepared were tested for validity and reliability, which showed findings of the transformational leadership variable consisted of 33 statements, the teacher's information technology ability variable consisted of 41 statements, and the learning quality variable consisted of 39 statements. After the reliability and validity were stated in the data, then the prerequisites were tested consisting of normality, multicollinearity, linearity, heteroscedasticity and hypothesis testing which included structural tests, F tests and T tests. The author processed the analysis findings data using SPSS 25 software.

RESULT AND DISCUSSION

1. The Influence of Transformational Leadership on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The findings of the analysis of transformational leadership variables on learning quality are explained in this table:

Table 2 Correlation of Transformational Leadership with Learning Quality

		Transformational Leadership	Learning Quality
Transformational Leadership	Pearson Correlation	1	.940**
	Sig. (2-tailed)		.000
	N	104	104
Learning Quality	Pearson Correlation	.940**	
	Sig. (2-tailed)	.000	
	N	104	104

The correlation analysis findings of transformational leadership on learning quality showed a positive r value of 0.940. Meanwhile, the Sig (one-tailed) value of 0.000 proves a one-way correlation between X1 and Y, which is significant because this value is below 5%, or 0.000 < 0.05. Furthermore, the findings of a simple regression analysis prove the correlation model of transformational leadership on learning quality, presented in the equation $\hat{Y} = 1.912 + 1.156 X1$. The partial t-test findings show a significance probability value of 0.000 < 0.10, meaning the independent variable significantly explains the dependent variable. The calculated t value is > t table (27.735 > 1.659930), indicating that transformational leadership partially has a significant influence on learning quality.

Table 3 Summary Test of Transformational Leadership Variables on Learning Quality

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.940 ^a	.883	.882	4.227
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The R-square value is 0.883, indicating an 88.3% influence of Transformational Leadership (X1) on Learning Quality (Y), with a moderate influence on Learning Quality (Y). The calculated r-value of 0.940 indicates that Transformational Leadership (X1) strongly influences Learning Quality (Y).

2. The Influence of Teacher Information Technology Skills on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The findings of the analysis of the variable of teacher information technology skills on learning quality are presented in this table:

Table 4 Correlation of Teacher Information Technology Skills on Learning Quality

		Teacher Information Technology Capabilities	Learning Quality
Teacher Information Technology Capabilities	Pearson Correlation	1	.699**
	Sig. (2-tailed)		.000
	N	104	104
Learning Quality	Pearson Correlation	.699**	
	Sig. (2-tailed)	.000	
	N	104	104

The findings of the correlation analysis on the variable of teacher information technology ability with learning quality are positive, namely r count 0.699. The findings of the simple regression analysis prove that the model of teacher information technology ability towards Learning Quality is called the equation $\hat{Y} = 24.711 + 0.731X_2$. The findings of the partial t test prove that the probability value of significance is $0.000 < 0.10$, meaning that the independent variable is a significant explanation of the dependent variable with a value of t count $> t$ table ($9.865 > 1.659930$), meaning that the variable of teacher information technology ability partially has a significant influence on the learning quality variable.

Table 5 Summary Test of Teachers' Information Technology Capabilities on Learning Quality Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699 ^a	.688	.831	8.836

The R-square value is 0.688, indicating a strong influence between teachers' information technology skills (X2) and learning quality (Y). The correlation coefficient, r, is 0.699, indicating a strong influence between teachers' information technology skills and Learning Quality.

3. The Influence of Transformational Leadership and Teacher Information Technology Skills on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The findings of the analysis of the variables influencing Transformational Leadership and Teacher Information Technology Skills on Learning Quality are presented in the following table:

Table 6 Correlation Coefficient of the Influence of Transformational Leadership and Teacher Information Technology Skills on Learning Quality

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.941	3.926		1.259	.211

Transformational Leadership	1.262	.067	1.026	18.932	.000
Teacher Information Technology Capabilities	.115	.057	.110	2.028	.000

The findings of the multiple regression analysis prove that the relationship model between Transformational Leadership and teachers' information technology skills on Learning Quality is expressed by the equation $\hat{Y} = 4.941 + 1.262 X_1 + 0.115 X_2$. The findings of the Partial t-test are based on the calculated t value of X1 against Y, which is 18.932 while the t-table is 1.659930. This means that t-count > t-table (18.932 > 1.659930), so the Transformational Leadership variable partially has a significant influence on the Learning Quality variable. The calculated t value of X2 against Y is 2.028 while the t-table is 1.659930. This means that t-count > t-table (2.028 > 1.659930), meaning that the teacher's information technology skills variable partially has a significant influence on the Learning Quality variable.

