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Designing Effective Entrepreneurship Education Programs To Cultivate Long-Term Entrepreneurial Mindsets In Generation Z

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Abstract

The increase in entrepreneurial activity among Generation Z shows excellent potential to drive innovation and economic growth, but there remains a gap between long-term entrepreneurial intentions and behavior. Entrepreneurship education often fails to foster sustainable entrepreneurial passion because of its theoretical, less contextual approach. This study aims to analyse the influence of entrepreneurship education on entrepreneurial passion, identify the most effective types of programs, and formulate institutional strategies in designing sustainable entrepreneurship education for Generation Z. Using a Systematic Literature Review approach following the PRISMA protocol, this study selected 27 of 1,458 articles obtained through the Scopus database (2024–2025, English language, open access). The results of the thematic analysis show four main findings: (1) experiential learning effectively fosters passion through project-based learning; (2) integration of digital technology increases student relevance and engagement; (3) social support and the campus ecosystem strengthen sustainable entrepreneurial behavior; and (4) social value-based learning forms authentic passion. Effective entrepreneurship education for Generation Z needs to be oriented towards real experiences, social values, and digital technology.

Keywords: Entrepreneurship Education; Entrepreneurial Passion; Generation Z; Experiential Learning; Digital Learning.

Abstrak

Peningkatan aktivitas kewirausahaan di kalangan Generasi Z menunjukkan potensi besar dalam mendorong inovasi dan pertumbuhan ekonomi, namun masih terdapat kesenjangan antara niat dan perilaku kewirausahaan jangka panjang. Pendidikan kewirausahaan sering kali belum mampu menumbuhkan entrepreneurial passion yang berkelanjutan karena pendekatan pembelajaran yang cenderung teoritis dan kurang kontekstual. Penelitian ini bertujuan menganalisis pengaruh pendidikan kewirausahaan terhadap entrepreneurial passion, mengidentifikasi jenis program yang paling efektif, serta merumuskan strategi institusional dalam merancang pendidikan kewirausahaan berkelanjutan bagi Generasi Z. Dengan menggunakan pendekatan Systematic Literature Review mengikuti protokol PRISMA, penelitian ini menyeleksi 27 dari 1.458 artikel yang diperoleh melalui basis data Scopus (tahun 2024–2025, berbahasa Inggris, open access). Hasil analisis tematik menunjukkan empat temuan utama: (1) experiential learning efektif menumbuhkan passion melalui pembelajaran berbasis proyek; (2) integrasi teknologi digital meningkatkan relevansi dan keterlibatan mahasiswa; (3) dukungan sosial dan ekosistem kampus memperkuat perilaku wirausaha berkelanjutan; serta (4) pembelajaran berbasis nilai sosial



membentuk passion yang autentik. Pendidikan kewirausahaan yang efektif bagi Generasi Z perlu berorientasi pada pengalaman nyata, nilai sosial, dan teknologi digital.

Kata Kunci: Pendidikan Kewirausahaan; Kemampuan Berwirausaha; Generasi Z; Pembelajaran Berbasis Pengalaman; Pembelajaran Digital.

INTRODUCTION

In recent years, global entrepreneurial activity has continued to grow significantly. A recent report indicates that by the end of 2024, approximately 665 million people worldwide will be active entrepreneurs (Flores, 2025). Younger generations, particularly Generation Z, born between 1995 and 2012, show a greater propensity for entrepreneurship than previous generations; approximately 54% of Gen Z express a strong desire to start their own business (Dean, 2024). This phenomenon has emerged alongside the rapid advancement of digital technology, the expansion of internet access, and a shift in career values among the younger generation, which emphasizes flexibility, creativity, and control over their career direction. Consequently, there is a significant opportunity for higher education institutions to become catalysts in fostering an entrepreneurial mindset from an early age through educational approaches relevant to Gen Z's characteristics.

Despite Gen Z's enormous potential in entrepreneurship, several studies indicate a gap between long-term entrepreneurial intentions and behavior. In higher education, it has been found that entrepreneurship education programs have not consistently influenced students' entrepreneurial mindsets and drive (Endarwati et al., 2023). The ineffectiveness of this program can have serious consequences: the high potential of young entrepreneurs may not be fully channelled, thereby reducing their contributions to innovation, job creation, and national economic growth (Hossain et al., 2025). For universities, this situation indicates the need to reorient entrepreneurship education strategies to produce graduates who possess not only business knowledge but also passion and sustainable entrepreneurial behavior.

