PROCEEDING
International Conference in Education and Vocation: Multicultural and Inclusive Approaches
ICEV-MIA 2026

A CORRELATION BETWEEN ONLINE INDEPENDENT LEARNING AND PEDAGOGICAL SELF-EFFICACY AMONG PRE-SERVICE TEACHERS OF ENGLISH

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Abstract

Online learning requires pre service teachers to develop a high level of learning independence in order to manage the learning process effectively. In teacher education contexts, Online Independent Learning plays an important role in shaping Pedagogical Self Efficacy, which refers to students‟ beliefs in their ability to plan, implement, and evaluate instructional activities. This study aims to examine the correlation between Online Independent Learning and Pedagogical Self Efficacy among pre service teachers in the English Education Study Program, Faculty of Teacher Training and Education, Universitas Lancang Kuning.This study employed a quantitative correlational design involving 55 students as respondents. Data were collected using Online Independent Learning and Pedagogical Self Efficacy questionnaires and analyzed using Spearman Rank Correlation because the data were not normally distributed. The results showed a significance value of
0.000 < 0.05 with a correlation coefficient of 0.769, indicating a positive and strong correlation between the two variables. These findings confirm that higher levels of online independent learning are associated with higher levels of pedagogical self efficacy, highlighting the importance of strengthening learning independence in online learning environments to support the pedagogical competence development of pre service teachers.

Keywords: *Online Independent Learning, Pedagogical Self Efficacy, Pre Service Teachers*

1. INTRODUCTION

The rapid expansion of digital technology has significantly reshaped higher education worldwide, compelling universities to redesign instructional systems that integrate face to face and online modalities. Contemporary learning environments are no longer limited to physical classrooms but extend into digital ecosystems that enable students to access resources, collaborate virtually, and manage learning activities independently. The UNESCO (2021) emphasizes that technology integration has become a structural foundation of modern education systems, requiring learners to develop autonomous learning competencies to respond to twenty first century academic and professional demands. Within this transformation, pre service teachers are expected not only to master subject matter but also to demonstrate digital pedagogical competence and adaptive professional confidence.

Blended learning policies have become a strategic response to digital transformation in higher education. Universitas Lancang Kuning implements a learning model consisting of sixty percent face to face instruction and forty percent online learning through the Edlink platform. This policy provides structured opportunities for students to engage in technology mediated academic activities, including accessing instructional materials, participating in online discussions, completing assessments, and submitting assignments through digital devices. In such contexts, the success of learning increasingly depends on

students' ability to regulate their own learning processes. Research indicates that effective online learning requires students to exercise self regulation strategies such as goal setting, time management, and monitoring progress (Broadbent & Poon, 2015). Although digital platforms facilitate access, they do not automatically guarantee the development of independent learning skills.

Online Independent Learning (OIL) refers to students' capacity to take responsibility for their learning processes within digital environments. It encompasses cognitive, metacognitive, and motivational dimensions that enable learners to plan, implement, and evaluate their learning strategies. Panadero (2017) explains that self regulated learning is central to independent academic performance, particularly in online contexts where direct supervision is limited. However, digital learning environments may also increase cognitive demands. Without adequate self regulation skills, students may experience overload, procrastination, and decreased academic engagement. Therefore, technological familiarity alone is insufficient; students must cultivate structured learning habits and sustained motivation.

Preliminary observations among seventh semester students of the English Language Education Study Program at Universitas Lancang Kuning indicate that although students are accustomed to using digital platforms, many still encounter difficulties in maintaining learning consistency, organizing schedules, and completing tasks independently. These students are categorized as pre service teachers because they have completed major pedagogical coursework and participated in microteaching programs. At this professional preparation stage, the ability to regulate online learning becomes particularly important. Inadequate independent learning skills at this level may influence not only academic performance but also professional readiness.

