Research Horizon

ISSN: 2808-0696 (p), 2807-9531 (e)

Research Horizon
Volume: 06
Issue: 01
Year: 2026
Page: 169-182

Citation:
Roasih, Mulyono, T., & Munadi. (2026). The relationship of emoji-based self-assessment, teacher role, and student perception in fostering learning independence. *Research Horizon*, *6*(1), 169-182.

Article History:
Received: December 16, 2025
Revised: February 9, 2026
Accepted: February 24, 2026
Online since: February 28, 2026

The Relationship of Emoji-Based Self-Assessment, Teacher Role, and Student Perception with Learning Independence

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Abstract

Learning independence is a crucial outcome in modern education, enabling students to take responsibility and initiative in their learning processes. This study examines the relationship between emoji-based self-assessment, teacher role, student perception, and learning independence among elementary school students. Using a quantitative correlational design, data were collected through questionnaires from 160 students familiar with digital learning activities. The instruments measured the four constructs using Likert scales, with reliability confirmed through acceptable Cronbach's alpha values. The results show that emoji-based self-assessment, teacher role, and student perception are positively and significantly related to learning independence. Emoji-based assessment showed the strongest association, supporting students' emotional awareness and self-reflection. Teacher guidance and supportive perception of the learning environment further contributed to autonomous learning behaviors. Collectively, these three factors explained 48% of the variance in learning independence. The findings imply that integrating simple, affective digital tools with supportive teaching practices can effectively foster student autonomy. Educators are encouraged to adopt emoji-based reflection methods, strengthen facilitative teacher roles, and cultivate positive classroom climates to promote independent learning, especially in technology-enhanced educational settings.

Keywords

Digital Assessment, Elementary Education, Emoji-Based Self-Assessment, Learning Independence, Student Perception, Teacher Role.

1. Introduction

Learning independence has become a central issue in contemporary education, particularly in the context of technology-enhanced learning environments. Students who demonstrate learning independence tend to show higher responsibility, self-regulation, and initiative in managing their learning processes. Several studies emphasize that learning independence significantly contributes to academic achievement and learning sustainability across educational levels. For instance, research on the Merdeka Curriculum shows its effectiveness in fostering greater student autonomy at both basic and high school levels (Wiratmoko, 2023; Noho et al., 2024). Similarly, studies in mathematics learning based on digital platforms like Google Classroom confirm a positive link between technology use and students' self-directed learning behaviors (Sipayung, 2022; Guan & Wang, 2025). Therefore, identifying factors that support the development of learning independence remains a critical concern for educators and researchers seeking to prepare learners for increasingly autonomous educational settings.

Recent studies indicate that self-assessment plays a crucial role in fostering students' reflective thinking and self-regulated learning. Self-assessment encourages learners to evaluate their understanding, monitor progress, and adjust learning strategies (Yan et al., 2023; Nurhayatin et al., 2023). The accuracy and utility of self-assessment, especially when combined with peer assessment, have been highlighted as key components in effective learning design (Sinaga et al., 2024). In digital learning contexts, simplified self-assessment formats, such as emoji-based self-assessment, have emerged as accessible tools to capture students' affective responses and learning awareness. Research suggests that visual and emotion-based assessment tools can enhance engagement and reflection, especially among younger learners. Moreover, advances in Artificial Intelligence (AI) are creating new possibilities for adaptive knowledge assessment, which can be designed to support learner autonomy and personalized feedback loops (Minn, 2022). Similarly, data-driven instructional design using Open Learner Models (OLM) illustrates how digital tools can make learning processes more transparent and manageable for students, thereby potentially increasing their sense of control and independence (Kay et al., 2022; Anindya & Purba, 2025).

In addition to assessment practices, teachers play a crucial role in strengthening learning independence by acting as facilitators, motivators, and guides who create learning environments that promote autonomy and responsibility. Nuryanto (2022) shows that teacher instructional skills and support systems significantly influence student self-reliance and learning outcomes, particularly in limited face-to-face contexts. The transition to blended and online learning during the Covid-19 pandemic further emphasized this relationship, as well-designed blended learning models were found to enhance students' learning independence (Riwayani & Harahap, 2022; Syarifudin et al., 2024). Students' perceptions of teachers and learning processes also affect motivation and independent learning behavior, with independence closely linked to how learners adapt to their learning environments (Wege et al., 2022). Additionally, the development of digital teaching materials within Learning Management Systems (LMS) has been intentionally designed to support autonomy and independent learning (Yunita & Risdianto, 2023; Wahyuni, 2024). Project-Based Learning (PjBL) further promotes independence through student-centered activities, while differences across class specializations indicate the influence of instructional context and student background (Sundari et al., 2025; Sele et al., 2023).