Several empirical studies have

examined the relationships among entrepreneurship education, the entrepreneurial mindset, and entrepreneurial intentions. For example, Endarwati et al., (2023) found that an integrative learning approach combining cognitive and experiential aspects can foster students' inspiration and entrepreneurial mindset. Another study by Laydes et al., (2024) confirmed that business education and innovative skills significantly predict entrepreneurial self-efficacy among university students. Meanwhile, study (Hossain et al., 2025) showed that although Gen Z students have high entrepreneurial intentions, they still face various structural and cognitive barriers in implementing them. However, most of this research still focuses on the general relationship between education and entrepreneurial intentions, without explicitly addressing the types of entrepreneurship education programs that are most effective in fostering long-term entrepreneurial passion and mindset in Gen Z. Thus, there is a significant research gap that needs to be filled: how can entrepreneurship education be effectively designed to foster passion and sustainable entrepreneurial behavior in Generation Z?

This study aims to analyse the influence of entrepreneurship education on the development of entrepreneurial passion among Generation Z, identify the most effective types of programs for fostering entrepreneurial behavior, and formulate strategies for universities to design sustainable entrepreneurship education. The implications of this research are expected to guide higher education institutions in developing entrepreneurship curricula that can foster and sustain entrepreneurial passion and sustainable entrepreneurial behavior. Theoretically, this study broadens the understanding of the relationship among education, passion, and the entrepreneurial mindset in the digital era. Practically, the results of this study provide

a foundation for universities to design contextual, adaptive, and practical entrepreneurship learning models for Generation Z.

METHODS

The approach used in this study is a Systematic Literature Review (SLR), which aims to compile scientific evidence in a structured, comprehensive, and transparent manner. The first step taken is to determine the research topic. From the research topic, the process continues by creating a research question (RQ). After obtaining the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), the process is carried out. This process sets standards for the identification, selection, and synthesis of

literature. In this study, the data source comes from the Scopus database accessed on October 8, 2025 with a combination of keywords ("entrepreneurship education" OR "entrepreneurial learning") AND ("entrepreneurial passion") AND ("entrepreneurial behavior" OR "entrepreneurial mindset") AND ("generation z" OR "youth" OR "students"). A total of 1,458 identified articles were screened based on inclusion criteria such as publication year (2024 – 2025), language (English), document (article), source and publication type, country, and open access. This resulted in 27 articles. After screening the title, abstract, and keywords, five articles were excluded due to their perceived relevance to the topic, resulting in a final 22 articles used for the systematic analysis process in this study.

