International Journal of Educational Development

E-ISSN: 3046-8159
P-ISSN: 3047-1893

The Influence of Design Thinking in Entrepreneurship Programs on Entrepreneurial Spirit and Independence of Fifth-Grade Elementary School Students

Sri Hardyanti Puspita Sary[1*], Elpisah[2], Saripuddin[3], Suarlin[4]

[1] Universitas Patompo, Indonesia; e-mail : dhyan.dhyan92@gmail.com
[2] Universitas Negeri Makassar, Indonesia; e-mail: elpisah@unm.ac.id
[3] Universitas Patompo, Indonesia; e-mail : saripuddin464@gmail.com
[4] Universitas Negeri Makassar, Indonesia; e-mail: suarlin@unm.ac.id
*Corresponding Author: Sri Hardyanti Puspita Sary

Abstract: This study aims to: (1) examine the effect of an entrepreneurship program using a Design thinking approach on the entrepreneurial spirit of Grade V students at UPT SPF SD Inpres Baraya 1, Makassar City, and (2) examine the effect of an entrepreneurship program using a Design thinking approach on student independence of Grade V students at UPT SPF SD Inpres Baraya 1, Makassar City. This research employed a quantitative approach with a quasi-experimental method using a Non-Equivalent Control Group Design. The research subjects consisted of two groups: an experimental group that received an entrepreneurship program based on Design thinking and a control group that did not receive the treatment. Data were collected using questionnaires measuring students' entrepreneurial spirit and independence, supported by documentation. Data analysis was conducted using descriptive statistics, classical assumption tests, and hypothesis testing through an independent samples t-test. The results indicate that the entrepreneurship program using a design thinking approach had a significant positive effect on students' entrepreneurial spirit and independence. The independent samples t-test revealed that the program significantly improved students' entrepreneurial spirit ($p = 0.002 < 0.05$) compared to the control group. Likewise, a very significant effect was found on student independence, with a significance value of $p = 0.001 < 0.05$. These findings confirm that the application of a design thinking–based entrepreneurship program effectively enhances key entrepreneurial attributes, including creativity, initiative, responsibility, and independence among fifth-grade elementary school students.

Keywords: Design Thinking; Entrepreneurial Spirit; Entrepreneurship Program; Independence; Quasi-Experimental Method

Received: August 12, 2025
Revised: October 7, 2025
Accepted: December 2, 2025
Published: January 27, 2026
Curr. Ver.: January 27, 2026

1. Introduction

Entrepreneurship education has increasingly been recognized as a strategic foundation for preparing resilient, creative, and independent young generations in response to global economic challenges. In the context of developing economies, entrepreneurship is not merely positioned as a means of job creation but also as a long-term investment in shaping adaptive mindsets and productive character. According to the Global Entrepreneurship Monitor (GEM, 2025), Indonesia ranks among the top ten countries worldwide with the most supportive entrepreneurial environments, despite being classified as a lower-income country (Group C). This condition reflects Indonesia's strong entrepreneurial potential. However, this potential has not yet been optimally transformed into sustainable entrepreneurial capacity, particularly among young people. Data from the Indonesian Central Bureau of Statistics indicate that 56% of the young workforce still relies on the informal sector and lacks adequate entrepreneurial competence (BPS, 2023). These findings highlight the urgency of systematic entrepreneurship education from an early age, not only to foster economic productivity but

also to develop independence, creativity, and responsible decision-making as core character traits.

At the elementary school level, entrepreneurship education plays a crucial role in strengthening character formation and cultivating essential life skills. Schools serve as foundational institutions where values such as initiative, responsibility, leadership, and collaboration can be systematically nurtured. One effective strategy to support this process is the implementation of learning programs that emphasize experiential and student-centered approaches, allowing learners to actively engage in meaningful activities (Samadi et al., 2023). Entrepreneurship programs at the elementary level encourage students to participate directly in hands-on activities that simulate real-world challenges, thereby promoting critical thinking and self-regulation. Within the framework of Indonesia's *Profil Pelajar Pancasila*, such programs align strongly with the dimensions of independence (*mandiri*) and critical thinking (*berpikir kritis*), reinforcing their relevance and pedagogical value in basic education settings.

Nevertheless, the effectiveness of entrepreneurship programs largely depends on the instructional approaches employed. When entrepreneurship education is implemented merely as a formal or routine activity, its impact on students' entrepreneurial character and independence tends to be limited. Consequently, innovative and structured pedagogical approaches are required to ensure that entrepreneurship programs function as transformative learning experiences. One approach that has gained considerable attention in global entrepreneurship education is design thinking. Design thinking emphasizes creative and collaborative problem-solving processes through iterative stages, including empathizing with users, defining problems, generating ideas, developing prototypes, and testing solutions. In educational contexts, this approach is believed to foster flexible yet systematic thinking, enabling learners to construct solutions grounded in contextual understanding and authentic experiences (Eamcharoen, 2024; R., 2022).

The pedagogical strength of design thinking lies in its ability to integrate affective, cognitive, and psychomotor dimensions within a coherent, student-centered learning process. By engaging learners in empathy-building, experimentation, reflection, and iterative improvement, design thinking extends beyond conventional problem-solving strategies (Grau & Rockett, 2022). Students are encouraged not only to generate ideas but also to understand others' needs, test assumptions, learn from failure, and reflect on their learning processes. At the elementary school level, such learning experiences are particularly valuable, as they stimulate curiosity, risk-taking, and divergent thinking key components of entrepreneurial spirit development in early childhood. Therefore, integrating design thinking into entrepreneurship education offers substantial potential to enhance both entrepreneurial dispositions and learner independence.

