

# The Influence of Communication and Resources on the Implementation of Deep Learning Policy in Penajam District Elementary School

 <https://doi.org/10.31004/jele.v11i2.2255>

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## ABSTRACT

This study aims to analyze the influence of communication and resources on the implementation of in-depth learning policies in elementary schools in Penajam District. Previous studies on educational policy implementation have generally emphasized structural and administrative factors; however, limited research has specifically examined how communication processes and resource availability jointly influence the implementation of in-depth learning policies at the elementary school level, particularly in regional contexts. This gap highlights the need for empirical investigation into the role of these factors in supporting effective policy implementation in schools. The study used a quantitative approach with an associative (correlational) design to statistically test the relationship and influence between variables. The study population consisted of all 289 public elementary school teachers in Penajam District who implemented in-depth learning. The research sample consisted of 168 teachers determined using a probability sampling technique with the Slovin formula at a 5% error rate. Data collection was carried out through a survey method using a questionnaire that had been tested for validity and reliability. Data analysis was carried out through descriptive statistics, classical assumption tests, multiple linear regression analysis, and hypothesis testing using t-tests, F-tests, and coefficients of determination. The results showed that communication and resources had a positive and significant influence on the implementation of in-depth learning policies. Partially, communication had the most dominant influence with a beta coefficient value of 0.631, while resources had a positive influence with a beta coefficient value of 0.184. Simultaneously, both variables had a significant influence with a calculated F value of 65.102 and a significance level of 0.000. The coefficient of determination of 43.4% indicates that communication and resources partially explain the variation in the implementation of immersive learning policies in elementary schools. This finding underscores the importance of effective policy communication and adequate resource support in enhancing the success of immersive learning implementation in elementary schools.

**Keywords:** *Communication, Elementary School, Implementation of Deep Learning Policy, Resources*

### Article History:

Received 06<sup>th</sup> March 2026

Accepted 01<sup>st</sup> April 2026

Published 02<sup>nd</sup> April 2026



## INTRODUCTION

Education is understood as a process that is consciously designed and planned to develop human potential as a whole, both in the intellectual, emotional, and social dimensions (Kusuma et al., 2025). Through education, individuals are not only equipped with knowledge, but also with the ability to think, behave, and act reflexively in the face of various life dynamics (Dartini et al., 2025; Nasrudin et al., 2025; Students, 2025; Widiantie, 2025). In the ever-changing global context, education systems in various countries are beginning to be directed not only to produce graduates who master the subject matter, but also individuals who are able to think critically, solve problems creatively, and adapt to the complexity of 21st century challenges. Various international institutions such as UNESCO and the OECD emphasize the importance of transforming learning towards a more meaningful, contextual, and oriented approach to the development of higher-level thinking skills. The change in the educational paradigm encourages the emergence of various learning innovations that place students as active subjects in the learning process. One of the approaches that is widely discussed in

contemporary educational literature is the concept of deep learning, which is a learning process that not only emphasizes mastery of information, but also on conceptual understanding, interconnectedness, critical reflection, and the ability to transfer knowledge to real situations (Chen & Chen, 2026; Prince, 2023). This approach developed in response to learning practices that have tended to be oriented towards memorization and completion of procedural tasks alone.

In Indonesia, efforts to encourage a change in the learning paradigm are realized through the implementation of the Independent Curriculum policy which provides wider space for educational units to develop meaningful and contextual learning. One of the concepts that has begun to be introduced in this policy framework is deep learning, which is seen as able to strengthen the quality of the learning process through a more comprehensive and reflective understanding. This policy has been gradually socialized through teacher training, technical guidance, and various programs to strengthen the learning community at the school level. Conceptually, the implementation of education policies like this not only depends on the quality of the policy itself, but is also heavily influenced by how the policy is communicated and supported by the availability of adequate resources at the implementation level.

