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The effects of the learning environment and digital literacy on students' entrepreneurial intention: The mediating role of self-efficacy in the digital creative economy

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ABSTRACT

Enhancing critical writing proficiency remains a significant challenge for vocational college students because their educational settings prioritize practical and technical skills over theoretical learning. This study explores the gap in understanding how vocational learners express critical thinking in academic writing. Based on an analysis of students' theses and reflective statements, the study identifies unique patterns in students' articulation, justification, and evaluation of concepts in their writing. The data for this research were derived from 22 final thesis reports submitted by students of 12 D4 Study Programs at The State Polytechnic of Malang. Additionally, statements from 10 students were collected regarding their strategies for critical writing when preparing their thesis reports. The research instruments included a guide for analyzing critical writing skills based on the substantive writing skills proposed by Paul & Elder (2019) and an interview guide. The results indicate that, although vocational students exhibit analytical thinking and contextual reasoning, they often struggle to synthesize theoretical perspectives and formulate coherent arguments in thesis introductions and literature reviews. The findings also highlight that students independently seek study ideas or assistance from supervisors, often conducting field surveys. However, challenges arise in the areas of thesis introduction and literature review, emphasizing a need for a deeper understanding of core critical writing concepts. Notably, vocational students tend to prioritize practical thinking and technical abilities. The findings of this study emphasize both the strengths and challenges in vocational students' critical writing skills. The identified patterns in their writing behavior can inform potential interventions aimed at enhancing their proficiency in critical writing. The study adds to the larger discussion on academic literacy by making it clear how critical writing development is different in vocational education settings.

INTRODUCTION

The growth of the creative economy has revolutionized how young people, including students, view job opportunities. They are now not only focused on finding work but also on creating their own (Khalil et al., 2024; Xu, 2024). The creative economy sector has become a key pillar of national development, contributing significantly to Indonesia's Gross Domestic Product (GDP) while creating millions of new jobs. The culinary subsector accounts for approximately 41% of the total, or IDR 1,134 trillion, encompassing food, beverages, restaurants, and catering services. Meanwhile, the fashion subsector contributes 17%, or approximately IDR 471 trillion, followed by the crafts subsector with 14.9%, or IDR 412 trillion, reflecting the strength of local culture and wisdom (Badan Pusat Statistik, 2021). This data confirms that while culinary remains the primary driver, the fashion and crafts subsectors have significant potential to penetrate the global market through innovation and knowledge based on local culture.

On the other hand, the national poverty rate decreased from 9.10 million in August 2021 to 7.47 million in August 2024. However, educated poverty remains a serious challenge because the formal labour market has not optimally absorbed higher education graduates. The working-age population increased from 206.71 million to 215.37 million, accompanied by a rise in the labour force participation rate from 67.80% to 70.63%. This increase was primarily driven by higher female participation, from 53.34% to 56.42% (Badan Pusat Statistik, 2021). This demonstrates that opportunities for students to develop broad entrepreneurial strategies are not merely an alternative, but a primary solution to facing increasingly fierce job competition.

Despite the vast opportunities available, many students are not yet ready to build their own businesses (Ratten & Jones, 2021; Wibowo et al., 2023). Low self-efficacy and limited digital technology skills are key obstacles (Simba et al., 2025; Udekwe & Iwu, 2024). Universities also face challenges in creating a learning environment that fosters an entrepreneurial culture, ranging from a lack of business incubation programs to overly theoretical curricula (Amalia & von Korflesch, 2021; Uddin et al., 2025). Although students are active on social media, their digital literacy varies; some are unable to leverage technology for strategic business innovation and marketing (Dwivedi et al., 2021; Feola et al., 2024). Low self-efficacy exacerbates the situation, as students lack confidence in facing risks, lack capital, and competitive market pressures (Meng & Kim, 2025; Miao et al., 2025; Patel et al., 2022).

Theoretically, the Social Constructivist approach emphasizes that the learning environment functions as an external factor that encourages social interaction and collaboration to stimulate entrepreneurial creativity (Vygotsky, 1978). Social Cognitive Theory explains that self-efficacy shapes an individual's belief in their ability to act (Bandura, 1997). Meanwhile, the Theory of Planned Behaviour posits that attitudes, subjective norms, and perceived behavioural control are the main determinants of behavioural intentions (Ajzen, 1991). On the other hand, digital literacy includes the ability to access, transmit, and use digital information effectively (Gilster, 1997).

Recent global research highlights the role of self-efficacy, the learning environment, and digital literacy in shaping entrepreneurial intentions in the digital age. While self-efficacy significantly influences entrepreneurial intentions and performance (Ndofirepi, 2022; Shen et al., 2021; Zhang & Huang, 2021), prior studies have not examined the role of digital literacy. This study, therefore, adds digital literacy as an independent variable influencing entrepreneurial intentions.

According to the Theory of Planned Behaviour, entrepreneurial intentions increase when students have positive attitudes, strong social support, and a strong sense of behavioural control (Andrade & Carvalho, 2023; Slomski et al., 2024; Tsaknis & Sahinidis, 2025). The three previous studies did not examine the influence of digital literacy and self-efficacy on entrepreneurial intentions. Therefore, this study combines digital literacy and self-efficacy to provide a deeper understanding of how these factors, along with positive attitudes, social support, and behavioural control, influence entrepreneurial intentions in the digital age.

Learning creativity through digital social interactions also strengthens the development of entrepreneurial skills (Mantooth et al., 2021; Rigopouli et al., 2025), while digital entrepreneurship education has been shown to increase entrepreneurial intentions by strengthening self-efficacy (Duong et al., 2024; Newman et al., 2019). Four previous studies did not mention the learning environment and self-efficacy that influence entrepreneurial intentions. To broaden understanding of the factors that influence entrepreneurial intentions by integrating the learning environment and self-efficacy, which are believed to play an important role in strengthening entrepreneurial intentions in the digital era.

