Principals' Transformational Learning Leadership in Digital Lifestyles and Teachers' Digital-Based Learning

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A B S T R A K

Penggabungan kedua konsep kepemimpinan pembelajaran dan kepemimpinan transformasional menjadi satu konsep kepemimpinan yang baru diyakini dapat membuat sekolah berjalan lebih efektif. Keefektifan ini yang akan dikaji lebih dalam gaya hidup digital dan pembelajaran berbasis digital guru. Tujuan dari penelitian ini adalah untuk menguji seberapa besar pengaruh kepemimpinan pembelajaran transformasional terhadap pembelajaran berbasis digital guru dengan gaya hidup digital sebagai variabel mediator. Jenis penelitian ini adalah penelitian survei. Rancangan penelitian ini menggunakan correlational reseach study. Populasi penelitian ini berjumlah 197 guru. Sampel penelitian ini berjumlah 137 guru. Metode pengumpulan data berupa kuisioner atau angket. Teknik analisis data menggunakan analisis statistik inferensial. Temuan hasil penelitian menunjukkan bahwa pertama, terdapat pengaruh yang signifikan dari kepemimpinan pembelajaran transformasional kepala sekolah terhadap gaya hidup digital guru. Kedua, terdapat pengaruh yang signifikan dari kepemimpinan pembelajaran transformasional kepala sekolah terhadap pembelajaran berbasis digital guru. Ketiga, terdapat pengaruh yang signifikan dari gaya hidup digital guru terhadap pembelajaran berbasis digital. Keempat, terdapat pengaruh yang signifikan dari kepemimpinan pembelajaran transformasional terhadap pembelajaran berbasis digital dengan gaya hidup digital guru sebagai mediator. Disimpulkan bahwa kepemimpinan pembelajaran transformasional berpengaruh kepada gaya hidup digital.

A B S T R A C T

Combining the two concepts of learning and transformational leadership into one new leadership concept is believed to make schools run more effectively. The effectiveness of teachers' digital lifestyles and digital-based learning will be studied in more detail. This research examines how transformational leadership influences teachers' digital-based learning with digital lifestyle as a mediator variable. This type of research is survey research. This research design uses a correlational research study. The population of this research was 197 teachers. The sample for this research was 137 teachers. The data collection method is in the form of a questionnaire or questionnaire. The data analysis technique uses inferential statistical analysis. The research findings show that the principal's transformational learning leadership significantly influences teachers' digital lifestyles. Second, the principal's transformational learning leadership significantly influences teachers' digital-based learning. Third, the teacher's digital lifestyle significantly influences digital-based learning. Fourth, transformational learning leadership and leaders-based learning with the teacher's digital lifestyle as a mediator. It is concluded that transformational learning leadership influences digital lifestyles.

1. INTRODUCTION

Educational units are the vanguard in realizing national education goals. National education aims to develop the potential of students to become people who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Implementing education in Indonesia by the law's mandate greatly emphasizes students' potential. These potentials must be able to be developed and explored at the educational unit level (Gampu, Pinontoan, & Sumilat, 2022; Yulianti, 2021). A principal leads the implementation of education in educational units. The principal has an important role in implementing education in schools.

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The principal's main role in implementing school education lies in learning leadership. As a learning leader, the principal creates high-achieving schools, often called successful or good schools. The rapid development of science, information technology, and communication in the 21st century has significantly impacted the world of education today. One of the most visible impacts is teacher behavior. There are four learning convergences that teachers must currently carry out to face the challenges of the 21st century, namely knowledge work (knowledge-based work), thinking tools (thinking tools), digital lifestyle (digital lifestyle, and learning research (classroom action research) (Nurjanah & Mukarromah, 2021; Putra, Pratama, & Sakti, 2020). The digital lifestyle is the convergence of learning that currently has a great opportunity to influence learning carried out by teachers. Prospective teachers are not worried about the development of computers. They are convinced that the development of technology and its use for learning will significantly increase class development. One form of implementing a digital lifestyle in education is digital-based learning. Digital-based learning is a learning and teaching process that uses technology to provide knowledge so students can access it anywhere and anytime (Agustin, Setyosari, & Suharti, 2020; Kadir & Adebayo, 2019). This concept shows that the growing digital lifestyle will also affect learning activities in the classroom. So that there will be a convergence of learning that utilizes the development of digital technology. Convergence of learning is also inseparable from the role of the principal's leadership. The principal has an important role in influencing teacher behavior. Teachers will be more effective if the principal supports them. This shows the great influence of the principal on the effectiveness of teachers in carrying out their duties (Asterina & Sukoco, 2019; Şenol & Lesinger, 2018).