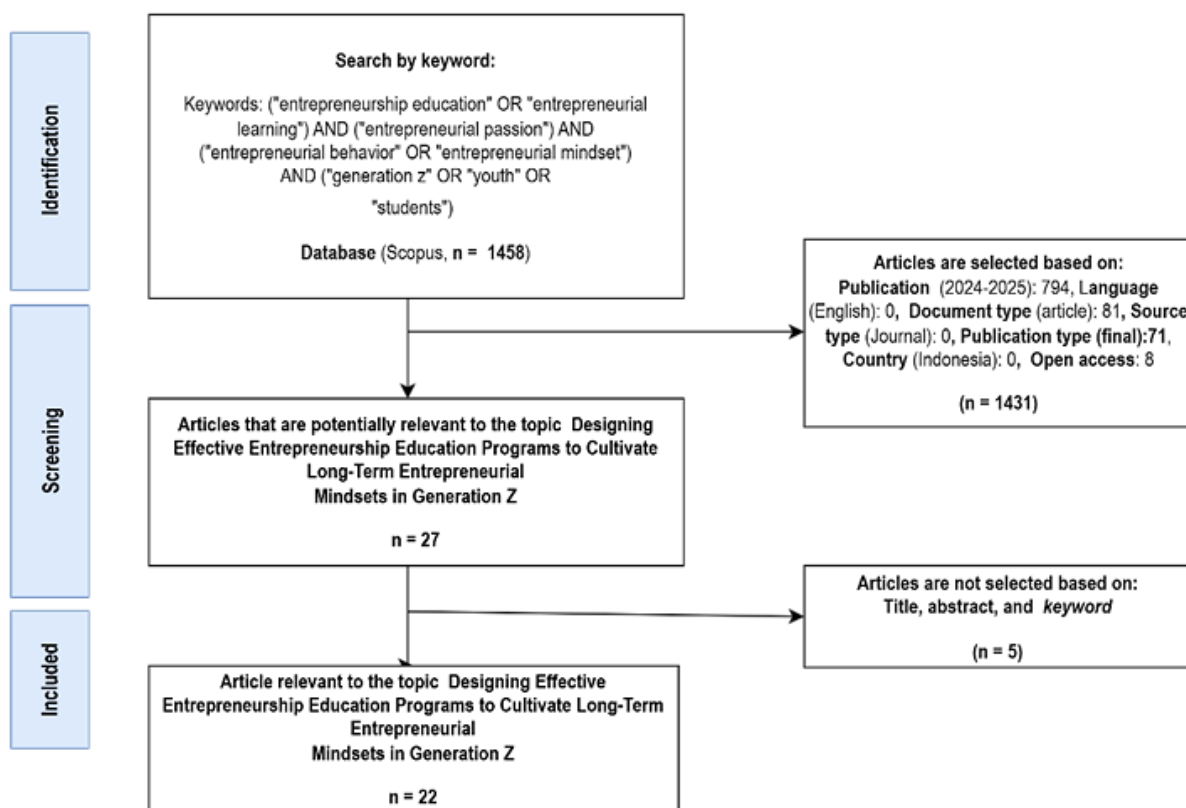


Figure 1: PRISMA Flowchart

The layout of the PRISMA stages is visualized in a PRISMA Flowchart diagram, which includes: identification (1,458), screening (27), exclusion (5), and final inclusion (22). Figure 1 below illustrates the overall selection process in this research method.

The data collection process employed

a qualitative thematic analysis approach. Articles meeting the selection criteria were systematically examined according to four elements: summary, main findings, discussion summary, and research question. This four-point screening facilitated a comprehensive understanding of each article's substance, including

research findings, theoretical arguments, and the orientation of the research questions. The approach enabled the identification of key elements relevant to the research focus and supported the development of a structured database for subsequent integration.

The filtered data were analysed using a deductive-inductive thematic synthesis. Data were organized into categories aligned with the research questions. Key themes, including digital technology, human resource management, and higher

education, were identified and refined as patterns emerged in the literature. The analysis examined the frequency of each theme, its definitions, interrelationships, and the development of concepts across studies. This approach yielded detailed and relevant insights that directly addressed the primary research focus.

The main analysis was conducted through conceptual mapping of 22 selected articles, based on three RQs. The data were organized into a table of conceptual relationships between the RQs as follows:

Table 1. Research Question Table

Research Question
RQ1: What is the relationship between entrepreneurial alertness [EA] and MSME performance under conditions of market uncertainty in developing countries?
RQ2: What are the research gaps regarding the interaction of EA, dynamic capabilities, and market uncertainty in developing countries?
RQ3: What strategies can higher education institutions adopt to design entrepreneurship education that builds sustainable entrepreneurial passion and behavior among Generation Z?

RESULTS and DISCUSSION

Results

Entrepreneurship education plays a central role in shaping entrepreneurial passion among Generation Z, characterized by emotional attachment, intrinsic drive, and a value orientation toward the business world. Various studies have shown that entrepreneurship education not only transfers technical knowledge and skills but also shapes students' self-confidence, identity, and psychological orientation toward entrepreneurial activity (Lestari et al., 2025; Sondak et al., 2025; Wardana et al., 2024). In this context, entrepreneurship education functions as a transformational process that connects learning experiences with personal meaning, enabling students to deeply and sustainably internalize entrepreneurial values (Agustina et al., 2025; Suparno et al., 2024).

An experiential learning approach is a key element proven effective in fostering entrepreneurial passion among students. Through project-based and simulation-based learning, and practical field experiences, students gain the space to face real-life business situations, hone their creativity, and develop a sense of ownership over their ideas (Narmaditya et al., 2024; Sutiadiningsih et al., 2025). This

process encourages students to connect their personal values to entrepreneurial activities, ultimately strengthening their emotional engagement and commitment to the business world. Research by Yulastri et al., (2025) supports these findings by showing that formal education that emphasizes business planning, innovation, and risk management increases self-efficacy and fosters stronger entrepreneurial passion.

The psychological dimension also plays a crucial role in explaining the relationship between entrepreneurship education and passion. Education that emphasizes the development of psychological capital such as optimism, hope, resilience, and self-efficacy has been shown to encourage students to face uncertainty and failure with a positive attitude (Agustina et al., 2025; Nuryanto et al., 2024). In this context, passion emerges from internalizing values and positive experiences with entrepreneurship as a career choice. Research Dellyana et al., (2024) emphasized that when education is designed to foster self-reflection, risk-taking, and social meaning in the learning process, students develop a more profound emotional attachment to entrepreneurial activities.

