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The Integrative Model for Strengthening the Quality of Inclusive Education Based on Digital Literacy, Achievement Culture, and Teacher Work Motivation

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Abstract: This study aims to develop an integrative model to enhance the quality of inclusive education based on digital literacy, achievement-oriented school culture, and teacher work motivation at public elementary schools in the Candisari District, Semarang City. A quantitative approach was employed using survey methods and path analysis. Data were collected from 105 teachers through closed-ended questionnaires and analyzed using multiple linear regression and path analysis. The results revealed that all three independent variables had a significant positive effect on the quality of inclusive education. Moreover, digital literacy and achievement culture indirectly influenced quality through teacher motivation as a mediating variable. The developed integrative model achieved an R^2 value of 0.748, indicating strong predictive power. The findings underscore the importance of a systemic and synergistic approach in improving inclusive education quality through the enhancement of teacher competencies and supportive school culture.

Keywords: inclusive education; digital literacy; achievement culture; teacher motivation; integrative model.

INTRODUCTION

The comprehensive improvement of educational quality is a key pillar in the development of inclusive and competitive human resources. In the context of primary education, the enhancement of educational quality not only concerns academic achievements but also involves creating an inclusive, fair, and socially just learning environment. This aligns with the national education goals outlined in Law No. 20 of 2003 on the National Education System, which aims to advance the nation's intelligence and develop the potential of learners to become faithful, devout, noble, healthy, competent, creative, independent individuals, as well as responsible and democratic citizens.

In this study, inclusive education is explicitly defined as a system that ensures all learners, including students with disabilities, receive meaningful learning experiences within mainstream classrooms. This approach involves the removal of barriers and the provision of necessary accommodations and support to enable full participation (UNESCO, 2020). The concept also aligns with Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive and equitable quality education and lifelong learning for all. According to UNESCO (2020), inclusive education encompasses the right of children with disabilities to learn together with their peers, emphasizing equality, participation, and acceptance.

In the framework of inclusive education, educational quality should not be assessed solely based on cognitive aspects but also on how well schools can accommodate the needs of all learners without discrimination, including those with learning disabilities, physical limitations, or diverse socio-economic backgrounds. Inclusive education requires curriculum adaptation, flexible teaching strategies, and school leadership and teachers who are responsive to diversity (Suryana, 2021; Aprilia, 2017).

However, the quality of education at public elementary schools in the Candisari District, Semarang City, still faces various challenges. According to the 2024 Education Report Card, Candisari District ranks 10th out of 16 districts in Semarang City. Several aspects show good achievements, such as literacy (76.05) and numeracy (68.93), but critical aspects of inclusive education, such as the climate of diversity, only scored 58.29, categorized as "adequate." This indicates the need to strengthen values of diversity and acceptance within the school environment.

Table 1. Education Report Card of Public Elementary Schools in Candisari District

No	School Name	Aspect Evaluation					
		A	B	C	D	F	G
1	SD Negeri Candi 1	84,19	81,73	40,74	74,18	89,64	62,96
2	SD Negeri Candi 2	79,15	67,42	53,33	59,15	75,65	65,84
3	SD Negeri Candi 3	80,82	73,99	93,33	66,08	78,44	70,65
4	SD Negeri Jatingaleh 1	74,43	64,12	43,33	58,15	74,48	46,67
5	SD Negeri Jatingaleh 2	74,53	61,97	73,33	50,47	72,11	76,92
6	SD Negeri Jomblang 1	73,77	64,43	58,62	57,78	72,12	85,71
7	SD Negeri Jomblang 2	74,76	69,94	63,22	61,74	71,93	76,92
8	SD Negeri Jomblang 3	73,36	73,14	88,46	50,57	69,97	92,31
9	SD Negeri Jomblang 5	73,27	64,85	62,33	43,02	72,63	86,67
10	SD Negeri Karanganyar 1	70,78	71,29	70,33	43,02	63,22	90,48
11	SD Negeri Karanganyar 2	80,39	72,72	94,44	58,42	80,32	78,54
12	SD Negeri Tegalsari 1	77,22	60,92	53,33	56,16	73,07	62,96
13	SD Negeri Tegalsari 2	80,55	80,16	75,12	78,18	71,54	93,33
14	SD Negeri Wonotingal	68,18	63,47	61,56	57,26	70,61	51,33
15	SD Negeri Kaliwuru	75,29	63,85	53,33	60,23	73,16	43,33
	Mean	76,05	68,93	65,65	58,29	73,93	72,31

Source: Report on the Education Performance of Elementary Schools in Candisari District (2024)

Evaluation
A. Literacy
B. Numeracy
C. Safety Climate
D. Diversity Climate
E. Inclusivity Climate
F. Learning of Quality