Empirical observations conducted at UPT SPF SD Inpres Baraya 1, Makassar City, reveal both the potential and limitations of current entrepreneurship practices at the elementary level. Since the 2022/2023 academic year, the school has implemented entrepreneurship-related activities, including handicraft production, snack preparation, and simple marketing strategies integrated into market day events. Initial observations indicate that some students demonstrate emerging entrepreneurial traits, such as confidence in expressing ideas, enthusiasm for innovation, and willingness to present products publicly. However, the majority of students remain passive participants. Approximately 65% of students tend to wait for teacher instructions and show limited initiative, while only 35% actively engage in idea generation and presentation. Similar patterns are observed in terms of student independence: only 30% of students are able to complete tasks autonomously and manage group work effectively, whereas 70% remain highly dependent on teacher guidance. Moreover, students' understanding of entrepreneurial concepts remains superficial, as they are primarily involved in selling products without comprehending essential aspects such as profit calculation and decision-making.

Further analysis indicates that these limitations are closely linked to the absence of a systematic design thinking framework within the entrepreneurship program. Teachers have not received specialized training in design thinking, and no standardized evaluation instruments are available to objectively measure students' entrepreneurial spirit and independence. As a result, program implementation lacks structural coherence, and learning outcomes are not optimally achieved. This condition underscores the need for a more innovative and structured instructional intervention that can enhance the effectiveness of entrepreneurship education at the elementary level.

Previous studies have demonstrated the effectiveness of design thinking in fostering entrepreneurial mindsets across various educational contexts. Thepkaew et al. (2024) reported that the integration of design thinking and cooperative learning significantly enhanced active participation and entrepreneurial understanding among undergraduate students. Similarly, Alagappar et al. (2023) found that design thinking–based training promoted curiosity, creativity, and critical reflection, reinforcing the importance of innovative pedagogies in entrepreneurship education. Galib et al. (2024) further confirmed that creativity and innovation training positively influenced entrepreneurial character development, although their findings were limited to higher education contexts. Gong (2020) emphasized that design thinking functions not merely as a learning strategy but as a comprehensive curricular framework capable of transforming entrepreneurship education systems.

Despite these contributions, existing studies reveal a clear research gap. Most prior research has focused on secondary and higher education levels, leaving elementary education largely underexplored. There is a lack of empirical evidence examining the impact of design thinking–based entrepreneurship programs on entrepreneurial spirit and independence among elementary school students. This gap is particularly critical given the formative nature of character development at early educational stages. In response to this empirical and theoretical gap, the present study aims to evaluate the effectiveness of an entrepreneurship program using a design thinking approach in fostering entrepreneurial spirit and independence among fifth-grade students at UPT SPF SD Inpres Baraya 1, Makassar City. Specifically, this study examines the influence of the program on students' entrepreneurial spirit and independence, thereby contributing empirical evidence to the limited body of research on design thinking–based entrepreneurship education at the elementary level. Through this investigation, the study seeks to offer pedagogical insights and practical implications for the development of innovative entrepreneurship programs that support character education and learner autonomy in basic education contexts.

2. Literature review

Entrepreneurship Education for Elementary School–Age Children

Entrepreneurship education at the elementary level is increasingly positioned as a strategy for building character and life skills relevant to 21st-century demands, particularly when entrepreneurship is understood as the capacity to create value, take initiative, and solve contextual problems. This perspective emphasizes that entrepreneurship learning should not stop at introducing business concepts; instead, it should be designed as a learning experience that enables students to practice creativity, collaboration, and responsible decision-making. In line with this, innovative approaches such as project-based learning are considered more consistent with the developmental needs of elementary students because they provide opportunities for exploration through real-life situations that foster self-confidence and responsibility (Tati et al., 2025). The findings of Kurniawan et al. (2018) strengthen the argument that early entrepreneurship internalization effectively cultivates creativity, risk-taking courage, and teamwork as adaptive life skills in competitive and uncertain conditions. However, the literature also stresses that entrepreneurship education in elementary schools should avoid the trap of "simplified business theory" and should instead prioritize practical activities that build entrepreneurial character through direct experience (Marlian et al., 2024). Moreover, entrepreneurship can be introduced even earlier than elementary school through collaborative and adaptive strategies that are enjoyable, suggesting that intervention design should align with children's world rather than merely replicating higher-level entrepreneurship education models (Panda et al., 2024). In this context, research focusing on basic education is crucial because this phase is a critical period for shaping dispositions, habits, and learning orientations that will influence entrepreneurial readiness in later stages.

At the level of objectives, entrepreneurship education in elementary schools conceptually aims to strengthen character and life literacy beyond the narrow goal of "producing entrepreneurs." Putri & Nawawi (2023) emphasize objectives that integrate attitudinal dimensions (responsibility, courage, hard work), creativity and innovation, leadership and independence, financial literacy, and mental and emotional resilience. This view indicates that entrepreneurship is treated as a tool to strengthen students' resilience and agency. In a similar vein, Setiono et al. (2023) view entrepreneurship education as a medium for character education that emphasizes planning entrepreneurial activities, interpersonal communication, problem-coping abilities, and practical economic literacy. The alignment of these two sources indicates that outcomes of entrepreneurship education in elementary schools should be assessed not

only by the products created, but also by changes in students' dispositions and capacities to plan, initiate, and take responsibility dimensions directly associated with the variables of independence and entrepreneurial spirit in this study.