The concept of self regulated learning provides a theoretical foundation for understanding these challenges. Self regulation involves cyclical processes of planning, monitoring, and reflection that influence academic achievement and professional competence. Klassen, Durksen, and Tze (2014) argue that self regulatory competence contributes to teacher confidence and instructional effectiveness. For pre service teachers, the ability to manage their own learning processes may shape their perception of teaching competence. Consequently, the development of online independent learning skills may extend beyond academic outcomes and influence broader professional attributes.

One crucial professional attribute in teacher education is pedagogical self efficacy. Rooted in social cognitive theory, self efficacy refers to individuals' beliefs in their capabilities to organize and execute actions required to achieve specific goals. In the context of education, pedagogical self efficacy reflects teachers' confidence in planning lessons, managing classrooms, applying instructional strategies, integrating technology, and motivating students. Anita Woolfolk Hoy and Megan Tschannen-Moran (2001) conceptualize teacher self efficacy as a strong predictor of instructional quality, persistence, and resilience. Teachers with higher efficacy beliefs are more adaptive, innovative, and responsive to student needs. Conversely, repeated experiences of difficulty may weaken confidence and reduce instructional effectiveness.

Although previous studies have examined online learning autonomy and teacher self efficacy, these variables are frequently investigated separately. Research on online learning commonly emphasizes engagement, academic performance, or digital literacy, while studies on pedagogical self efficacy often focus on teaching practicum experiences or classroom management competence. Limited research has specifically explored the correlation between online independent learning and pedagogical self efficacy among pre

service English teachers within a particular institutional context. Existing evidence suggests a positive association between learner autonomy and self efficacy beliefs, indicating that students who successfully manage independent learning tasks tend to develop stronger confidence in their professional abilities. However, empirical verification within Indonesian teacher education settings remains insufficient.

The main limitation of previous research lies in the lack of contextualized correlational analysis that integrates digital learning behavior with pedagogical confidence among pre service teachers. Most studies rely on general university samples or focus on either academic achievement or teaching practicum outcomes. Few investigations examine how students' capacity to regulate online learning may relate to their belief in their future teaching

competence. This gap indicates the need for systematic quantitative inquiry that simultaneously measures both constructs within a defined educational program.

Addressing this limitation offers both theoretical and practical merit. Theoretically, examining the relationship between online independent learning and pedagogical self efficacy contributes to a more integrated understanding of professional development in digital higher education environments. Practically, empirical findings may inform curriculum design, digital learning policies, and teacher preparation strategies at Universitas Lancang Kuning. Identifying whether a significant correlation exists between these variables can guide interventions aimed at strengthening students' autonomy and professional confidence simultaneously.

Therefore, the objective of this study is to examine whether there is a significant correlation between online independent learning and pedagogical self efficacy among pre service English teachers at Universitas Lancang Kuning. This research seeks to provide empirical evidence that clarifies the relationship between students' capacity to manage online learning and their confidence in performing pedagogical tasks, thereby supporting the enhancement of teacher education quality in the digital era.

2. METHOD

A. Research Design

This study applied a quantitative correlational design to examine the relationship between Online Independent Learning (OIL) and Pedagogical Self-Efficacy (PSE) among seventh-semester pre-service English teachers at Universitas Lancang Kuning. A correlational approach was selected because the study aimed to identify the degree and direction of association between two naturally occurring variables without manipulating them. Correlational designs are appropriate when researchers seek to determine whether variations in one construct are statistically related to variations in another construct within a defined population (Gravetter & Wallnau, 2023).

Online Independent Learning was positioned as the independent variable (X), while Pedagogical Self-Efficacy functioned as the dependent variable (Y). This configuration was grounded in the theoretical assumption that students' capacity to regulate and manage their learning in digital environments may contribute to the development of professional confidence in teaching contexts. The design enabled statistical examination of whether higher levels of online learning autonomy were associated with stronger pedagogical self-beliefs.

B. Research Setting

The research was conducted at the English Language Education Study Program, Faculty of Teacher Training and Education, Universitas Lancang Kuning, Pekanbaru. Data collection took place during the 2025 academic year, specifically in the odd semester when blended learning practices were intensively implemented.