Range
30-40 : Poor
41-60 : Adequate
61-80 : Good
81-100 : Excelent

In inclusive education, success depends not only on physical facilities but also heavily on teachers' capacity to design and implement accommodative learning. One crucial factor is the teachers' digital literacy. Teachers with high digital literacy can be more effective in preparing differentiated teaching materials and interactive tools to support students with varying abilities. Harjono (2021) states that digital literacy enhances teacher creativity and prevents monotonous teaching. Furthermore, the use of technology can also help expand educational access for students with special needs in regular classrooms (Murtado et al., 2023). Based on initial observations in public elementary schools in Candisari District, most teachers have a positive perception of the importance of information technology, but they are not yet fully competent in applying it optimally. There is a gap between the positive

attitude toward ICT and the teachers' actual ability to design and implement technology-based learning.

Table 2. Teachers' Attitudes and Perceptions Toward the Use of IT at Public Elementary Schools in Candisari District, Semarang

No	Aspect	SP	P	CP	TP	TPS
1	How important do you think the use of IT in learning is?	40	6	4	-	-
2	How important do you think IT is in helping understand the lesson material?	26	24	-	-	-
3	How important do you think learning becomes effective with IT?	20	30	-	-	-
4	How important do you think IT is for successful learning?	16	26	2	4	2

Source: Researcher's Observation, 2024

Additionally, the achievement-oriented culture in schools is also an essential foundation for developing high-quality inclusive education. This culture reflects the collective efforts of the entire school community to achieve excellence in a healthy competitive atmosphere, supporting the participation of all students, including those from vulnerable groups (Zamroni, 2020). Unfortunately, pre-research data shows that the achievement-oriented culture among teachers in the public elementary schools of Candisari is still low. Teacher participation in competitions and development programs such as the Teacher Movement Program is very limited.

Table 3. Data on Teacher Participation in Achievement Competitions at Public Elementary Schools in Candisari District, Semarang

No	School Name	Evaluation Aspect			
		School Name	Number of Teachers	Participation in Teacher Achievement Competitions	Teacher Movement Program Registration
1	SD Negeri Candi 1	9	1	1	0
2	SD Negeri Candi 2	9	2	0	0
3	SD Negeri Candi 3	10	1	1	0
4	SD Negeri Jatingaleh 1	12	1	1	0
5	SD Negeri Jatingaleh 2	9	1	1	0
6	SD Negeri Jomblang 1	13	0	0	2
7	SD Negeri Jomblang 2	10	1	1	0
8	SD Negeri Jomblang 3	10	0	1	0
9	SD Negeri Jomblang 5	9	0	1	0
10	SD Negeri Karanganyar 1	8	1	1	1
11	SD Negeri Karanganyar 2	10	1	0	0
12	SD Negeri Tegalsari 1	13	0	2	0
13	SD Negeri Tegalsari 2	10	1	0	1
14	SD Negeri Wonotingal	13	1	0	0
15	SD Negeri Kaliwuru	13	0	1	1

Source: Semarang City Education Office, 2024

Another equally important factor in strengthening the quality of inclusive education is teacher motivation. Teachers with high motivation tend to be more innovative and open to differentiating instruction and actively involving students. According to Uno (2019), teacher work motivation is an internal process that drives individuals to achieve organizational goals. Anoraga (2019) adds that motivation can stem from internal or external factors and plays a significant role in improving teachers' performance in the classroom. Low work motivation can lead to a lack of commitment towards students with special needs or those who are left behind.

Interviews with local school supervisors revealed that 85% of teaching modules created by teachers were merely the result of copy-pasting, 80% of teachers did not maximize the use of teaching aids, and only 40% of teachers effectively utilized ICT. This phenomenon reinforces the importance of designing integrated strategies to improve the quality of inclusive education.

Inclusive education quality reflects the ability of the education system to meet the needs of all students, without discrimination, including those with special needs. Sallis (2023) emphasizes that quality is the alignment with the needs and expectations of service users, in this case, students, teachers, and the community. In inclusive education, quality is measured not only through academic achievements but also by the school's success in creating a learning climate that is fair, equitable, and empowering for all students. According to Majid (2022), educational quality includes the quality of processes and outcomes, which can be measured through inputs (human resources, facilities), processes (teaching-learning interactions), and outputs (student achievements). This concept aligns with the national education policy standards outlined in Government Regulation No. 57 of 2021, which sets eight quality standards, including graduate competencies, processes, content, and education personnel as minimal indicators of the quality of educational delivery in Indonesia. In the context of inclusivity, quality indicators are expanded to include a safe and diverse learning climate, evidence-based management, and a school culture that supports acceptance of students from various backgrounds and needs (Tjiptono, 2020).