From the perspective of development approaches, the literature highlights the importance of contextual, enjoyable designs integrated into the curriculum. Hasibuan & Siregar (2024) position the integration of entrepreneurial values into thematic or cross-subject learning as a prerequisite, followed by internalization of core principles such as creativity, innovation, initiative, and risk-taking courage, and the application of experiential learning that allows active exploration through small projects. Meanwhile, Megawati et al. (2024) emphasize simple entrepreneurial practice activities to foster independence in designing and carrying out economic activities, creativity and innovation in products or services, and perseverance and fighting spirit. Both approaches point to the pedagogical logic that entrepreneurship is effectively developed through transformative "learning by doing," yet they raise a methodological question: which approach most reliably ensures a systematic learning process guiding students from problem observation to tested solutions and provides a reflection and evaluation mechanism that can be measured objectively? This question opens space for design thinking as a framework that not only offers activities, but also structures the process.

In terms of values, entrepreneurship education in elementary schools is conceptualized as the internalization of a proactive and ethical mindset, including hard work, perseverance, independence, creativity, empathy, social concern, calculated risk-taking, and resilience in the face of failure. This direction is consistent with the argument that entrepreneurship is closer to building adaptive character than teaching business skills alone. Putri & Nawawi (2023) underscore leadership, resilience, creativity, innovation, and social responsibility as value orientations in entrepreneurship education, while Hasibuan and Siregar (2024) formulate independence, creativity, risk-taking courage, responsibility, and innovation as core values in the elementary curriculum. However, existing studies often acknowledge these values without fully explaining the most effective pedagogical mechanisms for cultivating them in measurable ways among elementary students, especially when program implementation frequently stops at "selling products" and has not reached deeper learning about value creation. This gap reinforces the need for a learning approach capable of systematically linking values, processes, and outcomes.

Design Thinking in Educational Contexts

Design thinking is increasingly viewed as a relevant approach in education because it offers a human-centered problem-solving framework and encourages innovation through an iterative process. Amid its growing popularity, Kuzmina & Pavlovskaya (2024) warn of the risk of oversimplification when design thinking is adopted superficially; this caution matters because many educational interventions fail not due to weak ideas, but because implementation does not capture the essence of the process. Historically, design thinking emerged in the late 1960s and has been recognized as a problem-solving method emphasizing creativity, empathy, and cross-disciplinary collaboration (Krumina, 2018). In a more operational formulation, design thinking is understood as a human-centered approach that emphasizes rapid idea testing, value creation, and user acceptance through an iterative process from understanding needs to testing prototypes (Zakharchenko, 2022). In the context of entrepreneurship education in elementary schools, the implication is clear: design thinking is not merely a "creative method," but a pedagogical mechanism that can integrate empathy-building, innovation courage, critical thinking, and self-reflection all of which form the foundation of 21st-century entrepreneurial character.

At the process level, design thinking has variations in stages but shares core principles: moving from understanding a problem to designing and testing solutions, while allowing iteration. Aprianto et al. (2023) outline stages through discovery, interpretation, idea determination, experimentation, and evaluation, emphasizing information exploration, analysis, idea development, trial, and reflective evaluation. Another widely used model highlights empathize, define, ideate, prototype, and test (Suryawan & Anjani, 2023). Although these models differ in terminology, both affirm design thinking's added value for elementary education: the process provides a "roadmap" that helps students externalize creative thinking systematically not merely generating ideas, but understanding needs, formulating problems, testing ideas, and learning from feedback. Thus, design thinking addresses a core challenge in elementary entrepreneurship programs that are often event-based activities lacking a process structure that fosters deep learning and can be evaluated.

Beyond stages, design thinking is supported by elements that determine implementation quality. Rosa & Rozenfeld (2016) emphasize key elements method, people, input, tasks, and

outcomes indicating that design thinking is not simply a sequence of activities, but a working system requiring contextual data (input), active participation (people), structured tasks, and tangible outputs (outcomes). Wölbling et al. (2012) strengthen this perspective through elements of an iterative process, multidisciplinary teams, creative spaces, and a designer's mindset. When adapted to elementary education, these elements suggest that program success is shaped not only by modules, but also by the classroom ecosystem: student-teacher mindsets, group collaboration, and a safe space for trying and failing. However, the literature leaves a key empirical question: to what extent can these elements be operationalized in real elementary entrepreneurship programs, and how do they affect psychosocial outcomes central to basic education particularly entrepreneurial spirit and independence?

Entrepreneurial Spirit of Elementary School Students

Entrepreneurial spirit among elementary students is understood as a configuration of attitudes, values, and competencies that drive creative, innovative, and proactive actions in creating opportunities and solving problems. Sutihat et al. (2024) describe entrepreneurial spirit as the willingness to seize opportunities and create valuable goods or services, supported by internal drive, creativity, and courage to act. Yusantika (2021) highlights the mindset and life skills that enable students to adapt, integrating responsibility, innovation, and risk-taking courage, especially in facing challenges of the Industry 4.0 era. The literature also implies that entrepreneurial spirit has a moral-spiritual dimension and social responsibility, not merely economic motives; therefore, educational programs targeting it should balance value creation with integrity, empathy, and social usefulness. The theoretical implication is that strengthening entrepreneurial spirit in elementary students should be positioned as experience-based character building, not as a miniaturized form of business training.

