

# Digital Entrepreneurship Learning in Nonformal Education: A Literature Review of Implementation Strategies, Competency Development, and Community Empowerment

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## Abstract

*Digital technology has reshaped education and entrepreneurship, yet gaps in digital skills persist, particularly among communities with limited access to formal education. Nonformal education offers a flexible, needs-oriented alternative, but existing studies mostly examine specific programs, media, or community groups in isolation. This study offers an integrated synthesis of digital entrepreneurship learning in nonformal education and its contribution to learners' skills and community economic empowerment. A qualitative literature review was conducted on fourteen national and international journal articles published between 2023 and 2026, analyzed through thematic grouping and comparison. The findings show that implementation generally combines training, mentoring (e.g., coaching clinics), and project-based learning-by-doing, supported by digital media such as social media, e-commerce platforms, and learning management systems. These strategies develop personal, interpersonal, and digital entrepreneurial competencies, which in turn foster creativity, self-efficacy, business readiness, and economic independence, particularly among MSME groups and women. The synthesis yields a pathway that links nonformal education, digital entrepreneurship learning, practice-based implementation, and community empowerment. Its success, however, depends on technological support, educator readiness, and access to learning resources. Because most of the reviewed studies are small-scale, further empirical research is needed to strengthen the evidence base.*

**Keywords:** Nonformal education; digital entrepreneurship; entrepreneurship learning; digital skills; community empowerment

## 1. INTRODUCTION

The advancement of digital technology has brought significant changes to education and entrepreneurship. Technology not only facilitates public access to information but also creates new business opportunities through digital media. Rafiah et al. (2025) show that the use of social media and digital technology influences individual readiness, particularly self-confidence and the capacity to start a business. Digital skills have therefore become essential for navigating the digital economy.

However, the public's ability to use digital technology remains uneven. Certain community groups still struggle to apply technology in business activities and learning processes, especially those with limited access to education. Rahayu et al. (2025) note that digital-based management in the micro, small, and medium enterprise (MSME) sector still faces obstacles such as limited technological knowledge and sub-optimal financial management. Bridging this skills gap requires a more comprehensive educational effort.

Nonformal education offers an alternative solution. Its flexibility and orientation toward real-world needs make it accessible to various segments of society. Nasrullah (2025) reports that nonformal programs such as community learning centers (Pusat Kegiatan Belajar Masyarakat, PKBM) can foster learners' entrepreneurial spirit through practice-based activities. Nonformal education thus functions not only as a learning medium but also as a means of community empowerment.

Technology has also changed how entrepreneurship is taught in nonformal settings. Raihana and Junaedi (2024) find that digital entrepreneurship training can improve participants' ability to market products through digital platforms, and Sapitri and Siregar (2026) show that online marketing in PKBM learning helps learners grasp marketing strategies through direct practice. Innovative media and

mentoring further support this process: Darmawan et al. (2025) report that collaborative digital learning media enhance participation and understanding, while Widodo et al. (2024) find that mentoring-based programs help learners develop business ideas through to implementation.

Despite these developments, the existing studies tend to examine specific programs, media, or community groups in isolation. An earlier systematic review (Juwairia et al., 2023) addressed digital-based nonformal business education with a focus on the creative economy. What is still lacking is a synthesis that connects how digital entrepreneurship learning is implemented, which entrepreneurial competencies it develops, and how these translate into community economic empowerment.

This study addresses that gap through a literature review of recent studies across diverse Indonesian nonformal education settings, supported by international literature on ICT-based entrepreneurship education. Its novelty lies in integrating three elements into one framework: (1) implementation strategies (training, mentoring, and project-based learning), (2) the development of personal, interpersonal, and digital entrepreneurial competencies, and (3) their outcomes for community empowerment. Accordingly, this study aims to examine the implementation of digital entrepreneurship learning in nonformal education and its role in developing learners' skills and empowering communities in the digital era.

## 2. METHOD

### 2.1 Research Design

This study employed a qualitative literature review to examine concepts, findings, and developments concerning digital entrepreneurship learning in nonformal education. The review followed a structured procedure of searching, screening, data extraction, and thematic synthesis to keep the process systematic and traceable.