Teacher digital literacy has become a strategic component in enhancing the quality of inclusive education. Digital literacy is defined as the ability to access, evaluate, use, and create information through digital media effectively and ethically (Isabela, Iriyani & Lestari, 2023). Teachers who are digitally literate are able to design learning that responds to the diverse needs of students by utilizing technology as a tool for adapting learning. According to Haryono (2020), a teacher's digital literacy is crucial in determining the effectiveness of managing learning in the digital era, especially in the context of distance education, differentiated learning, and the integration of technology in assessments. Halim (2020) adds that this competency includes technical skills, digital communication abilities, and understanding of digital ethics. Haickal (2021) identifies five key factors of teacher digital literacy, namely functional skills, digital communication and interaction abilities, critical thinking, social support, and organizational factors. Rohmanto (2022) further suggests that the work environment, age, and intrinsic motivation are also strong determinants of a teacher's mastery of technology. In other words, teacher digital literacy is inseparable from the work culture in schools and systemic support. Belshaw (2020) developed eight dimensions of digital literacy, including critical thinking, constructive thinking, communication, and social responsibility. In inclusive education, these dimensions are crucial for accommodating diverse learning needs through a technology-based approach.

The achievement culture in inclusive education is a value framework that encourages all members of the school community to strive for excellence through fair, collaborative efforts that value diversity. Mulyana (2023) asserts that an achievement culture is the habit of achieving victory in healthy competition based on values such as integrity, hard work, and responsibility. Robbins (2020) emphasizes that this culture is formed through a results-oriented approach, innovation, teamwork, and accountability. Hartanto (2022) highlights that the key characteristics of individuals with a high-achievement culture include the will to perform, perseverance, responsibility, and self-confidence. In the context of inclusive primary schools, this culture is essential for fostering a healthy competitive spirit and a collaborative attitude among teachers, as well as between teachers and students. Drivers of this achievement culture include both internal factors such as motivation and self-perception (Harter in Hawadi, 2023) and external factors such as school leadership, social recognition, and reward structures (Suharto, 2020). In the public elementary schools of Candisari District, strengthening this culture has the potential to boost teachers' enthusiasm for innovating to support all students, including those with special needs.

Work motivation is the psychological energy that drives teachers to act and perform consistently. Chandra & Syardiansah (2021) state that work motivation consists of intrinsic and extrinsic drives, such as rewards, opportunities for development, and supportive working conditions. In inclusive education, teachers require high motivation to implement adaptive learning, support students with special needs, and design differentiated learning strategies. According to Uno (2017), work motivation is the internal force that directs an individual's voluntary behavior to work. Herzberg (in Siagian, 2018) divides work motivation into two dimensions: intrinsic (recognition, responsibility, self-development) and extrinsic (working conditions, supervision, salary). In inclusive education, extrinsic motivation, such as training and support from school leadership, becomes highly important due to the more complex challenges faced by teachers. Kartika & Susilawati (2022) emphasize that the success of inclusive education implementation is significantly influenced by teachers' intrinsic motivation, including self-efficacy and professionalism. When teachers feel valued, have room for self-actualization, and receive structural support, they are more likely to be motivated to give their best for all students.

In efforts to build sustainable quality in inclusive education, it is essential to understand the relationships between the variables that influence it. This study identifies three main variables that contribute to shaping the quality of inclusive education: teacher digital literacy, achievement culture, and work motivation. According to Idris & Jamal (2021), educational quality, as a dependent variable, cannot stand alone but is influenced by various internal and external factors that interact systematically. These three independent variables in this study mutually support and directly or indirectly contribute to improving the input, process, and output dimensions in the inclusive education system.

First, teacher digital literacy serves as the foundation for professional skills that support adaptive and technology-based learning. Digitally literate teachers are better equipped to design differentiated learning, create inclusive access to learning materials, and utilize digital platforms to reach all students equally (Isabela et al., 2023; Haryono, 2020). Second, achievement culture acts as a reinforcing variable that instills values of hard work, collaboration, and innovation within the school environment. This culture encourages all educational actors to achieve optimal results, including creating an inclusive learning environment and promoting equal participation among students (Mulyana, 2023; Robbins, 2020). Third, teacher work motivation is a psychological variable that affects the intensity and quality of teacher performance in the long run. High work motivation leads teachers to be more committed to implementing inclusive strategies, more open to change and training,

and more resilient in facing the challenges of a heterogeneous classroom (Uno, 2017; Kartika & Susilawati, 2022).