Research in Indonesia indicates that self-efficacy, or students' confidence in facing challenges and making independent business decisions, is a key driver of entrepreneurial interest and can be strengthened through effective entrepreneurship education (Wardana et al., 2020; Wardoyo et al., 2025). Two previous studies did not include digital literacy. This study includes digital literacy because mastery of technology can improve access to information, expand networks, and optimise business processes, all of which play a crucial role in shaping entrepreneurial intentions.

Furthermore, self-efficacy acts as a mediator connecting various student capabilities, including digital literacy, with entrepreneurial intentions (Sahid et al., 2024; Suryani & Chaniago, 2023). Digital literacy itself contributes to improving entrepreneurial organisations (Hanifah &

Nugraha, 2025; Yang et al., 2025), and in the post-pandemic era, adopting digital technology, coupled with self-confidence, has been shown to improve micro-business performance (Arifin et al., 2023; Ye & Kang, 2025). Six previous studies did not include learning environment variables that influence entrepreneurial intentions. This study included learning environment variables because they can provide important support and motivation for the development of entrepreneurial intentions.

Previous research has not explicitly modelled the learning environment as an independent variable, with self-efficacy as a mediator and entrepreneurial intention as a dependent variable. Therefore, this study aims to analyze the mediating role of self-efficacy in the relationship between the learning environment and digital literacy on students' entrepreneurial intentions. Universities have implemented various solutions, ranging from strengthening business incubation programs to implementing practice-based curricula. However, this study adopts an empirical approach to test the mediating role of self-efficacy, aiming to provide more targeted recommendations for the development of entrepreneurship policies in universities. The research results are expected to provide theoretical input to enrich the literature on digital entrepreneurship, while also offering practical contributions to universities in building adaptive, innovative, and technology-oriented learning ecosystems to foster a generation of young entrepreneurs in the creative economy era.

METHOD

This research employed a quantitative, explanatory approach. The goal was to explain the causal relationship between variables: learning environment and digital literacy as independent variables, self-efficacy as a mediating variable, and entrepreneurial intention as a dependent variable. This approach was chosen because it can test both direct and indirect (mediation) relationships between variables through inferential statistics.

The study was conducted over four weeks during the even semester of the 2024/2025 academic year. Data collection was performed using a combination of online and offline methods to ensure the representativeness of respondents. The research setting included several universities in Indonesia, particularly in Jakarta, Bandung, and Surabaya, which offer active entrepreneurship courses. The study population consisted of active students who had taken entrepreneurship courses at universities in these cities.

The sampling technique used purposive sampling, with the following criteria: (1) Active students at university (Bachelor's degree or equivalent); (2) Have completed at least one entrepreneurship course; (3) Actively use digital technology (social media, e-learning applications, or other digital platforms) for academic and non-academic activities; (3) Be at least 18 years old.

To reduce representation bias, respondents were selected from various study programs and universities, enabling broader generalization of the research results. The sample size was determined using G*Power software, with a significance level of 0.05 and a power of 0.95 (Carranza et al., 2020; Hair et al., 2019). The calculation indicated a minimum of 300 respondents, but this study targeted 350 to ensure data validity. Data collection was conducted in two ways: (1) Online distribution via email, instant messaging, social media, and official university communication channels; (2) Offline distribution with direct distribution to students who are less digitally active. During data collection, the response rate is monitored daily to ensure respondents are representative of the target population.

The main instrument was a closed questionnaire using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The questionnaire was prepared by modifying previous research to suit the context of this study. The measurement of each variable is as follows: (1) the learning environment is measured through indicators of lecturer support, learning facilities, collaborative culture, and experience-based learning opportunities (Vygotsky, 1978); (2) Digital literacy is measured through the ability to access, play, use, and produce digital content (Gilster, 1997); (3) Self-Efficacy includes self-confidence in facing risks, managing resources, and overcoming entrepreneurial challenges (Bandura, 1997); (4) Entrepreneurial intention is measured based on the Theory of Planned Behavior, which includes attitudes towards entrepreneurship, subjective norms, and perceived behavioral control (Ajzen, 1991).

Table 1. Operational definition of variables

Variable		Indicator/Item
Learning Environment	Lecturer Support	The lecturers always provide direction and guidance when I experience learning difficulties.
		The lecturers provide sufficient moral and academic support during the learning process.
	Learning Facilities	The learning facilities (classrooms, library, internet access, etc.) support my learning needs.
		The available learning media and technology make it easier for me to understand the lecture material.
	Collaborative Culture	The learning environment encourages me to work collaboratively with my classmates.
		Discussion and group work are essential components of the learning process in class.
	Applicative Learning Experiences	I often get the opportunity to apply theory to real-world situations.
		The assignments and projects I receive are relevant to real-world situations.
Digital Literacy	Accessibility	I can find the information I need online and in other digital sources.
		I can easily access various digital learning platforms.
	Evaluation	I can distinguish between valid and invalid information on the internet.
		I can assess the quality of digital information sources before using them.
	UtilizationUtilization	I use digital technology to support my learning effectiveness.
		I am accustomed to using digital applications (e.g., e-learning, productivity software) to complete assignments.
	Content Creation	I create digital content (articles, videos, presentations, etc.) to support learning.
		I am confident in conveying my ideas through digital content.
Self-Efficacy	Confidence in Facing Risk	I am confident in my ability to navigate uncertainty when making decisions.
		I am not afraid to try new things, even if there is a risk of failure.
	Managing Resources	I am confident in managing my time, energy, and resources to achieve my goals.
		I can use available resources effectively.
	Solving Challenges	I am confident in solving complex problems.
		I can complete tasks despite obstacles.
Entrepreneurial Intention	Attitudes Toward Entrepreneurship	Entrepreneurship is an attractive career option.
		Being an entrepreneur offers freedom and opportunities for growth.
	Subjective Norms	The people around me (family, friends, professors) support my entrepreneurial aspirations.
		My social environment encourages me to choose entrepreneurship as a career.
	Perceived Behavioural Control	I can start a business if I want to.
		I possess the necessary skills to become an entrepreneur.

