Exploring the Relationship Between Entrepreneurship Education and Career Success in Higher Education: A Systematic Review

Aries Adenata [1, a)], Muhammad Akhyar [1, b)], and Wiranto [2, c)]

[1] *Department of Educational Science, Faculty of Teacher Training and Education, Universitas Sebelas Maret, Surakarta, Indonesia*
[2] *Department of Informatics, Faculty of Information Technology and Data Science, Universitas Sebelas Maret, Surakarta, Indonesia*

[a)]Corresponding author: adenataaries@student.uns.ac.id
[b)]muhammadakhyar@staff.uns.ac.id
[c)]wiranto@staff.uns.ac.id

Abstract. The relationship between entrepreneurship education and career success has become a critical focus in higher education, given its potential to equip students with essential skills for the evolving job market. This systematic review aims to explore how entrepreneurship education contributes to career success, both for students aspiring to become entrepreneurs and those seeking roles in various professional sectors. The study employs a structured literature review approach, analyzing 26 research articles from five major publishers (ScienceDirect, Scopus, ARDI, Springer, and Sage Journals), selected using predefined search criteria. Key findings reveal that factors such as student competencies, entrepreneurial mindset, psychological attributes, and entrepreneurial intentions play a pivotal role in shaping career outcomes. Effective methods include case studies, experiential learning, and industry-based approaches, which enable students to gain practical insights and real-world experiences. However, the study identifies significant challenges, including limited resources, misalignment between education and labor market demands, students' lack of confidence, and insufficient interdisciplinary collaboration. These constraints underscore the need for a more integrated and adaptable approach to entrepreneurship education, thereby enhancing its relevance and impact. The findings provide actionable insights for educators, policymakers, and institutions seeking to promote career readiness and entrepreneurial success in higher education.

Keywords: career success; entrepreneurship education; higher education; systematic literature review

INTRODUCTION

The relationship between entrepreneurship education and career success in higher education is increasingly recognized as vital in preparing students for a competitive job market. Entrepreneurship education equips students with skills such as innovation, adaptability, and risk-taking, which are essential for career success (Kaiyanan et al.,

2024; Ajani et al., 2023). With global unemployment rates rising, particularly among graduates, there is an urgent need for educational institutions to foster entrepreneurial mindsets to create employment opportunities (Saputra et al., 2023).

Entrepreneurship education in higher education has proven to play a significant role in shaping students' skills and proactive attitudes towards career success. Studies indicate that effective entrepreneurship curricula incorporate experiential learning, industry partnerships, and real-world case studies, enabling students to build entrepreneurial knowledge and competencies (Al Balushi et al., 2023). Additionally, fostering an entrepreneurial mindset through innovative learning methods, such as business incubators, is key to preparing students for the challenges of the modern workforce (Rafiana, 2023).

The importance of entrepreneurship education is also evident in its contribution to economic growth and job creation. Literature reviews highlight that graduates with entrepreneurial skills can become job creators, positively impacting local and national economic development (Saputra et al., 2023). Practical learning elements and mentorship networks are identified as critical factors in the success of student startups (Jurgelevičius & Raišienė, 2024). Soft skills and practical experience are also crucial in preparing graduates to enter the workforce, as skills such as communication, teamwork, leadership, and problem-solving are essential in increasingly complex work environments. Through the Merdeka Belajar program, the effectiveness of graduates' work readiness can be enhanced (Nugroho et al., 2024).

Globally, countries are integrating entrepreneurship into higher education to combat unemployment and stimulate economic growth. For instance, South Africa's initiatives aim to enhance graduate employability through entrepreneurship education (Ajani et al., 2023). Similarly, research shows that entrepreneurial practices significantly influence students' interest in entrepreneurship, leading to enhanced career opportunities (Alifia et al., 2024).

Despite the growing body of literature, gaps remain in understanding the specific mechanisms through which entrepreneurship education translates into career success. More empirical research is needed to evaluate the long-term impact of such education on graduates' career trajectories (Kesuma et al., 2023) Challenges in implementation, including societal stigma against entrepreneurial careers compared to conventional career paths, persist. Transforming higher education curricula to be more inclusive of entrepreneurship, such as through technopreneurship approaches, has been proposed as a strategic solution (Rafiana, 2023). By instilling creative, innovative, and adaptive values, entrepreneurship education aims to enhance graduates' career success while boosting global competitiveness.