The relationships between these three independent variables and the quality of inclusive education can be described through a causal relationship model, where each independent variable has the potential to influence the dependent variable either directly or through simultaneous interactions. This approach aligns with the input–process–output (IPO) paradigm used in education system evaluations (Kemendiknas, 2023). Furthermore, this approach is reinforced by the open systems theory, where the educational environment cannot be separated from social and technological dynamics. According to Tjiptono (2020), an excellent education system is one that is able to synergize internal forces (teacher capacity and school culture) with external forces (policies, technology, and societal demands).

Thus, the relationship between teacher digital literacy, achievement culture, and work motivation forms an integrative model that influences the quality of inclusive education simultaneously and mutually reinforces each other. In the context of public elementary schools in Candisari District, testing this model is crucial to formulating data-driven and need-based policy strategies at the primary education level.

METHOD

This study uses a quantitative approach with explanatory research type, which aims to test and explain the causal relationship between teacher digital literacy, achievement culture, and work motivation on education quality in elementary schools. This approach is in line with the objective of quantitative research, which seeks to measure phenomena through the collection and analysis of numerical data (Creswell & Creswell, 2020). The explanatory research type was chosen because its primary focus is to determine the effect and causal relationships between variables (Sugiyono, 2020). The study will be conducted in public elementary schools in the Candisari District, Semarang City, from May to October 2025. The design used is a causal survey to empirically test the effect of independent variables on the dependent variable. This causal research aims to explain the relationship between digital literacy, achievement culture, work motivation, and education quality (Hasanah & Lestari, 2021). This method allows researchers to observe the variation trends between variables systematically.

The population in this study consists of all 260 teachers from public elementary schools in Candisari District. The sampling technique uses the Slovin formula with a margin of error of 5%, resulting in a sample size of 158 respondents. Proportional random sampling was selected to ensure that the distribution of respondents represents each school proportionally (Wahyuni & Santosa, 2021).

The data collection instrument is a questionnaire with a 5-point Likert scale, designed based on theoretical indicators from each variable. The variable indicators are based on the digital literacy theory by Ng (2021), achievement culture by Robbins and Judge (2020), and work motivation according to Herzberg (in Rahmawati & Pramudibyanto, 2022). The variable of inclusive education quality is operationalized based on four dimensions: (1) Physical inclusion (availability of infrastructure and facilities for students with disabilities), (2) Social participation (student engagement in inclusive classroom activities), (3) Learning access (accommodation in instructional delivery and learning materials), and (4) Achievement outcomes (academic progress of students with special needs compared to peers). These dimensions are adapted from the national education standards (Kemendikbud, 2021) and relevant inclusive education literature.

The instrument's validity and reliability were tested. Validity was tested using Pearson Product Moment correlation, while reliability was tested using Cronbach's Alpha coefficient. All instruments were found to be valid and reliable with alpha values above 0.70 (Ghozali, 2021b).

Data will be collected through closed questionnaires distributed directly to the respondents. This method was chosen because it is efficient in reaching a large number of respondents and allows for structured answers (Setiawan & Wijaya, 2020). Ethical procedures were followed during the research process. Prior to data collection, informed consent was obtained from all participants, ensuring they understood the purpose, voluntary nature, and confidentiality of the study. To protect participant privacy, all teacher identities were anonymized and no personally identifiable information was collected or reported.

Data analysis will be conducted using SPSS. The analysis steps include: (1) Validity and Reliability Tests to examine the accuracy and consistency of the measuring tools, (2) Normality and Linearity Tests using Kolmogorov-Smirnov and F tests to ensure the data's suitability for regression analysis (Sudargo, 2020), (3) Multicollinearity and Heteroscedasticity Tests using Variance Inflation Factor and Glejser Test to identify any violations of classical assumptions, and (4) Regression Analysis. Simple regression will be used to examine the effect of each independent variable on education quality, while multiple regression will be used to test the simultaneous effects of the three independent variables on the dependent variable (Nugroho, 2022). The multiple regression model is represented as: $Y = a + b_1X_1 + b_2X_2 + b_3X_3$, where Y is inclusive education quality, X_1 is teacher digital literacy, X_2 is achievement culture, and X_3 is teacher work motivation.

In addition to linear regression, this study also uses path analysis to examine the direct and indirect effects of each independent variable on education quality. Path analysis is an extension of multiple regression analysis that allows researchers to test the structural relationships between variables in a single simultaneous model (Ghozali, 2021b). This technique is used to evaluate the relative contributions of each variable to the endogenous variable either directly or through mediating variables, thus providing a comprehensive picture of the integrative model built. Path analysis in this study maps the structural relationships between:

teacher digital literacy → work motivation → education quality, and achievement culture → work motivation → education quality.

