

Effectiveness of Teachers in Handling Learners with Educational Needs: Forecasted by Leadership Styles and Technology Utilization as Predictors

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ABSTRACT

Low teaching effectiveness among teachers handling learners with educational needs is a global concern. The strength to forecast teaching effectiveness using leadership styles and technology utilization as predictors was verified. Predictive research design, total enumeration, survey and multiple linear regression were the methods applied. The data from 150 elementary school teachers informed that the model was significant, explaining approximately 30.8% of the variance in teaching effectiveness ($R^2 = .308$) and significant, partly supporting the Theory of Planned Behavior. Future studies may examine variables not included in this research to account for the remaining variance in the strength of the model for teaching effectiveness, while exploratory studies may be pursued to generate themes and subthemes that could serve as potential variables and indicators. Likewise, educational leaders may implement programs that strengthen leadership styles and technology utilization to augment the effectiveness of teaching skills.

Keywords: Teachers handling learners with educational needs, forecasted by leadership styles, technology utilization

INTRODUCTION

The Problem and Its Scope

Low teaching effectiveness remains a persistent concern in the global education landscape, as it is closely associated with the quality of student learning and educational outcomes, König et al., (2025).

In Germany, debates continue about the low teaching effectiveness of teacher despite reforms, while in China, the rapid expansion of higher education has resulted in inconsistent teaching effectiveness (König et al., 2025). Likewise, similar challenges are reported in Australia, where inconsistencies in teacher preparation programs affect classroom teaching effectiveness (Mayer, 2024).

Low teaching effectiveness continues to challenge Philippine education, with provinces such as Cebu, Negros Occidental, Samar, and Surigao del Sur reflecting broader national issues. Recent evidence from Batangas City underscores the need for stronger professional development and systemic support (Saner & Villena, 2023–2024).

These consequences underscore the urgency of strengthening teaching effectiveness to ensure inclusive, equitable, and high-quality education for all learners (Javornik 2023). Yet, a research gap persists in understanding how leadership styles and technology utilization influence teaching effectiveness, particularly for learners with educational needs (Javornik & Tan 2025). Hence, this study was undertaken to address this gap and contribute to improve educational outcomes globally and locally.

Significance of the Study

This study is significant as it highlights how leadership styles and technology utilization serve as predictors of teaching effectiveness among teachers handling learners with educational needs, contributing to the achievement of Sustainable Development Goal 4 (Quality Education) and Sustainable Development Goal 10 (Reduced Inequalities). In the Philippine context, the findings may support the goals of the Department of Education in promoting inclusive, equitable, and quality education through improved leadership practices and effective integration of technology in teaching. At the institutional level, this study aligns with the vision and mission of Holy Cross of Davao College (HCDC) in fostering a learner-centered and inclusive educational environment, strengthening its commitment to delivering quality education and developing teachers as effective agents of social transformation.

Statement of the Problem

This study determined the significance of the influence of leadership styles and technology utilization as predictors of teaching effectiveness among teachers handling learners with educational needs in inclusive education. Specifically, it pursued the following objectives:

1. To describe the levels of leadership styles in terms of principals' leadership behavior and participative leadership style, and principals' leadership behavior related to affiliative leadership style; technology utilization in terms of computer literacy background and accessing the internet; and teaching effectiveness in terms of knowledge of the subject and teaching ability, management of learning, and professional competence,
2. To determine the significance of the correlation between leadership styles, technology utilization, and teaching effectiveness of teachers handling learners with educational needs,
3. To determine the significance of the strength of the model for teaching effectiveness using leadership styles and technology utilization as predictors.

Hypotheses

This research study has the following null hypotheses tested at 0.05 level of performance:

Ho1: Leadership style is not significantly correlated to teaching effectiveness of teachers handling learners with educational needs.

Ho2: Technology utilization is not significantly correlated to teaching effectiveness of teachers handling learners with educational needs.

Ho3: The strength of the model to predict teaching effectiveness using leadership styles and technology utilization as predictors is not significant.