Source: (Vygotsky, 1978; Gilster, 1997; Bandura, 1997; Ajzen, 1991)

Data were collected through both online and offline questionnaires, as described above. Before mass distribution, a pilot test was conducted to ensure construct validity and item clarity. The pilot test results were used to refine the wording and measure the reliability of the initial instrument. Data analysis was conducted using SmartPLS software using the Partial Least Squares–Structural Equation Modelling (PLS-SEM) approach.

The analysis stages included: (1) Convergent validity testing using outer loadings and average variance extracted (AVE) values; (2) Reliability testing using Cronbach's alpha and Composite Reliability (CR); (3) Discriminant validity testing using the Fornell–Larcker criterion; (4) Goodness

of Fit testing using R^2 and Effect Size (f^2) values; and (5) Hypothesis testing through direct and indirect relationship analysis (mediation effects) using a bootstrapping procedure with a 5% significance level.

Based on the literature review and theories described above, the research hypotheses are formulated as follows:

H1 : The learning environment has a significant effect on self-efficacy.
H2 : Digital literacy has a significant effect on self-efficacy.
H3 : The learning environment has a significant effect on entrepreneurial intention.
H4 : Digital literacy has a significant effect on entrepreneurial intention.
H5 : Self-efficacy has a significant effect on entrepreneurial intention.
H6 : The learning environment has a significant effect on entrepreneurial intention through self-efficacy.
H7 : Digital literacy has a significant effect on entrepreneurial intention through self-efficacy.

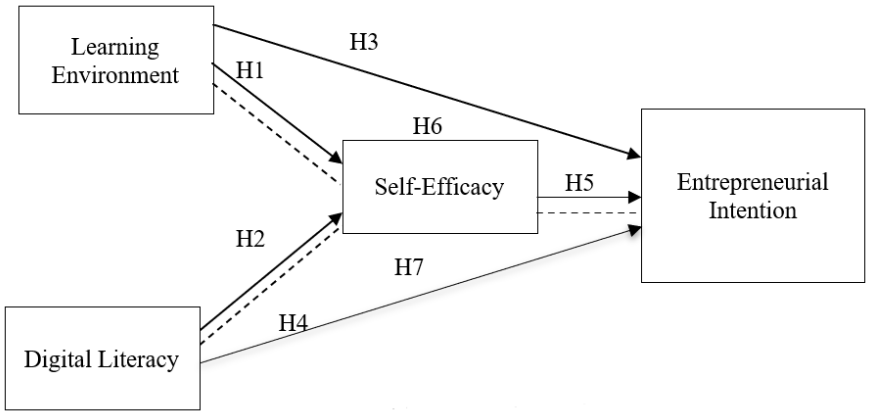

Figure 1. Research framework

RESULTS AND DISCUSSION

Results

Table 2. Characteristics of research respondents

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	150	42,9 %
	Female	200	57,1 %
Age	18–20 years old	120	34,3 %
	21–23 years old	170	48,6 %
	>23 years old	60	17,1 %
College Origin	Jakarta	140	40,0 %
	Bandung	110	31,4 %
	Surabaya	100	28,6 %
Study program	Entrepreneurship	100	28,6 %
	Economics and Business	90	25,7 %
	Engineering/Computers	80	22,9 %
	Tourism/Hospitality	80	22,9 %
Semester	1–4	160	45,7 %
	5–8	190	54,3 %
Entrepreneurial Experience	Ever	130	37,1 %
	Never	220	62,9 %
Digital Use	High intensity (≥5 hours/day)	180	51,4 %
	Moderate (2–4 hours/day)	120	34,3 %
	Low (<2 hours/day)	50	14,3 %

According to Table 2, the majority of respondents were women (57.1%) and were aged 21 to 23 (48.6%). Most of them (40%) were from universities in Jakarta. The study programs were very evenly distributed, with Entrepreneurship (28.6%) being the most common. Most of them were in their final semester (54.3%), but 62.9% had never started a business, despite frequently using digital devices (51.4% used them for 5 hours a day). This means that most of the people who answered were still learning, but they had considerable potential to become digital entrepreneurs.

Table 3. Validity test and reliability test

Variable	Indicator/Item	Loading Factor	Cronbach's Alpha	AVE	CR
Learning Environment	Learningsupport1	0.812	0.873	0.621	0.902
	Learningsupport2	0.845			
	Learningfacilities1	0.804			
	Learningfacilities2	0.831			
	Collaborativeculture1	0.787			
	Collaborativeculture2	0.802			
	Applicativelearning experiences1	0.826			
	Applicativelearning experiences2	0.839			
Digital Literacy	Accessibility1	0.813	0.884	0.639	0.907
	Accessibility2	0.827			
	Evaluation1	0.822			
	Evaluation2	0.836			
	Utilization1	0.845			
	Utilization2	0.861			
	Contentcreation1	0.829			
	Contentcreation2	0.851			
Self-Efficacy	Confidenceinfacingrisk1	0.814	0.876	0.624	0.898
	Confidenceinfacingrisk2	0.821			
	Managingresources1	0.834			
	Managingresources1	0.809			
	Solvingchallenges1	0.838			
	Solvingchallenges2	0.846			
Entrepreneurial Intention	Attitudestowardentrepreneurship1	0.841	0.889	0.648	0.912
	Attitudestowardentrepreneurship2	0.854			
	Subjectivenorms1	0.819			
	Subjectivenorms2	0.833			
	Perceivedbehaviouralcontrol1	0.849			
	Perceivedbehaviouralcontrol2	0.862			

Table 3 illustrates that the tool employed in this research is both valid and reliable. Every indication has a loading factor greater than 0.70, indicating that each item may accurately measure the construct. The Cronbach's alpha values for all variables are also above 0.70 (0.873–0.889), indicating that the items within each variable are highly consistent with one another. Additionally, the AVE (average variance extracted) values are all above 0.50 (0.621–0.648), indicating that the construct can explain more than 50% of the variance in the indicators. The composite reliability (CR) is similarly high (0.898–0.912), indicating robust overall reliability for each construct. This tool meets the standards for SEM-PLS-based quantitative research in terms of both validity and reliability. This means that it can be used for more analysis.