This systematic review aims to investigate the impact of integrating entrepreneurship into curricula on career outcomes for graduates. Specifically, it aims to analyze the effectiveness of entrepreneurship education in enhancing career success, identify best practices for integrating entrepreneurship into higher education curricula, and examine the role of mentorship and practical experience in fostering entrepreneurial skills.

The findings will contribute to the development of more effective entrepreneurship education programs, ultimately leading to improved career outcomes for graduates. By highlighting successful strategies, this research can inform policymakers and educational institutions on best practices for integrating entrepreneurship into higher education curricula.

RESEARCH METHOD

This study employs the Systematic Literature Review (SLR) methodology (Kitchenham et al., 2009). This structured approach enables the selected studies to extract both quantitative and qualitative data, addressing the research questions comprehensively.

Research Questions (RQs)

The objective of this study is to identify, evaluate, and synthesize research findings related to the development of entrepreneurship education and its impact on career success in higher education. The research questions (RQs) addressed are:

RQ1: What are the publication trends on the development of student entrepreneurship and its impact on career success in higher education over the past six years?

RQ2: What are the key factors influencing student entrepreneurship and career success in higher education?
RQ3: What methods or approaches are most commonly used to support the development of student entrepreneurship for career success in higher education?
RQ4: What challenges are faced in developing student entrepreneurship for career success in higher education?
RQ5: What research gaps exist in the context of student entrepreneurship development and career success in higher education?

SLR Protocol

To ensure a systematic and transparent review process, the following protocol was established: Data Sources, Search Keywords, Inclusion and Exclusion Criteria

Review Process

Stage 1: Initial Literature Search, Stage 2: Article Selection Based on Relevance, Stage 3: Quality Assessment of Articles, Stage 4: Data Extraction, Stage 5: Data Analysis and Synthesis

RESULTS AND DISCUSSION

Following the five steps of the systematic review process, the results of the most recent studies are detailed below.

Step 1: Formulating Research Questions

This systematic review aims to identify, evaluate, and synthesize research findings related to the development of students' creativity skills in the field of entrepreneurship.

Step 2: Identifying Relevant Articles

Articles were searched across five academic databases: ScienceDirect, Scopus, ARDI, Springer, and Sage Journals. Several search procedures were employed to collect studies aligned with the objectives of this research. The search period was set from 2019 to 2024, using the term "Entrepreneurship education." This yielded the following results: 1,039 articles from ScienceDirect, 3,479 from Scopus, 3,863 from ARDI, 730 from Springer, and 1,802 from Sage Journals.

A refined search using the term “Entrepreneurship education” AND “career success” resulted in 99 papers across the five databases. To focus on relevant and recent studies, inclusion and exclusion criteria were applied. After removing duplicate titles, 84 unique articles remained. Further selection based on relevance to the topic yielded 72 papers. An abstract review narrowed the selection down to 30 papers, and a subsequent full-text review resulted in 26 articles that met all the inclusion criteria.

The 26 selected publications underwent a thorough assessment to ensure relevance and alignment with the research objectives. The full procedural flow of the article selection process is illustrated in Figure 1.