In practice, the implementation of education policies often faces various challenges, especially when they have to be translated into classroom learning practices. Several studies have shown that the success of policy implementation is highly determined by the clarity of policy communication to implementers and the adequacy of resources available to support its implementation. Without clear and systematic communication, teachers as the main implementers of policies in schools have the potential to have difficulties in understanding the direction of policies and how to implement them in the learning process. Similarly, limited resources, whether in the form of professional competence, support for learning facilities, and access to training, can affect the success rate of policy implementation. This condition is also found in the context of the implementation of deep learning policies at the elementary school level in various regions. A number of studies show that although learning innovation policies have been widely introduced, the level of implementation in schools often still shows significant variations. Some teachers are able to adopt a more reflective and contextual approach to learning, while others still maintain learning practices that are oriented towards one-way delivery of material. These differences show that policy implementation factors at the school level play an important role in determining the success of learning transformation.

In the regional context, a similar phenomenon can also be observed in elementary schools in Penajam District. Based on initial observations and information from the school, it is known that the deep learning policy has begun to be introduced to teachers through various socialization and training activities facilitated by the education office. However, the application of this concept in classroom learning practice still shows a level of diversity. Some teachers have tried to implement more exploratory and concept-based learning, while others still face difficulties in translating deep learning principles into concrete learning strategies.

This situation shows that the implementation of deep learning policies at the school level is not only influenced by the existence of the policy itself, but also by policy communication factors and the availability of resources that support its implementation. Effective policy communication allows teachers to understand the objectives, directions, and procedures of policy implementation more clearly. Meanwhile, adequate resources, both in the form of teacher competence, learning facility support, and access to professional training, can strengthen school readiness to implement learning innovations.

From the perspective of policy implementation theory, this phenomenon can be explained through the framework of the policy implementation model proposed by George C. Edwards III. This model emphasizes that the successful implementation of a policy is influenced by several important variables, including policy communication, available resources, implementing disposition, and bureaucratic structure. In the context of this study, attention is focused on two main variables, namely communication and resources, as these two factors are seen as having a fundamental role in ensuring that education policies can be

understood and implemented effectively by implementers at the school level. Policy communication refers to the process of conveying information, directions, and policy objectives from policymakers to implementers in the field (Rangkuti & Rangkuti, 2021). Clarity of messages, consistency of information, and the effectiveness of communication channels are important factors that determine the extent to which policies can be understood by teachers and school principals. Meanwhile, resources include various supporting factors that allow policies to be implemented optimally, including the competence of educators, the availability of learning facilities, technological support, and access to professional training.

A number of studies in the last five years have shown that policy and resource communication has a significant relationship with the success of education policy implementation. Clear and continuous communication has been proven to improve teachers' understanding of learning innovations introduced by the government, while limited resources are often a major obstacle in implementing policies at the school level. However, most of the previous research still examined the factors of policy implementation partially and focused more on the pedagogical aspects of deep learning or the effectiveness of learning strategies on student learning outcomes. Studies that specifically examine the influence of simultaneous policy and resource communication on the implementation of deep learning in elementary schools are still relatively limited, especially in the context of developing regions. Therefore, this study was conducted to analyze the influence of communication and resources on the implementation of deep learning policies in Penajam District Elementary Schools, as well as to make theoretical, empirical, and practical contributions to the development of education policies.

## METHOD

A quantitative approach with associative (correlational) design was used in this study. The quantitative approach was chosen because variable measurements can be carried out objectively, hypotheses can be tested statistically, and the relationship of influence between variables in the implementation of Deep Learning policies can be analyzed systematically (Sihotang, 2023). Through this approach, the influence of policy communication ( $X_1$ ), resources ( $X_2$ ), the disposition of the policy implementer ( $X_3$ ), and bureaucratic structure ( $X_4$ ) on the implementation of the Deep Learning ( $Y$ ) policy in Penajam District elementary schools, both partially and simultaneously, measured and analyzed. This research was carried out at State Elementary Schools in Penajam District as a formal education unit that directly plays a role as the implementer of deep learning policies. The research activities were carried out in the period of February 2026 to March 2026. The research population was determined by all teachers of State Elementary Schools (SDN) in Penajam District who applied the Deep Learning method with a total of 289 people. The research sample was determined using the probability sampling technique, which is a sampling technique that provides an equal opportunity for each member of the population to be selected as a respondent. The number of samples was determined using the Slovin formula with an error rate of 5% ( $e = 0.05$ ) and a confidence rate of 95%. Based on this calculation, the number of samples obtained was 168 teachers. Data collection was carried out using a survey method through a questionnaire instrument. The survey method was chosen because data from a number of respondents can be obtained systematically, efficiently, and measurably according to the characteristics of quantitative research. The research instrument in the form of a questionnaire was first tested through a validity test and followed by an instrument reliability test. Furthermore, data analysis was carried out using descriptive statistical techniques, classical assumption tests, multiple linear regression analysis, and hypothesis testing which included t-test, F test, and coefficient of determination.