However, a clear research gap persists. Existing studies often examine key variables such as self-assessment, teacher role, and student perception in isolation or in paired relationships. For example, while Sinaga et al. (2024) focus on assessment

accuracy and Yan et al. (2023) on perceptions of self-assessment, and while Nuryanto (2022) and Riwayani and Harahap (2022) explore teacher roles and blended learning effects, there is limited integrated empirical evidence on how these three factors, emoji-based self-assessment as a specific affective digital tool, the role of the teacher, and student perception, jointly relate to and explain variance in learning independence, particularly in elementary school settings. This leaves educators without a holistic view of how digital affective tools and teacher support interact within the learner's perceived environment to cultivate autonomy.

Therefore, this study aims to fill this gap by examining the collective relationship between emoji-based self-assessment, teacher role, student perception, and learning independence among elementary school students. By exploring these relationships simultaneously using a quantitative correlational approach, this research is expected to contribute empirical insights into the integrated effects of affective digital assessment and pedagogical support in promoting students' learning independence. The study seeks to determine the extent to which these three predictors collectively explain differences in students' autonomous learning behaviors.

2. Literature Review and Hypothesis Development

2.1. Emoji-Based Self-Assessment and Learning Independence

Learning independence refers to students' ability to take responsibility for learning through self-regulation, initiative, and decision-making, including setting goals, monitoring progress, and evaluating outcomes independently (Sele et al., 2023). In digital and blended learning environments, independence becomes increasingly important as students manage learning with reduced supervision (Syarifudin et al., 2024). Self-assessment serves as a formative strategy that fosters autonomy by encouraging reflection and adjustment of learning strategies, contributing to self-regulated learning and metacognitive awareness (Yan et al., 2023). Recently, simplified and visual assessment formats, such as emoji-based self-assessment, have gained attention for improving accessibility and emotional expression, enabling honest reflection while reducing cognitive load. This visual and affective approach aligns with findings that digital literacy and engaging digital media positively support students' capacity for independent learning (Rizka, 2024).

Furthermore, the strategic use of non-verbal cues and emotional communication in smart classrooms, as explored by Utami et al. (2025), underscores the importance of affective channels in modern pedagogy. The integration of such tools is part of a larger shift in educational dynamics for Generation Z, which demands interactive and emotionally resonant learning methods (Wirautami et al., 2025). Studies specifically on emojis indicate their facilitative effect in cognitive tasks, such as vocabulary recognition, by providing semantic and emotional anchors (Li & Zhong, 2025). This suggests that emoji-based tools do more than just engage, they can cognitively support learning processes. When students regularly use these tools to self-reflect, they practice monitoring their learning states, which is a core component of independence. Therefore, it is hypothesized that the consistent use of such an affective self-assessment tool would correlate with higher levels of self-directed learning behavior.

H1. Emoji-based self-assessment has a significant effect on students' learning independence.

2.2. Teacher Role and Learning Independence

The role of the teacher is fundamental in creating a classroom environment that nurtures independent learning. Teachers function as facilitators, motivators, and

designers of experiences that encourage student autonomy and responsibility. Their support, clarity in instruction, and quality of feedback are consistently identified as significant factors in fostering student self-reliance. This is evident in various educational contexts, including the role of guidance counselors in systematically boosting student learning independence through dedicated mentoring (Nurfaisa, 2025). The importance of teacher facilitation is further highlighted in frameworks for building debriefing and feedback skills, such as the Advocacy-Inquiry Rubric, which emphasizes structured teacher intervention to promote reflective practice (Hallaymoun et al., 2024; Buléon et al., 2025). Beyond direct instruction, teachers shape the digital learning landscape. The effectiveness of e-learning modules, for instance, is heavily dependent on teacher design and implementation, which in turn influences student cognitive outcomes (Delvia, 2022; Amanda, 2024).