Students with entrepreneurial spirit typically display leadership, independence and hard work, collaboration, creativity and innovation, and the courage to make decisions and take risks (Pratiwi & Zahroh, 2023). This framework can be conceptually enriched by findings at the university level that emphasize risk propensity, internal locus of control, need for achievement, innovative ability, and tolerance for ambiguity (Anwar & Saleem, 2019). Salamzadeh et al. (2014) also identify characteristics such as open-mindedness, vision, pragmatism, perseverance, and acceptance of challenges. Although these studies focus on higher education, they are conceptually relevant because they indicate entrepreneurial spirit is built by a combination of character, motivation, and dispositions toward uncertainty elements that can be "translated" into elementary contexts through developmentally appropriate activities. Here, design thinking becomes a plausible mechanism: it trains tolerance for ambiguity through iteration, supports self-regulation through structured stages, and strengthens locus of control through experiences of creating solutions.

Entrepreneurial spirit is also shaped by interacting internal and external factors. Yani (2024) emphasizes motivation, risk perception, uncertainty tolerance, self-confidence, stress management, and social support. Kushwaha & Singh (2023) add entrepreneurial self-image and orientation, entrepreneurial intention, and self-perception as determinants of entrepreneurial spirit development. Synthesizing these sources implies an important practical consequence for elementary education: interventions should not only "assign entrepreneurship tasks," but should be designed to influence students' self-beliefs, perceived competence, and classroom social support through safe, structured, and meaningful processes. Therefore, studies testing specific pedagogical interventions (such as design thinking) are highly relevant for strengthening empirical evidence on effective strategies for cultivating entrepreneurial spirit from an early age.

Student Independence

Independence is a core capacity that enables students to act autonomously, take initiative, manage time and responsibilities, and solve problems without excessive dependence. In educational contexts, learning that stimulates critical thinking, collaboration, and independent solution-seeking contributes strongly to the development of independence (Waruwu, 2023). Beyond school, independence is also shaped by habituation and family support, including giving children space to make decisions and learn from consequences (Hidayanti et al., 2023). More operationally, independence is defined as a child's ability to think and act independently to meet needs without relying on others (Sa'diyah, 2017). This synthesis suggests that independence is not merely "not being helped," but rather develops through a combination of learning experiences, social support, and decision-making habits.

The literature notes that independence includes cognitive, affective, and psychomotor dimensions, and can be differentiated into emotional autonomy, behavioral autonomy, and value autonomy as classified by Steinberg. These dimensions indicate that independence is

expressed not only in behavior but also in emotional maturity and the strength of personal values. Hidayati (2014) describes independence across emotional, intellectual, social, and economic dimensions, emphasizing that independent students tend to be creative, able to make mature decisions, emotionally stable, communicative, initiative-driven, and capable of managing resources. Desmitha (2009) enriches this understanding through characteristics such as objectivity, tolerance for ambiguity, respect for others' independence, and the ability to express emotions confidently. Safitri & Maryanti (2022) emphasize that independent behavior can be recognized through proactive attitudes and efforts to solve problems independently. This framework reveals a strong overlap between independence and entrepreneurial spirit: both require initiative, responsibility, and tolerance for uncertainty. Therefore, an entrepreneurship program designed around an iterative process (design thinking) theoretically has a plausible pathway to improve student independence.

Factors influencing independence are also explained through internal and external frameworks. Syahputra (2017) highlights endogen factors (such as innate foundations) and exogen factors (social environment). Another perspective from Chabib Thoha (Supriyanto, 2021) distinguishes internal factors such as age maturity, gender differences, and intelligence, and external factors such as culture, family, schooling, and community social life. This synthesis is important because it signals the limits of school-based interventions: improvements in independence are likely shaped by contexts outside the classroom. In other words, research on the effectiveness of design thinking–based entrepreneurship programs should acknowledge that changes in independence result from interactions between program and context; therefore, implementation design and interpretation should consider local socio-cultural conditions.

At the indicator level, learning independence is commonly operationalized through initiative, self-confidence, motivation, discipline, and responsibility (Nahdliyati et al., 2016), as well as more detailed indicators such as diagnosing learning needs, setting goals, monitoring progress, viewing difficulties as challenges, seeking relevant resources, selecting learning strategies, evaluating processes and outcomes, and self-efficacy (Sumarmo, 2004). Astuti (2015) summarizes learning independence as the ability to learn with self-initiative without external coercion, supported by self-control and responsibility. In this study, the independence indicators used adapt five aspects from Widuroyekti (2021:17): *bebas tanggung jawab*, progressive and persistent, initiative or creativity, self-control, and self-confidence/steadfastness. This operationalization provides a sharper basis to test whether a specific pedagogical intervention such as design thinking can influence independence dimensions in measurable ways.

3. Research Method

This study employed a quantitative quasi-experimental approach using a Non-Equivalent Control Group Design to examine the effect of a design thinking–based entrepreneurship program on fifth-grade students' entrepreneurial spirit and independence. The study was conducted at UPT SPF SD Inpres Baraya 1, Makassar City, Indonesia, over three months from September to November 2025. The population consisted of all Grade V students in the 2025/2026 academic year (N = 74). Using purposive sampling, two intact classes with comparable characteristics were selected. Class VC served as the experimental group (n = 25), while Class VA served as the control group (n = 25).

Both groups completed pretests and posttests measuring entrepreneurial spirit and student independence. The experimental group received an entrepreneurship program structured around the five stages of design thinking empathize, define, ideate, prototype, and test while the control group did not receive the intervention. Data were collected primarily through questionnaires, supported by observation and documentation to capture students' engagement and behavioral changes during the learning process. Entrepreneurial spirit was measured using indicators of open and visionary thinking, perseverance, challenge acceptance, tolerance, and self-control. Student independence was assessed through indicators of initiative, self-confidence, motivation, discipline, and responsibility. Data analysis included descriptive statistics, assumption testing, and hypothesis testing. Normality was examined using the Shapiro–Wilk test, and homogeneity of variance was assessed with Levene's test. An independent samples t-test was applied to determine post-intervention differences between the experimental and control groups at a significance level of 0.05.