The integration of digital technology

is becoming an increasingly significant aspect in shaping the entrepreneurial passion of Generation Z. Students who grow up as digital natives are more easily emotionally engaged when the learning process uses interactive media such as online platforms, startup simulations, or virtual incubators (Harianto et al., 2024; Herlina et al., 2024). Digital-based learning not only improves technological skills but also provides a space for students to express creativity and connect their personal values with business innovation. In this context, technology acts as an effective medium that strengthens the connection between learning experiences and entrepreneurial passion.

In addition to the technological dimension, social and collaborative factors also significantly influence the formation of passion. A supportive, positive academic environment, mentor interactions, and the presence of a campus entrepreneurial community foster emotional bonds and long-term motivation (Gusmao et al., 2024; Sahid et al., 2024). Research shows that students who feel supported and inspired by peers or lecturers demonstrate increased enthusiasm and confidence in pursuing entrepreneurial careers. Passion, in this case, is not only a product of individual motivation but also the result of social processes that strengthen beliefs and emotional engagement with the business world (Hutasuhut et al., 2024).

An entrepreneurship curriculum that integrates local social and cultural values also enriches students' learning experience. Lestari et al., (2025) emphasized that when entrepreneurial activities are linked to social goals and community contributions, students feel a stronger emotional connection to their business activities. These values foster the emergence of authentic, sustainability-oriented passion. Efendi et al., (2024) confirmed that value-driven entrepreneurship education, which instills morality, empathy, and social responsibility, strengthens students' intrinsic motivation to pursue meaningful entrepreneurship.

Several other studies have shown that the relationship between entrepreneurship education and passion can be indirect or gradual. Sijabat, (2024) and Pranitasari et al., (2024) observed that passion often

emerges after students engage in real-life entrepreneurial practices or activities outside the classroom. They confirm that contextual experiences and self-reflection play a greater role than mere theoretical learning. Jaya et al., (2025) and Hartika et al., (2025) also noted that blended learning models, which combine online and face-to-face interactions, provide ample opportunities for students to reflect on how to connect theory with personal experiences, thereby deepening their emotional attachment to entrepreneurship.

Other empirical findings reinforce the understanding that passion develops through the interaction of cognitive, affective, and social dimensions. Enderwati et al., (2023) and Laydes et al., (2024) demonstrated that a learning approach combining business theory and personal reflection can increase students' inspiration and confidence in entrepreneurship. Meanwhile, Hossain et al., (2025) emphasized that the firm entrepreneurial intention among Generation Z requires the support of an adaptive learning system to develop into a sustainable passion. Research by Narmaditya et al., (2024) and Suparno et al., (2024) demonstrated that student involvement as problem solvers in real-life projects sparks enthusiasm and emotional engagement, which are at the core of entrepreneurial passion.

From a pedagogical perspective, (Hutasuhut et al., 2024) and (Sutiadiningsih et al., 2025) the importance of lecturer preparedness and the implementation of reflective learning to create meaningful learning experiences. When students are given the freedom to create, explore ideas, and receive constructive feedback, passion naturally grows through a sense of accomplishment and social connectedness. Dellyana et al., (2024) also noted a similar sentiment. Sahid et al., (2024) and Gusmao et al., (2024), who emphasized the importance of a collaborative entrepreneurial ecosystem in strengthening the process of forming passion through mentor support, campus facilities, and real business networks.

For Generation Z, entrepreneurship education has undergone a paradigm shift from a traditional lecture-based approach to a more applied, collaborative, and digital

model. Based on the results of mapping 13 articles, there is a strong tendency that an experiential learning approach greatly influences the effectiveness of entrepreneurship education programs, the integration of digital technology, and cross-sector collaboration between universities, government, and industry. These three elements form the foundation for developing sustainable, adaptive entrepreneurial behavior in the digital era (Lestari et al., 2025; Narmaditya et al., 2024).

First, the most effective forms of entrepreneurship education programs are project-based learning and digital entrepreneurship education, which place students in real-world situations to design, manage, and evaluate their business ideas. A study by Lestari et al., (2025) showed that using digital learning platforms for business simulations increased Generation Z's interest and exploratory behavior toward innovation. This model not only instills technical skills but also fosters a technology-based entrepreneurial mindset, a key characteristic of this generation (Wardana et al., 2024). This approach aligns with the characteristics of Generation Z, who are more responsive to interactive, visual, and social media-integrated learning.