Theoretical Framework and Conceptual Framework

This study is anchored on the Theory of Planned Behavior, an extension of the Theory of Reasoned Action developed by Ajzen and Fishbein (1980) and Fishbein and Ajzen (1975), which posits that a central factor in human behavior is the individual's intention to perform a given action. The theory explains that a person's intention to perform a behavior is the strongest predictor of that behavior, and this intention is determined by three core factors: attitude, subjective norms, and perceived behavioral control.

In this study, the leadership styles variable was represented by principals' leadership behavior, with statements reflecting the affiliative leadership style; while principals' leadership behavior and participative leadership style corresponded to subjective norms. Further, the technology utilization variable, indicated by computer literacy background and internet access, was associated with perceived behavioral control as highlighted in the theory. Lastly, teaching effectiveness as the criterion variable, measured through subject knowledge, teaching ability,

learning management, and professional competence, was linked to the behavior component of the theory. Since the attitude toward behavior and intention components were omitted, this study is only partially anchored in the framework.

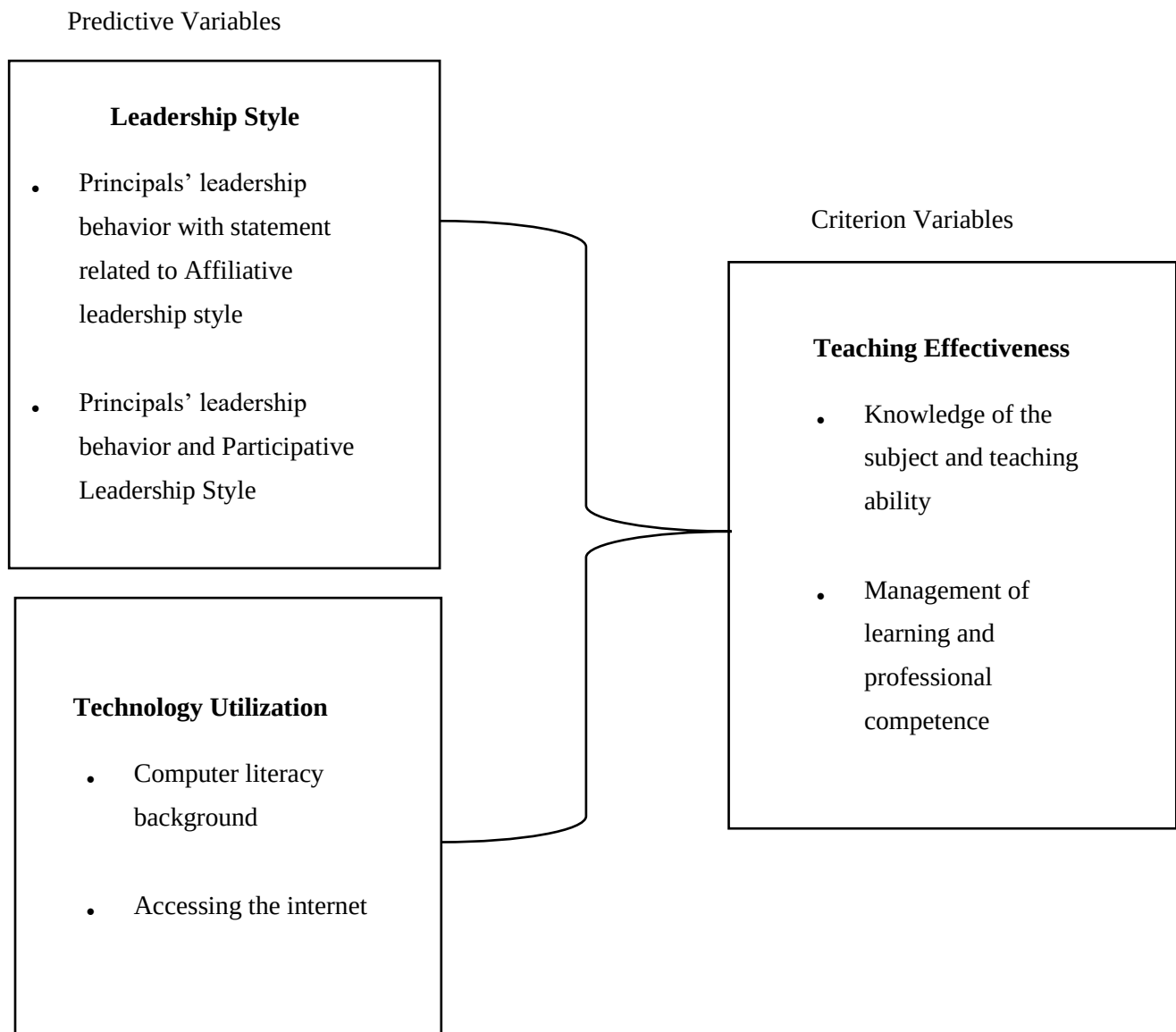


Figure 1. Conceptual Framework of the Study

METHOD

This chapter includes the research design, locale of the study, the sample and sampling, data gathering technique, data analysis technique, and the ethical considerations are included in this chapter.

Research Design

This study employed a predictive research design. It is characterized by its focus on forecasting outcomes by analyzing relationships among variables. It is quantitative approach that utilizes numerical data to analyze patterns and relationships among variables. It is typically applied when researchers aim to anticipate how changes in certain factors influence future results, making it especially useful in education and organizational studies where evidence-based planning is essential (Almeida & Monteiro, 2022). The key advantage of this design lies in its ability to move beyond description, offering data-driven predictions that guide informed decisions and practical interventions. In this study, predictive analysis was used to examine how leadership styles and technology utilization influence teaching effectiveness, providing valuable insights for improving educational practice (Fan et al., 2021).

Locale of the Study

The study was conducted in the elementary schools under Glan I District, Division of Sarangani, which comprises 14 public schools serving learners across various barangays. As part of the province's public education system, the district plays a vital role in delivering foundational learning opportunities to diverse communities.

It was chosen as the locale due to its accessibility to the researcher and the presence of respondents who met the study's criteria. More importantly, the district provides a meaningful educational setting for examining teaching effectiveness in relation to leadership styles and technology utilization, reflecting both the challenges and opportunities faced by schools in fostering quality instruction and learner development.