The principal acts as a learning leader. Learning leadership is a leadership style in which the principal acts as an agent of change in developing a learning culture in the school. Learning leadership emphasizes more than just the principal's ability to manage the administration of teachers' learning. Learning leadership focuses on teaching and learning and on the behavior of teachers in working with students (Bush & Sargsyan, 2020; Wollah, Cahyaningrum, & Wijayanti, 2020). In addition to learning leadership skills, a principal must have transformational leadership skills. Transformational leadership is a leader who inspires his followers to put aside personal interests for the organization's good. This transformational leadership prioritizes trust in dividing organizational tasks to achieve the organization's vision and mission. Transformational leadership encourages teachers to innovate and not be afraid to make changes (Muis & Isyanto, 2022; Pratiwi, Wastuti, & Jamila, 2022). Principals with transformational leadership can build trust, mutual respect, and inspiration with their followers. In addition, the principal's leadership style tends to significantly impact student achievement beyond the influence of the school context and the demographics of the principal.

Previous studies have stated the intermediate relationship between transformational leadership, instructional leadership, and collaborative space and the intermediate effect of structure to collaboration in implementing individual educational planning. The effect of transformational leadership on the implementation of individual educational planning is fully mediated by space for collaboration, while the effect of instructional leadership remains (Lambrecht et al., 2022; Oupen, Agung, & Yudana, 2020). Other studies state that instructional leadership directly and indirectly influences teacher performance, instructional leadership on student achievement, change leadership on student achievement, spiritual leadership on student achievement, and teacher performance on student achievement (Kesuma, Sudrajat, & Purwanto, 2021; Nurabadi et al., 2021). In addition, related to digital lifestyle, other studies have stated that there are significant differences between digital technology enthusiasts and non-digital technology enthusiasts in the intention to share public and non-public food safety risk information, and there are significant differences between non-digital technology enthusiasts and people who are neutral to digital technology in the intention to share non-public information (Indarta et al., 2022; Yin, Li, Zhang, & Liu, 2019). The construction of this digital lifestyle instrument uses these instruments because the validity and reliability of the instruments have been tested. However, in this study, experts tested the validity of the face-to-face instrument to strengthen and examine the instrument's feasibility for use in research. Other studies have revealed the unsatisfactory level of teachers' digital competence among teachers in primary and secondary education (Faisal, Hotimah, Nurhaedah, & Khaerunnisa, 2020; Tzafilkou, Perifanou, & Economides, 2023).

Practically, the instrument will be used to measure the level of digital learning practices carried out by teachers. Based on previous research findings, this research needs to be conducted considering that we have now entered and are living in the 21st century. The development of science, information, and communication technology is so rapid. This research is urgently needed so that educational unit leaders know their role and teachers can understand and reflect on themselves with a digital lifestyle and its practices in learning. Based on the research results on principal leadership and its impact on teachers, we will examine the influence of principals' learning and transformational leadership on teachers' digital lifestyles and digital-based learning practices. The difference between this study and previous studies lies

in the variables studied. This study combines two applications of leadership concepts: learning leadership and principals' transformational leadership. We will see the relationship between the two leadership concepts with digital lifestyle and digital-based learning practices of teachers. The purpose of this study is first to determine the influence of transformational learning leadership of principals on teachers' digital lifestyles. Second, determine the influence of transformational learning leadership of principals on teachers' digital-based learning practices. Third, to determine the influence of teachers' digital lifestyles on teachers' digital-based learning practices. Fourth, the influence of the principal's transformational learning leadership on teachers' digital-based learning practices with teachers' digital lifestyles as mediators is to be determined.