Moreover, teachers play a critical role in developing students' positive self-concept, which is a key psychological foundation for autonomous learning. Efforts by teachers to foster a positive self-image in early childhood education demonstrate the long-term pedagogical investment in creating confident, self-directed learners (Badhai et al., 2012; Tsani, 2021). In technology-enhanced settings, the teacher's role evolves to include curating and mediating digital interactions. Positive perceptions of teacher support and guidance directly enhance student motivation, making them more likely to take initiative and persist in challenging tasks. When students feel supported by their teacher, they are more likely to engage deeply and take ownership of their learning journey. This relationship underscores that teacher influence extends beyond content delivery to shaping the psychological and environmental conditions for independence. Accordingly, the following hypothesis is formulated:

H2. Teacher role has a significant effect on students' learning independence.

2.3. Student Perception and Learning Independence

Student perception encompasses their views and attitudes regarding classroom interaction, the learning atmosphere, teacher support, and the overall learning process. These perceptions are not merely passive reflections but active filters that influence motivation, engagement, and behavioral outcomes. A positive perception of the learning environment is strongly associated with higher levels of engagement and a stronger tendency toward independent learning. For example, students' perceptions of the usefulness and ease of use of digital tools, such as WhatsApp for learning, significantly impact their engagement and, by extension, their self-directed study habits (Tunnissa, 2021). This aligns with the concept that emotional and social factors are integral to learning. Research on Social-Emotional Learning (SEL) shows that programs designed to improve students' emotional competencies can significantly increase their active participation in learning, which is a precursor to independence (Prijambodo & Punggeti, 2025).

Furthermore, a student's perception is often intertwined with their emotional intelligence and self-efficacy. Studies by Sabrina and Japar (2024) indicate a significant relationship between emotional intelligence, self-efficacy, and learning independence, suggesting that how students perceive and manage their emotions affects their confidence in learning autonomously. The learning climate crafted by the teacher significantly shapes these perceptions. A differentiated learning approach based on multiple intelligences, which acknowledges diverse student needs, can enhance student well-being and create a more positive perception of the learning environment, thereby supporting autonomous learning (Sudarti et al., 2025). When students perceive the classroom as supportive, fair, and responsive to their needs, they feel safer taking academic risks and directing their own learning. Therefore, a favorable student perception acts as a key enabler, transforming external support

and tools into internalized drives for independent study. Based on this synthesis, the following hypothesis is proposed:

H3. Student perception has a significant effect on students' learning independence.

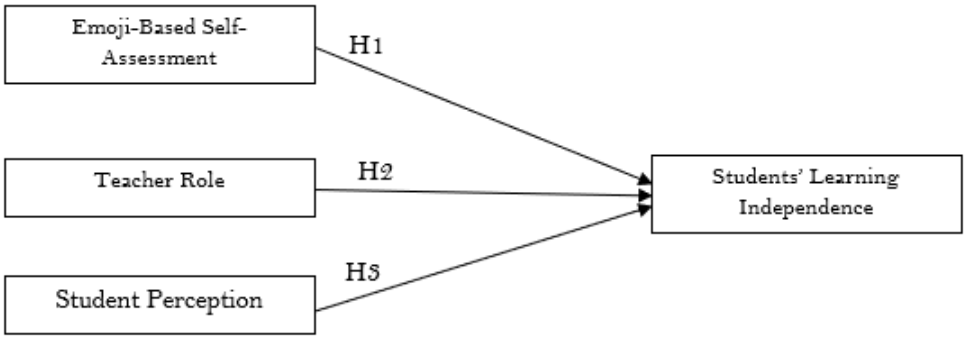

Figure 1. Conceptual Framework

The conceptual framework guiding this study integrates the three independent variables discussed, emoji-based self-assessment, teacher role, and student perception, to examine their collective relationship with the dependent variable, learning independence. The framework posits that these variables do not operate in isolation but interact within the learning environment to influence a student's capacity for autonomous learning. Emoji-based self-assessment provides a mechanism for internal reflection and emotional awareness. The teacher's role establishes an external structure of support, guidance, and motivation. Student perception acts as the interpretive lens through which these external inputs and internal processes are filtered and given meaning. Together, they form an interconnected system that supports the development of learning independence. This integrated perspective addresses the identified research gap by moving beyond isolated examinations of each factor. The framework is visualized in Figure 1, which illustrates the hypothesized positive relationships from each of the three independent variables toward learning independence. This model will be tested empirically using a quantitative correlational design to determine the strength and significance of these proposed relationships.