Second, university-developed entrepreneurial ecosystem-based education programs have demonstrated high effectiveness. Dellyana et al., (2024) and Suparno et al., (2024) emphasized that programs combining universities, industry, and government (triple helix collaboration) can provide comprehensive ecosystem support to foster entrepreneurial behavior in students. This collaboration enables students not only to acquire theoretical knowledge but also to access tangible resources such as business mentoring, seed capital, and professional networks. This ecosystem approach strengthens the link between knowledge, practice, and environmental support, which are important catalysts in the process of developing entrepreneurial behavior (Agustina et al., 2025).

Furthermore, an adaptive curriculum based on digital literacy and innovation thinking is a crucial element in shaping future-oriented entrepreneurial behavior.

Research by Herlina et al., (2024)) and (Sahid et al., 2024) found that entrepreneurship education programs that integrate digital literacy, such as e-commerce simulations, data analytics for business, and the use of AI in marketing, lead to significant improvements in entrepreneurial behavior, particularly in creativity and innovation. Generation Z, growing up amidst the digital revolution, tends to adapt more quickly to technological contexts, so curricula that utilize technology as a tool for business exploration have proven more effective than conventional lecture-based learning.

On the other hand, research by Nuryanto et al., (2024) shows that collaborative entrepreneurship learning involving interdisciplinary teamwork encourages the emergence of social entrepreneurial behavior. Generation Z exhibits a strong propensity for social values and sustainability, so educational programs that emphasize empathy, social responsibility, and sustainable innovation can foster long-term entrepreneurial commitment. They reinforce the view that entrepreneurship education is not solely profit-oriented but also focuses on character development and sustainable business ethics (Sutiadiningsih et al., 2025).

In terms of learning methods, most research demonstrates the effectiveness of blended learning and the integration of digital platforms. Programs that combine face-to-face and online learning offer high flexibility and enable learning across space and time. According to Wardana et al., (2024), this approach enhances students' learning autonomy and broadens access to global knowledge sources, thereby strengthening intrinsic motivation for entrepreneurship. Furthermore, integrating gamification into entrepreneurship education, such as startup simulations and digital business idea competitions, has been shown to increase students' emotional engagement and exploratory behavior (Yulastri et al., 2025).

Interestingly, research by (Agustina et al., 2025) shows that knowledge-sharing-based programs have a significant impact on increasing entrepreneurial behavior. Through mentoring activities, online discussion forums, and alums

entrepreneur networks, students gain inspiration and practical insights that encourage real-life entrepreneurial action. This model emphasizes the importance of the social learning process — namely, learning through social interactions — which strengthens entrepreneurial self-efficacy (Bandura, 1986; (Agustina et al., 2025).

This also confirms that the development of entrepreneurial behavior among Generation Z cannot be separated from the digital communities and social interactions that are integral to their lives.

In addition to an experience-based and collaborative approach, the role of educational institutions in designing adaptive entrepreneurship curricula is a determining factor. Several studies (Lestari et al., 2025; Sondak et al., 2025) indicate that curricula that emphasize the integration of business theory, field practice, and soft skills such as creativity, communication, and problem-solving increase students' entrepreneurial intention and behavior. Effective entrepreneurship education for Generation Z combines cognitive, affective, and psychomotor dimensions within a holistic learning environment.

Furthermore, government policy support and the university environment are also important drivers of program effectiveness. Narmaditya et al., (2024) emphasize that government programs such as the Student Entrepreneur Program and Startup Campus provide incentives and financial support for students, thereby increasing participation and sustaining entrepreneurial behavior. Synergy between macro policies and micro implementation at the university level is key to the success of modern entrepreneurship education.

Finally, a values-based approach (value-based entrepreneurship education) is also emerging as a key element. Several studies (Sahid et al., 2024; Suparno et al., 2024) emphasize that programs that internalize moral values, sustainability, and social responsibility foster ethically oriented entrepreneurial behavior. Generation Z, known for its high social awareness, tends to be more motivated when entrepreneurial activities are linked to a positive impact on society and the environment. Therefore, entrepreneurship

programs that emphasize social sustainability have a strong appeal to this generation.