### 2.2 Data Sources and Search Strategy

The data were secondary data from national and international journal articles. Articles were searched in Google Scholar, Garuda (Garda Rujukan Digital), and ScienceDirect using combinations of the keywords "nonformal education", "PKBM", "digital entrepreneurship", "entrepreneurship learning", "digital marketing", and "community empowerment", together with their Indonesian equivalents (pendidikan nonformal, kewirausahaan digital, pemberdayaan masyarakat). The main search string was ("nonformal education" OR "PKBM") AND ("digital entrepreneurship" OR "entrepreneurship learning"). The search was conducted in 2026.

### 2.3 Selection Criteria

Articles were included if they (1) addressed nonformal education, digital entrepreneurship, or entrepreneurship learning; (2) reported findings relevant to learners' skills or community empowerment; (3) were published within the last five years, following Juwairia et al. (2023); and (4) were available in full text. Articles were excluded if they were not peer-reviewed, focused only on formal education without relevance to nonformal settings, or duplicated other records. Screening proceeded through titles, abstracts, and full texts, and fourteen articles published between 2023 and 2026 were retained as the primary sources (Table 1).

To support the conceptual discussion of ICT-based entrepreneurship learning, eight additional articles were used as supporting literature. These were not part of the primary dataset and were not included in Table 1.

### 2.4 Data Extraction and Analysis

Data from the fourteen primary articles were recorded in a summary table covering the source, study focus, and main findings. The data were then analyzed thematically in three stages: (1) coding the findings of each article, (2) grouping codes into categories and comparing patterns across articles,

and (3) interpreting the categories to explain how digital entrepreneurship learning is implemented and how it relates to community empowerment.

### 2.5 Trustworthiness

Trustworthiness was maintained by selecting credible, peer-reviewed sources, rereading the articles repeatedly, and cross-checking findings across multiple sources to confirm consistency.

## 3. RESULTS AND DISCUSSION

This study yields data based on a review of fourteen scientific articles relevant to non-formal education, digital entrepreneurship, and community empowerment. Analysis was conducted to identify pattern findings, study focus, and the contributions of non-formal education to digital entrepreneurship skills development. To clarify the results of the analysis, a summary of the analyzed articles is presented in Table 1.

**Table 1.** Summary of Literature Review Results

| Source                     | Study Focus                                                                                                | Main Findings                                                                                                                                                                                                                                                                                             |
|----------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Darmawan et al., 2025)    | Development of community-based digital learning media                                                      | Collaborative-based digital learning media is capable of enhancing literacy and learning effectiveness in non-formal education.                                                                                                                                                                           |
| (Salim et al., 2025)       | Women's empowerment program through digital technology-based entrepreneurship education in the MSME sector | Digital entrepreneurship programs help empower women's MSME groups by enhancing abilities, developing a business mindset, and strengthening economic independence. Additionally, digital technology assists business actors in expanding marketing and increasing creativity in running their businesses. |
| (Rahayu et al., 2025)      | The role of MSMEs in digital-based economic empowerment                                                    | MSME digitalization contributes to improved financial management and community economic empowerment.                                                                                                                                                                                                      |
| (Raihana & Junaedi, 2024)  | Digital entrepreneurship training                                                                          | Digital entrepreneurship training is capable of strengthening the local creative economy and enhancing community skills.                                                                                                                                                                                  |
| (Nasrullah, 2025)          | The role of PKBM in entrepreneurship                                                                       | Non-formal education through PKBM is effective in fostering students' entrepreneurial spirit.                                                                                                                                                                                                             |
| (Sapitri & Siregar, 2026)  | Digital marketing in PKBM                                                                                  | The application of digital marketing helps improve entrepreneurial skills and the utilization of digital economic opportunities.                                                                                                                                                                          |
| (Apriliani, 2025)          | Effectiveness of entrepreneurship learning (CIPP model)                                                    | Evaluation indicates that entrepreneurship learning in PKBM is effective in improving students' skills.                                                                                                                                                                                                   |
| (Rahmah & Mubarak, 2025)   | Digital transformation of non-formal education                                                             | Digitalization of educational management enhances the efficiency and quality of non-formal learning services.                                                                                                                                                                                             |
| (Munawar & Khasanah, 2025) | Entrepreneurship education in the digital era                                                              | Digital-based entrepreneurship education enhances students' business readiness and self-confidence.                                                                                                                                                                                                       |
| (Andini, 2024)             | Community empowerment through digital entrepreneurship training                                            | Training increases community motivation, skills, and ability to develop businesses.                                                                                                                                                                                                                       |
| (Widodo et al., 2024)      | Entrepreneurship-based non-formal education program                                                        | Coaching clinic-based programs are effective in developing students' business skills.                                                                                                                                                                                                                     |
| (Nurhayati, 2024)          | Computer technician education & digital entrepreneurship                                                   | Technical skill-based education supports the development of digital entrepreneurship.                                                                                                                                                                                                                     |
| (Rafiah et al., 2025)      | The influence of social media on entrepreneurial readiness                                                 | Social media and entrepreneurship education enhance self-efficacy and entrepreneurial readiness.                                                                                                                                                                                                          |