Sample and Sampling Technique

A total of 150 public elementary school teachers employed as permanent, under the Department of Education for School Year 2025–2026, were included in this study. All teachers with at least three years of teaching experience and handling different learning areas were included to guarantee that responses reflected meaningful professional experience. These teachers are assigned across 14 public schools in the district and are actively engaged in classroom instruction. Consistent with the study's focus, all respondents were verified to be actively handling learners with educational needs in their respective classrooms, including learners with diverse learning requirements across regular and inclusive class settings.

Given the manageable population size, total enumeration sampling was employed. Total enumeration sampling is a technique in which all members of the population are included in the study, ensuring complete representation of the group. It is commonly applied when the population is relatively small and accessible, allowing the researcher to gather comprehensive and accurate data without the need for sampling selection (Babasola et al., 2024).

Data Gathering Technique

The study used the survey technique, a systematic method of collecting data through structured questionnaires to describe respondents' characteristics, opinions, or behaviors. This approach, commonly applied in quantitative research, efficiently gathers information and supports generalization of findings across a defined group (Sheikh et al., 2024).

The study utilized three adapted questionnaires. These instruments included the Leadership Style Questionnaire (Nguyen & Le, 2021), which consisted of 20 items with a Cronbach's alpha of 0.816; the Technology Utilization Questionnaire (Moorhouse, 2023), which consisted of 10 items with a Cronbach's alpha of 0.771; and the Teaching Effectiveness Questionnaire (Stronge, 2018), which consisted of 10 items with a Cronbach's alpha of 0.868. All instruments employed a four-point Likert scale and demonstrated acceptable to good reliability based on their Cronbach's alpha values.

Data Analysis Technique

In this study, three data analysis techniques were employed, namely: descriptive analysis, correlation analysis, and multiple linear regression. Descriptive analysis was utilized to summarize and describe the key features of the data, including measures such as frequency, mean, and standard deviation, to provide an overall profile of the respondents and variables under investigation (Fulk, 2023). Moreover, correlation analysis was applied to determine the strength and direction of the relationship between the independent and dependent variables, thereby identifying whether significant associations exist among them. The Pearson product-moment correlation coefficient was the statistical treatment used under this analysis technique (Rizk, 2023). Furthermore, multiple linear regression analysis was used to examine the combined and individual effects of the independent variables on the dependent variable, allowing the researcher to identify significant predictors and assess the extent to which these variables explain variations in the outcome of the study (Roustaei, 2024). The unstandardized beta coefficient was the statistical treatment used under this analysis technique.