This setting was selected because the institutional learning policy integrates a significant proportion of online instruction, thereby providing students with sustained exposure to digital learning environments. Such conditions were considered suitable for examining online independent learning behaviors in an authentic academic context.

C. Population and Sample

The population comprised all seventh-semester students enrolled in the Pre-Service Teaching Program of the English Language Education Study Program in the 2025 academic year. These students had completed most core pedagogical courses and participated in microteaching activities, indicating that they had acquired foundational teaching competencies.

Given the relatively small population size and the homogeneity of characteristics relevant to the research objectives, total sampling was employed. Total sampling involves including all accessible members of the population to enhance representativeness and reduce sampling

error (Pallant, 2024). A total of 55 students participated in the study. Including the entire cohort ensured that the findings reflected the collective characteristics of pre-service teachers at this academic level.

D. Research Instruments

Quantitative data were collected using structured questionnaires designed to measure both research variables. Questionnaires were selected because they allow for standardized data collection, facilitate statistical analysis, and ensure comparability across respondents.

1. Online Independent Learning (Variable X)

Online Independent Learning was measured using a 36-item questionnaire adapted from Tian and Belawati (2023). The instrument encompassed several dimensions, including self-concept of online learning skills, learning motivation, access to technology, utilization of technology for academic purposes, and digital literacy in online learning contexts.

These dimensions were conceptually aligned with the framework of self-regulated learning, which emphasizes learners' capacity to plan, monitor, and evaluate their own learning processes (Panadero, 2017). The instrument was selected because it captures both cognitive and motivational components of independent learning within digital environments.

2. Pedagogical Self-Efficacy (Variable Y)

Pedagogical Self-Efficacy was measured using a 36-item questionnaire adapted from Kwangsawad (2022). The instrument assessed respondents' confidence in engaging students, applying instructional strategies, and managing classroom situations, including both traditional and technology-mediated settings.

The measurement of pedagogical self-efficacy was grounded in the conceptualization of teacher efficacy proposed by Tschannen-Moran and Hoy (2001), which highlights teachers' beliefs in their ability to organize and implement instructional actions effectively. This construct is widely recognized as a predictor of teaching performance and professional resilience.

Both instruments employed a four-point Likert scale consisting of Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). The use of a four-point scale was intended to reduce central tendency bias by removing the neutral option and encouraging respondents to indicate a clear evaluative position.

The questionnaires were distributed through Google Forms to facilitate accessibility and ensure efficient data management. Responses were automatically recorded in spreadsheet format, which minimized data entry errors and supported accurate statistical processing.

E. Data Collection Procedure

Data were collected through an online survey administered during a two-week period. The questionnaire link was shared through official class communication platforms commonly used by seventh-semester students. Prior to participation, respondents were informed about the purpose of the study and assured of the confidentiality of their responses. Participation was voluntary.

The online format was chosen to align with the digital context under investigation and to provide flexibility for participants to complete the questionnaire at their convenience. Upon completion of the data collection period, all responses were compiled and prepared for statistical analysis.

F. Data Analysis Technique

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 26. The analytical process consisted of descriptive and inferential statistical procedures.

Descriptive statistics were first calculated to summarize the distribution of scores for both variables. Measures of central tendency, including the mean, median, and mode, were used to identify the overall level of Online Independent Learning and Pedagogical Self-Efficacy among respondents (Field, 2022). Measures of variability, specifically the range and standard

deviation, were calculated to examine the dispersion of responses. The standard deviation provided insight into the degree of consistency or variation among students' perceptions.

Before testing the research hypothesis, a normality test was performed using the Kolmogorov–Smirnov test to determine whether the data met the assumption of normal distribution. If the significance value exceeded 0.05, the data were considered normally distributed, and Pearson Product-Moment Correlation was applied. Pearson's correlation coefficient (r) measures the strength and direction of linear association between two continuous variables and is mathematically expressed as:

$$r = \Sigma[(X - Mx)(Y - My)] / \sqrt{[\Sigma(X - Mx)^2 \Sigma(Y - My)^2]}$$

If the significance value was below 0.05, indicating non-normal distribution, Spearman Rank Correlation (rho) was employed as a non-parametric alternative (Gravetter & Wallnau, 2023). The level of statistical significance was set at 0.05.