Table 4. Discriminant validity (Fornell and Larcker criterion)

Variable	Learning Environment	Digital Literacy	Self-Efficacy	Entrepreneurial Intention
Learning Environment	0.742	0.501	0.528	0.445
Digital Literacy	0.555	0.824	0.633	0.388
Self-Efficacy	0.586	0.609	0.811	0.676
Entrepreneurial Intention	0.443	0.337	0.676	0.850

Table 4 presents the discriminant validity test using the Fornell–Larcker criterion. The square root mean AVE values on the main diagonal for learning environment (0.742), digital literacy (0.824), self-efficacy (0.811), and entrepreneurial intention (0.850) are consistently higher than the correlations between constructs in the corresponding rows/columns. This pattern indicates that each construct explains greater variance through its own indicators than through variance shared with other constructs; thus, the Fornell–Larcker criterion is met, and the model's discriminant validity is deemed adequate. Although the highest correlation is between self-efficacy and entrepreneurial intention (0.676), it remains below the square root of each construct's AVE.

Table 5. Effect size (F^2)

Relationship	F Square
Learning Environment → Self Efficacy	0.141
Digital Literacy → Self Efficacy	0.835
Learning Environment → Entrepreneurial Intention	0.069
Digital Literacy → Entrepreneurial Intention	0.021
Self Efficacy → Entrepreneurial Intention	0.762

Table 5 presents the effect sizes (f^2) for each path in the model: Digital Literacy→Self-Efficacy (0.835) and Self-Efficacy→Entrepreneurial Intention (0.762) are significant according to Cohen's criteria (0.02 small; 0.15 medium; 0.35 large), indicating substantial contributions to the variance of the endogenous constructs. The effect of Learning Environment→Self-Efficacy is 0.141 (small–near medium), while Learning Environment→Entrepreneurial Intention is 0.069 (small) and Digital Literacy→Entrepreneurial Intention is 0.021 (very small). Overall, this pattern underscores the central role of Self-Efficacy as a driver of entrepreneurial intention and as the primary channel through which digital literacy and the learning environment influence entrepreneurial intention.

Table 6. R-square (R^2)

Variable	R^2
Self-Efficacy	0.497
Entrepreneurial Intention	0.465

The coefficient of determination test indicates that the research model has considerable explanatory power, as shown in Table 6. According to Chin's (1998) criteria, an R^2 value of 0.33 or higher is considered moderate to strong. This means that the independent variables (learning environment and digital literacy) explain approximately 49.7% of the variance in self-efficacy. The combination of the independent variables (learning environment and digital literacy) and the mediator (self-efficacy) can explain 46,5% of the variance in entrepreneurial intention. This substantiates that the interrelationships among variables in the study model exert a significant impact, albeit around 50% of the variance is still affected by external factors not encompassed by the model.

Table 7. Direct effect test

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistic	P Values	Description
Learning Environment → Self-Efficacy	0.132	0.129	0.046	2.888	0.004	Significant
Digital Literacy → Self-Efficacy	0.750	0.756	0.039	19.038	0.000	Significant
Learning Environment → Entrepreneurial Intention	0.099	0.101	0.048	2.046	0.041	Significant
Digital Literacy → Entrepreneurial Intention	0.039	0.037	0.069	0.573	0.566	No Significant
Self-Efficacy → Entrepreneurial Intention	0.718	0.716	0.057	12.631	0.000	Significant

According to Table 7, most of the connections in the study model are statistically significant. The learning environment significantly influences self-efficacy (t(36) = 2.888, p = 0.004) and entrepreneurial intention (t(36) = 2.046, p = 0.041). However, the effect size is not particularly large. Digital literacy has a significant impact on self-efficacy (t-statistic = 19.038; p = 0.000), but it does not directly influence entrepreneurial ambition (t-statistic = 0.573; p = 0.566). These results indicate that digital literacy contributes more substantially to enhancing students' self-confidence (self-efficacy) than to directly promoting entrepreneurial inclinations. Self-efficacy emerged as the most significant predictor of entrepreneurial intention (t-statistic = 12.631; p < 0.000), demonstrating that self-confidence is the essential factor in shaping students' entrepreneurial aspirations.