The matrix below contains the scale, descriptive level, and corresponding interpretation assigned to each variable involved in this study. This measure is used particularly in describing the level of leadership styles and technology utilization and teaching effectiveness.

	<i>Level</i>	<i>Leadership Style</i>	<i>Technology Utilization</i>	<i>Teaching Effectiveness</i>
1.00 – 1.74	Very low	Not effective	Rarely utilizing technology	Not effective
1.75 – 2.49	Low	Less Effective	Occasionally utilizing technology	Less effective
2.50 – 3.24	High	Effective	Frequently utilizing technology	Effective
3.25 – 4.00	Very high	Very Effective	Always utilizing technology	Very effective

Standard Deviation Value Ranges and Interpretation

<i>Range</i>	<i>Description</i>	<i>Interpretation</i>
SD ≤ 0.50	High Consistent Responses	Strong and Uniform Perception
SD = 0.51 – 1.00	Moderate Consistent Responses	Acceptable Consistency
SD = 1.01 – 1.50	Low Consistent Responses	Differing Views or Experiences
SD > 1.50	Very Low Consistent Responses	High Variability and Lack of Consensus

In this study, the significance of the correlation is tested at 0.05 confidence level. The following standard measure for the interpretation scale of *r*-value was used:

<i>Computed r</i>	<i>Descriptive Interpretation</i>
+/-1.00	Perfect Correlation
Between +/- 0.75 - +/- 0.99	High Correlation
Between +/- 0.51 - +/- 0.74	Moderately High Correlation
Between +/- 0.31 - +/- 0.50	Moderately Low Correlation
Between +/- 0.01 - +/- 0.30	Low Correlation
0.00	No Correlation

The following scheme for Beta (β) coefficient strength, as proposed by Cohen (1998) and Hair et al. (2019), was used:

<i>B Value Range</i>	<i>Predictive Strength</i>
+/- 0.00 – +/- 0.09	Very Weak
+/- 0.10 – +/- 0.29	Weak
+/- 0.30 – +/- 0.40	Moderate
+/- 0.50 – +/- 0.69	Strong
+/- 0.70 and above	Very Strong

Ethical Considerations

This study adhered strictly to ethical standards to safeguard the participation of public-school elementary teachers and ensure the credibility of its findings. It complied with the protocols of the Holy Cross of Davao College – Society for Moral Integrity and Legal Ethics (SMILE), the HCDC- Graduate School Department’s research guidelines, and the Data Privacy Act of 2012 for the responsible handling of personal information (Cheng, 2021).

Ethical clearance was obtained prior to data collection, and coordination with school administrators was conducted to avoid disruption of teaching duties. While potential risks such as discomfort during self-assessment were acknowledged, respondents were assured that their involvement was voluntary, their responses confidential, and that they could withdraw at any time without consequence. All data were securely stored, used solely for academic purposes, and destroyed after the study to protect privacy and identities.

RESULTS

Included in this chapter are the results of the descriptive, correlation, regression, and the corresponding analysis and interpretation. Also, included is the summary of findings.

Descriptive Result

Table 1 is the descriptive statistics of the study variables, including leadership styles, technology utilization, and teaching effectiveness. The table shows the number of respondents (N = 150), standard deviation, mean, and descriptive level for each variable and its indicators.

Table 1: Descriptive Statistics (N=150)

Variables	N	Standard Deviation	Mean	Descriptive Level
Leadership Styles	150	.07	3.51	Very high
<i>Principal's Leadership Behavior and Participative Leadership Style</i>	150	.13	3.42	Very high
<i>Principals' Leadership Behavior with Statements Related to Affiliative Leadership style</i>	150	.15	3.60	Very high
Technology Utilization	150	.20	3.64	Very high
<i>Computer Literacy Background</i>	150	.19	3.71	Very high
<i>Accessing the Internet</i>	150	.25	3.58	Very high
Teaching Effectiveness	150	.16	3.70	Very high
<i>Knowledge of the Subject and Teaching Ability</i>	150	.24	3.70	Very High
<i>Management of Learning and Professional Competence</i>	150	.17	3.69	Very high