FINDING AND DISCUSSION

Finding(s)

This study involved 158 teacher respondents from public elementary schools in Candisari District, Semarang City. The data distribution shows that all respondents provided complete data, allowing for a comprehensive analysis. The data collected via questionnaires underwent validation and reliability processes and was tested using both descriptive and inferential statistical analyses. There are four main variables in this study: (1) teacher digital literacy (X_1), (2) achievement culture (X_2), (3) teacher work motivation (X_3), and (4) inclusive education quality (Y).

The analysis results reveal that the level of teacher digital literacy falls within a high category, with an average score of 4.01 and a standard deviation of 0.52. The majority of teachers are capable of operating online learning applications, actively using digital media, and understanding digital ethics. The high scores can be explained by the fact that most schools have adopted digital platforms during and after the COVID-19 pandemic, leading to increased familiarity with ICT tools among teachers. However, it should be noted that this high level of digital literacy does not automatically translate into effective inclusive practice,

as many teachers reported difficulties in adapting technology for students with disabilities which may explain why the diversity climate at these schools was only rated "adequate" (58.29). This highlights a gap between general digital competence and inclusive-specific digital pedagogy.

Similarly, most respondents reported that their schools have a strong achievement culture. Indicators such as recognition for achievements, teamwork, and collective motivation were reflected in the respondents' answers. The average score for achievement culture was 4.15, with a standard deviation of 0.49. This high score is supported by a culture of collaboration, regular school meetings, and shared values toward performance in most schools. However, the strong achievement orientation may not yet be inclusive in nature, as competitive and performance-based cultures can sometimes overlook the participation of students with disabilities or those with different learning needs—again contributing to the only moderate rating in the school diversity climate dimension. The findings suggest that achievement culture needs to be reframed to value diverse forms of success and participation, particularly in inclusive settings.

Teacher work motivation was also categorized as high, with an average score of 4.08 and a standard deviation of 0.54. This indicates that teachers have high enthusiasm and dedication in carrying out their tasks, both intrinsically and extrinsically. Based on teacher reflections, this motivation stems from job satisfaction, support from school leadership, and their sense of professional identity. However, qualitative follow-up and supervisor reports revealed that motivation to work inclusively varies significantly depending on teacher training and experience.

To better understand these variations, the data were disaggregated based on whether the teachers had received inclusive education training or had direct teaching experience with students with disabilities. The results showed that teachers with inclusive training (n = 56) had slightly higher digital literacy scores (mean = 4.12 vs. 3.96) and significantly higher scores in inclusive education quality perceptions (mean = 4.21 vs. 3.89). Similarly, their work motivation scores were marginally higher (mean = 4.18 vs. 4.03). This disaggregation confirms that inclusive exposure enhances not only digital competency for inclusion but also strengthens motivation and inclusive attitudes, in line with Kartika & Susilawati (2022).

The quality of inclusive education, as measured by teachers' perceptions of the input, process, and output aspects of learning, was rated highly overall, with an average score of 4.03 and a standard deviation of 0.50. However, as noted above, this perception is strongly influenced by general teaching standards and may not fully reflect the reality of inclusive classroom practices, especially in the absence of training or targeted strategies for inclusion.

The Kolmogorov-Smirnov test showed significance values > 0.05 for all variables, indicating that the data follows a normal distribution. The F-test revealed that the relationships between the independent and dependent variables are significantly linear ($p < 0.05$). The VIF values ranged from 1.083 to 1.125, and the Tolerance value was > 0.1, indicating no multicollinearity among the independent variables. Based on the Glejser test, the significance values > 0.05 for all variables suggest that the model is free from heteroscedasticity.

The results of the multiple linear regression analysis showed that all three independent variables (X_1, X_2, X_3) simultaneously have a significant impact on the quality of inclusive education (Y). The F value of 53.276 and significance of $0.000 < 0.05$ indicate that the regression model is significant overall. Partially, the t-test results showed: (1) Teacher digital literacy (X_1): $t = 2.352$, $p = 0.020$, (2) Achievement culture (X_2): $t = 2.409$, $p = 0.017$, (3) Teacher work motivation (X_3): $t = 6.249$, $p = 0.000$

The coefficient of determination (R^2) of 0.507 indicates that 50.7% of the variation in inclusive education quality can be explained by the three independent variables:

Table 4. Results of Linear Regression Test

Independent Variable	Regression Coefficient (B)	t-value	Significance
Digital Literacy (X_1)	0.221	2.352	0.020
Achievement Culture (X_2)	0.227	2.409	0.017
Teacher Work Motivation (X_3)	0.444	6.249	0.000

Path analysis was used to examine the direct and indirect effects among the variables. The results showed: (1) Digital literacy has a direct effect on the quality of inclusive education (0.221) and an indirect effect through work motivation of 0.099, (2) Achievement culture has a direct effect of 0.227 and an indirect effect through work motivation of 0.108, (3) Teacher work motivation has the highest direct effect on the quality of inclusive education, at 0.444.