3. Methods

This research adopted a quantitative approach to investigate the relationships among emoji-based self-assessment, teacher role, student perception, and learning independence. The correlational design was chosen to determine the magnitude and direction of relationships between variables and to empirically test the proposed hypotheses in an objective manner, a method commonly employed in educational research to explore associations without manipulation (Esteves & Gurat, 2024). The study was conducted within the formal learning context of SD Negeri Binaan II Kec. Wanasari, which incorporates digital-based instructional activities, with the individual student serving as the unit of analysis.

The population comprised students from this school attending in the 2025/2026 academic year. A total of 160 students participated as research respondents, selected through a purposive sampling technique. The sampling criteria required students to have participated in teacher-guided learning activities and to be familiar with the use of digital learning media, ensuring they had the contextual experience relevant to the study's variables. The sample consisted of 78 male students (48.3%) and 82 female students (51.7%), all aged between 8 and 10 years. This sample size is

considered adequate for conducting correlational and regression analyses in educational studies, providing sufficient power for reliable statistical inference (Chuah & Cham, 2020).

Data were gathered using a structured questionnaire distributed in both online and printed forms to ensure accessibility for all respondents. Prior to distribution, the instrument was evaluated by two experts in education to establish its content validity, ensuring the questions accurately measured the intended constructs. The questionnaire was divided into four sections, each utilizing a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Learning independence was measured with 10 items adapted from research on self-regulated learning. The emoji-based self-assessment variable used 8 items designed to capture the use of emoji symbols for expressing understanding and emotional responses, adapted from studies on visual assessment (Yan, 2022). The teacher's role was measured with 8 items addressing guidance and facilitation, and student perception was gauged with 7 items related to classroom interaction and support.

The questionnaires were completed individually by students under teacher supervision to reduce potential response bias, and participation was voluntary with assurances of confidentiality. Data analysis in this study employed both descriptive and inferential statistical techniques using statistical software. Descriptive statistics were used to describe the characteristics of the research variables, namely learning independence, emoji-based self-assessment, teacher role, and student perception, through the calculation of mean and standard deviation values. The quality of the research instrument was assessed through validity and reliability tests. Validity testing was conducted using the Pearson product–moment correlation, while reliability testing was performed using Cronbach's Alpha to evaluate the internal consistency of the questionnaire items. Furthermore, hypothesis testing was conducted using multiple linear regression analysis to examine the influence of the independent variables emoji-based self-assessment, teacher role, and student perception on the dependent variable, learning independence. The significance of the regression model was evaluated using the F-test and t-test, along with the coefficient of determination (R^2).

4. Results

This section presents the findings derived from descriptive and inferential statistical analyses conducted to test the research hypotheses. The analysis begins by describing the central tendencies and distributions of the main study variables, learning independence, emoji-based self-assessment, teacher role, and student perception, through descriptive statistics. Following this, the relationships between these variables are examined using correlation analysis to understand their bivariate associations. The core of the hypothesis testing employs multiple linear regression analysis to determine the collective and individual influence of emoji-based self-assessment, teacher role, and student perception on students' learning independence. All analyses were performed using statistical software, with a significance level set at $p < 0.05$.

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviation
Learning Independence	3.87	0.56
Emoji-Based Self-Assessment	3.92	0.51
Teacher Role	4.01	0.48
Student Perception	3.95	0.52

The descriptive statistics provide an overview of how respondents rated the four key constructs in this study. As shown in Table 1, all variables obtained mean scores

above the midpoint of the scale (3.00), indicating generally positive levels of each construct among the participants. Students' learning independence achieved a mean score of 3.87 with a standard deviation of 0.56, suggesting a relatively high and consistent perception of their own autonomous learning capabilities. The variable of emoji-based self-assessment recorded a mean of 3.92 and a standard deviation of 0.51, reflecting positive student engagement with this affective and visual assessment method. The teacher role obtained the highest mean score of 4.01 with a standard deviation of 0.48, indicating that students strongly perceived their teachers as playing a supportive and facilitative role in the learning process. Student perception also showed a high mean score of 3.95 with a standard deviation of 0.52, demonstrating that students generally held favorable views of their classroom environment and learning experiences. The relatively small standard deviations across all variables suggest that responses were not widely dispersed, showing consensus among participants in their ratings of these educational constructs.