2. METHOD

This research design uses a correlational research study. A correlational research study aims to test the relationship between two or more variables, carried out through statistical procedures, and the correlation coefficient is explained (Creswell, 2009). This study uses SEM (structural equation modeling covariance) analysis. SEM is a multivariate analysis technique that is a combination of factor analysis and path analysis. Factor analysis tests the validity and reliability of an instrument (measurement scale), while path analysis tests the relationship between variables. The main objective of this study is to describe and analyze the variables that influence teachers' digital-based learning. The type of research used in this study is survey research. This study will look at the influence of the principal's transformational learning leadership on the digital lifestyle of teachers in Sampung District, Ponorogo Regency. The population in this study were teachers from 31 public elementary schools in Sampung District, Ponorogo Regency. The survey will be conducted online using a questionnaire. The population in this study consisted of teachers working in public elementary schools in Sampung District, Ponorogo Regency. The total population of public elementary school teachers in Sampung District based on data obtained from 2022/2023 Even Semester Basic Education Data (Dapodik) is 197. The data from Dapodik will be the main reference for the population in this study so that the data can be accessed and viewed directly by readers or other researchers.Sampling was carried out using a simple random sampling technique. In this study, the sample taken was elementary school teacher population data according to Dapodik data in Sampung District, Ponorogo Regency. The sampled teachers did not have certain criteria, such as being ASNs or completing professional education. The population in this study was 197 teachers. Therefore, the sample that must be obtained according to a 95% confidence level or a 5% error rate is 137 people. In this study, the research instrument consists of three main instruments, namely (1) the principal's transformational learning leadership instrument, (2) the teacher's digital lifestyle, and (3) the teacher's digital-based learning. The details of the instruments used in this study can be seen in Table 1.

Table 1. Research Instrument Details Table

No	Instrument	Total Item
1	Principal transformational learning leadership	57
2	Digital lifestyle	39
3	Digital-based learning	12

Data collection was carried out through research instruments in the form of questionnaires or surveys. The collected data will be analyzed using statistical techniques, including descriptive and inferential analysis. This study used multiple linear regression and path analyses to test the relationship between variables. The path analysis equation model in this study is presented in Figure 1.
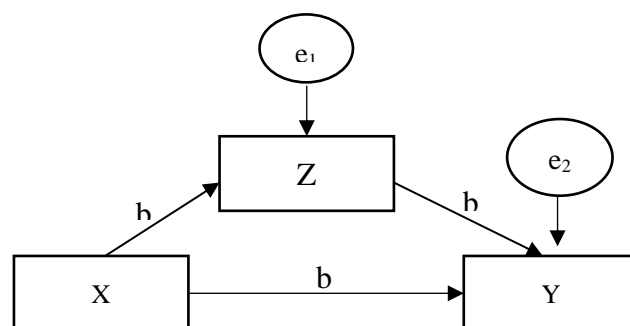

Figure 1. Path Analysis Equation Model

This study has four research hypotheses based on the path analysis equation modeling above.
1. H0: The principal's transformational learning leadership does not affect the teacher's digital lifestyle.
H1: The principal's transformational learning leadership significantly affects the teacher's digital lifestyle.
2. H0: The principal's transformational learning leadership does not affect digital-based learning.
H1: The principal's transformational learning leadership significantly affects digital-based learning.
3. H0: The teacher's digital lifestyle does not affect the teacher's digital-based learning.
H1: The teacher's digital lifestyle significantly affects the teacher's digital-based learning.
4. H0: The principal's transformational learning leadership does not affect the teacher's digital-based learning with a digital lifestyle as a mediator.
H1: The principal's transformational learning leadership significantly affects the teacher's digital-based learning, with the teacher's digital lifestyle acting as a mediator.