Table 5. Result pf Path Analysis

Path Effect	Coefficient
$X_1 \rightarrow Y$ (direct)	0.221
$X_2 \rightarrow Y$ (direct)	0.227
$X_3 \rightarrow Y$ (direct)	0.444
$X_1 \rightarrow X_3 \rightarrow Y$ (indirect)	0.099
$X_2 \rightarrow X_3 \rightarrow Y$ (indirect)	0.108

An illustration of the path model, showing the direct and indirect relationships between variables (digital literacy, work motivation, achievement culture, and the quality of inclusive education) within an integrative model of inclusive education quality, is shown in Figure 1 below:

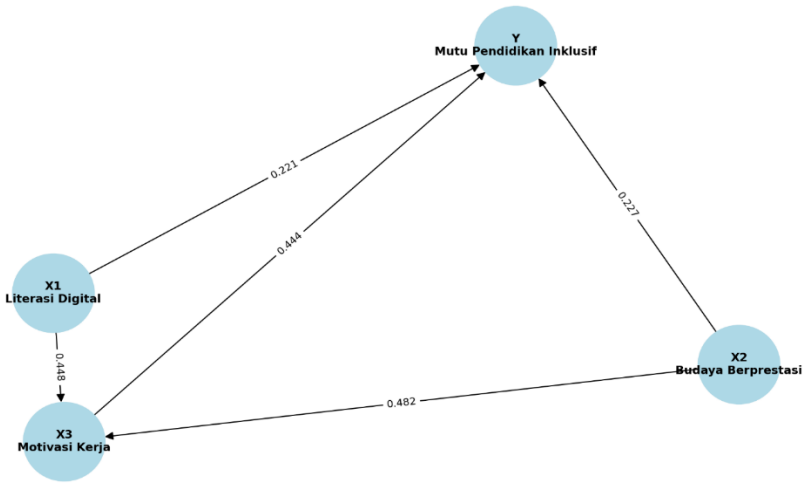

Figure 1. Illustration of the Path Model Between Variables

Pearson's correlation test results indicate a positive and significant relationship between all pairs of independent variables and the dependent variable: (1) Teacher digital literacy (X_1) ↔ Work motivation ($r = 0.623$, $p < 0.01$), (2) Digital literacy ↔ Inclusive education quality ($r = 0.534$, $p < 0.01$), (3) Achievement culture (X_2) ↔ Work motivation ($r = 0.599$, $p < 0.01$), (4) Achievement culture ↔ Inclusive education quality ($r = 0.522$, $p < 0.01$), (5) Work motivation ↔ Inclusive education quality ($r = 0.661$, $p < 0.01$). These

findings confirm that teacher work motivation plays a mediating role in the relationship between digital literacy and achievement culture on the quality of inclusive education.

The integrative model developed in this study adopts a multidimensional approach that includes aspects of technological competence (digital literacy), work environment (achievement culture), and internal psychological factors (teacher work motivation) as the main determinants of inclusive education quality. The regression and path analysis results show that this model explains more than half of the variation in inclusive education quality ($R^2 = 0.507$), indicating that the variables studied have real relevance and contribution in the empirical context of public elementary schools in Candisari District.

The most significant direct effect comes from teacher work motivation (0.444), emphasizing that while technology and organizational culture are important, individual factors such as enthusiasm, dedication, and teacher involvement are the main determinants in ensuring the optimal implementation of inclusive education quality. The indirect effects of digital literacy and achievement culture, mediated by work motivation, also highlight that improving quality requires not only structural and cultural aspects but also the readiness and enthusiasm of teachers, especially those trained in inclusion.

This model aligns with previous findings (Ghozali, 2021a; Robbins & Judge, 2020), which emphasize the importance of a systemic approach to improving educational organizational performance, especially in the context of diverse student needs and the complexity of inclusive education implementation. Therefore, the findings of this study contribute both theoretically and practically to the development of a human resources-based and digitally integrated education quality management model.