The strength of the correlation coefficient was interpreted using established interval criteria: 0.00–0.20 (very weak), 0.21–0.40 (weak), 0.41–0.70 (moderate), 0.71–0.90 (strong), 0.91–0.99 (very strong), and 1.00 (perfect). In addition to numerical coefficients, a scatter plot generated through SPSS was examined to visualize the direction and pattern of the relationship. An upward trend indicated a positive correlation, a downward trend indicated a negative correlation, and a random distribution suggested no clear linear association.

Through these systematic procedures, the study ensured that the relationship between Online Independent Learning and Pedagogical Self-Efficacy was examined rigorously and interpreted within an appropriate statistical framework.

3. FINDINGS AND DISCUSSION [Capital Letter, Times New Roman, 12, Bold]

A. Findings

1. Descriptive Statistics

1. Online Independent Learning (OIL)

The descriptive statistics of Online Independent Learning are presented in Table 1.

Table 1. Descriptive Statistics of Online Independent Learning (OIL)

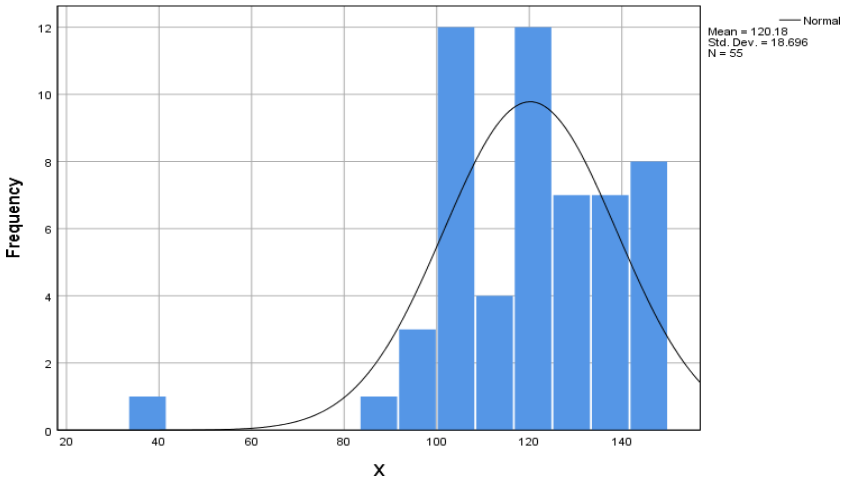
X: Online Independent Learning	Mean	Median	Mode	Std. Deviation	Range	Min	Max	Sum
(Score)	120.18	122.00	108	18.696	107	37	144	6610

Table 1 shows that the mean score of Online Independent Learning was 120.18, with a median of 122.00 and a mode of 108. The scores ranged from 37 to 144, resulting in a range of 107. The standard deviation of 18.696 indicates a relatively wide dispersion of scores. This variation suggests that although many students demonstrated strong independent learning behaviors, their levels of autonomy, time management, and digital self-regulation differed considerably.
The frequency distribution revealed that most respondents scored within the moderate to high range. The highest frequency occurred at a score of 108 (9.1%), followed by 122 and 144 (7.3% each). Only a small proportion of students obtained very low scores. Overall, these results indicate that pre-service teachers generally possess adequate online independent learning skills, although individual differences remain evident.

Figure 1: Histogram of Online Independent Learning (OIL) Scores

The histogram illustrates a distribution concentrated toward the upper-middle score range,

confirming the descriptive statistics that most students demonstrate moderate to high levels of online learning autonomy.