3. RESULT AND DISCUSSION

Result

Validity testing is done by correlating the score of each question item with the total score as the result of adding all the question item scores using the product moment correlation technique. The product-moment correlation calculation results show that the score on each question correlates significantly with the total score, indicated by the calculated r-value being greater than the table r. All the items are valid and can be used as data collection tools in this study. The reliability testing of the questionnaire was carried out using the Alpha-Cronbach formula. The testing criteria state that the questionnaire item is declared reliable if the Alpha-Cronbach value exceeds 0.6. The summary of the interpretation of the reliability of the questionnaire according to the SPSS output can be seen in Table 2.

Table 2. Reliability Test Results Table

Variable	Cronbach's Alpha	Description
Transformational Learning Leadership (X)	0.899	Reliable
Teacher Digital Lifestyle (Z)	0.637	Reliable
Digital Based Learning (Y)	0.729	Reliable

The table above shows that Cronbach's Alpha value for all variables is greater than 0.6. Thus, all questionnaire items are declared reliable so that they are declared good and worthy of being used as data collection tools.

1. Normality Test

The normality test aims to test whether the independent and dependent variables in the regression model have a normal distribution. A good regression is if the data is normal or close to normal. If the data is spread in the same direction as the diagonal line, it can meet the normality assumption. The regression model does not meet the normality assumption if the data is spread far from the diagonal line. The normality test results are presented in Figures 2 and 3.
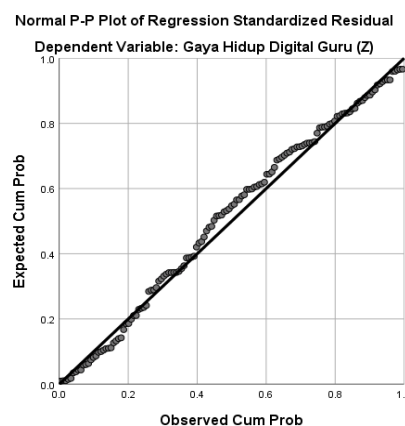

Figure 2. Results of the First Structural Normality Test

Figure 2 shows that the data is spread around the diagonal line, and its distribution follows the diagonal line; this means that the data is normally distributed. Thus, the regression model is suitable for use in research.

Figure 3. Results of the Second Structural Normality Test

Graph 3 shows that the data is spread around the diagonal line, and its distribution follows the diagonal line. This means that the data is normally distributed. Thus, the regression model is suitable for use in research.
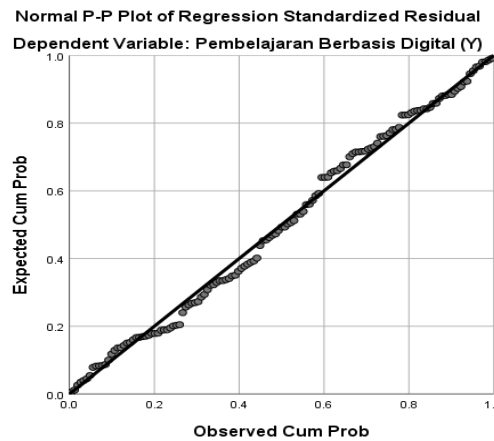
2. Multicollinearity Test

Multicollinearity is tested with VIF (Volume Inflation Factor). Multicollinearity is needed to determine whether or not there are independent variables that have similarities between independent variables in one model. The problem of multicollinearity arises when a very strong relationship or influence exists between two or more variables. If the VIF on the independent variable <10, multicollinearity occurs, and vice versa; if the variable> 10, multicollinearity occurs. The data from the analysis obtained the results presented in Tables 3 and 4.

Table 3. Results of the First Structure Multicollinearity Assumption Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	28.837	13.527		2.132	0.035		
	Transformational Learning Leadership (X)	0.509	0.074	0.511	6.901	0.000	1.000	1.000

Variable X has a tolerance value of less than 1, namely 1.00. Likewise, the VIF number is still between 1 and 10, namely 1.00, meaning there is no multicollinearity. Variables X and Z have a tolerance value of less than 1, which is 0.739, and the VIF number is still between 1-10, which is 1.353, meaning there is no multicollinearity. The heteroscedasticity test aims to test whether a multiple analysis has an inequality of variance in an observation. A good regression model does not have heteroscedasticity. Detection means heteroscedasticity, which is achieved by seeing whether there is a certain pattern in the analysis results graph. Heteroscedasticity occurs if a pattern, like dots, forms a wave that spreads later. If there is no clear pattern and the dots spread above and below the number zero on the Y axis, then heteroscedasticity does not occur. The heteroscedasticity results graph is presented in Figures 4 and 5.