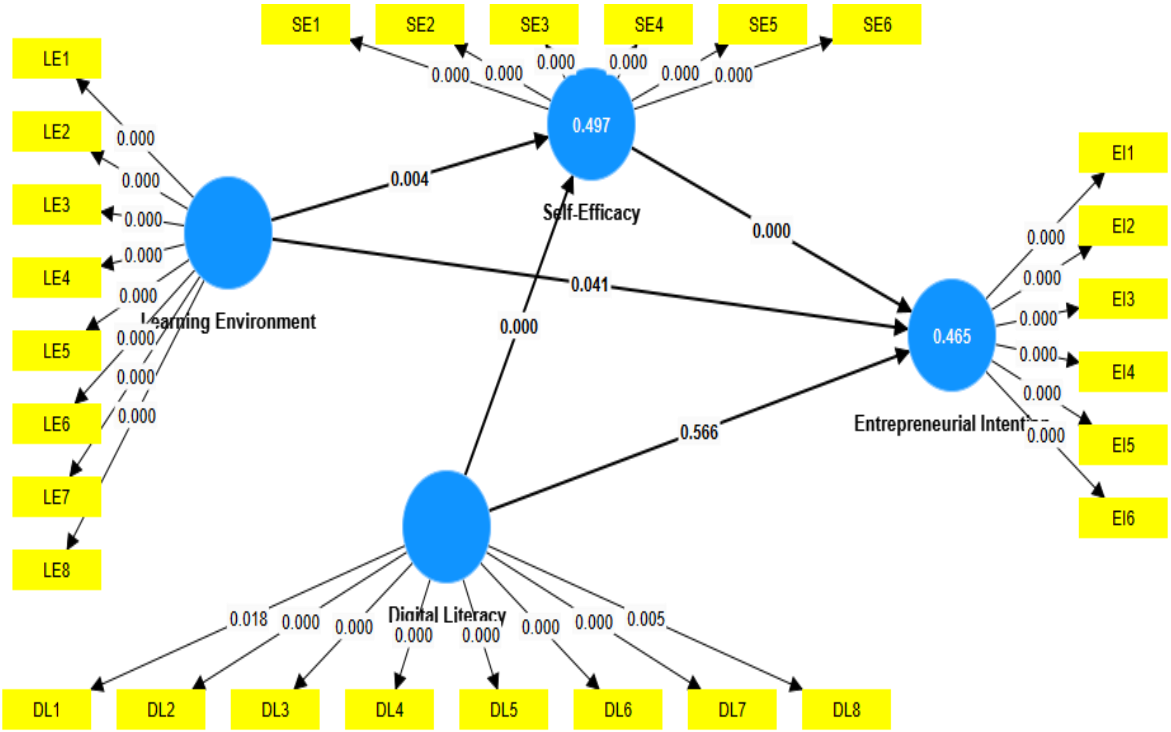

Figure 1. Bootstrapping result

Figure 1 illustrates the results of the SEM-PLS structural model, which demonstrates the relationships between the research variables. The learning environment (LE) and digital literacy (DL) are independent factors, each comprising eight indicators, that affect self-efficacy (SE) as a mediating variable and entrepreneurial intention (EI) as a dependent variable. The R^2 values for self-efficacy and entrepreneurial intention are 0.497 and 0.465, respectively. This means that the model can explain things to a moderate to substantial degree. The coefficient route indicates that digital literacy has a significant impact on self-efficacy, whereas the learning environment exerts a favourable, albeit lesser, influence. It is then demonstrated that self-efficacy has a significant impact on entrepreneurial intention, whereas the direct effect of digital literacy is not substantial.

Table 8. Indirect effect

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statustic	P Values	Description
Learning Environment → Self-Efficacy→Entrepreneurial Intention	0.095	0.093	0.036	2.650	0.000	Significant
Digital Literacy→Self-Efficacy→Entrepreneurial Intention	0.539	0.541	0.056	9.557	0.008	Significant

According to the findings in Table 8, both mediation routes via self-efficacy are deemed significant. The pathway from the learning environment to entrepreneurial intention via self-efficacy has a positive and considerable influence (t-statistic = 2.650; p = 0.000), indicating that the learning environment indirectly encourages students' entrepreneurial intentions by increasing their self-efficacy. The pathway from digital literacy to entrepreneurial intention via self-efficacy demonstrates a substantially greater influence (t-statistic = 9.557, p = 0.008), affirming that digital literacy significantly influences students' entrepreneurial intentions, primarily by enhancing self-efficacy. In this way, self-efficacy serves as an essential link between the learning environment and the development of digital literacy, ultimately shaping students' entrepreneurial intentions.

Discussion

The influence of the learning environment on self-efficacy

This study demonstrates that the learning environment profoundly affects self-efficacy; when students are in a supportive setting characterized by lecturer interactions, constructive feedback, sufficient facilities, and opportunities to engage in real-life projects, they acquire mastery experiences and modelling through observation, which, according to Bandura's theory, enhances their confidence in their capabilities. In this context, a supportive learning environment is a key factor in influencing students' sense of control and self-assurance when confronting entrepreneurial obstacles. No previous research has been found that specifically addresses and tests the significant influence of the learning environment on self-efficacy. This situation indicates a research gap that this study aims to fill.

The influence of digital literacy on self-efficacy

This study found that students' self-efficacy was greatly affected by their digital literacy. Being able to look for and evaluate information, communicate ethically online, and make useful digital material gave me a profound sense of confidence. When students boldly tackled technology-based obstacles, they not only had successful experiences but also strengthened their understanding that they could adapt and excel in the digital age. Digital literacy thus fosters self-efficacy, equipping students for an increasingly interconnected, technology-oriented society.

Numerous prior studies have consistently shown that digital literacy has a substantial influence on self-efficacy across diverse educational and occupational settings. Prior et al. (2016) found that

digital literacy significantly improved business master's students' self-efficacy, leading to increased online learning engagement and academic interaction. Getenet et al. (2024) also found a link between digital literacy, self-efficacy, and learning engagement in the context of brave learning. Conversely, Yuan et al. (2024) found that digital literacy enhanced academic self-efficacy while reducing procrastination among medical students. The research by Zeynalov and Doğantan (2025) corroborates these findings, showing that digital literacy has a marked impact on self-efficacy in the realm of digital entrepreneurship. This suggests that digital competencies not only influence academic self-assurance but also play a vital role in fostering professional confidence during the digital transformation era.

The influence of the learning environment on entrepreneurial intention

This research demonstrates that the learning environment has a substantial influence on entrepreneurial inclinations. This is because there is structured academic support, including extensive teacher guidance, helpful feedback on business ideas, and access to learning resources and hands-on projects relevant to the world of entrepreneurship. Bringing these aspects together suggests that entrepreneurship is a viable career choice that benefits both society and the economy. A supportive learning environment fosters students' intrinsic motivation for entrepreneurship while also enhancing their positive attitudes, self-efficacy, and perceived behavioural control, ultimately improving their decision-making and confidence in pursuing entrepreneurship as a prospective career path. To date, no research has been found that explicitly reviews the influence of the learning environment on entrepreneurial intentions.

The influence of digital literacy on entrepreneurial intention

This study found that digital literacy did not have a significant impact on entrepreneurial inclinations. This can be seen in the observation that, while students have acquired proficiency in the technical dimensions of digital technology, accessing, managing, and exploiting digital information, these skills are not yet sufficiently robust to cultivate the drive for entrepreneurial decision-making. Digital literacy serves a more functional role than an inherent motivator of entrepreneurial behaviour. Without supporting variables such as elevated self-efficacy, confidence in one's capacity to confront business risks, and social and environmental support that enhance a sense of control over actions, technological proficiency often fails to translate into concrete entrepreneurial goals. In this framework, digital literacy serves as a "background potential" that requires psychological mediation, such as intrinsic desire, entrepreneurial orientation, and opportunity perception to exert a substantial impact on the development of entrepreneurial intentions.