The Histogram of X: Online Independent Learning (OIL) Score

2. Pedagogical Self-Efficacy (PSE)

The descriptive statistics of Pedagogical Self-Efficacy are presented in Table 2.

Table 2. Descriptive Statistics of Pedagogical Self-Efficacy (PSE)

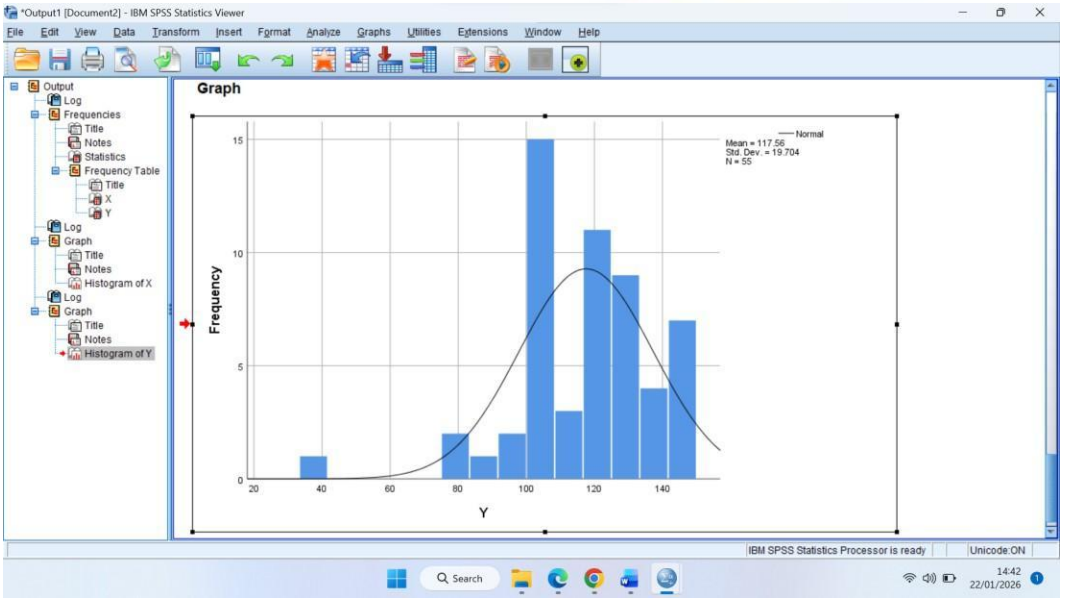
Y: Pedagogical Self-Efficacy								
Range	**Min**	**Max**	**Sum**					
(Score)	117.56	119.00	108	19.704	108	36	144	6466

As shown in Table 2, the mean PSE score was 117.56, with a median of 119.00 and a mode of 108. Scores ranged from 36 to 144, with a standard deviation of 19.704. The relatively high standard deviation reflects noticeable variability in respondents' confidence levels regarding lesson planning, instructional strategy implementation, classroom management, and student engagement.

The most frequent score was 108 (21.8%), indicating that this value represented the dominant level of pedagogical self-efficacy among the respondents. Overall, the majority of students demonstrated moderate to high confidence in their pedagogical abilities.

Figure 2: Histogram of Pedagogical Self-Efficacy (PSE) Scores

The histogram shows a distribution pattern similar to OIL, with most scores clustered in the moderate to high range, although dispersion remains visible across respondents.



The Histogram of Y: Pedagogical Self-Efficacy (PSE) Score

2. Normality Test

To determine the appropriate statistical test for hypothesis testing, a Kolmogorov–Smirnov normality test was conducted. The results are presented in Table 3.

Table 3. Kolmogorov–Smirnov Normality Test

One-Sample Kolmogorov-Smirnov Test

		OIL	PSE
N		55	55
Normal Parameters[a,b]	Mean	120.18	117.56
	Std. Deviation	18.696	19.704
Most Extreme Differences	Absolute	.101	.150
	Positive	.101	.090
	Negative	-.088	-.150
Test Statistic		.101	.150
Asymp. Sig. (2-tailed)		.200[c,d]	.003[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Source: SPSS Version 26

The OIL variable showed a significance value of 0.200 (> 0.05), indicating a normal distribution. In contrast, the PSE variable yielded a significance value of 0.003 (< 0.05), indicating non-normal distribution. Since one variable did not meet the normality assumption, a non-parametric correlation test was deemed appropriate.