Specifically, leadership style variable obtained a mean of 3.51, described as very high, indicating that the leadership style is very effective. All its indicators described as very high level. The standard deviation of 0.07 suggest that the responses are highly consistent. Moreover, the technology utilization variable obtains a mean of 3.64 described as very high, indicating that the technology utilization is always utilized. All its indicators are described as very high. The standard deviation of 0.25 signifies that the responses are highly consistent. Finally, teaching effectiveness variable recorded a mean of 3.70 described as very high, indicating that teaching effectiveness is very effective. All its indicators described as very high. The standard deviation of 0.24 signifies that the responses are highly consistent.

The results indicated that leadership styles, technology utilization, and teaching effectiveness are all consistently described at a very high level. Among these variables, each showed strong indicators with minimal variation, highlighting their comparable strength in the descriptive assessment.

Correlation Results

Table 2 is the correlation results between the predictive variables and criterion variable. Also, it shows the r-value, the p-value, the decision for the hypothesis, and the corresponding interpretation.

Table 2: Correlation Table (N=150)

Variables Teaching Effectiveness (DV)	r-value	p-value	Decision on Ho	Interpretation
Leadership Styles significant correlation	0.388	0	Reject H_0	Moderately low positive
Technology Utilization	0.501	0	Reject H_0	Moderately high positive significant

Correlation is significant at the 0.05 level (2-tailed).

Table-2 shows the correlation between leadership styles and teaching effectiveness obtained a p-value of .000, which is less than 0.05 level of significance; hence, the null hypothesis was rejected. This indicates that the relationship between leadership styles and teaching effectiveness is significant. The corresponding r- value of .388 indicates low positive correlation. This implies that an increase in leadership styles corresponds to an increase in teaching effectiveness. Furthermore, the correlation between technology utilization and teaching effectiveness obtained a p-value of .000, which is less than 0.05 level of significance; hence, the null hypothesis was rejected. This indicates that the relationship between technology utilization styles and teaching effectiveness is significant. The r- value of .501, indicates moderately high correlation. This implies that an improvement in technology utilization is associated with an improvement of teaching effectiveness.

In summary, both leadership styles and technology utilization showed significant positive relationships with teaching effectiveness, with leadership reflecting a moderately low correlation and technology a moderately high one. This means that improvements in these areas are linked to greater teaching effectiveness among teachers.

Regression Analysis

Table 3 presents the regression analysis of predictive variable on the criterion variable. It includes the coefficients (β), the *t*-values, the *p*-values, the decisions on the hypotheses, and the corresponding interpretations.

Table 3: Regression Analysis: Teaching Effectiveness

Variables	Unstandardized Coefficients		Standardized Coefficients	t	p-value	Decision <i>Ho</i>	Interpretation
	B	Std. Error	Beta				
(Constant)	7.027	.567	—	12.391	.000	Reject <i>Ho</i>	Significant
Leadership Styles	.592	.170	.252	3.475	.001	Reject <i>Ho</i>	Significant
Technology Utilization	.341	.059	.419	5.782	.000	Reject <i>Ho</i>	Significant
Model Summary: $R = .555$, $R\text{-Squared} = .308$, $F(2,147) = 32.667$, $p = .000$ ($TE = 7.027 + 0.592 LS + 0.341 TU$) Level of significance: 0.05, Decision Rule: Reject <i>ho</i> if $p < 0.05$							

Specifically, the table shows the model for teaching effectiveness using the predictive variables leadership styles and technology utilization is $TE = 7.027 + 0.592(LS) + 0.341(TU)$. The corresponding p-value is 0.000, which is lower than 0.05 level of significance; hence, the null hypothesis was rejected. It indicates that the model to predict teaching effectiveness is statistically significant. The R-squared value of 0.308 indicates that the model predict teaching effectiveness is weak. This implies that for every unit change in the predictors of the model, there is a corresponding change in the teaching effectiveness.

The results showed that teaching effectiveness can be statistically predicted by leadership styles and technology utilization, with the model proving significant but demonstrating only a weak explanatory strength.