In higher education, entrepreneurship education plays a strategic role in fostering entrepreneurial passion and sustainable behavior among Generation Z, a generation known for its technology-adaptability, innovation orientation, and inclination to seek personal meaning in professional activities. The most effective strategy for designing entrepreneurship education for this generation requires a transformation from conventional, theory-based approaches to more contextual, experiential, and experiential learning-oriented approaches. This is emphasized by Lestari et al., (2025), who suggest that higher education institutions (HEIs) need to strengthen their internal entrepreneurial ecosystems, including industry partnerships and project-based learning, to foster intrinsic motivation and a long-term entrepreneurial spirit.

The findings of Sondak et al., (2025) reinforce this by highlighting the importance of redesigning the entrepreneurship curriculum to incorporate the cognitive, affective, and conative dimensions of entrepreneurial behavior. They emphasize that curricula that link theory to real-world practice such as entrepreneurial incubators, mentorship programs, and community-based entrepreneurship projects can foster more sustainable entrepreneurial behavior. This approach allows students to experience firsthand the processes of value creation, failure, and innovation, all of which are crucial affective experiences in developing entrepreneurial passion. Similarly, Yulastri et al., (2025) argue that integrating competency-based and problem-based learning results in significant improvements in students' affective dimensions, particularly self-confidence and perseverance in facing business challenges.

Meanwhile, a study by Dellyana et al., (2024) emphasized the need for higher education institutions to develop strategic policies that align with the entrepreneurial ecosystem. This means that strategies should not be limited to the curriculum but should also be extended to support systems such as funding availability, access to

business networks, and cross-faculty collaboration. This ecosystemic approach allows students to learn in a context that mimics a real business environment, ensuring that the passion they develop is sustainable because it is built on authentic experiences. This aligns with the idea of Narmaditya et al., (2024) that universities should act as entrepreneurial enablers by providing a platform for students to test their business ideas in a safe yet competitive ecosystem.

Wardana et al., (2024) added that entrepreneurship learning is effective if it prioritizes transformational pedagogy, a teaching approach that motivates students to innovate through self-reflection, empathy, and collaboration. In the context of Generation Z, which is heavily influenced by digital technology, educational strategies need to integrate digital entrepreneurship platforms that support the exploration of technology-based creative ideas. Therefore, HEIs must design programs aligned with digitalization trends, such as virtual incubators, e-commerce simulations, and digital startup challenges, to foster entrepreneurial behavior that adapts to the dynamics of the digital economy Suparno et al., (2024).

Student-centered learning strategies are a common thread in various studies. Agustina et al., (2025) suggest that learning autonomy should be strengthened through entrepreneurial projects that provide students with space to make independent decisions and take responsibility for the outcomes. This aligns with Herlina et al., (2024), who suggest that educators should enhance student engagement by providing emotionally resonant learning experiences, in which positive emotions, such as project success and social appreciation, strengthen long-term entrepreneurial passion. In other words, educational design that focuses on emotional experiences is a key factor in ensuring sustainable entrepreneurial motivation.

In the Indonesian context, Lestari et al., (2025) highlighted that integrating social and cultural values into entrepreneurship education can strengthen students' sense of purpose. They found that when entrepreneurship is linked to social goals and community impact, students demonstrate increased long-term commit-

ment to entrepreneurial activities. This confirms that sustainable passion arises not only from economic motivation but also from the connection of personal values with social meaning (Sutiadiningsih et al., 2025). Therefore, educational strategies that combine moral and social dimensions, such as social entrepreneurship and sustainability-based ventures that can strengthen sustainable entrepreneurial behavior.

In addition to curricular and pedagogical approaches, institutional strategy is also a crucial element. Sahid et al., (2024) argue that the successful development of entrepreneurial passion depends on visionary, participatory institutional leadership. Managerial support that encourages innovation, incentives for lecturers to develop creative curricula, and collaborative cross-disciplinary policies accelerate the formation of an entrepreneurial culture on campus. Nuryanto et al., (2024) add that collaboration between universities, government, and industry is a crucial catalyst in creating a sustainable entrepreneurial learning ecosystem.

Findings from Jaya et al., (2025) and Sijabat, (2024) expand this discourse by emphasizing the role of digital learning infrastructure in strengthening entrepreneurial experiences. Through digital platforms, students can access business simulations, collaborative forums, and online mentoring, expanding the reach of learning. Furthermore, Hartika et al., (2025) demonstrate that a blended learning approach can increase student interactivity and engagement in the entrepreneurial learning process. However, they also caution that the success of this digital strategy depends heavily on lecturers' readiness and the institution's capacity to manage learning technology effectively (Hutasuhut et al., 2024). Finally, Efendi et al., (2024) highlight a gender perspective, emphasizing that entrepreneurship education strategies must be inclusive, encourage women's participation, and eliminate gender stereotypes that hinder the expression of entrepreneurial passion and behavior.