Table 4. Results of the Second Structure Multicollinearity Assumption Test

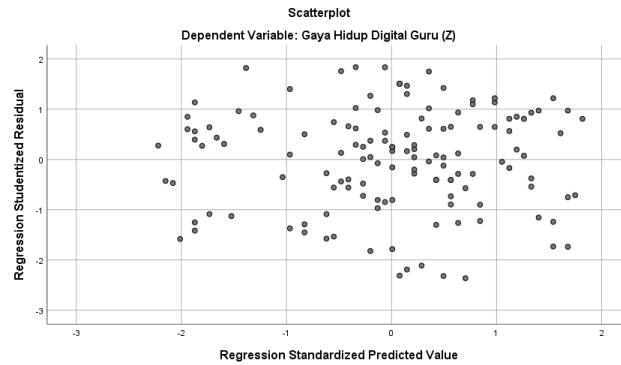| Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-14.052	5.640		-2.491	0.014		
	Transformational Learning Leadership (X)	0.163	.035	0.363	4.629	0.000	0.739	1.353
	Teacher Digital Lifestyle (Z)	0.161	0.035	0.358	4.573	0.000	0.739	1.353

Figure 4. Graph of the Results of the First Structural Heteroscedasticity Test

Figure 4 shows that the dots are spread randomly without forming a clear pattern. Thus, there is no heteroscedasticity, and the regression model is suitable for use.
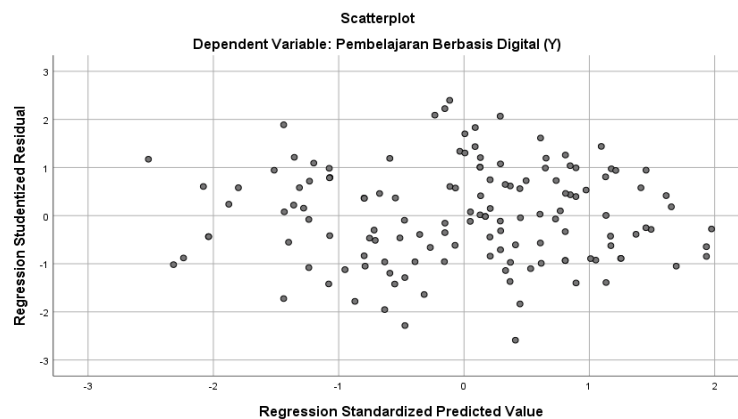

Figure 5. Graph of the Results of the Second Structural Heteroscedasticity Test

The graphic image shows that the dots are randomly spread without forming a clear pattern. Thus, there is no heteroscedasticity, so the regression model is suitable for use. In line with the formulation of the problem, which aims to prove the influence of the principal's transformational learning leadership (X) on the digital life of teachers (Z), therefore the researcher carried out the stages of statistical testing, which were processed with the help of the SPSS program. Based on the tests carried out, a summary of the results of the causal relationship test between transformational learning leadership (X) and the digital lifestyle of teachers (Z) was obtained, which can be seen in Tables 5 and 6.