Table 7 Summary Test of Transformational Leadership and Teachers' Information Technology Skills on Learning Quality

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.942 ^a	.888	.885	4.164	

The R-square value of 0.888 proves that the variation in Learning Quality (Y) can be explained simultaneously by Transformational Leadership (X1) and teachers' information technology skills (X2), at 88.8%, indicating a strong coefficient of determination.

DISCUSSION

1. The Influence of Transformational Leadership on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The findings of this study indicate that transformational leadership has a strong and significant influence on learning quality in public junior high schools in Boja District, Kendal Regency. The R-square value is 0.883, indicating an 88.3% and the correlation coefficient of 0.940 confirm that transformational leadership practiced by school principals plays a crucial role in improving the quality of teaching and learning processes. This result emphasizes that leadership practices oriented toward inspiration, intellectual stimulation, and individualized consideration can significantly enhance teachers' performance and learning outcomes. These findings reinforce the theoretical framework of transformational leadership, which highlights the ability of leaders to inspire and motivate organizational members to achieve higher performance levels.

The results of this study are consistent with previous studies which found that transformational leadership positively influences educational quality and school effectiveness. For example, research by Sumarno (2020) concluded that transformational leadership significantly contributes to the development of effective schools. Similarly, Hastuti (2024) found that transformational leadership significantly affects learning quality, with an R-square value of 0.849. Research by Leithwood and Jantzi (2020) also demonstrated that transformational leadership enhances teacher motivation and improves instructional practices. Additionally, studies by Hallinger (2021) and Bush (2022) highlighted that school leaders who apply transformational leadership can create supportive learning environments that promote academic improvement. Research by Sinaga (2023) also emphasized that transformational school leadership plays a critical role in bridging policy implementation and classroom learning practices. The similarity of these findings may be due to the universal characteristics of transformational leadership, which focus on vision, motivation, and professional development for teachers.

However, this study also presents several contextual differences compared with previous research. Many previous studies focused on general school effectiveness or teacher performance, whereas this research specifically examines the relationship between transformational leadership and learning quality within the context of public junior high schools in Boja District. Differences in context, educational environment, and research population may explain variations in the strength of the relationship between leadership and learning quality. For instance, schools located in semi-urban areas such as Boja District may rely more heavily on the leadership role of principals in managing educational change, teacher collaboration, and innovation in learning practices.

The novelty of this research lies in its contextual and empirical contribution to the study of educational leadership in Indonesian junior high schools, particularly in the Kendal Regency area. While many studies have examined transformational leadership in education, limited research has specifically analyzed its direct influence on learning quality using quantitative correlation and regression analysis in the context of public junior high schools in Boja District. This research therefore provides new empirical evidence that strengthens the relationship between transformational leadership and learning quality at the secondary education level. Furthermore, this study highlights how transformational leadership functions not only as an administrative leadership approach but also as an instructional leadership strategy that directly supports improvements in classroom learning practices.

From an academic perspective, this research contributes to the development of educational leadership theory by providing empirical support that transformational leadership is a key determinant of learning quality. Practically, the findings suggest that school principals should strengthen transformational leadership competencies such as inspiring vision, intellectual stimulation, and individualized teacher support. From a policy perspective, the results indicate that educational authorities should integrate transformational leadership training into principal professional development programs to enhance school performance and educational quality.

Despite its significant findings, this study has several limitations that should be acknowledged. First, the research focuses only on public junior high schools in Boja District, Kendal Regency, which may limit the generalizability of the findings to other regions or educational levels. Second, the study uses a quantitative approach with survey data, which may not fully capture the complexity of leadership practices and learning processes occurring in schools. Third, the research only examines the influence of transformational leadership on learning quality without considering other potential variables such as teacher motivation, organizational culture, or school climate that may also affect learning quality.

Future research is recommended to expand the scope of this study by including schools from different regions or educational levels to obtain more comprehensive findings. Researchers may also consider incorporating additional variables such as teacher self-efficacy, organizational commitment, school culture, and technological integration in learning. Furthermore, mixed-method research designs combining quantitative and qualitative approaches could provide deeper insights into how transformational leadership practices influence teaching strategies and student learning outcomes. Longitudinal studies may also be conducted to examine how transformational leadership affects learning quality over time.

2. The Influence of Teacher Information Technology Skills on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The findings of this study indicate that teachers' information technology skills have a positive and significant influence on learning quality in public junior high schools in Boja District, Kendal Regency. The correlation coefficient of 0.699 indicates a strong relationship between teachers' information technology skills and learning quality. In addition, the regression equation $\hat{Y} = 24.711 + 0.731X_2$ shows that every increase in teachers' information technology skills contributes positively to improving learning quality. The results of the t-test further confirm that the independent variable significantly affects the dependent variable ($t_{count} 9.865 > t_{table} 1.659930$; significance value $0.000 < 0.10$). These findings suggest that teachers who

possess adequate digital competencies are more capable of designing innovative learning strategies, integrating digital learning resources, and facilitating more effective classroom learning processes.