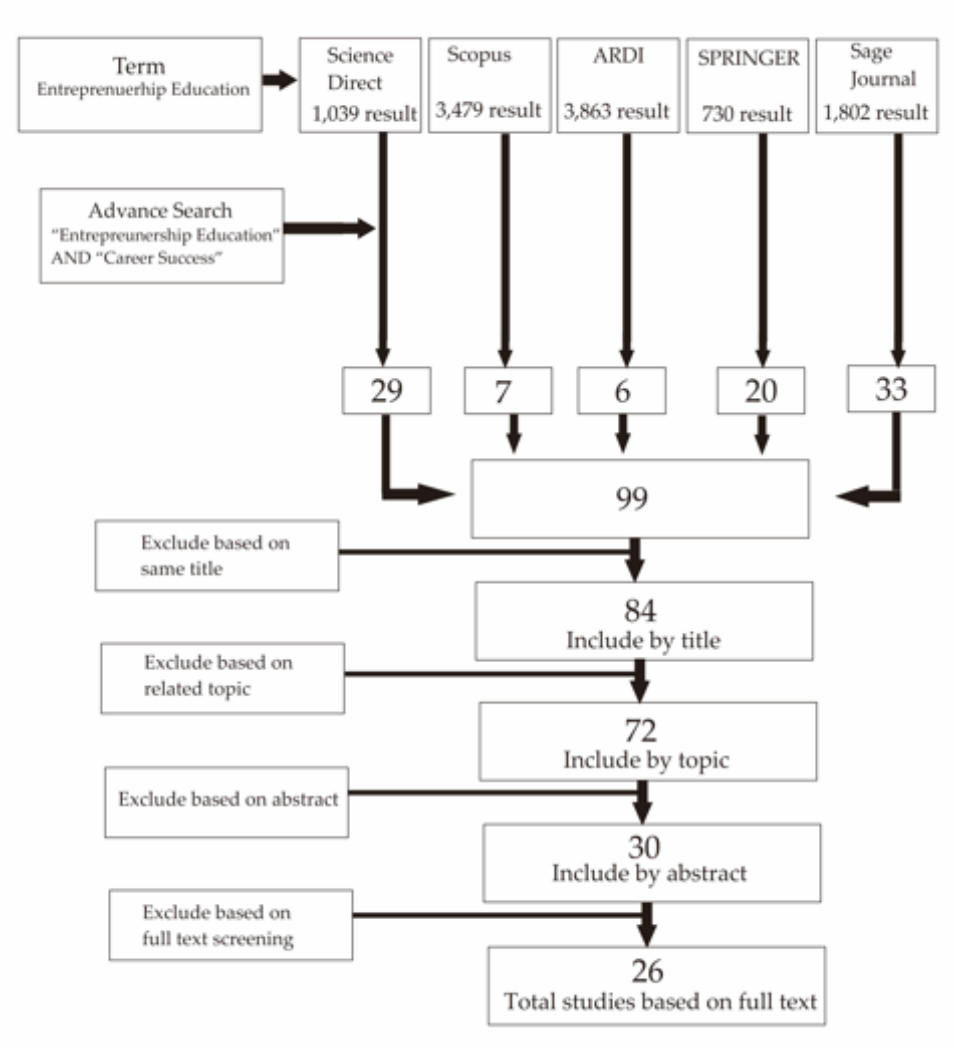

FIGURE 1. Article search procedure across five publisher databases

Step 3: Assessing Study Quality

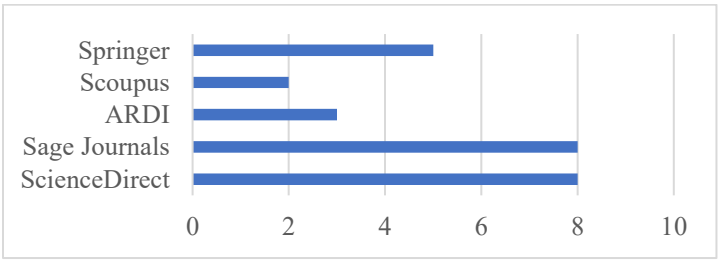

FIGURE 2. Number of papers from various publishers

The 26 papers that met all inclusion criteria underwent a quality assessment to ensure their relevance and methodological rigor. These papers, sourced from various publishers, are shown in Figure 2.

Figure 3 employs a Sankey diagram to visualize the distribution of selected papers based on their quartile rankings (Q1, Q2, Q3, and Q0 - non-quartile) across the five databases: ScienceDirect, Sage Journals, ARDI, Scopus, and Springer. The diagram illustrates how papers from each source are distributed among the quartile categories, providing insight into the quality and impact of publications included in the review. For example, the flow could show that ScienceDirect predominantly publishes Q1 and Q2 papers, with a smaller number classified as Q3 or Q0. Scopus: A balanced distribution among Q1, Q2, and Q3, with minimal Q0 papers. ARDI: Primarily Q3 papers, with a few Q1 and Q2 contributions and some Q0. Springer: Mostly Q1 papers, with occasional Q2 or Q3. Sage Journals: A mixture of Q1 and Q2 papers, with minimal Q3 or Q0. This visual representation not only emphasizes the quality of the selected studies but also highlights the contributions of different databases in terms of high-impact (Q1 and Q2) research.