4. Results and Discussion

Result of Research

Assumption Testing

Prior to hypothesis testing, classical assumption tests were conducted to ensure that the data met the requirements for parametric statistical analysis, including normality and homogeneity. Normality was examined using the Shapiro–Wilk test, which is appropriate for small sample sizes ($N < 50$). As presented in Table 1, all pretest and posttest scores for entrepreneurial spirit (Y1) and student independence (Y2), in both experimental and control groups, yielded significance values greater than 0.05. These results indicate that all data were normally distributed.

Table 1. Results of Normality Test (Shapiro–Wilk)

Variable	Statistic	df	Sig.	Interpretation
Pretest Y1 Experimental	0.942	25	0.168	Normal
Posttest Y1 Experimental	0.929	25	0.081	Normal
Pretest Y1 Control	0.930	25	0.085	Normal
Posttest Y1 Control	0.953	25	0.288	Normal
Pretest Y2 Experimental	0.943	25	0.173	Normal
Posttest Y2 Experimental	0.928	25	0.080	Normal
Pretest Y2 Control	0.955	25	0.326	Normal
Posttest Y2 Control	0.963	25	0.483	Normal

Homogeneity of variance between the experimental and control groups was tested using Levene's Test. As shown in Table 2, all significance values exceeded 0.05 for both variables at pretest and posttest, indicating that the data met the homogeneity assumption and were suitable for further parametric analysis.

Table 2. Homogeneity of Variance Test (Levene's Test)

Variable	Levene Statistic	Sig.	Interpretation
Pretest Entrepreneurial Spirit	1.319	0.257	Homogeneous
Posttest Entrepreneurial Spirit	1.218	0.275	Homogeneous
Pretest Independence	2.075	0.156	Homogeneous
Posttest Independence	0.854	0.360	Homogeneous

Hypothesis Testing

Given that the assumptions of normality and homogeneity were satisfied, hypothesis testing was conducted using an independent samples t-test to compare posttest scores between the experimental and control groups. The results, summarized in Table 3, indicate statistically significant differences between groups for both entrepreneurial spirit and student independence.

Table 3. Independent Samples t-Test Results

Variable	t	Sig. (2-tailed)	Mean Difference	Decision
Entrepreneurial Spirit (Y1)	3.274	0.002	5.64	Significant
Student Independence (Y2)	11.336	0.001	12.68	Significant

For entrepreneurial spirit (Y1), the significance value ($p = 0.002$) was below the 0.05 threshold, indicating a significant difference between the experimental and control groups. Similarly, student independence (Y2) showed a highly significant difference ($p = 0.001$), confirming that the design thinking–based entrepreneurship program had a significant positive effect on both outcome variables.

Effect Size

To complement the significance testing and assess the magnitude of the intervention's impact, effect size was calculated using Cohen's d. As presented in Table 4, the effect size for entrepreneurial spirit was classified as large, while the effect size for student independence was classified as very large, indicating strong practical significance.

Table 4. Effect Size (Cohen's d)

Variable	Effect Size (d)	95% CI	Category
Entrepreneurial Spirit	0.926	0.337–1.506	Large
Student Independence	3.206	2.352–4.045	Very Large

These findings demonstrate that the design thinking–based entrepreneurship program not only produced statistically significant improvements but also yielded substantial practical effects, particularly in enhancing students' independence.

Discussion

Effect of a Design Thinking–Based Entrepreneurship Program on Students' Entrepreneurial Spirit

The findings of this study demonstrate that the entrepreneurship program incorporating a design thinking approach had a significant positive effect on the entrepreneurial spirit of

fifth-grade students. The independent samples t-test revealed a statistically significant difference between the experimental and control groups ($p = 0.002 < 0.05$), with the experimental group achieving higher posttest scores. The magnitude of this effect was further confirmed by a large effect size (Cohen's $d = 0.926$), indicating that the observed improvement was not only statistically significant but also educationally meaningful. These results suggest that design thinking provides a structured yet flexible learning framework that effectively nurtures core dimensions of entrepreneurial spirit, including creativity, initiative, persistence, and courage to face challenges. The iterative stages of empathizing, defining problems, ideating, prototyping, and testing appear to have encouraged students to actively explore problems, generate ideas, and take ownership of solutions. Compared to conventional instruction, this approach enabled students to experience entrepreneurship as a problem-solving and value-creation process rather than as a purely product-oriented activity.

The present findings are consistent with previous studies highlighting the effectiveness of design thinking in entrepreneurship education. Baltador et al. (2024) reported that design thinking significantly enhances entrepreneurial competencies and entrepreneurial motivation, while Alagappar et al. (2023) emphasized its role in fostering creative mindsets, curiosity, and intrinsic motivation key foundations of entrepreneurial spirit. Similarly, Ayala et al. (2023) found a positive relationship between design thinking and entrepreneurial enthusiasm among secondary school students, and Misso et al. (2024) demonstrated improvements in ideation, prototyping, and communication skills through design thinking–based entrepreneurship learning. Observational data from the classroom further support the quantitative results. During implementation, students in the experimental group became increasingly active in identifying problems, expressing ideas, collaborating in teams, and confidently presenting their prototypes. These behavioral changes contrast sharply with pre-intervention conditions, where students tended to be passive and hesitant. Thus, the findings indicate that the design thinking approach not only enhances entrepreneurial spirit statistically but also produces tangible pedagogical benefits by transforming students' learning behaviors and attitudes in authentic classroom contexts.