The results of this study are consistent with previous research that highlights the important role of teachers' digital competence in improving educational quality. Research by Scherer (2020) found that teachers' digital competence significantly influences the effectiveness of technology-based learning and student engagement in the classroom. Similarly, Baser (2020) emphasized that the integration of digital technology into teaching practices improves access to learning resources and enhances student participation. Hallinger (2020) also identified that teachers' technological skills play a mediating role in improving learning quality, particularly in schools implementing digital learning strategies. In addition, Pratiwi (2023) reported that teacher IT competence positively affects teacher performance, which subsequently improves learning quality in schools. Research by Tondeur et al. (2021) further revealed that teachers' technological pedagogical knowledge significantly contributes to the successful implementation of digital learning environments. Likewise, studies by Redecker (2021) highlight that teachers' digital competence is a key component in modern education systems that emphasize digital literacy and innovative pedagogy.

The similarity between this research and previous studies may be explained by the increasing integration of digital technology in the educational process. As schools adopt more technology-based learning platforms, teachers' ability to use digital tools becomes increasingly essential for effective instruction. Teachers who are technologically competent are better able to adapt learning materials, utilize multimedia resources, and facilitate interactive learning environments that improve student engagement and learning outcomes.

However, several contextual differences also emerge when comparing this study with previous research. While many international studies focus on large-scale digital learning environments or higher education contexts, this research specifically examines teachers' information technology skills in the context of public junior high schools in Boja District, Kendal Regency. Differences in educational infrastructure, teacher training opportunities, and local educational policies may influence the magnitude of the relationship between technology skills and learning quality. For instance, schools in regional areas may rely more heavily on teacher initiative and individual technological competence to implement digital learning effectively.

The novelty of this study lies in its contextual contribution to understanding the influence of teachers' information technology skills on learning quality within the specific setting of public junior high schools in Boja District, Kendal Regency. Although previous research has widely discussed digital competence in education, limited empirical studies have quantitatively analyzed its direct influence on learning quality within regional Indonesian public schools. This study therefore provides new empirical evidence demonstrating that teachers' information technology skills are a strong determinant of learning quality in the context of secondary education in developing educational environments.

From an academic perspective, this research contributes to the development of educational technology and educational management studies by reinforcing the theoretical assumption that teachers' digital competence plays a strategic role in improving learning quality. Practically, the findings highlight the importance of strengthening teachers' technological competencies through continuous professional development programs. From a policy perspective, the results suggest that education authorities should prioritize teacher digital literacy training and provide adequate technological infrastructure to support effective digital learning implementation.

Despite its important findings, this study has several limitations. First, the research was conducted only in public junior high schools in Boja District, Kendal Regency, which may limit the generalization of the findings to other regions or educational levels. Second, this study focuses solely on the influence of teachers' information technology skills on learning quality without including other relevant variables such as teacher motivation, school culture, leadership support, or student digital readiness. Third, the research relies on quantitative

survey data, which may not fully capture the complexity of how teachers integrate technology into their classroom practices.

Future studies are recommended to expand the research scope by involving schools from different regions or educational levels to obtain more comprehensive and generalizable findings. Researchers may also incorporate additional variables such as technological pedagogical knowledge, teacher professional development, school digital infrastructure, and student engagement. Furthermore, future research may employ mixed-method approaches combining quantitative and qualitative methods to provide deeper insights into how teachers integrate information technology into learning processes. Longitudinal studies could also be conducted to examine how improvements in teachers' digital competencies influence learning quality over time.

3. The Influence of Transformational Leadership and Teacher Information Technology Skills on Learning Quality at Public Junior High Schools in Boja District, Kendal Regency

The results of this study indicate that transformational leadership and teachers' information technology skills simultaneously have a significant influence on learning quality in public junior high schools in Boja District, Kendal Regency. The multiple regression equation $\hat{Y} = 4.941 + 1.262X_1 + 0.115X_2$ shows that both variables contribute positively to improving learning quality. The t-test results further confirm that transformational leadership ($t = 18.932 > 1.659930$) and teachers' information technology skills ($t = 2.028 > 1.659930$) partially have a significant influence on learning quality. Moreover, the coefficient of determination ($R^2 = 0.888$) indicates that 88.8% of the variation in learning quality can be explained by these two variables simultaneously. These findings emphasize that improving learning quality requires an integrated approach that combines visionary school leadership and teachers' digital competence.