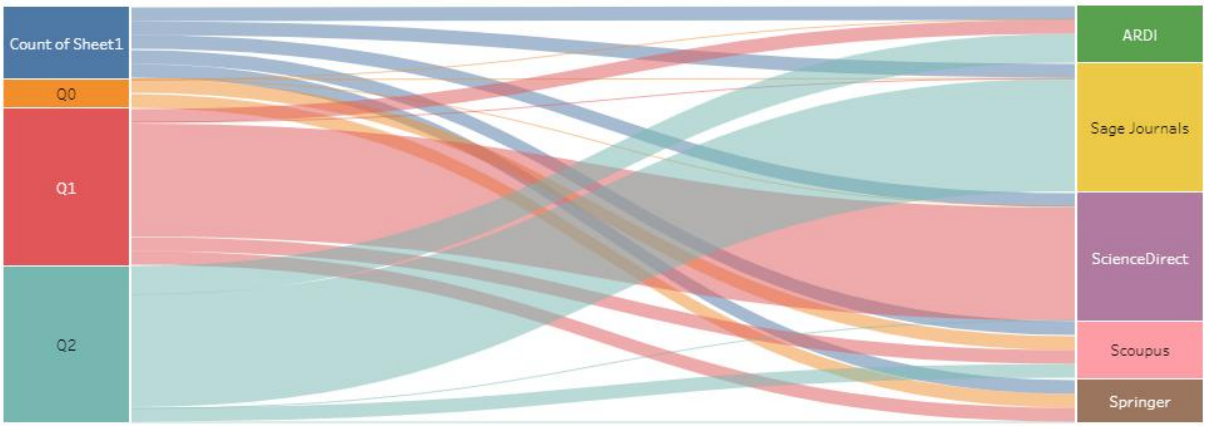

FIGURE 3. Sankey diagram showing the flow of relationships between quartile classification and sources.

Table 1 provides a breakdown of the number of selected papers based on their quartile classification (Q1, Q2, Q3, and Q0 - non-quartile) across the years 2019 to 2024.

TABLE 1. Number of papers by quartile and year (2019–2024)

Quartile	2019	2020	2021	2022	2023	2024
Q0	1		1			
Q1	2	1	2	1	3	4
Q2	1	1	4	2	1	2
Q3						
Q4						
Total	**4**	**2**	**7**	**3**	**4**	**6**

These findings are relevant to the research as they enable the identification of various quartile levels of the journals, such as Q1, Q2, Q3, and Q0 (non-quartile). Notably, studies published in Q1 journals are listed across four (4) information sources, including ScienceDirect, ARDI, Scopus, and Springer Link. On the other hand, Q2 journals are represented in Sage, ARDI, and Scopus. Additionally, Table 4 outlines the total number of papers by quartile and year, showing that out of 26 papers, 13 were published in Q1 journals, followed by Q2 with 11 papers, and Q0 with 2 papers. Furthermore, the most productive year was 2022, with 7 papers published, while the least productive year was 2020, with only 2 papers, within the considered period of 2019–2024.

Step 4: Summarizing the Evidence

Key trend data in research on the development of student entrepreneurship and its relationship with career success in higher education were identified from various sources. These trends include: effectiveness of entrepreneurship education (studies emphasize how structured entrepreneurship programs contribute to enhancing entrepreneurial skills and career readiness), relationship between entrepreneurship education and career success/employability (evidence highlights a direct correlation between entrepreneurship education and improved employability outcomes, such as higher adaptability and job creation), role of psychological and non-cognitive factors (attributes like resilience, risk-taking, and creativity are identified as critical to entrepreneurial success and career advancement), multidisciplinary approaches and technology integration (research underscores the importance of combining entrepreneurial training with other disciplines and utilizing technology to foster innovation), development of entrepreneurial competencies (competency-based education models are highlighted as essential for equipping students with practical entrepreneurial skills), international and gender perspectives (studies explore global variations in entrepreneurship education and address gender disparities in entrepreneurial participation and outcomes). More comprehensive data are presented in Table 2.

TABLE 2. Summary of the key trends identified in the research on the development of student entrepreneurship and its relationship with career success in higher education.