## FINDINGS AND DISCUSSION

## Research Results

## Instrument Testing

The research instrument used must meet the validity criteria so that the research variables can be measured appropriately and accurately. Therefore, the development of the questionnaire in this study was carried out by paying attention to the validity aspect of the instrument. The validity test of the research instrument is carried out as an important stage to ensure that the instrument used is really able to measure the variables being studied appropriately and accurately. After the validity test process is carried out, the next stage is the instrument reliability test which aims to determine the level of reliability of the instrument used in the research.

Table 1. Testing the Validity of Questionnaire Instruments

No	Item	R-count	R Table	Verdict
<b>Communication (X1)</b>				
1	S_1	.685	.151	Valid
2	S_2	.752	.151	Valid
3	S_3	.718	.151	Valid
4	S_4	.645	.151	Valid
5	S_5	.650	.151	Valid
6	S_6	.696	.151	Valid
7	S_7	.719	.151	Valid
8	S_8	.682	.151	Valid
<b>Resources (X2)</b>				
1	S-9	.688	.151	Valid
2	S-10	.585	.151	Valid
3	S-11	.613	.151	Valid
4	S-12	.620	.151	Valid
5	S-13	.603	.151	Valid
6	S-14	.377	.151	Valid
<b>Implementation of Deep Learning Policy (Y)</b>				
1	S_15	.244	.151	Valid
2	S_16	.758	.151	Valid
3	S_17	.611	.151	Valid
4	S_18	.701	.151	Valid
5	S_19	.676	.151	Valid
6	S_20	.793	.151	Valid

Source: SPSS Analysis 22 (2026)

Based on Table 1, it is known that all statement items on the variables Communication (X1), Resources (X2), and Learning Policy Implementation (Y) have a greater r-count value than the r-table value of 0.151. In the Communication variable, the r-calculated value is in the range of 0.605–0.752, while in the Resources variable, the r-calculated value is in the range of 0.585–0.688, and in the Policy Implementation variable, the r-calculated value is in the range of 0.611–0.793. Since the entire r-value is greater than the r-table value (0.151), then the entire statement item is declared valid. Thus, the research instrument is declared feasible to be used in the next stage of data analysis.

Table 2. Analysis of Questionnaire Instrument Reliability

Variabel	Cronbach's Alpha	Kritas Numbers	Verdict
Communication (X1)	.845	.600	Reliabel
Resources (X2)	.773	.600	Reliabel
Policy Implementation	.716	.600	Reliabel

Source: SPSS Analysis 22 (2026)

The results of the reliability test showed that the Communication variable had a Cronbach's Alpha value of 0.845, the resource variable of 0.773, and the Policy Implementation variable of 0.716. All of these values are above the minimum reliability limit of 0.600. Thus, it can be stated that the research instrument has a good level of internal consistency, so that all variables in this study are declared reliable and suitable for use in the next data analysis process.

## Descriptive Statistical Testing

Descriptive statistical testing was carried out to provide an overview of the data characteristics of each research variable. This analysis is carried out using the help of data processing software, such as Microsoft Excel and SPSS. Descriptive statistics in this study are used to present information about minimum and maximum values, mean values, medians, modes, standard deviations, variances, and frequency and percentage distributions of each research variable. The analysis is carried out so that the picture of the condition of the research data can be understood more systematically and comprehensively.