The findings of this study are consistent with previous research highlighting the important role of transformational leadership and digital competence in improving educational quality. Research by Sumarno (2020) demonstrated that transformational leadership significantly influences school effectiveness and teacher performance. Similarly, Leithwood and Jantzi (2020) found that transformational leadership enhances teacher motivation and encourages innovation in instructional practices. Hallinger (2020) also emphasized that effective school leadership plays a strategic role in improving learning outcomes by creating supportive learning environments. In addition, Scherer et al. (2020) revealed that teachers' digital competence significantly affects the effectiveness of technology-based learning. Research by Tondeur et al. (2021) further confirmed that teachers' technological pedagogical knowledge is a critical factor in integrating digital technology into classroom instruction. Likewise, Redecker (2021) highlighted that digital competence among teachers is an essential component in improving the quality of modern education systems.

The similarity between the findings of this study and previous studies may be explained by the increasing integration of technology in the educational process. In the digital era, effective learning requires not only strong leadership from school principals but also teachers who are capable of utilizing digital technologies in the learning process. Transformational leadership encourages innovation, collaboration, and professional development, while teachers' information technology skills enable the practical implementation of these innovations in classroom teaching. When these two factors operate together, they create a supportive educational environment that promotes continuous improvement in learning quality.

However, some differences may occur when comparing the results of this study with previous research. Many earlier studies examined transformational leadership and digital competence separately, whereas this research analyzes their simultaneous influence on learning quality within the specific context of public junior high schools in Boja District, Kendal Regency. Differences in educational context, technological infrastructure, and teacher professional development opportunities may influence the magnitude of the relationship between these variables. For example, schools located in regional areas may rely more heavily on the

leadership role of principals in facilitating teachers' technological development and promoting innovation in learning practices.

The novelty of this research lies in its integrated analysis of transformational leadership and teachers' information technology skills as simultaneous determinants of learning quality within the context of public junior high schools in Boja District, Kendal Regency. While previous studies have often examined leadership or teacher digital competence independently, this study provides empirical evidence demonstrating that the synergy between transformational leadership and teachers' information technology skills significantly improves learning quality. This research therefore contributes to the development of educational leadership and educational technology studies by highlighting the importance of combining leadership strategies with teacher digital competencies to achieve optimal learning outcomes.

From an academic perspective, this research strengthens the theoretical framework that emphasizes the interaction between leadership practices and teacher competencies in improving educational quality. Practically, the findings suggest that school principals should implement transformational leadership practices that encourage innovation, collaboration, and teacher professional development in digital competencies. From a policy perspective, the results highlight the importance of integrating leadership development programs with teacher digital literacy training as part of comprehensive strategies to improve the quality of education.

Despite its significant findings, this study has several limitations that need to be considered. First, the research focuses only on public junior high schools in Boja District, Kendal Regency, which may limit the generalizability of the results to other regions or educational contexts. Second, this study examines only two independent variables, namely transformational leadership and teachers' information technology skills, while other factors such as school culture, teacher motivation, student engagement, and technological infrastructure may also influence learning quality. Third, the study relies primarily on quantitative survey data, which may not fully capture the complexity of leadership practices and technology integration in classroom learning.

Future research is recommended to expand the scope of this study by including schools from different regions and educational levels to obtain more comprehensive and generalizable findings. Researchers may also incorporate additional variables such as teacher professional development, school digital infrastructure, organizational culture, and student engagement to provide a more comprehensive understanding of the factors influencing learning quality. In addition, future studies may employ mixed-method research designs that combine quantitative and qualitative approaches to explore more deeply how transformational leadership and teachers' digital competence interact in improving learning practices. Longitudinal studies may also be conducted to examine the long-term impact of leadership and digital competence development on learning quality.

CONCLUSION

There is a positive and significant influence of classroom observation on Learning Quality indicated by the results of the regression equation calculation $\hat{Y} = 1.912 + 1.156 X_1$. Then the r-count value is 0.940 with a very strong category and the t-count value $>$ t-table ($27.735 > 1.659930$). Then based on the R-square value, the Transformational Leadership (X_1) variable on Learning Quality (Y) has a strong category influence of 88.3%. There is a positive and significant influence of teachers' information technology capabilities on Learning Quality indicated by the results of the regression equation calculation $\hat{Y} = 24.711 + 0.731 X_2$. Then the r-count value is 0.699 with a strong category and the t-count value $>$ t-table ($9.865 > 1.659930$). Then based on the R-square value, the teacher's information technology capabilities (X_2) variable on Learning Quality (Y) has a moderate category influence of 68.8%. There is a significant influence of Transformational Leadership and teachers' information technology capabilities on Learning Quality as shown by the results of the regression equation calculation $\hat{Y} = 4.941 + 1.262 X_1 + 0.115 X_2$. Then the correlation coefficient value r is 0.942 with a very strong category. The results of the coefficient of determination of the influence of the Transformational

Leadership variable and teachers' information technology capabilities on Learning Quality (Y) are 88.8% in the strong category.

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