Trends in Research Publication	References
The Effectiveness of Entrepreneurship Education.	(Zotov et al., 2021); (Zappe et al., 2023); (Oliver & Oliver, 2022)
The Relationship Between Entrepreneurship Education and Career and Employability.	(Decker-Lange et al., 2024); (Rodriguez & Lieber, 2020); (Killingberg et al., 2021)
The Role of Psychological and Non-Cognitive Factors.	(Kumar & Shukla, 2022); (Chen, 2024); (Baluku et al., 2019)
Multidisciplinary Approaches and Integration of Technology.	(Ho et al., 2024); (Munawar et al., 2023); (Pérez-Pérez et al., 2021)
Entrepreneurial Competency Development.	(Kennedy et al., 2021); (Okolie et al., 2021); (Mwasiaji et al., 2022)
International and Gender Perspectives	(Cho et al., 2020); (Newman et al., 2019); (Cadenas et al., 2020)

The key factors influencing student entrepreneurship toward career success identified in the literature include: entrepreneurship education and entrepreneurial competency development, the influence of personality and attitudes on entrepreneurship, entrepreneurship education in virtual and industrial environments, psychological capital development and social support, entrepreneurship and career development in social and cultural contexts, the impact of entrepreneurship education on career readiness, self-efficacy, and entrepreneurial intentions, along with the role of educational support in shaping entrepreneurship. the data is presented in table 3.

TABLE 3. Data of factors influencing student entrepreneurship towards career success from literature sources

Factors Influencing Student Entrepreneurship towards Career Success	References
Entrepreneurial Competency Development	(Zotov et al., 2021); (Zappe et al., 2023); (Kennedy et al., 2021); (Okolie et al., 2021)
The Influence of Personality and Attitudes on Entrepreneurship	(Kumar & Shukla, 2022); (Chen, 2024); (Kariv et al., 2025)
Entrepreneurship Education in Virtual and Industrial Environments	(Oliver & Oliver, 2022); (Pérez-Pérez et al., 2021)
Psychological Capital Development and Social Support	(Baluku et al., 2019); (Cadenas et al., 2020)
Entrepreneurship and Career Development in Social and Cultural Contexts	(Cho et al., 2020); (Biney, 2023)
The Impact of Entrepreneurship Education on Career Readiness	(Rodriguez & Lieber, 2020); (Chiu et al., 2021)
Self-Efficacy and Entrepreneurial Intentions	(Newman et al., 2019); (Haque & Kour, 2023)
The Role of Educational Support in Shaping Entrepreneurship	(Killingberg et al., 2021); (Naudin & Agusita, 2021)

Data on approaches frequently used to support student entrepreneurship development toward career success in higher education. These approaches include case studies, experiential learning, industry-based approaches, development of psychological and social competencies, entrepreneurship training, online learning, and digital innovation. The data are presented in Table 4.

TABLE 4. Approaches frequently used to support student entrepreneurship development towards career success

Approaches in Entrepreneurship Development	Reference
Case Studies	(Zotov et al., 2021)
Experiential Learning	(Kennedy et al., 2021)
Industry-based Approaches	(Oliver & Oliver, 2022)
Psychological and Social Competencies Development	(Baluku et al., 2019)
Entrepreneurship Training	(Baluku et al., 2019)
Online Learning and Digital Innovation	(Munawar et al., 2023)

Data on challenges faced in student entrepreneurship development towards career success in higher education include: Limited resources and educational support, difficulties in integrating real-world learning, lack of self-confidence and personal development among students, cultural differences and social influences, limitations of online learning models, entrepreneurship development among underrepresented student groups, mismatch between education and labor market needs, and lack of interdisciplinary collaboration. Complete data is presented in Table 5.