|                         |                                                   |                                                                                                   |
|-------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------|
| (Juwairia et al., 2023) | Digital-based non-formal business education (SLR) | Digital-based non-formal education contributes to the growth of the community's creative economy. |
|-------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------|

Based on the study results in Table 1, the majority of research demonstrates that digital entrepreneurship plays a crucial role in non-formal education. The utilization of digital technology is considered capable of helping students enhance their business skills and adapt to developments in the digital economy. A practice-based approach supported by digital technology serves as the primary factor in fostering the success of the learning process. Non-formal education holds an essential function in assisting the community to develop entrepreneurial capabilities through more flexible, practice-based learning; learners do not merely acquire theory, but also gain direct experience applicable to business activities. Furthermore, non-formal education is capable of reaching various social strata and providing more comprehensive learning opportunities (Juwairia et al., 2023; Nasrullah, 2025). This highlights that non-formal education makes a vital contribution to shaping sustainable entrepreneurial capabilities.

### **3.1 Implementation of Digital Entrepreneurship Learning**

The implementation of digital entrepreneurship learning is generally conducted through training activities, mentoring, and direct practice. This approach helps students understand the practical use of digital technology in business operations. A learning-by-doing approach enables students to practically apply skills within business activities. The utilization of digital media also plays a role in supporting the instructional process while simultaneously unlocking opportunities for business development (Darmawan et al., 2025; Raihana & Junaedi, 2024). Consequently, the integration of digital technology becomes a key factor in boosting the effectiveness of entrepreneurship education.

The execution of digital entrepreneurship learning in non-formal education does not merely shift face-to-face material into a digital format; rather, it restructures the learning process to be more interactive, adaptive, and oriented toward technology-based practices (Darmawan et al., 2025; Sapitri & Siregar, 2026). The integration of information and communications technology (ICT) is no longer a passive auxiliary tool, but has become a core component in transforming the learning process and elevating student competitiveness (Núñez-Canal et al., 2022; Ratten & Usmanij, 2021). In this context, the use of digital devices and media is proven to enrich the learning experience and provide an interactive environment for students to comprehensively hone business skills (Bandera et al., 2018; Teymurova et al., 2020). Various digital instruments such as Learning Management Systems (LMS), business simulation platforms, animated presentations, and mobile-based learning now function as applied business simulation laboratories (Oliver & Oliver, 2022; Wu et al., 2018). Furthermore, the integration of artificial intelligence (AI) automation technology and social media allows students to directly practice content creation for promotions, customer service automation, and digital market trend analysis (Secundo et al., 2020).

To optimize the use of such technology, effective learning needs to combine experiential learning and project-based learning methods with direct exposure to business or startup activities (Bandera et al., 2018; Teymurova et al., 2020). Through a learning-by-doing approach, students are engaged in real-world projects, such as designing digital marketing strategies, creating online stores on e-commerce platforms, and executing digital marketing campaigns (Raihana & Junaedi, 2024; Sapitri & Siregar, 2026). The effectiveness of project-based learning is further reinforced through mentoring schemes such as coaching clinics, business incubation, and the involvement of living labs or field visits (Ratten & Usmanij, 2021; Widodo et al., 2024). These schemes serve as important assets in delivering direct, one-on-one feedback regarding practical obstacles faced by students in the field.