Thus, effective entrepreneurship education strategies for fostering entrepreneurial passion and sustainable

behavior among Generation Z include: (1) experiential learning, (2) integration of digital technology into the learning process, (3) building a collaborative campus entrepreneurship ecosystem, (4) instilling social and sustainability values, and (5) institutional leadership that supports innovation and inclusivity. These strategies form a conceptual framework that positions students as active agents in the learning process while bridging intrinsic motivation with real-world entrepreneurial opportunities.

Literature mapping indicates that most studies emphasize experiential learning and ecosystem support as the core of entrepreneurship education strategies for Generation Z. More than 80% of articles indicate that universities that can provide collaborative learning environments through business incubators, startup competitions, and mentoring programs are more successful at fostering long-term entrepreneurial passion. Research also highlights the important role of integrating digital technology, particularly in online learning and business simulations, to facilitate flexible learning and increase student engagement. Furthermore, there is a strong awareness that entrepreneurship education is not solely oriented towards business creation, but also on character development, social values, and sustainability, which are the foundation for sustainable entrepreneurial behavior.

DISCUSSION

The results of this study confirm that entrepreneurship education plays a central role in shaping entrepreneurial passion and entrepreneurial behavior among Generation Z. Overall, the findings address the research objectives of understanding how entrepreneurship education influences entrepreneurial passion, the most effective types of programs, and the strategies that higher education institutions can implement to foster sustainable entrepreneurial behavior. Entrepreneurship education has been shown not only to improve knowledge and skills but also to foster the internalization of entrepreneurial values, motivation, and identity, which form the basis for developing long-term entrepreneurial passion and behavior.

These findings are consistent with previous literature emphasizing the importance of experiential learning (Kolb, 1984) and self-efficacy (Bandura, 1986) as mediators of the relationship between education and passion. Studies such as those by Lestari et al., (2025)) and Wardana et al., (2024) demonstrate that project-based learning and real-world experiences foster strong emotional engagement in students. This similarity demonstrates the consensus that learning by doing is the most effective way to foster emotional attachment to the world of entrepreneurship. However, the results of this study also enrich the literature by highlighting the integration of digital technology and social values as a crucial factor in the context of Generation Z. This novel contribution has not been widely highlighted in previous research.

Unlike traditional approaches, entrepreneurship education integrated with digital technology and collaborative ecosystems has proven more effective in fostering adaptive entrepreneurial behavior. This aligns with Herlina et al., (2024), who asserted that digital entrepreneurship learning enables students to express creativity and build an entrepreneurial identity in a virtual space. On the other hand, several studies, such as those by Pranitasari et al., (2024) show that the effect of education on passion is not always direct but is instead mediated by practical experience and social factors. These findings emphasize the importance of continuity between formal learning and real-life entrepreneurial experiences outside the classroom.

Theoretically, the research findings reinforce the relevance of three key theories: Social Cognitive Theory (Bandura, 1986), Experiential Learning Theory (Kolb, 1984), and Self-Determination Theory (Deci & Ryan, 2000). Entrepreneurship education is proven effective when it meets students' three basic psychological needs autonomy, competence, and social connectedness and creates meaningful and reflective learning experiences. These findings expand the scope of these theories by adding the dimensions of digital engagement and social value orientation as important contextual variables for Generation Z.

Practically, the research findings provide strategic implications for the development of entrepreneurship curricula in higher education. First, programs should be designed based on real-world experiences through business projects, digital simulations, and incubator-based learning activities. Second, the integration of digital technology and social media should be utilized to increase the interactivity and relevance of learning to suit Generation Z's learning styles. Third, strengthening the campus entrepreneurship ecosystem through collaboration with industry, government, and the community is key to ensuring the sustainability of students' entrepreneurial behavior. Furthermore, a social value-based and sustainability approach needs to be adopted so that the passion developed is not only economically oriented but also has profound social significance. From a policy perspective, the research findings emphasize the need for more comprehensive institutional support and national policies for developing entrepreneurship education. Programs such as the Startup Campus and Student Entrepreneur Program can be expanded to strengthen digital capacity and provide ongoing mentoring. The government, industry, and universities must collaborate to build a conducive and inclusive entrepreneurial ecosystem, including providing access to funding, digital learning infrastructure, and incentives for curriculum innovation.