Effect of a Design Thinking–Based Entrepreneurship Program on Student Independence

In addition to entrepreneurial spirit, the entrepreneurship program based on design thinking exerted a very strong influence on student independence. The independent samples t-test showed a highly significant difference between the experimental and control groups ($p < 0.001$), with an exceptionally large effect size (Cohen's $d = 3.206$). This result indicates that the intervention had a substantial practical impact on students' ability to regulate their learning, make decisions, and take responsibility for tasks. The descriptive analysis revealed that students in the experimental group exhibited markedly greater gains in independence than those in the control group. These gains suggest that design thinking–based entrepreneurship learning creates conditions that actively promote autonomy, self-confidence, discipline, and responsibility. By engaging students in iterative problem-solving processes, the program required them to plan activities, divide roles within groups, manage time, and refine their work independently, thereby strengthening self-directed learning behaviors.

These findings align with prior research demonstrating the role of entrepreneurship education in enhancing student independence. Utami et al. (2025) reported that entrepreneurship-oriented learning within the P5RA program effectively increased students' independence, while Sufyan et al. (2024) found that entrepreneurship education in boarding school contexts positively influenced students' economic independence, decision-making skills, and responsibility. The present study extends this body of evidence by showing that a design thinking framework can amplify these effects at the elementary school level. Classroom observations further revealed that students in the experimental group became more proactive and less dependent on teacher instructions. During the testing phase, students demonstrated reflective thinking by independently identifying weaknesses in their prototypes and making improvements without detailed guidance. This behavioral shift contrasts with pre-intervention patterns, where students relied heavily on teacher direction and showed limited confidence in decision-making. Consequently, the findings indicate that design thinking not only supports entrepreneurial cognition but also strengthens independence as a critical character trait for 21st-century learning.

Overall, the discussion underscores that a design thinking–based entrepreneurship program functions as a powerful pedagogical intervention capable of simultaneously enhancing entrepreneurial spirit and student independence. By integrating experiential learning with structured reflection and iteration, design thinking bridges cognitive, affective, and behavioral

dimensions of learning, making it particularly effective for character development in elementary education.

5. Conclusions

This study concludes that an entrepreneurship program grounded in a design thinking approach is empirically effective in enhancing both the entrepreneurial spirit and independence of fifth-grade students at UPT SPF SD Inpres Baraya 1, Makassar City. The findings demonstrate that the implementation of design thinking facilitates meaningful changes in students' learning attitudes and behaviors, as reflected in increased creativity, initiative, decision-making confidence, and the ability to manage and take responsibility for their own learning processes. Accordingly, the research objectives to examine the effectiveness of a design thinking–based entrepreneurship program in strengthening entrepreneurial character and student independence at the elementary school level have been successfully achieved.

From a theoretical perspective, this study contributes to the literature on elementary entrepreneurship education by affirming design thinking as a pedagogical framework capable of integrating cognitive, affective, and behavioral dimensions of learning. The findings suggest that design thinking not only supports the development of entrepreneurial competencies but also serves as an effective mechanism for fostering learner independence as a core component of character education. Practically and managerially, the results imply that teachers should consider adopting design thinking as an alternative, student-centered instructional strategy to promote entrepreneurial spirit and independence. Furthermore, schools are encouraged to provide supportive policies, facilities, and creative learning spaces to enable the sustainable implementation of design thinking–based entrepreneurship programs as part of an innovative learning culture in elementary education.

Despite these contributions, this study is subject to several limitations. The relatively small sample size and the focus on a single school context limit the generalizability of the findings. In addition, the measurement of key variables relied primarily on questionnaire-based instruments and short-term observation. Future research is therefore recommended to involve larger and more diverse samples across different school contexts, employ longitudinal research designs, and integrate mixed-method approaches to obtain a more comprehensive understanding of the long-term impact of design thinking–based entrepreneurship programs on students' entrepreneurial character and independence.

References

Alagappar, P. N., Xavier, J. A., & Jambulingam, M. (2023). Nurturing students' entrepreneurial mindset. In *Advances in business strategy and competitive advantage* (pp. 400–420). https://doi.org/10.4018/978-1-6684-8781-5.ch018

Aprianto, M. T. P., Kuswandi, D., & Soepriyanto, Y. (2023). Memperkuat keterampilan berpikir kreatif melalui model pembelajaran proyek berlandaskan metode design thinking. *Jurnal Kajian Teknologi Pendidikan, 6*(3), 132. https://doi.org/10.17977/um038v6i32023p132

Ayala, A. C. N., Yovera, S. E. R. y, & Soto, F. G. C. (2023). Design thinking y los emprendimientos de los estudiantes de educación secundaria en el Perú, caso: Institución Educativa Guillermo e Billinghurst. *Salud, Ciencia y Tecnología, 2*(2), 222. https://doi.org/10.56294/sctconf2023222

Baltador, L. A., Grecu, V., Panţa, N. D., & Beju, A. M. (2024). Design thinking in education: Evaluating the impact on student entrepreneurship competencies. *Education Sciences, 14*(12), 1311. https://doi.org/10.3390/educsci14121311

Deden, D., Devi, J., Jomantara, D., Willys, H., Hilman, A., & Yasmin Azhar, W. (2025). Pemanfaatan design thinking sebagai strategi inovatif dalam pembelajaran kewirausahaan di SMAN 3 Cikampek. *Jurnal Abdimas Maduma, 4*(1), 134–138. https://doi.org/10.52622/jam.v4i1.418

Desmitha. (2009). *Psikologi perkembangan peserta didik*. Bumi Aksara. PT. Remaja Rosdakarya.