A structured implementation of digital entrepreneurship demands not only technical mastery (hard skills), but also the development of three dimensions of entrepreneurial competency: personal, interpersonal, and digital skills. Personally, digital-based learning fosters business intuition, creative thinking skills, and students' self-efficacy in taking risks and pursuing business opportunities (Rafiah et al., 2025). On the interpersonal dimension, the learning process encourages group collaboration,

effective business communication, and a social entrepreneurship orientation so that established businesses focus not only on profit, but also on generating positive societal impact. Meanwhile, on the digital dimension, students are equipped with adaptability to market dynamics, applied ICT literacy, and an encouragement for lifelong learning to maintain inclusivity and competitiveness in the future job market.

### 3.2 Impact on Community Economic Empowerment

The application of digital entrepreneurship in non-formal education yields an impact on enhancing community economic self-reliance. Students experience improvements in skills and capacity to run businesses independently. In addition, the use of digital technology aids in expanding marketing reach and boosting business competitiveness amidst current economic developments (Rahayu et al., 2025). Within specific groups, this approach has also been proven to increase business capacity and economic empowerment, particularly among female MSMEs (Salim et al., 2025). This demonstrates that digital entrepreneurship learning exerts a positive influence on enhancing community economic independence.

One of the most tangible outcomes of this program is the acquisition of practical digital entrepreneurship skills that can be directly applied by students. Under tutor guidance, students successfully apply their acquired knowledge to design business ideas, create product prototypes, and, most importantly, practice digital marketing strategies. They learn to create promotional content for social media, and some even set up accounts on e-commerce platforms to reach broader markets (Fuadi et al., 2024).

Based on the preceding discussion, several main themes showing the interconnections among non-formal education, digital entrepreneurship, and community empowerment can be identified. To facilitate understanding, these research findings are categorized into several themes as presented in Table 2.

**Table 2.** Categories of Research Findings

| Category of Findings                 | Description of Results                                                                                                      |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Role of non-formal education         | Serves as a flexible, needs-based learning medium for the community to develop entrepreneurial skills.                      |
| Digital entrepreneurship development | Utilization of digital technology in learning and business to enhance adaptability to digital economic developments.        |
| Learning implementation              | Carried out through training, mentoring, and hands-on practice using an experiential approach ( <i>learning by doing</i> ). |
| Community empowerment                | Promotes increased economic independence, business capacity, and community participation in productive economic activities. |

Based on Table 2, it can be seen that the research findings can be grouped into four main interconnected categories. Non-formal education serves as the foundation for the skill development process, which is then reinforced through the integration of digital entrepreneurship into learning. Furthermore, practice-based learning implementation plays a role in ensuring that the acquired skills can be directly applied. The interplay among these three aspects ultimately leads to community empowerment, characterized by increased economic independence and the ability to manage businesses sustainably. Thus, it can be understood that non-formal education based on digital entrepreneurship forms a structured pathway, ranging from the learning process to the outcome of enhanced community empowerment.

## 4. CONCLUSION

The findings of this study indicate that digital entrepreneurship learning in non-formal education offers substantial benefits for students, particularly in enhancing their entrepreneurial abilities and skills. Practice-based learning supported by digital technology helps students boost their skills, creativity, and adaptability to contemporary developments. A flexible, practice-based learning approach reinforced by technology utilization can foster students' creativity, innovation, and independence. Furthermore,

instructional success is influenced not merely by the methods applied, but also by technological support, educator readiness, and access to learning resources.

Non-formal education also demonstrates significant potential as a vehicle for community empowerment through digital entrepreneurship development that aligns with modern needs. Therefore, the implementation of digital entrepreneurship in non-formal education does not merely aid in developing individual capacities, but also supports sustainable community economic self-reliance.

## AI USAGE STATEMENT

During the preparation of this manuscript, the authors used ChatGPT to assist with language editing, improving sentence clarity, and refining the academic presentation of the manuscript. All AI-assisted content was reviewed, verified, and revised by the authors. The authors take full responsibility for the accuracy, interpretation, originality, and final content of the manuscript.

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