3. Linearity Test

A linearity test using ANOVA was conducted to examine whether the relationship between OIL and PSE followed a linear pattern.

Table 4. Linearity Test between OIL and PSE

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Pedagogical Self-Efficacy *Online Independent Learning	Between Groups	(Combined)	17770.861	33	538.511	3.540	.002
		Linearity	14718.572	1	14718.572	96.752	.000
		Deviation from Linearity	3052.288	32	95.384	.627	.886
	Within Groups		3194.667	21	152.127		
	Total		20965.527	54			

The significance value for linearity was 0.000 (< 0.05), indicating a statistically significant linear relationship. Meanwhile, the deviation from linearity value was 0.886 (> 0.05), suggesting that no significant deviation from linearity occurred. Therefore, the assumption of linearity was satisfied.

4. Hypothesis Testing

Given the non-normal distribution of one variable, Spearman Rank Correlation was applied. The results are presented in Table 5.

Table 5. Spearman Rank Correlation between OIL and PSE

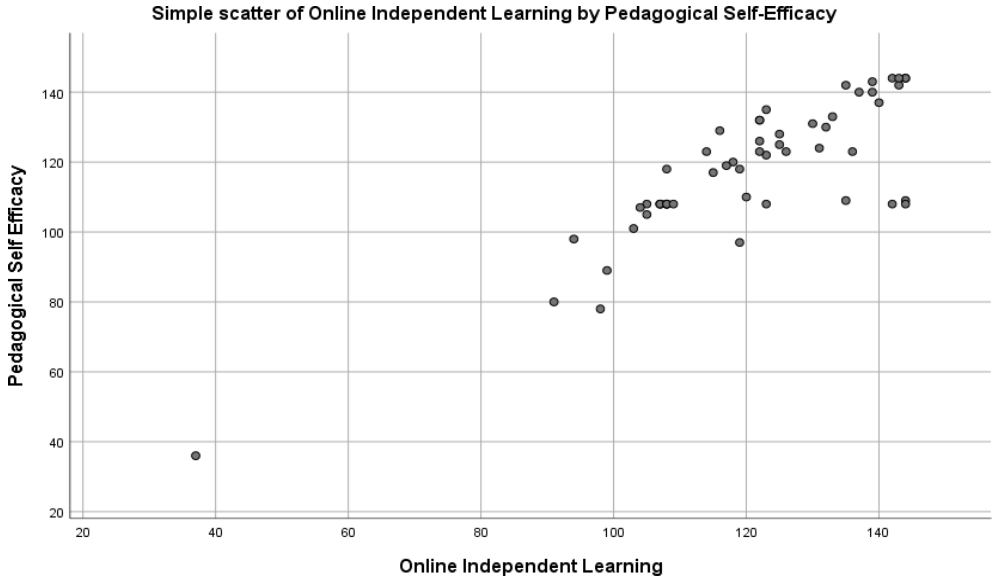
Nonparametrics Correlation				
			OIL	PSE
Spearman's rho	Online Independent Learning	Correlation Coefficient	1.000	.769**
		Sig. (2-tailed)	.	.000
		N	55	55
	Pedagogical Self-Efficacy	Correlation Coefficient	.769**	1.000
		Sig. (2-tailed)	.000	.
		N	55	55
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: SPSS Version 26

The correlation coefficient (ρ) was 0.769 with a significance value of 0.000 (< 0.05). This indicates a strong and statistically significant positive correlation between Online Independent Learning and Pedagogical Self-Efficacy. According to established interpretation criteria, a coefficient within the range of 0.70–0.90 reflects a strong relationship.