Discussion(s)

The results of this study indicate that teacher digital literacy has a positive and significant impact on the quality of inclusive education, with a regression coefficient of 0.221 and significance value of 0.020 (< 0.05). This finding reflects that the use of technology by teachers in teaching is a key factor in creating an educational environment that is responsive and adaptive to the needs of all students, including those with special needs. Teachers' mastery of ICT enables more flexible and differentiated instructional approaches, aligned with the principles of Universal Design for Learning (UDL) allowing for multiple means of representation, engagement, and expression. Furthermore, assistive technologies such as screen readers, voice-to-text tools, and interactive digital worksheets empower teachers to support students with physical, sensory, or cognitive disabilities more effectively. As highlighted by Nasrullah et al. (2023), digitally literate teachers are better equipped to design technology-based inclusive approaches, while Wardani and Haryanto (2022) emphasize that digital competence expands equitable access to learning. Asmara et al. (2021) assert that ICT integration broadens the reach of inclusive resources, and Jannah and Kurniasih (2022) stress how digital literacy strengthens creativity in differentiated materials design. In addition, teachers' ability to filter online information and interpret learning analytics becomes essential for customizing instruction and providing targeted interventions. Despite these positive findings, practical implementation of digital literacy in inclusive pedagogy remains uneven. Not all teachers fully utilize technology to address diverse learning needs, especially in the absence of targeted training or exposure to inclusive classroom practices. This gap suggests that digital competence must be accompanied by inclusive pedagogical training to have meaningful impact on classroom equity.

This study also reveals that achievement culture significantly influences the quality of inclusive education, with a regression coefficient of 0.227 and significance of 0.017. Achievement culture refers to the values, norms, and practices that encourage continuous improvement and shared success. Schools with strong achievement culture tend to promote collaboration, healthy competition, and collective responsibility, forming a vital foundation for inclusive education implementation. Kurniawan et al. (2023) assert that a performance-oriented culture enhances teachers' commitment to inclusivity. Yuliana et al. (2021) support this by showing that appreciation for diverse achievements fosters equity among all students. Meanwhile, Surya and Prasetyo (2022) find that teacher innovation recognition accelerates inclusive practices. A supportive work environment, as noted by Salamah et al. (2020), cultivates a culture that values inclusive success. However, while the presence of achievement culture supports inclusive education, some limitations may arise. A culture too narrowly focused on test-based outcomes or elite performance can unintentionally marginalize students with disabilities. Thus, an inclusive achievement culture should be redefined to recognize progress, effort, and diverse forms of success, beyond standardized academic measures.

Teacher work motivation emerges as the most influential variable in this study, with a regression coefficient of 0.444 and significance value of 0.000. Motivated teachers are more likely to exhibit patience, persistence, creativity, and adaptability, all of which are crucial in addressing student diversity. Path analysis confirms that work motivation also mediates the relationship between digital literacy and achievement culture with inclusive education quality, as shown by indirect path coefficients of 0.099 and 0.108 respectively. These findings align with Dewi et al. (2022), who demonstrate that work motivation supports differentiated learning, and Afriani & Mukhlis (2021), who argue that intrinsic motivation leads to inclusive engagement. Fatmawati et al. (2020) further point out that job satisfaction fosters openness to innovation, while Huda and Ramadhan (2023) emphasize that meaningful work and professional responsibility are key motivational drivers. Andayani and Nugroho (2022) also show that psychological well-being significantly influences teachers' ability to deliver inclusive services. Despite these strengths, it is essential to acknowledge external constraints that may hinder teacher motivation. These include excessive workload, large class sizes, limited time for individualized instruction, and systemic challenges such as insufficient support for inclusive practices or unclear policy guidance. Recognizing these barriers allows for a more balanced understanding of the conditions that shape motivation in real classrooms.

The integrative model developed in this study shows that digital literacy and achievement culture indirectly influence the quality of inclusive education through work motivation. This supports the open systems theory, where input (technology and culture) and process (motivation) interact dynamically to influence educational outcomes. Handayani and Priyanto (2023) similarly argue that mediating variables play a critical role in explaining educational outcomes. Zhang et al. (2021) in their research on inclusive systems in China also highlight work motivation and organizational culture as key levers. This systemic relationship is further aligned with UNESCO (2020), which promotes integrated approaches to achieving inclusive education targets under SDG 4. Likewise, Winarti and Susanto (2022), through SEM analysis, confirm the interdependence of digital capacity, motivation, and school culture in shaping education quality.

The model explains 50.7% of the variation in inclusive education quality in public elementary schools in Candisari District. With teacher work motivation as the most dominant factor, the findings suggest that any policy for inclusive education reform must begin with empowering teachers. Neither technology nor school culture alone can guarantee inclusive

outcomes they must serve as enablers of teacher motivation. Lestari et al. (2023) highlight that combining technological support and shared values is key to improving service quality. Nurhadi et al. (2023) recommend collaborative strategies involving teachers, school leaders, and parents. OECD (2021) also calls for the development of inclusive education ecosystems, supported by data-driven planning and capacity building. Studies by Fahmi and Zuhri (2022) and Marpaung (2023) further affirm the relevance of contextual models for urban inclusive education. Thus, this model has practical value as a prototype for strategic, holistic, and context-sensitive inclusive education improvement, particularly in Indonesian basic education settings.