These three investigations are consistent with prior research. The initial study conducted by Sutiadiningsih et al. (2025) revealed that digital mastery has an indirect effect on entrepreneurial mentality and self-efficacy. The second study by Bachmann et al. (2024) corroborated similar findings, indicating that digital competence affects entrepreneurial intention solely through the mediation of individual entrepreneurial orientation (IEO) and self-efficacy, with the direct pathway proving insignificant. The third study by Ganefri et al. (2024) confirmed that digital literacy does not significantly affect digital entrepreneurial intention, unlike attitudes and perceived behavioural control, which do. In general, the three studies agree that digital literacy does not directly affect entrepreneurial intention. Instead, it does so indirectly through psychological factors and entrepreneurial behaviour, such as mentality and self-efficacy.

The influence of self-efficacy on entrepreneurial intention

A favourable learning environment has a significant impact on entrepreneurial intentions through self-efficacy, as it provides pleasant stimuli, supportive learning experiences, and social support, thereby enhancing students' self-confidence. When students perceive their learning environment as one that encourages creativity, provides opportunities for entrepreneurship, and offers examples and motivation from teachers and classmates, their self-efficacy levels increase. This self-assurance helps students believe in their ability to start a business, increasing their likelihood of taking action. A favourable learning environment fosters self-confidence, which is an essential precursor to the development of entrepreneurial goals.

For instance, Zhao et al. (2005) in their seminal work showed that entrepreneurial self-efficacy is a crucial predictor of entrepreneurial intention. Moreover, the study conducted by Ye and Kang (2025) revealed that self-efficacy exerts a significant positive influence on entrepreneurial intention, surpassing other factors inside their model. Wang et al. (2023) found that entrepreneurship education has a significant impact on entrepreneurial ambitions through entrepreneurial self-efficacy (ESE), serving as a complete mediator.

The influence of the learning environment on entrepreneurial intentions through self-efficacy

The learning environment in this study affects entrepreneurial intentions through self-efficacy. When students are in a supportive environment, such as when their teachers provide them with positive feedback, they have access to good facilities and opportunities to practice in the real world, they gain successful experiences and models to follow (modelling) that boost their self-confidence to take entrepreneurial actions. This self-confidence then connects the environment's effect on their interest in entrepreneurship.

The influence of digital literacy on entrepreneurial intentions through self-efficacy

Digital literacy has a significant impact on entrepreneurial inclinations, with self-efficacy serving as a mediating factor. When students become accustomed to finding, learning, using, and creating digital content, they accumulate technical success experiences that boost their confidence. This confidence is a critical factor in turning that technical ability into entrepreneurial goals. Simply being digitally literate is not enough; you also need the confidence to take on business challenges. Self-efficacy serves as a conduit that enables digital talents to incite motivational action. This finding aligns with the study by Duong et al. (2024), which found that self-efficacy mediates the association between digital education and digital entrepreneurial goals. This finding is corroborated by Sutiadiningsih et al. (2025), who found that the impact of digital competence on entrepreneurial ambitions is evident only when self-efficacy and an entrepreneurial attitude are taken into account.

CONCLUSION

This research confirms that the learning environment and digital literacy have a significant impact on students' self-efficacy, with digital literacy exerting the most important influence. The learning environment exerts a limited direct influence on entrepreneurial ambition, whereas digital literacy does not directly affect entrepreneurial intention. Nonetheless, both characteristics have been demonstrated to indirectly affect entrepreneurial intention through self-efficacy, which has emerged as the most significant predictor of students' entrepreneurial intentions. Therefore, self-efficacy is a crucial factor that links the impact of the learning environment and digital literacy on the desire to start a business.

These results have real-world implications for colleges and universities, particularly in creating entrepreneurship learning ecosystems and structuring curricula to support this goal. To help students believe in themselves, schools should focus on real-world project-based learning, mentoring, and high-quality digital resources. Moreover, enhancing digital literacy extends beyond technical proficiency; it should also focus on bolstering self-confidence in utilizing technology for entrepreneurial endeavours. Higher education institutions can actively contribute to cultivating new entrepreneurs who are adaptable in the era of the creative and digital economy through this technique.

This study has several drawbacks, including the use of a cross-sectional survey method that captures conditions at a single point in time, thereby failing to reflect the dynamics of changes in students' entrepreneurial goals over time. Additionally, while the study sample is relatively typical of three major cities (Jakarta, Bandung, and Surabaya), it does not comprehensively reflect students from other locations in Indonesia, who may possess distinct social, cultural, and internet access attributes.

A longitudinal design is suggested for future study to monitor the evolution of students' self-efficacy and entrepreneurial inclinations over time. Future studies may further enlarge the sample size to encompass additional regions in Indonesia, including those beyond Java, to achieve a more thorough understanding. Additionally, incorporating variables such as familial support, intrinsic

desire, or the influence of business incubation may yield a more comprehensive knowledge of the factors affecting students' entrepreneurial inclinations.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Amalia, R. T., & von Korflesch, H. F. O. (2021). Entrepreneurship education in Indonesian higher education: mapping literature from the Country's perspective. *Entrepreneurship Education*, *4*(3), 291–333. https://doi.org/10.1007/s41959-021-00053-9

Andrade, F. L. de, & Carvalho, L. M. C. (2023). Entrepreneurial intention of university students under the perspective of the theory of planned behaviour: Integrative literature review. *Administrative Sciences*, *13*(11), 242. https://doi.org/10.3390/admsci13110242

Arifin, M. A., Zakaria, M., & Bustaman, H. A. (2023). Digital adoption, self-efficacy, and business success – towards resilience and sustainability micro-entrepreneurs in the post-pandemic world. *Cogent Business & Management*, *10*(3), 2260128. https://doi.org/10.1080/23311975.2023.2260128

Bachmann, N., Rose, R., Maul, V., & Hölzle, K. (2024). What makes for future entrepreneurs? The role of digital competencies for entrepreneurial intention. *Journal of Business Research*, *174*, 114481. https://doi.org/10.1016/j.jbusres.2023.114481

Badan Pusat Statistik. (2021). *Berita resmi statistik*. Badan Pusat Statistik. https://stream-asset.stockbit.com/stream_77741_d526390d-33a4-490d-aad3-4aa9604ab4d1_doc1.pdf

Bandura, A. (1997). *Self-efficacy: The exercise of control* (Vol. 11). Freeman.