Table 2. Validity test

Variable	Item	r-count	r-table (n=160, α=0.05)	Note
Emoji-Based Self-Assessment (X1)	X1.1	0.72	0.157	Valid
	X1.2	0.75	0.157	Valid
	X1.3	0.78	0.157	Valid
	X1.4	0.70	0.157	Valid
	X1.5	0.74	0.157	Valid
	X1.6	0.76	0.157	Valid
	X1.7	0.71	0.157	Valid
	X1.8	0.73	0.157	Valid
Teacher Role (X2)	X2.1	0.68	0.157	Valid
	X2.2	0.70	0.157	Valid
	X2.3	0.72	0.157	Valid
	X2.4	0.69	0.157	Valid
	X2.5	0.71	0.157	Valid
	X2.6	0.70	0.157	Valid
	X2.7	0.67	0.157	Valid
	X2.8	0.69	0.157	Valid
Student Perception (X3)	X3.1	0.66	0.157	Valid
	X3.2	0.68	0.157	Valid
	X3.3	0.70	0.157	Valid
	X3.4	0.69	0.157	Valid
	X3.5	0.71	0.157	Valid
	X3.6	0.67	0.157	Valid
	X3.7	0.68	0.157	Valid
Learning Independence (Y)	Y1	0.73	0.157	Valid
	Y2	0.75	0.157	Valid
	Y3	0.77	0.157	Valid
	Y4	0.74	0.157	Valid
	Y5	0.72	0.157	Valid
	Y6	0.76	0.157	Valid
	Y7	0.71	0.157	Valid
	Y8	0.75	0.157	Valid
	Y9	0.73	0.157	Valid
	Y10	0.74	0.157	Valid

The results in Table 2 indicate that all items for the variables emoji-based self-assessment (X1), teacher role (X2), student perception (X3), and learning independence (Y) are valid. The r calculated values for all items range from 0.66 to 0.78, all of which exceed the r table = 0.157 at a significance level of 0.05 with a

sample of 160 respondents. This indicates that each item accurately measures the intended construct. Therefore, the questionnaire demonstrates good content validity and is suitable for further analyses, such as correlation and regression tests, without raising concerns about the quality of the collected data.

Table 3. Reliability Test

Variable	Items	Cronbach's Alpha	Description
Emoji-based self-assessment	8	0.80–0.85	Reliable
Teacher role	8	0.78–0.83	Reliable
Student perception	7	0.77–0.82	Reliable
Learning independence	10	0.80–0.86	Reliable

The results in Table 3 show that all variables demonstrate satisfactory reliability. The Cronbach's alpha values range from 0.77 to 0.86 across all items, exceeding the commonly recommended threshold of 0.70. Specifically, emoji-based self-assessment (8 items) ranges from 0.80–0.85, teacher role (8 items) from 0.78–0.83, student perception (7 items) from 0.77 – 0.82, and learning independence (10 items) from 0.80–0.86. These results indicate that the questionnaire items have consistent internal reliability, confirming that the instrument is reliable for further statistical analysis.

Before proceeding with the regression analysis, several statistical assumptions were tested to ensure the validity of the results. The assumption of linearity was examined through scatterplots of residuals against predicted values, which revealed no clear patterns, indicating that linear relationships existed between the predictors and the outcome variable. Normality of residuals was assessed using a normal probability plot (P-P plot), which showed that the points closely followed the diagonal line, suggesting that the residuals were normally distributed. The assumption of homoscedasticity was evaluated by examining the scatterplot of standardized residuals against standardized predicted values, which displayed a random distribution of points with no funnel shape, indicating constant variance of residuals. Multicollinearity was assessed using Variance Inflation Factor (VIF) values, all of which were below 2.0 (well under the common threshold of 10), and tolerance statistics all above 0.5, confirming that multicollinearity was not a concern in this analysis. These diagnostic checks confirmed that the data met the necessary assumptions for multiple linear regression analysis.