Summary of Findings

Based on statistical results, it was found specifically that:

1. Leadership style significantly correlates with teaching effectiveness.
2. Technology utilization significantly correlates with the teaching effectiveness.
3. The strength of the model to predict teaching effectiveness using leadership styles and
4. technology utilization as predictors is significant.

DISCUSSION

In this chapter, the findings of the study are discussed. Also, the conclusions and recommendations based on the results are presented.

Teaching Effectiveness Correlates Leadership Styles

Then finding that leadership styles practiced by school leaders are positively correlated with teaching effectiveness aligns with the finding of Leithwood and Jantzi (2023), arguing that leadership styles practiced by the school leaders foster inspiration, motivation, which positively correlate with teaching effectiveness through enhanced commitment, professional growth, and improved classroom practices. Likewise, the current finding affirms Maqbool and Zafeer (2024), who explained that positively correlate with teaching effectiveness, demonstrating the strongest impact among the examined variables and reinforcing the critical role of leadership in fostering effective teaching practices. However, the current finding contradicts the finding of Yang et al. (2025), arguing that teaching effectiveness, its correlation is not direct; instead, it operates through mediating factors such as teachers' self-efficacy, pedagogical beliefs, and capacity-building mechanisms.

Teaching Effectiveness Correlates Technology Utilization

The finding states that effective technology integration in classrooms is positively correlated with teaching effectiveness. This corroborates Behera and Acharya, (2024), who reported that effective technology integration in classrooms positively correlates with teaching effectiveness by improving instructional delivery, increasing student engagement, and strengthening learning outcomes. Moreover, the current finding affirms Oranga and Matere (2025), who explained that the use of appropriate tools and structured systems positively correlates with improved performance outcomes, thereby supporting the conclusion that technology utilization enhances teaching effectiveness. However, the current finding contradicts Dechawatanapaisai (2025), who argued that the correlation between technology use and performance is not automatic; rather, tools alone do not lead to improved outcomes unless supported by appropriate strategies and institutional support.

The model to predict teaching effectiveness using leadership styles and technology utilization as predictors is significant.

The finding of this study revealed that the model to predict teaching effectiveness using leadership styles and technology utilization as predictors is significant. This agrees with the claim of Estrada and Dasig (2023) who reported that participative and visionary leadership styles strongly correlate with teacher motivation and performance, demonstrating that leadership practices are reliable predictors of teaching effectiveness. Similarly, the current finding affirms Afuang (2023), who said that school heads leadership and supervision styles, combined with effective technology integration, positively influence teaching outcomes, reinforcing the importance of leadership and technology as significant predictors of teaching effectiveness. However, this finding contradicts Tan (2025), who argued that transactional and authoritarian leadership approaches may not consistently improve teaching effectiveness, emphasizing that contextual factors and leadership style variations can weaken the predictive strength of the model.

CONCLUSION

Based on the findings, the strength of the model to predict teaching effectiveness using leadership styles and technology utilization as predictors is modest, explaining approximately 30.8% of the variance in teaching effectiveness ($R = .555$, $R^2 = .308$), and significant. This finding partly supports the Theory of Planned Behavior, which posits that an individual intention to perform a behavior shaped by attitude, subjective norms, and perceived behavioral control is the strongest predictor of that behavior. The theory explains that a person's intention to perform a behavior is the strongest predictor of that behavior, and this intention is determined by three core factors: attitude, subjective norms, and perceived behavioral control.

RECOMMENDATIONS

Based on the conclusion, future studies may examine variables not included in this research to account for the remaining approximately 69% of the variance in the strength of the model for teaching effectiveness. Qualitative approaches may be pursued to generate themes and subthemes that may serve as potential variables and corresponding indicators. Specifically, future research should consider variables such as teacher self-efficacy, professional development, inclusive education competence, school climate, administrative support, and availability of instructional resources, as these factors may account for a substantial portion of the unexplained variance in teaching effectiveness. In addition, educational strengthen leadership practices and technology integration programs in schools, as these were found to be significant predictors of teaching effectiveness. Longitudinal or mixed-methods designs are also recommended in future studies to provide stronger evidence of causal relationships and to explore how leadership practices and technology utilization influence teaching effectiveness over time.

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