Carranza, R., Díaz, E., Martín-Consuegra, D., & Fernández-Ferrín, P. (2020). PLS–SEM in business promotion strategies. A multigroup analysis of mobile coupon users using MICOM. *Industrial Management & Data Systems*, *120*(12), 2349–2374. https://doi.org/10.1108/IMDS-12-2019-0726

Duong, C. D., Ngo, T. V. N., Nguyen, T. P. T., Tran, N. M., & Pham, H. T. (2024). Digital entrepreneurial education and digital entrepreneurial intention: A moderated mediation model. *Social Sciences & Humanities Open*, *10*, 101178. https://doi.org/10.1016/j.ssaho.2024.101178

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A. S., Kumar, V., Rahman, M. M., Raman, R., Rauschnabel, P. A., Rowley, J., Salo, J., Tran, G. A., & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, *59*, 102168. https://doi.org/10.1016/j.ijinfomgt.2020.102168

Feola, R., Crudele, C., & Celenta, R. (2024). Developing cross-cultural competence in entrepreneurship education: What is the role of the university. *The International Journal of Management Education*, *22*(3), 101055. https://doi.org/10.1016/j.ijme.2024.101055

Ganefri, G., Kamdi, W., Makky, M., Hidayat, H., & Rahmawati, Y. (2024). Entrepreneurship education and entrepreneurial intention among university students: The roles of entrepreneurial mindset, digital literacy, and self-efficacy. *Journal of Social Studies Education Research*, *15*(4), 85–134. https://www.learntechlib.org/p/224778/

Getenet, S., Cantle, R., Redmond, P., & Albion, P. (2024). Students' digital technology attitude, literacy and self-efficacy and their effect on online learning engagement. *International Journal of Educational Technology in Higher Education*, *21*(1), 3. https://doi.org/10.1186/s41239-023-00437-y

Gilster, P. (1997). *Digital literacy*. Wiley Computer Pub. https://d1wqtxts1xzle7.cloudfront.net/8413655/diglit-libre.pdf?1390855345=&response-content-disposition=inline%3B+filename%3DDigital_Literacy.pdf&Expires=1695101988&Signature=a-A6r1zE8IMokQ2apG5zF~2n4JYZU49xCxWdNeO8DuzwF2vwosYpZwhAJ5nimS5cXnj57b008NeZ6Zki

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (7th ed.). Cengage. https://www.worldcat.org/title/multivariate-data-analysis/oclc/900353065

Hanifah, R. U., & Nugraha, A. R. (2025). Entrepreneurial orientation, innovation, ecosystem, and digital literacy on venture growth via opportunity recognition. *Journal Economic Business Innovation*, *2*(1), 30–46. https://doi.org/10.69725/jebi.v2i1.219

Khalil, H., Hashim, K. F., Rababa, M., & Atallah, S. (2024). Shaping the entrepreneurial mindset: Exploring the impact of entrepreneurship education on entrepreneurial intentions among university students in the UAE: The mediating role of individual entrepreneurial orientation. *International Journal of Educational Research*, *127*, 102430. https://doi.org/10.1016/j.ijer.2024.102430

Mantooth, R., Usher, E. L., & Love, A. M. A. (2021). Changing classrooms bring new questions: Environmental influences, self-efficacy, and academic achievement. *Learning Environments Research*, *24*(3), 519–535. https://doi.org/10.1007/s10984-020-09341-y

Meng, H., & Kim, J. (2025). Disability and entrepreneurial behavior: Psychological barriers, knowledge and enablers. *Journal of Innovation & Knowledge*, *10*(5), 100794. https://doi.org/10.1016/j.jik.2025.100794

Miao, J., Wu, Y., Yuan, J., Wang, X., Shi, X., Zhao, J., & Zang, S. (2025). Network analysis of interpersonal sensitivity and self-efficacy in nursing students. *BMC Nursing*, *24*(1), 63. https://doi.org/10.1186/s12912-025-02725-6

Ndofirepi, T. M. (2022). The effect of entrepreneurial self-efficacy and entrepreneurial self-identity on entrepreneurial goal intentions of female and male college students in Zimbabwe. *Administrative Sciences*, *12*(4), 180. https://doi.org/10.3390/admsci12040180

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of Vocational Behavior*, *110*, 403–419. https://doi.org/10.1016/j.jvb.2018.05.012

Patel, P. C., Tsionas, M., Oghazi, P., & Izquierdo, V. (2022). No entrepreneur steps in the same river twice: Limited learning advantage for serial entrepreneurs. *Journal of Business Research*, *142*, 1038–1052. https://doi.org/10.1016/j.jbusres.2022.01.019

Prior, D. D., Mazanov, J., Meacheam, D., Heaslip, G., & Hanson, J. (2016). Attitude, digital literacy and self efficacy: Flow-on effects for online learning behavior. *The Internet and Higher Education*, *29*, 91–97. https://doi.org/10.1016/j.iheduc.2016.01.001

Ratten, V., & Jones, P. (2021). Entrepreneurship and management education: Exploring trends and gaps. *The International Journal of Management Education*, *19*(1), 100431. https://doi.org/10.1016/j.ijme.2020.100431

Rigopouli, K., Kotsifakos, D., & Psaromiligkos, Y. (2025). Vygotsky's creativity options and ideas in 21st-century technology-enhanced learning design. *Education Sciences*, *15*(2), 257. https://doi.org/10.3390/educsci15020257

Sahid, S., Norhisham, N. S., & Narmaditya, B. S. (2024). Interconnectedness between entrepreneurial self-efficacy, attitude, and business creation: A serial mediation of

entrepreneurial intention and environmental factor. *Heliyon*, *10*(9), e30478. https://doi.org/10.1016/j.heliyon.2024.e30478