Table 3. Descriptive Statistical Analysis

	N	Minimum	Maximum	Mean	Hours of deviation
Communication	168	25.00	40.00	34.1250	3.33048
Resources	168	15.00	30.00	23.6488	3.06446
Policy Implementation	168	23.00	30.00	28.3036	1.85317
Valid N (listwise)	168				

Source: SPSS Analysis 22 (2026)

Based on the Descriptive Statistical Table, the number of respondents in this study was recorded as 168 people. In the Communication variable, the minimum value was recorded at 25.00 and the maximum value was 40.00, with a mean value of 34.1250 and a standard deviation of 3.30448. In the Resource variable, a minimum value of 15.00 and a maximum value of 30.00 were obtained with an average value of 23.6488 and a standard deviation of 3.06446. Meanwhile, in the Policy Implementation variable, a minimum value of 23.00 and a maximum value of 30.00 were obtained with an average value of 28.3036 and a standard deviation of 1.85317. These results show that the level of implementation of the deep learning policy in Penajam District Elementary Schools is in the high category and has relatively homogeneous data variations.

## Classic Assumption Testing

Before multiple linear regression analysis is performed, the research data is first tested through classical assumption testing. This test is carried out to ensure that the regression model used meets the statistical requirements so that the results of the analysis can be interpreted validly and reliably. In this study, classical assumption testing was carried out through several stages, namely normality test, multicollinearity test, and linearity test.

Table 4. Normality Analysis

		Unstandardized Residual
N		168
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Hours of deviation	1.38546733
Most Extreme Differences	Absolute	.059
	Positive	.036
	Negative	-.059
Test Statistic		.059
Asymp. Sig. (2-tailed)		.200 <sup>c,d</sup>

Source: SPSS Analysis 22 (2026)

Based on the results of the test using the Kolmogorov-Smirnov method, an Asymp value was obtained. Sig. (2-tailed) of 0.200 which is above the significance limit of 0.05. Thus, it can be stated that the residual data has been distributed normally. The fulfillment of the normality assumption shows that the regression model used has met one of the requirements of statistical analysis so that it is suitable for use in the hypothesis testing process.

Table 5. Multicollinearity Analysis

Model		Collinearity Statistics	
		Tolerance	LIVE
1	(Constant)		
	Communication	.999	1.001
	Resources	.999	1.001

Source: SPSS Analysis 22 (2026)

Furthermore, based on the results of the multicollinearity test, a tolerance value for the Communication and Resources variable was obtained of 0.999 with a Variance Inflation Factor

*The Influence of Communication and Resources on the Implementation of Deep Learning Policy in Penajam District Elementary School*  
(VIF) value of 1.001. Because the tolerance value obtained is greater than 0.10 and the VIF value is less than 10, it can be concluded that no symptoms of multicollinearity were found in this study model. In other words, a high correlation relationship between independent variables does not occur so that the regression model used is considered to meet the assumption of multicollinearity.

Table 6. Linearity Analysis

			Sum of Squares	df	Mean Square	F	Say.
Policy Implementation * Communication	Between Groups	(Combined)	270.231	14	19.302	9.737	.000
		Linearity	233.468	1	233.468	117.778	.000
		Deviation from Linearity	36.762	13	2.828	1.427	.153
	Within Groups	Total	303.287	153	1.982		
			573.518	167			
Policy Implementation * Resources	Between Groups	(Combined)	65.662	13	5.051	1.532	.112
		Linearity	24.976	1	24.976	7.573	.007
		Deviation from Linearity	40.686	12	3.391	1.028	.426
	Within Groups	Total	507.856	154	3.298		
			573.518	167			

Source: SPSS Analysis 22 (2026)

Based on the results of the linearity test between Communication and Policy Implementation, a significance value of *Deviation from Linearity* of 0.153 was obtained, which is greater than 0.05. The findings show that the relationship between Communication and Policy Implementation is stated to be linear. Meanwhile, in the relationship between Resources and Policy Implementation, a significance value of *Deviation from Linearity* was obtained of 0.426 which is also greater than 0.05. Thus, it can be stated that the two independent variables have a linear relationship with the dependent variable so that one of the assumptions in the regression analysis is stated to have been fulfilled.