TABLE 5. Challenges faced in student entrepreneurship development towards career success in higher education

Challenges in Entrepreneurship Development	Reference
Limited resources and educational support.	(Zappe et al., 2023); (Chen, 2024); (Newman et al., 2019)
Difficulties in integrating real-world learning.	(Kennedy et al., 2021); (Oliver & Oliver, 2022)
Lack of self-confidence and personal development among students.	(Kumar & Shukla, 2022); (Chen, 2024); (Kariv et al., 2025)
Cultural differences and social influences.	(Cho et al., 2020); (Baluku et al., 2019)
Limitations of online learning models.	(Oliver & Oliver, 2022); (Munawar et al., 2023)
Entrepreneurship development among underrepresented student groups.	(Cadenas et al., 2020); (Mwasiaji et al., 2022)
Mismatch between education and labor market needs.	(Decker-Lange et al., 2024); (Rodriguez & Lieber, 2020)
Lack of interdisciplinary collaboration.	(Zappe et al., 2023); (Mwasiaji et al., 2022)

Data on research gaps related to student entrepreneurship development for career success in higher education, identified from the list of papers mentioned, cover several key areas. These include the long-term effects of entrepreneurship education, combining entrepreneurship training with real-world experience, social and cultural entrepreneurship, entrepreneurship for students who are not primarily entrepreneurial, the influence of psychology and character on entrepreneurship, how online learning affects entrepreneurship, and gender and demographic differences. Complete data are presented in Table 6.

TABLE 6. Research gaps in the context of student entrepreneurship development towards career success in higher education

Research Gaps	Reference
Long-term impact of entrepreneurship education	(Zotov et al., 2021); (Oliver & Oliver, 2022); (Newman et al., 2019)
Integration of entrepreneurship education with real-world experience	(Oliver & Oliver, 2022); (Raine & Pandya, 2019)
Social and culture-based entrepreneurship	(Rodriguez & Lieber, 2020); (Mwasiaji et al., 2022); (Chiu et al., 2021)
Entrepreneurship for non-entrepreneurial students	(Kennedy et al., 2021); (Mwasiaji et al., 2022)
The role of psychology and character in entrepreneurship	(Kumar & Shukla, 2022); (Baluku et al., 2019)
The impact of online learning on entrepreneurship, gender, and demographic-based differences	(Oliver & Oliver, 2022); (Munawar et al., 2023)
Long-term impact of entrepreneurship education	(Cho et al., 2020)

Step 5: Interpreting the findings

RQ1: What are the Publication Trends in Research on Student Entrepreneurship Development and Its Relationship to Career Success in Higher Education Over the Last Five Years?

From the listed paper titles, the following trends or similarities can be identified regarding research publications on student entrepreneurship development and career success in Higher Education over the past five years.

Effectiveness of Entrepreneurship Education. Research assesses various approaches to entrepreneurship education in building students' skills and competencies. The focus is on the effectiveness of teaching methods, including case studies, hands-on experience, and technology-based learning. This trend suggests that entrepreneurship programs should prioritize simulating real-world challenges, fostering cross-disciplinary collaboration, and incorporating experiential teaching to develop practical competencies (Zotov et al., 2021; Zappe et al., 2023; Oliver & Oliver, 2022).

The Relationship Between Entrepreneurship Education and Career and Employability. This research highlights the impact of entrepreneurship education on students' employability and their readiness to enter the workforce. Entrepreneurship prepares students to be more competitive in the job market, both through enhanced employability and the ability to create their own jobs (Decker-Lange et al., 2024; Rodriguez & Lieber, 2020; Killingberg et al., 2021).

The Role of Psychological and Non-Cognitive Factors. Research highlights the significance of psychological factors and individual characteristics in shaping entrepreneurial intention and success. Psychological factors such as personality, optimism, and self-efficacy are key elements in building a solid entrepreneurial foundation in students (Kumar & Shukla, 2022; Chen, 2024; Baluku et al., 2019).

Multidisciplinary Approaches and Technology Integration. Entrepreneurship education increasingly adopts approaches that involve multiple disciplines and technology to enhance learning effectiveness. The use of technology and multidisciplinary approaches provides flexibility in entrepreneurship learning, allowing students to gain more relevant experiences (Ho et al., 2024; Munawar et al., 2023; Pérez-Pérez et al., 2021).

Development of Entrepreneurial Competencies. Research focuses on developing specific entrepreneurial skills, such as innovation, problem-solving, and technical competencies. Entrepreneurial competencies can be developed through practical experiences, structured training programs, and project-based approaches (Kennedy et al., 2021; Okolie et al., 2021; Mwasiaji et al., 2022).

International and Gender Perspectives. Research encompasses various cultural contexts and focuses on inclusivity, including the representation of women and minority groups in entrepreneurship education. Cross-cultural and gender perspectives highlight the importance of inclusive and context-sensitive approaches in entrepreneurship education (Cho et al., 2020; Newman et al., 2019; Cadenas et al., 2020).