Eamcharoen, P. (2024). Design thinking for creating educational innovations for teachers in the digital age. *23*(2). https://doi.org/10.55003/jie.23203

Fitri, R., Sudarmiatin, D. A., Lia, Z., & Murniati, A. (2021). Konsep design thinking melalui ecoprint sebagai upaya meningkatkan keterampilan dan kemandirian santri. *J. Karinov, 4*(1), 64–69.

Galib, M., Maulana, M., Basri, M., Mashuri, A., & Ardasanti, A. (2024). Menumbuhkan jiwa entrepreneur mahasiswa melalui pelatihan kreativitas dan inovasi. *PengabdianMu, 9*(8), 1464–1470. https://doi.org/10.33084/pengabdianmu.v9i8.7139

GEM (Global Entrepreneurship Monitor). (2025). *Global Entrepreneurship Monitor: 2025/2025 Global report: Entrepreneurship reality check*.

Ginting, F. B., Natasya, T., Kurniyati, W., Nahara, A. S., Sofwan, M., & Sholeh, M. (2024). Strategi guru dalam menumbuhkan jiwa wirausaha peserta didik melalui pembelajaran di sekolah dasar. *Jurnal Guru Kita, 8*(3), 504–513.

Gong, C. (2020). Design thinking transforms teaching approaches and curriculum development for entrepreneurship education. *162–165*. https://doi.org/10.2991/ASSEHR.K.200306.100

Grau, S. L., & Rockett, T. (2022). Creating student-centred experiences: Using design thinking to create student engagement. *Journal of Entrepreneurship, 31*(2_suppl), S135–S159. https://doi.org/10.1177/09713557221107443

Hasibuan, B. A. M., & Siregar, R. (2024). Pengembangan kurikulum kewirausahaan di sekolah dasar. *Indo-MathEdu Intellectuals Journal, 5*(6), 8319–8325. https://doi.org/10.54373/imeij.v5i6.2407

Hidayanti, M., Lita, L., & Agustin, M. (2023). The role of parents in forming children's independence. https://doi.org/10.56916/jesi.v1i1.478

Krumina, A. A. (2018). Design thinking in the context of pedagogy. *4*, 423–434. https://doi.org/10.17770/SIE2018VOL1.3300

Kurniawan, B., Sayuti, M., & Kuat, T. (2018). The effectiveness of life skills education in fostering entrepreneurship values and interest of primary school students. *1*, 21–28. https://doi.org/10.12928/joves.v1i1.592

Kushwaha, A., & Singh, A. (2023). The entrepreneurial mind: Unraveling psychological drivers. *Deleted Journal, 1*(1), 44–57. https://doi.org/10.21844/crr.v1i01.1104

Kuzmina, A. A., & Pavlovskaya, E. E. (2024). Design thinking: In the labyrinth of the concept. *Arhitekton, 18*. https://doi.org/10.47055/19904126_2024_2(86)_18

Marlian, S., Simarmata, E. J., & Samosir, R. (2024). Empowering young entrepreneurs: Practical learning initiatives in primary education. *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan, 2*(3), 200–205. https://doi.org/10.31004/jerkin.v2i3.245

Megawati, M., Sawita, N., Wahyudi, L., & Firman, F. (2024). Entrepreneurship education: Training entrepreneurship through the pancasila (P5) student profile strengthening project for primary school students. *Jurnal Muara Pendidikan, 9*(1), 136–142. https://doi.org/10.52060/mp.v9i1.2032

Misso, A., Rwegasira, D., Ismail, M., Mkocha, K., Shayo, E., & Maziku, H. (2024). Enhancing entrepreneurial skills in higher learning institutions: A case study of the University of Dar es Salaam's ICT innovation hubs. https://doi.org/10.23919/ist-africa63983.2024.10569938

Panda, S. K., Mohapatra, P. M., Panda, S. S., & Panda, A. K. (2024). Kindling young minds: Entrepreneurship in India's pre-primary education landscape. https://doi.org/10.7910/dvn/p67jqj

Pratiwi, G. A., & Zahroh, A. (2023). Developing an entrepreneurial spirit: Case study of entrepreneurial vocational school students in Jombang. *International Journal of Economics and Management Research, 3*(1), 72–78. https://doi.org/10.55606/ijemr.v3i1.158

Putri, C. P., & Nawawi, Z. M. (2023). Pentingnya pendidikan kewirausahaan ditanamkan sejak usia sekolah dasar dalam perspektif Islam. *Maeswara/Maeswara, Semarang, 2*(1), 141–158. https://doi.org/10.61132/maeswara.v2i1.603

R., A. (2022). Design thinking approach: A new perspective in education. *Asian Journal of Management, 245–246*. https://doi.org/10.52711/2321-5763.2022.00042

Rosa, M., & Rozenfeld, H. (2016). Looking for fundamental elements of design thinking. *1115–1124*.

Sa'diyah, R. (2017). Pentingnya melatih kemandirian anak. *Kordinat: Jurnal Komunikasi Antar Perguruan Tinggi Agama Islam, 16*(1), 31–46. https://doi.org/10.15408/kordinat.v16i1.6453

Safitri, M. E., & Maryanti, E. (2022). *Buku ajar kewirausahaan*. Penerbit NEM.