Table 4. Coefficient Determination and F-Test

Construct	Value
R	0.692
R^2	0.480
Adjusted R^2	0.470
Std. Error of the Estimate	0.409
F-statistic	48.12
Sig.	0.001

The primary analysis for testing the research hypotheses was conducted using multiple linear regression, with learning independence as the dependent variable and emoji-based self-assessment, teacher role, and student perception as independent variables. The overall regression model was statistically significant, $F(3, 156) = 48.12$, $p < 0.001$, indicating that the combination of these three predictors significantly explained variance in students' learning independence. The model summary statistics presented in Table 4 show that the coefficient of determination (R^2) was 0.48, meaning that approximately 48% of the variance in learning independence could be explained by the linear combination of emoji-based self-

assessment, teacher role, and student perception. The adjusted R^2 value of 0.47 accounted for the number of predictors in the model relative to the sample size, providing a more conservative estimate of the variance explained. These results demonstrate that nearly half of the differences in students' learning independence can be attributed to these three factors working in combination.

Table 5. Regression Analysis Results

Variable	β	t-statistic	p-value
Emoji-Based Self-Assessment	0.412	4.876	0.000
Teacher Role	0.365	4.214	0.000
Student Perception	0.298	3.642	0.001

The detailed regression coefficients for each predictor variable are presented in Table 5, which shows the contribution of each independent variable while controlling for the others. Emoji-based self-assessment exerted the strongest positive and statistically significant influence on learning independence ($\beta = 0.412$, $t = 4.876$, $p < 0.001$), indicating that for each standard deviation increase in emoji-based self-assessment, learning independence increased by .412 standard deviations, holding other variables constant. This finding supports Hypothesis 1 (H1), confirming that students who more frequently and meaningfully engage in emoji-based self-assessment tend to demonstrate higher levels of learning independence. The teacher role variable also showed a significant positive effect on learning independence ($\beta = 0.365$, $t = 4.214$, $p < 0.001$), supporting Hypothesis 2 (H2) and indicating that students who perceive their teachers as more supportive, facilitative, and motivating report greater autonomy in their learning processes. Student perception was similarly found to be positively associated with learning independence ($\beta = 0.298$, $t = 3.642$, $p = 0.001$), providing support for Hypothesis 3 (H3) and suggesting that students who hold more positive views of their classroom environment and learning experiences are more likely to develop and exhibit independent learning behaviors.

The standardized beta coefficients presented in Table 5 allow for direct comparison of the relative strength of each predictor's relationship with learning independence. Emoji-based self-assessment ($\beta = 0.412$) emerged as the strongest predictor, followed by teacher role ($\beta = 0.365$), and then student perception ($\beta = 0.298$). This pattern suggests that among the factors studied, the practice of using emoji-based self-assessment tools has the most substantial association with students' development of learning independence, even when accounting for the important roles of teachers and general classroom perceptions. The consistency of these findings across different analytical approaches strengthens the confidence in these results and provides a nuanced understanding of how these variables collectively and individually relate to independent learning behaviors among elementary school students.

Based on the comprehensive statistical evidence presented, all three research hypotheses were supported. The significant positive regression coefficients for emoji-based self-assessment, teacher role, and student perception, combined with the substantial explained variance in the overall model, provide strong empirical support for the theoretical framework guiding this study. These results confirm that each of these factors, individually and in combination, plays an important role in fostering learning independence among students at SD Negeri Binaan II Kec. Wanasari. The findings offer quantitative evidence that integrating affective digital assessment tools with supportive teaching practices and positive learning environments contributes significantly to the development of autonomous learning capabilities in elementary education contexts.

5. Discussion

The findings of this study show that emoji-based self-assessment, teacher role, and student perception are positively and significantly associated with students' learning independence, indicating that independence is influenced not only by internal factors but also by supportive instructional strategies and learning environments. The positive relationship between emoji-based self-assessment and learning independence suggests that visual and affective assessment tools enhance students' self-reflection and emotional awareness during learning. This result is consistent with prior studies demonstrating that self-assessment promotes monitoring of understanding, regulation of learning strategies, and responsibility for learning outcomes (Zimmerman, 2002; Yan, 2022). Emoji-based formats also reduce cognitive load and encourage honest learning expression, particularly among elementary students (Patty, 2023). Supporting earlier findings, emojis provide emotional and semantic anchors that facilitate cognitive processes (Li & Zhong, 2025). Furthermore, integrating non-verbal emotional communication in smart classrooms supports autonomy development and aligns with the need for interactive digital tools suited to Generation Z learners (Wirautami et al., 2025; Utami et al., 2025).