Some results also reveal unexpected findings, such as variations in the strength of education's influence on passion across contexts. This may be due to differences in institutional preparedness, teacher competency, and student characteristics. Generation Z, which is more individualistic and easily bored, requires dynamic, emotionally engaging learning methods. Therefore, the lack of a reflective approach and of emotional learning experiences may explain why some educational programs fail to foster deep passion.

From a methodological perspective, the strength of this research lies in its systematic approach, guided by the PRISMA flowchart, which ensures accurate literature selection. However, significant limitations include the lack of longitudinal studies and the variety of cultural contexts,

which warrant caution when generalizing the results. Future research should broaden the scope by exploring moderating factors such as gender, socio-economic background, and cultural differences across countries.

Overall, the results of this study confirm that entrepreneurship education serves as a transformative mechanism for Generation Z, transforming cognitive potential into passion and sustainable entrepreneurial behavior. These findings reinforce the urgency for universities to transform into entrepreneurial learning organizations that produce not only knowledgeable graduates but also individuals who are innovative, resilient, and purpose-driven in their entrepreneurial endeavors.

CONCLUSION

Overall, the literature synthesis shows that entrepreneurship education significantly influences the development of Generation Z's entrepreneurial passion through complex interactions among learning experiences, digital technology, psychological factors, and social support. Passion does not arise from mere knowledge transfer, but from the process of internalizing values and meaningful experiences, in which students feel competent, independent, and connected to their social environment (Dellyana et al., 2024; Herlina et al., 2024; Lestari et al., 2025; Nuryanto et al., 2024). These findings align with the frameworks of Social Cognitive Theory (Bandura, 1986), Experiential Learning Theory (Kolb, 1984), and Self-Determination Theory (Deci & Ryan, 2000), which collectively explain that effective entrepreneurship education enables students to experience, reflect on, and internalize entrepreneurial values deeply.

The most effective entrepreneurship education programs for shaping Generation Z's entrepreneurial behaviour include:

1. Digital entrepreneurship learning (DE) based on online platforms and simulations;
2. Project-based and experiential learning through real-life business practices;

3. Collaborative ecosystem programs between universities, industry, and government; and
4. Value-driven entrepreneurship education that integrates social and ethical dimensions.

These four models not only enhance entrepreneurial knowledge but also foster the younger generation's character, values, and courage to innovate in a dynamic digital business environment.

Theoretically, these findings reinforce the relevance of Experiential Learning Theory (Kolb, 1984), Social Learning Theory (Bandura, 1986), and Entrepreneurial Ecosystem Theory (Isenberg, 2010) in modern entrepreneurship education. The experiential learning approach explains that entrepreneurial behaviour is formed through a cycle of concrete experience, reflection, conceptualization, and experimentation. Evident in project-based programs and digital simulations that provide students with space to experiment directly. Meanwhile, social learning theory asserts that entrepreneurial behaviour can be developed through observation, imitation, and social interaction, in line with the effectiveness of programs based on collaboration and knowledge sharing. More broadly, entrepreneurial ecosystem theory provides a framework for understanding that the development of entrepreneurial behaviour requires systemic support from various actors, such as universities, industry, and government.

In the context of higher education institutions, this means providing students with space to explore ideas independently, receive constructive feedback, and collaborate in a supportive environment. Entrepreneurial Ecosystem Theory complements this framework by emphasizing the importance of interactions between system actors—universities, industry, government, and communities in creating a conducive environment for the emergence of entrepreneurial behaviour. Thus, the design of sustainable entrepreneurship education results from a synergy among transformative pedagogical strategies, strong ecosystem support, and a humanistic approach that prioritizes meaning, value, and sustainability in entrepreneurial practice.

Overall, the results of this systematic review confirm that entrepreneurship education significantly influences the development of entrepreneurial passion and behaviour among Generation Z. Experiential learning, supported by the integration of digital technology and a collaborative environment, has proven most effective in fostering interest, self-confidence, and long-term commitment to entrepreneurship. The findings also indicate that program effectiveness depends heavily on higher education institutions' ability to connect the cognitive, affective, and social aspects of learning. Practically, the results of this study provide a foundation for universities, policymakers, and industry players to design adaptive, digital, and socially value-based educational strategies to create an innovative, resilient, and sustainability-oriented young generation.

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