#### Analysis of the Regresi Linier Berganda

After all classical assumption tests are declared, the next stage is multiple linear regression analysis. This analysis was used to examine the influence of policy communication variables ( $X_1$ ), resources ( $X_2$ ), policy implementation disposition ( $X_3$ ), and bureaucratic structure ( $X_4$ ) on the implementation of the Deep Learning ( $Y$ ) policy, both partially and simultaneously.

Table 7. Regression Line Equation Analysis

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	13.685	1.363	
	Communication	.351	.032	.631
	Resources	.112	.035	.184

Source: SPSS Analysis 22 (2026)

Based on the Table, the multiple linear regression equation is obtained as follows:

$$Y=13.685+0.351X_1+0.112X_2$$

The constant of 13.685 indicates that if the Communication and Resources variable is 0, then the Policy Implementation value is estimated to remain at 13.685. The Communication Coefficient of 0.351 indicates that each increase of 1 unit in the Communication variable is followed by an increase in Policy Implementation by 0.351 units. Meanwhile, the resource coefficient of 0.112 shows that each increase of 1 unit in the resource variable is followed by an increase in Policy Implementation by 0.112 units.

#### Pengujian Hypothesis

Hypothesis testing was carried out to determine the level of significance of the influence of independent variables on dependent variables according to the hypothesis that had been formulated. In this study, hypothesis testing was carried out through a t-test (partial), an F test (simultaneous), and a determination coefficient ( $R^2$ ). The results of the hypothesis analysis can be explained as follows.

Table 8. Partial Analysis (t)

*The Influence of Communication and Resources on the Implementation of Deep Learning Policy in Penajam District Elementary School*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Say.
	B	Std. Error	Beta		
(Constant)	13.685	1.363		10.040	.000
1 Communication	.351	.032	.631	10.833	.000
Resources	.112	.035	.184	3.167	.002

Source: SPSS Analysis 22 (2026)

Based on the results of the t-test, it was obtained that the Communication variable had a calculated t-value of 10.833 with a significance level of  $0.000 < 0.05$ , so it can be stated that a positive and significant influence on Policy Implementation has been shown by the Communication variable. The standardized beta coefficient value of 0.631 indicates that a relatively strong influence is exerted by the Communication variable. Meanwhile, the resource variable has a t-value of 3.167 with a significance level of  $0.002 < 0.05$ , so that the positive and significant influence on Policy Implementation is also shown by this variable. However, a beta value of 0.184 indicates that the influence exerted by the Resource variable is relatively smaller when compared to the Communication variable. Thus, it can be concluded that the Communication variable is a more dominant variable in influencing Policy Implementation.

Table 9. Simultaneous Analysis (F)

Model		Sum of Squares	df	Mean Square	F	Say.
1	Regression	252.958	2	126.479	65.102	.000b
	Residual	320.560	165	1.943		
	Total	573.518	167			

Source: SPSS Analysis 22 (2026)

Furthermore, based on the results of the F test, an F value was obtained of 65.102 with a significance level of  $0.000 < 0.05$ . These results show that a significant simultaneous influence on the implementation of the Deep Learning Policy in Penajam District Elementary Schools is given by the Communication and Resources variables. Therefore, the regression model used in this study was declared feasible for use in the analysis.

Table 10. Coherence Determination Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.664a	.441	.434	1.39384

Source: SPSS Analysis 22 (2026)

An R-value of 0.664 indicates that a fairly strong relationship between independent variables and dependent variables has been demonstrated in the research model. The value of R Square of 0.441 and Adjusted R Square of 0.434 indicate that 43.4% of the variation in Policy Implementation can be explained by the variables Communication and Resources. Meanwhile, the remaining 56.6% was influenced by other factors outside the variables studied in this study.

## Discussion

### The Influence of Communication on the Implementation of Deep Learning Policies

The results of the hypothesis test showed that the communication variable had a positive and significant influence on the implementation of the deep learning policy in Penajam District Elementary School. This is shown by a calculated t-value of 10.833 with a significance level of  $0.000 < 0.05$ , and a beta coefficient value of 0.631 which shows a fairly strong influence contribution. These findings indicate that the more effective the communication that occurs in the school environment, the better the implementation of the deep learning policy that is implemented. In other words, the success of the implementation of the deep learning policy is not only determined by the existence of the policy itself, but also by how the policy is communicated to implementers at the school level.