Saragih, D. D., & Tyas, W. P. (2020). Faktor – Faktor yang Mempengaruhi Perkembangan Usaha Industri Konveksi Berbasis Rumah di Kelurahan Tingkir Lor. *Teknik*, *41*(1), 78–91. https://doi.org/10.14710/teknik.v41i1.24880

Shen, Y., Wang, Q., Hua, D., & Zhang, Z. (2021). Entrepreneurial learning, self-efficacy, and firm performance: Exploring moderating effect of entrepreneurial orientation. *Frontiers in Psychology*, *12*, 731628. https://doi.org/10.3389/fpsyg.2021.731628

Simba, A., Rambe, P., & Jones, P. (2025). Entrepreneurship processes: Digital self-efficacy, technostress, and entrepreneurial behaviour in South Africa. *Technology in Society*, *83*, 103038. https://doi.org/10.1016/j.techsoc.2025.103038

Slomski, V. G., Tavares de Souza Junior, A. V., Lavarda, C. E. F., Simão Kaveski, I. D., Slomski, V., Frois de Carvalho, R., & Fontes de Souza Vasconcelos, A. L. (2024). Environmental factors, personal factors, and the entrepreneurial intentions of university students from the perspective of the theory of planned behavior: Contributions to a sustainable vision of entrepreneurship in the business area. *Sustainability*, *16*(13), 5304. https://doi.org/10.3390/su16135304

Suryani, S., & Chaniago, H. (2023). Digital literacy and its impact on entrepreneurial intentions: Studies on vocational students. *International Journal Administration Business and Organization*, *4*(2), 16–22. https://doi.org/10.61242/ijabo.23.261

Sutiadiningsih, A., Dewi, I. H. P., Ratnasari, W., Taufiq, A., & Miranti, M. G. (2025). How do digital competencies promote entrepreneurial intention among vocational students? A mediation analysis of entrepreneurial self-efficacy and entrepreneurial mindset. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2482486

Tsaknis, P. A., & Sahinidis, A. G. (2025). The power of knowledge in shaping entrepreneurial intentions: Entrepreneurship education in sustainability. *Sustainability*, *17*(15), 6785. https://doi.org/10.3390/su17156785

Uddin, M., Bal, H., & Hoque, N. (2025). Paving the way towards effective entrepreneurship education in private higher educational institutions in emerging economy: An analysis of barriers and strategies. *Sustainable Futures*, *10*, 101027. https://doi.org/10.1016/j.sftr.2025.101027

Udekwe, E., & Iwu, C. G. (2024). The nexus between digital technology, innovation, entrepreneurship education, and entrepreneurial intention and entrepreneurial motivation: A systematic literature review. *Education Sciences*, *14*(11), 1211. https://doi.org/10.3390/educsci14111211

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (Vol. 86). Harvard university press.

Wang, X.-H., You, X., Wang, H.-P., Wang, B., Lai, W.-Y., & Su, N. (2023). The effect of entrepreneurship education on entrepreneurial intention: Mediation of entrepreneurial self-efficacy and moderating model of psychological capital. *Sustainability*, *15*(3), 2562. https://doi.org/10.3390/su15032562

Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: the mediating role of attitude and self-efficacy. *Heliyon*, *6*(9), e04922. https://doi.org/10.1016/j.heliyon.2020.e04922

Wardoyo, C., Narmaditya, B. S., Qurrata, V. A., Satrio, Y. D., & Sahid, S. (2025). Are students ready for digital business? Antecedents of entrepreneurial intentions among Indonesian students

using a serial mediation. *Social Sciences & Humanities Open*, *11*, 101213. https://doi.org/10.1016/j.ssaho.2024.101213

Wibowo, A., Narmaditya, B. S., Saptono, A., Effendi, M. S., Mukhtar, S., & Mohd Shafiai, M. H. (2023). Does digital entrepreneurship education matter for students' digital entrepreneurial intentions? The mediating role of entrepreneurial alertness. *Cogent Education*, *10*(1), 2221164. https://doi.org/10.1080/2331186X.2023.2221164

Xu, Y. (2024). The influence of entrepreneurial environment on college students' entrepreneurial intention: The mediating role of entrepreneurial self-efficacy. *Applied & Educational Psychology*, *5*(3), 69–77. https://doi.org/10.23977/appep.2024.050309

Yang, F., Yao, R., Ren, Y., & Guo, L. (2025). Harmony in diversity: Digital literacy research in a multidisciplinary landscape. *Computers & Education*, *230*, 105265. https://doi.org/10.1016/j.compedu.2025.105265

Ye, Z.-M., & Kang, K.-W. (2025). The impact of entrepreneurial self-efficacy and entrepreneurship on entrepreneurial intention: Entrepreneurial attitude as a mediator and entrepreneurship education having a moderate effect. *Sustainability*, *17*(10), 4733. https://doi.org/10.3390/su17104733

Yuan, X., Rehman, S., Altalbe, A., Rehman, E., & Shahiman, M. A. (2024). Digital literacy as a catalyst for academic confidence: exploring the interplay between academic self-efficacy and academic procrastination among medical students. *BMC Medical Education*, *24*(1), 1317. https://doi.org/10.1186/s12909-024-06329-7

Zeynalov, S., & Doğantan, E. (2025). The effect of digital literacy and entrepreneurship education on digital entrepreneurship intention: The mediating role of personal innovativeness. *Technology, Knowledge and Learning*, *30*(2), 1189–1206. https://doi.org/10.1007/s10758-025-09821-1

Zhang, J., & Huang, J. (2021). Entrepreneurial self-efficacy mediates the impact of the post-pandemic entrepreneurship environment on college students' entrepreneurial intention. *Frontiers in Psychology*, *12*, 643184. https://doi.org/10.3389/fpsyg.2021.643184

Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, *90*(6), 1265–1272. https://doi.org/10.1037/0021-9010.90.6.1265