Although the study offers valuable insights, it has several limitations. First, it does not include student perspectives or direct classroom observations, which could validate the actual practices and experiences of inclusion. As such, the data is based solely on teacher perceptions, which may not fully capture the lived experiences of diverse learners. Second, although digital literacy is discussed in relation to inclusive practices, there is limited examination of how teachers actually apply digital tools in real-time instructional contexts. Future research should explore how specific digital strategies (e.g., UDL, assistive tech) are used and their impact on student engagement and learning. Addressing these limitations will enrich future studies and provide a more complete picture of inclusive education implementation

CONCLUSION

This study concludes that the quality of inclusive education in public elementary schools in Candisari District, Semarang, is significantly influenced by teacher digital literacy, school achievement culture, and teacher work motivation. Teacher digital literacy contributes meaningfully to the quality of inclusive education, as evidenced by a regression coefficient of 0.311, a t-value of 4.081, and a significance level of 0.000. These findings confirm that the higher the teachers' ability to access and utilize information technology, the better the school's capacity to provide inclusive learning services especially for students with special needs. However, it is important to note that inclusive education is not merely about digital access or positive teacher attitudes; it fundamentally requires systematic capacity-building for disability-responsive pedagogy, including the use of assistive technologies and the implementation of inclusive instructional models like Universal Design for Learning (UDL). The school achievement culture also has a significant impact, with a regression coefficient of 0.315, a t-value of 4.177, and a significance level of 0.000. A work environment that promotes appreciation for teacher performance and encourages collaboration can foster an inclusive climate that emphasizes equity and collective progress. Here, organizational culture functions not only as a value system but also as a structural mechanism that drives inclusive classroom practices. Teacher work motivation is identified as the most dominant factor, with a regression coefficient of 0.372, a t-value of 4.664, and a significance level of 0.000. Motivation manifests through intrinsic drive, dedication, and the sense of professional responsibility teachers feel toward inclusive practice. Highly motivated teachers are more likely to be patient, committed, and flexible in accommodating students with diverse learning needs.

Path analysis results reveal that teacher work motivation mediates the relationship between digital literacy and achievement culture with inclusive education quality. The indirect effect of digital literacy through motivation is 0.086, and the indirect effect of achievement culture through motivation is 0.096. The total effect of digital literacy (direct + indirect) on inclusive education quality reaches 0.397, while the total effect of achievement

culture reaches 0.411. The integrative model developed in this study demonstrates strong predictive power, with an R^2 value of 0.748, meaning that the three variables explain 74.8% of the variation in inclusive education quality. These findings affirm that improving inclusive education requires an integrative approach, one that simultaneously strengthens teachers' digital competencies, builds achievement-oriented school culture, and cultivates teacher motivation. The success of inclusive education lies not only in technology adoption or inclusive values, but also in developing the practical skills and adaptive capacities of educators to meet the diverse needs of all learners.

From a policy perspective, this study offers practical recommendations for education authorities at both local and national levels. The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) could design targeted professional development programs focused on: (1) Digital pedagogical skills for inclusion, including assistive technology and inclusive learning management systems. (2) Inclusive school culture development, emphasizing collaboration, recognition, and professional growth. (3) Motivation-based incentive systems, such as performance-based allowances for inclusive classroom practices or leadership in inclusive school programs. These training modules could be integrated into existing national programs, such as Program Guru Penggerak and Platform Merdeka Mengajar (PMM), with added emphasis on disability-responsive instructional strategies. Moreover, policies on teacher evaluation and school accreditation should include specific indicators for inclusive education practice and impact.

While this study offers valuable insights, it is not without limitations. First, the sample was limited to public elementary schools in one urban district (Candisari, Semarang). To enhance the generalizability of findings, future research should include a broader range of school settings, including rural and suburban contexts with varying demographic and infrastructural challenges. Second, the data was gathered through self-reported questionnaires. Although these provide useful perceptions, they may not fully reflect actual classroom practices. Future studies are encouraged to incorporate classroom observations, teaching portfolio analysis, or video-based lesson studies to validate inclusive pedagogical implementation. Third, this study did not include students' or parents' perspectives, which are essential in evaluating the real impact of inclusive education. Future research should involve students with and without disabilities, as well as their caregivers, to assess the perceived quality and inclusiveness of school services.

In conclusion, inclusive education reform must go beyond rhetoric. It demands structured, evidence-based interventions grounded in teacher empowerment, digital and cultural readiness, and systemic support for meaningful inclusion. This study contributes a contextualized model for inclusive education quality improvement one that policymakers, school leaders, and researchers can further develop, replicate, and refine.

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