Table 5. Results of Testing the Influence of X and Z

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	28.837	13.527		2.132	0.035		
Transformational Learning Leadership (X)	0.509	0.074	0.511	6.901	0.000	1.000	1.000

Table 6. Coefficient of Determination of the Influence of X with Z

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.511	0.261	0.255	12.35148	1.950

From the table above, the residual coefficient (error) value Z = 0.511 X + 0.859 can be calculated. The t-test is used to test the regression coefficient partially. From the results of the multiple linear regression analysis in the table above, the results of the influence of variable X on Z are obtained. From the

results of the multiple linear regression analysis in the table above, it can be seen that variable X shows a significant t value of 0.000 <0.05, meaning that there is a significant influence of variable X on variable Z. From the test, the standardized coefficient (Beta) value of 0.511 is obtained, indicating that X has a positive (unidirectional) influence on Z, meaning that the better X is, the better Z will be, and vice versa. Thus, hypothesis 1 is accepted. The transformational learning leadership variable (X) significantly influences the teacher's digital lifestyle (Z). In line with the formulation of the problem, which aims to prove the influence of X and Z on Y, the researcher carried out the stages of statistical testing, which were processed with the help of the SPSS program. Based on the tests carried out, a summary of the results of the causal relationship test between X and Z with Z is obtained, as shown in Tables 7 and 8.

Table 7. Results of Testing the Influence of X and Z with Y

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-14.052	5.640		-2.491	0.014		
Transformational Learning Leadership (X)	0.163	0.035	0.363	4.629	0.000	0.739	1.353
Teacher Digital Lifestyle (Z)	0.161	0.035	0.358	4.573	0.000	0.739	1.353

Table 8. Determination Coefficient of Influence of X and Z with Y

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.626	0.392	0.383	5.06580	2.016

From the results of the multiple linear regression analysis in the table above, it can be seen that variable X shows a significant t value of 0.000 <0.05, meaning that there is a significant influence of variable X on variable Y. From the test, the standardized coefficient (Beta) value of 0.363 is obtained, indicating that X has a positive (unidirectional) influence on Y, meaning that the higher X, the higher Y will be, and vice versa. Thus, hypothesis 2 is accepted. The transformational learning leadership variable (X) significantly influences digital-based learning (Y). From the results of the multiple linear regression analysis in the table above, it can be seen that variable Z shows a significant t value of 0.000 <0.05, meaning that there is a significant influence of variable Z on variable Y. From the test, the standardized coefficient (Beta) value of 0.358 is obtained, indicating that Z has a positive (unidirectional) influence on Y, meaning that the higher Z, the higher Y will be, and vice versa. Thus, hypothesis 3 is accepted. The teacher's digital lifestyle variable (Z) significantly influences digital-based learning (Y). Path analysis is a technique for analyzing causal relationships in multiple regression. From the results of the Sobel test calculation, the p value is 0.0013145 <0.05, proving that hypothesis 4 is accepted. The transformational learning leadership variable (X) has a significant influence on digital-based learning (Y), with the teacher's digital lifestyle (Z) as a mediator.

Discussion

Several findings were shown based on the results of the study. First, the principal's transformational learning leadership significantly influences the teacher's digital lifestyle. The suitability or effectiveness of the learning and transformational leadership models is related to external environmental factors and the school's local context. In addition, transformational learning leadership can develop in response to changing school needs in the context of global education reform. Transformational learning leadership can develop and significantly influence the teacher's digital lifestyle. In general, based on the results of this study, if the principal's transformational learning leadership increases, the teacher's digital lifestyle will increase. The results of this study are also based on previous research that states that learning leadership directly influences teacher performance (Nurabadi et al., 2021; Rahayu & Iskandar, 2023). The principal's transformational leadership significantly influences school quality (Fairy, Yudana, & Divayana, 2019; Maris, Komariah, & Bakar, 2017). Other studies state that integrating learning and transformational leadership can improve poor school performance. In addition, the climate created by integrating learning and transformational leadership styles leads to a work climate that promotes the spirit of implementing learning better (Armiyanti, Sutrisna, Yulianti, Lova, & Komara, 2023; Shava & Heystek, 2021).