Theoretically, these findings are in line with the view George C. Edwards III which states that communication is one of the main determinants of the successful implementation of public policies. Edwards III explained that a policy can only be implemented effectively if policy information is conveyed clearly, consistently, and appropriately to the implementers (Alauddin et al., 2025). Within this theoretical framework, policy communication includes three main dimensions, namely transmisi, Clarity, and Consistency policy message. If the information transmission process goes well, the policy message can be understood by the implementer; If the message is clear and unambiguous, then the executor can translate it into

action; And if the message conveyed is consistent, there will be no confusion in the policy implementation process. In the context of the implementation of deep learning in elementary schools, communication plays an important role in ensuring that teachers fully understand the objectives, principles, and strategies for implementing deep learning. Deep learning policies demand a paradigm shift in learning from one that is oriented towards material delivery to learning that emphasizes conceptual understanding, reflection, collaboration, and problem-solving. Without clear and systematic policy communication, teachers have the potential to have difficulty translating deep learning concepts into classroom learning practices. Effective communication between the government, education offices, school principals, and teachers is an important factor in ensuring that the policy can be implemented optimally.

The findings of this study are also in line with the policy implementation theory put forward by Mazmanian dan Sabatier, which emphasizes that the success of policy implementation is greatly influenced by the clarity of policy objectives and the effectiveness of communication between policy actors (Makruf et al., 2023). In this perspective, communication functions as a coordination mechanism that allows implementers to understand the direction of policy, build common perceptions, and integrate various actions in achieving predetermined policy goals. Good communication also allows for feedback from policy implementers at the field level, so that policies can be adjusted to real conditions and needs in schools. In addition, the theory policy implementation of Van Meter and Van Horn It also emphasized that clear communication between implementing organizations is an important prerequisite for the successful implementation of public policies (Fauziyah & Arif, 2021). When the policy message is not conveyed properly or is distorted in the transmission process, the policy implementation has the potential to deviate from the initial goals that have been formulated. Therefore, policy communication must be carried out in a structured, systematic, and sustainable manner so that implementers have the same understanding of the direction of the policy being implemented.

The results of this study are also strengthened by several previous studies. Research Beauty (2021) shows that the effectiveness of the implementation of education policies is greatly influenced by the coordinated communication between bureaucratic units, leaders, and the community as recipients of education services (Nani, 2021). The findings confirm that good communication can improve coordination, strengthen policy understanding, and encourage the involvement of various parties in the implementation of education policies. Furthermore, the research Ependi and Pahrudin (2026) found that the implementation of deep learning in the Independent Curriculum began to lead to more meaningful and reflective learning, but it had not been carried out systematically due to differences in teachers' understanding of the concept of deep learning. This condition shows that policy communication that is not yet fully effective can cause variations in interpretation among teachers, so that the implementation of deep learning has not run optimally (Ependi & Pahrudin, 2026). These findings are also supported by the results Meta-analysis Manipulation (2025) which shows that the success of policy implementation is greatly influenced by the quality of policy communication which includes vertical and horizontal communication, clarity of message content, and suitability of communication strategies with social and organizational contexts. The research confirms that adaptive and contextual communication can increase stakeholder engagement and strengthen the effectiveness of policy implementation (Maniagasi, 2025).

In the context of Penajam District Elementary School, in-depth learning policy communication can occur through various mechanisms, such as policy socialization by the education office, school coordination meetings, teacher learning community activities, and curriculum implementation assistance by school supervisors. The communication process allows teachers to gain a more comprehensive understanding of the principles of deep learning and strategies for their application in learning activities. When communication takes place openly, dialogically, and continuously, teachers will more easily adapt the policy into learning practices that suit the characteristics of students and the school context.