Salamzadeh, A., Farjadian, A. A., Amirabadi, M., & Modarresi, M. (2014). Entrepreneurial characteristics: Insights from undergraduate students in Iran. *International Journal of Entrepreneurship and Small Business, 21*(2), 165–182. https://doi.org/10.1504/IJESB.2014.059471

Samadi, M., Nurishlah, L., & Mariam, S. (2023). Strategi pengembangan ekstrakurikuler untuk meningkatkan kemampuan afektif siswa sekolah dasar. *1*(2), 186–206. https://doi.org/10.69768/jt.v1i2.29

Setiono, E., Nabilah, Z. I., Fitri, F. K., Indrawati, A., & Wardana, L. W. (2023). Entrepreneurship character education in elementary schools: Systematic literature review (SLR). *International Journal of Education, Language, Literature, Arts, Culture, and Social Humanities, 1*(2), 53–65. https://doi.org/10.59024/ijellacush.v1i2.81

Sienatra, K. B., & Padmalia, M. (2022). Pembelajaran entrepreneurship dengan metode design thinking pada siswa siswi SMK Frateran Surabaya. *Covit (Community Service of Health), 2*(2), 88–94.

Sinatria, N. (2025). Pelatihan kewirausahaan menggunakan metode design thinking bagi siswa di SMA IT Insan Mulia Boarding School. *Jurnal Pengabdian Kepada Masyarakat Ungu (ABDI KE UNGU), 7*(1), 7–14.

Su'adiyah, R. L. Q., Wahid, A., & Fahrurrozi, F. (2020). Manajemen kurikulum ekstrakurikuler kewirausahaan dalam membentuk jiwa entrepreneur peserta didik di SMA Mazra'atul Ulum Paciran Lamongan. *Jawda: Journal of Islamic Education Management*, 1–13.

Sufyan, S., Jamali, J., & Juanda, A. (2024). Entrepreneurship education and independence of students of Ulfiyah Progressive Islamic Boarding School, Segeran Kidul Juntinyuat Indramayu, Indonesia. *International Journal of Social Science and Human Research, 07*(10). https://doi.org/10.47191/ijsshr/v7-i10-31

Sugiyono. (2010). *Metode penelitian kuantitatif, kualitatif dan R&D*. Alfabeta.

Sukaris, S., Alkusani, A., & Baskoro, H. (2023). Penyuluhan strategi berinovasi melalui design thinking dengan konsep efektuasi untuk kesiapan siswa dalam berwirausaha di SMA Muhammadiyah Cerme 8 Gresik. *Jurnal Pengabdian Manajemen, 3*(1), 7–14.

Supriyanto, S. (2021). Membentuk kemandirian ekonomi pesantren: Telaah terhadap peran kiai dalam pesantren Al-Amien Prenduan, Madura. *Maliyah, 11*(2), 282–309.

Suryawan, I. P. P., & Anjani, N. W. R. (2023). Design thinking: Metode perancangan aplikasi Bapeling dalam penanganan sampah berbasis sumber Provinsi Bali. *1*(02), 41–48. https://doi.org/10.57203/session.v1i02.2023.41-48

Sutihat, A., Budiantini, A., & Jelanti, D. (2024). Menumbuhkan jiwa wirausaha melalui implementasi edupreneurship di SMK Techno Media. https://doi.org/10.62237/jac.v1i1.37

Syahputra, D. (2017). Pengaruh kemandirian belajar dan bimbingan belajar terhadap kemampuan memahami jurnal penyesuaian pada siswa SMA Melati Perbaungan. *AT-TAWASSUTH: Jurnal Ekonomi Islam, 2*(2), 368–388.

Tati, A. D. R., Irfan, M., Sahabuddin, R., & Faisal, M. (2025). Memupuk jiwa entrepreneur sejak dini: Integrasi konsep kewirausahaan dalam pembelajaran di SD. *Journal on Education, 7*(2), 9629–9638. https://doi.org/10.31004/joe.v7i2.7950

Thepkaew, J., Lertthahan, P., & Nithichaiyo, E. (2024). Promoting entrepreneurial mindset of undergraduate students by using design thinking with cooperative learning. *23*, 1–5. https://doi.org/10.1109/istem-ed62750.2024.10663117

Triono, S. P. H., Kristanti, F. T., & Salim, D. F. (2023). Pelatihan kewirausahaan untuk mendukung kapasitas kewirausahaan bagi SMK YPPS Sumedang. *Inovasi Jurnal Pengabdian Masyarakat, 1*(2), 63–72.

Utami, Y. T., Ulum, D., & Mukhlis, A. (2025). Penguatan kemandirian dan kreativitas siswa melalui implementasi pendidikan kewirausahaan dalam program P5RA di MTsN 9 Jember. *Pandalungan, 3*(2), 328–339. https://doi.org/10.62097/pandalungan.v3i2.2273

Waruwu, E. W., & Waruwu, E. (2023). Peran pendidikan agama Kristen dalam meningkatkan kemandirian peserta didik di era kurikulum merdeka. *Sinar Kasih: Jurnal Pendidikan Agama Dan Filsafat, 1*(2), 98–112.

Yani, A. (2024). The impact of psychological factors in decision-making to start and develop entrepreneurial initiatives. https://doi.org/10.61100/tender.v1i1.148

Yusantika, F. D. (2021). Penanaman jiwa entrepreneur pada siswa SD di era revolusi industri 4.0. *2*(1), 34–45. https://doi.org/10.47400/JIEES.V2I1.32

Zakharchenko, N. A. (2022). Perspectives on design thinking in business and innovation. *Akademičnij Oglâd, 1*(56), 53–62. https://doi.org/10.32342/2074-5354-2022-1-56-6