The second finding shows that the principal's transformational learning leadership significantly influences teachers' digital-based learning. Transformational leadership positively influences the school organization's elements, including culture, planning, and strategies for learning change and school organization. The orientation of the principal's behavior as a learning leader leads to technical, symbolic, human relations, and educational behavior. The principal's learning leadership is related to internal factors, namely the determination of the school's mission, learning arrangement, and creating a learning climate. At the same time, the external factors are the values and expectations of the community as well as the institutional structure of the school. In this study, the principal's transformational learning leadership significantly positively influences the digital-based learning practices carried out by teachers. When transformational learning leadership grows well, digital-based learning practices also increase. The results of this study are based on previous studies that state that the principal is a leader in the implementation of digital school policies at the planning, implementation, and evaluation stages (Hayudiyani, Bafadal, & Sumarsono, 2022; Wote & Patalatu, 2019). Other research states that the principal's transformational leadership positively improves teacher performance (Fairy et al., 2019; Rifa'i, 2020). This means that the more effective the principal's transformational leadership, the higher the teacher's performance. The Third Finding significantly influences the teacher's digital lifestyle and digital-based learning. Lifestyle and life stages can trigger Internet adoption. Digital lifestyle also influences the learning carried out by teachers, namely digital-based learning. Lifestyle and achievement motivation simultaneously influence the academic achievement of teachers. When the teacher's digital lifestyle is high in activity, opinion, interest, and value, their digital-based learning is also high. These results show a positive and significant influence. In addition, the results of this study provide an overview of how a well-directed digital lifestyle will also make digital-based learning more effective and efficient. Previous research findings stated that the opportunity to implement digital-based learning could activate students, improve digital literacy, arouse student creativity, and create new applications (Argawati & Suryani, 2020; Nirwana, 2021). Other studies state that the impact of learning in this digital era makes it easier for students to access any learning material. Students prefer digital learning media, teachers participate in various training to improve their skills, and teachers will continue to learn new things (Sa'diyah, 2021; Septiana & Hidayati, 2022). Based on the above explanation, the findings of this study are very appropriate because, in a digital lifestyle, there is a digital interest that also encourages, accelerates, and significantly influences digital-based learning practices.

The Fourth Finding shows a significant influence between the principal's transformational learning leadership and teachers' digital-based learning with a digital lifestyle as a moderator. Lifestyle and achievement motivation simultaneously influence the academic achievement of teachers (Jalal, Amaliah, Wardhani, Rifqah, & Fadhel Muhammad, 2022; Maulida & Aminah, 2020). In this study, digital lifestyle as a mediator variable also influences teachers' digital-based learning. The concept of lifestyle was first introduced to help marketers understand consumer behavior. In this case, lifestyle is only seen as an instrument to determine various desires and needs of society based on their daily lifestyle. The findings of this study also show this. When the principal's learning leadership influences the teacher's digital lifestyle, then in terms of lifestyle concept, there is a desire to implement a digital-based learning (Asterina & Sukoco, 2019; Rahayu & Iskandar, 2023). The results of this study show the important role of the principal's transformational learning leadership. Transformational learning leadership has a direct influence on digital-based learning. In addition, it also has an indirect influence through a digital lifestyle. Therefore, it is important to develop the principal's transformational learning leadership as one of the competency indicators a principal must have. The findings of this study are from previous studies, which state that learning leadership indirectly influences student achievement through teacher performance, change leadership on student achievement through teacher performance, and spiritual leadership on student achievement through teacher performance (Nurabadi et al., 2021; Pratiwi et al., 2022). The principal's transformational leadership style influences teacher performance (Armiyanti et al., 2023; Kesuma et al., 2021). Other research states that the principal's transformational leadership positively improves teacher performance (Muis & Isyanto, 2022; Rifa'i, 2020). This means that the more effective the principal's transformational leadership, the more teacher performance will improve.

4. CONCLUSION

Several conclusions can be drawn based on the description and statistical analysis results. The principal's transformational learning leadership variable significantly influences the teacher's digital lifestyle. The principal's transformational learning leadership variable significantly influences the teacher's digital-based learning. The teacher's digital lifestyle variable significantly influences the teacher's digital-based learning. The transformational learning leadership variable (X) significantly

influences digital-based learning with the teacher's digital lifestyle as a mediator. It is concluded that transformational learning leadership affects the digital lifestyle. Policymakers in education should consider the potential of the principal's transformational learning leadership to be maximized in more effective and efficient school management.

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