Figure 3: Scatter Plot of Online Independent Learning and Pedagogical Self-Efficacy

The scatter plot demonstrates an upward trend from left to right, confirming the positive direction of the relationship. Students with higher OIL scores tended to report higher PSE scores.



The results support the alternative hypothesis, indicating that Online Independent Learning is significantly associated with Pedagogical Self-Efficacy among pre-service English teachers.

B. Discussion

The findings reveal a strong and positive correlation between Online Independent Learning and Pedagogical Self-Efficacy. Statistically, the correlation coefficient of 0.769 indicates that increases in students' online learning autonomy are accompanied by increases in their pedagogical confidence.

From a theoretical perspective, this result aligns with social cognitive theory, which posits that self-efficacy develops through mastery experiences and self-regulatory processes. When pre-service teachers successfully manage their learning independently in digital environments, they accumulate mastery experiences that reinforce their belief in their professional capabilities. Independent online learning requires goal setting, time management, monitoring progress, and strategic use of digital resources. These competencies mirror essential pedagogical skills, thereby strengthening confidence in teaching performance.

The findings also resonate with contemporary research emphasizing the importance of self-regulated learning in shaping self-efficacy beliefs. Students who demonstrate stronger autonomy in digital contexts tend to exhibit higher levels of academic and professional confidence. In the context of teacher education, such independence appears to function not only as a learning strategy but also as a formative experience contributing to professional identity development.

Practically, these results suggest that teacher education programs should intentionally cultivate online independent learning competencies rather than treating online platforms merely as tools for content delivery. Structured opportunities for self-directed tasks, reflective activities, and autonomous problem-solving may strengthen both digital literacy and pedagogical confidence. Pre-service teachers who develop strong independent learning habits are more likely to approach instructional challenges with resilience and adaptability.

Nevertheless, it is important to acknowledge that pedagogical self-efficacy is influenced by multiple factors beyond online independent learning. Teaching practicum experiences, mentoring quality, institutional climate, and intrinsic motivation may also contribute significantly. Future studies are therefore encouraged to incorporate additional variables and potentially adopt longitudinal designs to explore causal pathways more comprehensively.

In summary, this study demonstrates that Online Independent Learning plays a substantial role in shaping Pedagogical Self-Efficacy among pre-service English teachers. The strong positive association identified in this research highlights the strategic importance of fostering learner autonomy within digital learning environments as part of comprehensive teacher preparation programs.

4. CONCLUSION

This study was designed to examine whether a significant relationship exists between Online Independent Learning and Pedagogical Self-Efficacy among pre-service teachers of the English Education Study Program at Universitas Lancang Kuning. The findings clearly demonstrate a strong and statistically significant positive correlation between the two variables, as indicated by the Spearman correlation coefficient ($\rho = 0.769$, $p < 0.05$). These results confirm that the research objective has been achieved and that the alternative hypothesis is supported.

Beyond confirming statistical association, this study contributes to the current discourse in teacher education by providing empirical evidence that autonomous engagement in digital learning environments is not merely a technical skill but a developmental foundation for pedagogical confidence. Pre-service teachers who effectively regulate their learning, manage time, utilize online resources strategically, and sustain independent academic engagement tend to exhibit stronger beliefs in their capacity to plan lessons, manage classrooms, and implement instructional strategies.

The significance of this finding lies in its implication for contemporary teacher preparation programs. As higher education increasingly integrates digital learning ecosystems, fostering structured opportunities for independent online learning may serve as an intentional pathway for strengthening pedagogical self-efficacy. This extends existing knowledge by positioning online learning independence as a predictive and reinforcing factor in the formation of professional teaching confidence, rather than viewing it solely as a learning modality.

In conclusion, this study advances understanding within the field of teacher education by demonstrating that Online Independent Learning is substantially associated with the development of Pedagogical Self-Efficacy. Strengthening learner autonomy in digital contexts should therefore be considered a strategic component in preparing resilient, confident, and pedagogically competent future educators.

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