The significant effect of the teacher's role on learning independence emphasizes teachers' importance as facilitators and motivators in autonomy-supportive learning environments. Teacher guidance, feedback, and instructional clarity positively contribute to students' independence, reinforcing previous studies highlighting teacher support as a key factor in promoting self-regulated and autonomous learning (Zimmerman, 2002). These findings are consistent with Nurfaisa (2025), who stressed the systematic role of teacher guidance in fostering student independence. The results also align with structured intervention frameworks such as the Advocacy-Inquiry Rubric, which strengthens student reflection through guided debriefing and feedback (Buléon et al., 2025). When teachers design learning activities that encourage initiative while maintaining appropriate structure, students develop greater responsibility and confidence in managing their learning. Additionally, teachers play a crucial role in mediating digital tools, as the effectiveness of e-learning modules depends heavily on teacher design and implementation (Amanda, 2021). The teacher's influence is multifaceted, encompassing pedagogical design, emotional support, and effective digital learning management.

Student perception was found to be positively associated with learning independence, indicating that how students view their learning environment influences autonomous learning behavior. This finding aligns with studies showing that positive perceptions of classroom interaction and teacher support enhance motivation and engagement, which strengthen independent learning tendencies (Utami et al., 2025). The results support Tunnissa (2021), who found that students' perceptions of digital tool usefulness directly affect engagement and self-directed learning habits. This relationship is also reinforced by Social-Emotional Learning (SEL) research, demonstrating that improved emotional competence increases participation and ownership of learning (Prijambodo & Punggeti, 2025). Furthermore, emotional intelligence and self-efficacy studies explain that students' emotional perceptions influence confidence in autonomous learning (Sabrina & Japar, 2024). Supportive environments created through differentiated instruction can enhance well-being and foster positive perceptions that promote learning independence (Sudarti et al., 2025).

This study extends previous research by demonstrating the combined influence of assessment methods, teacher roles, and student perceptions on learning independence. The findings suggest that integrating affective digital assessment tools with supportive teaching practices can foster autonomy, reflection, and

responsibility in learning environments. Several practical implications emerge. First, teachers are encouraged to integrate simple emoji-based check-ins to support continuous emotional and metacognitive reflection. Second, professional development should strengthen teachers' dual roles as facilitators of content and designers of autonomy-supportive digital learning experiences, including the use of frameworks such as the Advocacy-Inquiry Rubric. Third, schools should promote positive classroom climates through Social-Emotional Learning (SEL) programs and differentiated instruction, recognizing student perception as a key driver of independent learning. Finally, curriculum designers should develop teacher-friendly digital materials that incorporate self-assessment and emotional expression to support learning independence in technology-enhanced and blended learning contexts.

6. Conclusion

The findings of this study demonstrate that students' learning independence is shaped by multiple interconnected factors, particularly emoji-based self-assessment, the role of the teacher, and students' perception of the learning environment. Learning independence emerges not only from individual learner characteristics but also from how assessment practices and instructional support are designed and experienced by students. The use of emoji-based self-assessment provides a meaningful space for students to reflect on their understanding and emotional responses during learning activities, serving as a simple and visually intuitive tool that encourages honest and consistent self-monitoring. At the same time, teacher involvement remains a key component in supporting independent learning, where clear guidance, constructive feedback, and motivational support directly contribute to students' confidence and willingness to take initiative. Furthermore, students' positive perceptions of classroom interaction and instructional practices strengthen their engagement and tendency to learn independently, acting as a crucial filter that translates external support into internal motivation. Together, these elements form a supportive ecosystem that effectively fosters student responsibility and autonomy in learning.

The implications of this study are relevant for educational practice, suggesting that teachers can foster learning independence by integrating simple digital reflection tools, providing autonomy-supportive guidance, and maintaining a positive classroom climate. However, several limitations should be acknowledged. The study used a correlational design, which limits the ability to determine causal relationships among variables. In addition, the reliance on self-reported data may introduce subjective bias, and the focus on a single elementary school restricts the generalizability of the findings to other educational contexts. Future studies are recommended to employ experimental or longitudinal approaches to better examine causal relationships and developmental changes in learning independence. Furthermore, qualitative methods such as interviews or classroom observations could provide deeper insights into students' reflective and emotional processes during emoji-based assessments across diverse educational settings.

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Acknowledgment
We gratefully acknowledge the contributions of individuals who supported the completion of this article.

Funding Information
This research did not receive any funding.

Conflict of Interest Statement
The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement
Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement
The data that support the findings of this study are available from the corresponding author upon reasonable request.