**The Influence of Resources on the Implementation of Deep Learning Policies**

The results of the partial test showed that the resource variable had a positive and significant influence on the implementation of the deep learning policy in Penajam District Elementary School. This is shown by a calculated t-value of 3.167 with a significance level of  $0.002 < 0.05$ . In addition, a beta coefficient value of 0.184 indicates that resources contribute to improving the implementation of deep learning policies, although the effect is not as large as the communication variable. These findings suggest that the availability of adequate resources can support the successful implementation of deep learning policies in the school environment.

Theoretically, the results of this study are in line with the theory of policy implementation put forward by George C. Edwards III (1980) which states that resources are one of the important factors that determine the success of policy implementation (Huda, 2021). Edwards III explained that a policy cannot be implemented effectively if policy implementers do not have sufficient resources, either in the form of human resources, facilities, or organizational support. In the context of education policy implementation, resources include teacher competence, availability of learning facilities, technological support, and institutional support from schools and the government. In the implementation of deep learning, the availability of resources has a strategic role because this learning approach requires a paradigm shift in the learning process. Deep learning does not only focus on delivering material, but emphasizes the active involvement of students in the process of critical thinking, reflection, collaboration, and problem-solving. Therefore, teachers need adequate pedagogical competence to design contextual and meaningful learning. In addition, the availability of learning media, educational technology, and supporting learning facilities is also an important factor in supporting the implementation of deep learning in schools.

The findings of this study are also in line with the policy implementation theory put forward by Mazmanian dan Sabatier (1983) which emphasizes that the successful implementation of policies is greatly influenced by the capacity of implementing agencies, including the availability of adequate resources (Makruf et al., 2023). In this perspective, educational institutions as policy implementers need sufficient resource support so that the designed policies can be translated effectively in classroom learning practices. Without adequate resource support, even good policies will be difficult to implement optimally. In addition, the theory Van Meter dan Van Horn (1975) also emphasizing that resources are one of the important variables in the public policy implementation model (Amma et al., 2024; Mulyadi, 2022). The resources in question include human resources, financial resources, and the means and infrastructure needed to implement policies. If these resources are adequately available, the chances of successful policy implementation will be greater. On the other hand, limited resources can cause a gap between the policies formulated and the implementation in the field.

The results of this study are also strengthened by several previous studies. Research Putra et al. (2025) shows that various education policies in Indonesia have basically led to the strengthening of deep learning, but their implementation has not been running optimally because it is still influenced by teacher competency gaps and limited educational infrastructure (Putra et al., 2025). The findings show that the success of the implementation of deep learning is highly dependent on the readiness of the resources owned by the school. Research Haryaningsih et al. (2022) also found that the implementation of the online learning policy in Pontianak City faces obstacles related to limited resources, especially internet access, technological devices, and the availability of quotas for students (Haryaningsih et al., 2022). These findings confirm that resource constraints can be a major obstacle to the implementation of education policies, even though policy communication has been well underway. Furthermore, the study conducted by Hasanbasri and Nurhayuni (2023) It shows that the use of technological resources in the implementation of the curriculum in the digital era is able to improve interactivity and the quality of learning, but its effectiveness still faces various obstacles such as limited technological infrastructure, educator competence, and policy support that is not optimal (Hasanbasri & Nurhayuni, 2023). This shows that the successful

implementation of education policies requires comprehensive and sustainable strengthening of resources.

In the context of Penajam District Elementary School, resources that support the implementation of deep learning can be in the form of teachers' competence in designing innovative learning, the availability of learning media and facilities, as well as institutional support from schools and education offices. Teachers who have good pedagogical and digital competence will be better able to integrate the principles of deep learning in learning activities. In addition, the availability of facilities such as technological devices, contextual teaching materials, and a supportive learning environment can also enrich students' learning experiences.

The results of this study show that resources are one of the important factors in supporting the successful implementation of deep learning policies. Although the effect is not as large as the communication variable, the existence of adequate resources remains an important prerequisite for deep learning policies to be implemented effectively in schools. Therefore, improving the quality of resources through strengthening teacher competence, providing learning facilities and infrastructure, and policy support from the government and educational institutions needs to continue to be carried out to ensure the successful implementation of deep learning policies in elementary schools.

### **The Influence of Communication and Resources on the Implementation of Deep Learning Policies**

The results of the simultaneous test showed that the communication and resource variables together had a significant effect on the implementation of the Deep Learning policy in Penajam District Elementary School. This is evidenced by the calculated F value of 65.102 with a significance level of 0.000 which is smaller than 0.05. These findings indicate that the success of the implementation of deep learning policies is not only determined by a single factor, but is the result of the interaction between the effectiveness of policy communication and the availability of resources that support the implementation process.

Theoretically, the results of this study are in line with the policy implementation model proposed by George C. Edwards III (1980) which states that the success of policy implementation is greatly influenced by four main factors, namely communication, resources, implementing disposition, and bureaucratic structure (Huda, 2021). In this model, communication plays a role in ensuring that policy messages can be clearly understood by the implementers, while resources serve as support that allows policies to be implemented effectively. Without clear communication, policy implementers can experience misinterpretations of policy objectives and procedures. On the other hand, without adequate resource support, well-understood policies are difficult to implement optimally.

The findings of this study also show that the communication variable has a more dominant influence compared to the resource variable. This can be seen from the beta coefficient value of communication of 0.631 which is greater than the beta value of the resource of 0.184. This condition shows that the success of the implementation of the deep learning policy in Penajam District Elementary School is more influenced by the effectiveness of the communication built between the government, the education office, the principal, and teachers as policy implementers. Effective communication allows information about the objectives, principles, and procedures of deep learning to be understood consistently by all parties involved, thus facilitating the policy implementation process at the school level.

In the perspective of policy implementation theory, Mazmanian and Sabatier (1983) also emphasized that the success of policy implementation is influenced by the clarity of policy objectives, the capacity of implementing institutions, and the support of available resources (Dwitama et al., 2025). The capacity of the implementing agency is not only related to the structural aspects of the organization, but also related to the ability of the implementing actors to understand policies and translate them into real practices. Therefore, effective policy communication is an important prerequisite so that policy objectives can be understood uniformly by all policy implementers. In addition, the theory of policy implementation put forward by Grindle (1980) also emphasizes that the success of policy implementation is

influenced by the context of implementation, including the institutional capacity and resource support owned by the implementing organization (As' adi et al., 2024). In the context of education, resources include teacher competence, the availability of learning facilities and infrastructure, and institutional support from the government and schools. If these resources are adequately available, then deep learning policies can be implemented more effectively because teachers have enough support to develop innovative and meaningful learning.

The results of this study are supported by various previous studies that show the importance of communication and resources in the implementation of education policies. Nani's research (2021) found that the successful implementation of education policies is influenced by the effectiveness of communication between the bureaucracy, leaders, staff, and the community as service recipients (Nani, 2021). Research by Ependi and Pahrudin (2026) also shows that the application of the *deep learning* in the Independent Curriculum has not run optimally due to variations in teachers' understanding, limited time, and learning resources (Ependi & Pahrudin, 2026). The findings of the meta-analysis of Maniagasi (2025) confirm that the quality of policy communication, both vertical and horizontal, plays an important role in increasing stakeholder engagement (Maniagasi, 2025). In addition, research by Haryaningsih et al. (2022) and Hasanbasri and Nurhayuni (2023) shows that limited infrastructure, access to technology, and educator competence are the main challenges in the implementation of education policies (Haryaningsih et al., 2022; Hasanbasri & Nurhayuni, 2023). Thus, effective communication and adequate resource support are key factors in the successful implementation of deep learning policies in primary schools.

## CONCLUSION

This study concludes that communication and resources have a significant effect on the implementation of deep learning policies in Penajam District Elementary Schools, both partially and simultaneously. Communication is the most dominant factor, showing that clarity, consistency, and effectiveness of policy delivery greatly determine the success of implementation at the school level. Meanwhile, resources such as teacher competence, infrastructure, and institutional support also contribute positively albeit with less influence. Together, the two variables were able to explain 43.4% of the variation in policy implementation, so that improving the quality of communication and strengthening resources are the main strategies in supporting the success of deep learning. Therefore, more structured and sustainable policy communication, teacher capacity building, and optimization of facility and institutional support are needed, along with recommendations for further research to examine other factors such as leadership and school organizational culture.

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