RQ2: What are the Key Factors Influencing Student Entrepreneurship Towards Career Success in Higher Education?

The key factors influencing student entrepreneurship and their effects on career success, as discussed in the literature, are outlined below.

Entrepreneurial Competency Development. Case studies in entrepreneurship education help students develop analytical and problem-solving skills, which are crucial in entrepreneurship. Entrepreneurship support programs in STEM fields strengthen students' technical skills for starting and managing businesses in technology and science. Providing students with opportunities to develop basic entrepreneurial skills through practical and collaborative projects. Entrepreneurship education focused on developing competencies relevant to the local context can support students' success in the entrepreneurship sector (Zotov et al., 2021; Zappe et al., 2023; Kennedy et al., 2021; Okolie et al., 2021).

Influence of Personality and Attitudes on Entrepreneurship. Proactive personality and creativity play a crucial role in entrepreneurial intention, which can be strengthened through entrepreneurship education that fosters the development of self-efficacy. A proactive personality, influenced by entrepreneurial attitudes and educational support,

plays a significant role in shaping students' entrepreneurial intentions. Internal factors, such as personal motivation and educational support, interact to form strong entrepreneurial intentions (Kumar & Shukla, 2022; Chen, 2024; Kariv et al., 2025).

Entrepreneurship Education in Virtual and Industrial Environments. Industry-based learning in online learning environments provides valuable hands-on experience that prepares students for entering the business world. The use of business games in entrepreneurship education allows students to learn in a practical and challenging way, which can strengthen their entrepreneurial intentions (Oliver & Oliver, 2022; Pérez-Pérez et al., 2021).

Development of Psychological Capital and Social Support. Mentoring, optimism, and self-efficacy strengthen students' psychological capital, thereby enhancing their entrepreneurial intentions. Interventions that focus on developing self-efficacy, critical thinking, and technological readiness can support underrepresented students in achieving entrepreneurial success (Baluku et al., 2019; Cadenas et al., 2020).

Entrepreneurship and Career Development in Social and Cultural Contexts. Entrepreneurship education that supports women can help them overcome social and cultural challenges, as well as improve their career success in the entrepreneurship world. Entrepreneurship education for young adults can develop their entrepreneurial skills and prepare them for successful careers (Cho et al., 2020; Biney, 2023).

Influence of Entrepreneurship Education on Career Readiness. Entrepreneurship education that shapes students' entrepreneurial mindset influences their readiness for the workforce or to start their own businesses. Effective learning in higher education, coupled with mathematical and affective skills, contributes to graduates' career success (Rodriguez & Lieber, 2020; Chiu et al., 2021).

Self-Efficacy and Entrepreneurial Intent. Entrepreneurial self-efficacy plays a significant role in students' career decisions. Education that strengthens self-efficacy can increase the likelihood of their entrepreneurial success. This research shows the importance of developing self-efficacy in influencing students' entrepreneurial intentions (Newman et al., 2019; Haque & Kour, 2023).

Role of Educational Support in Shaping Entrepreneurship. Entrepreneurship education that focuses on practical skills and innovation helps students prepare to face future career challenges. Entrepreneurship education supporting creativity and cultural innovation helps students navigate the entrepreneurial world with a focus on arts and culture (Killingberg et al., 2021; Naudin & Agusita, 2021).

RQ3: What Methods or Approaches are Most Commonly Used to Support the Development of Student Entrepreneurship Towards Career Success in Higher Education?

Several methods or approaches are frequently employed to foster the development of student entrepreneurship for career success in higher education.

Case Studies. The use of case studies in entrepreneurship education helps students develop a deeper understanding of the dynamics of the business world, while strengthening problem-solving and analytical skills. This enhances critical thinking and practical skills in addressing real-world business problems, preparing them for entrepreneurship or working in the business sector (Zotov et al., 2021).

Experiential Learning. Experiential learning emphasizes skill development through hands-on experiences. In the context of entrepreneurship, this involves students in real projects, business simulations, or other activities that simulate business situations. This enhances technical, creative, and entrepreneurial skills through direct experimentation, helping students build confidence in managing their own projects or businesses (Kennedy et al., 2021). An example of its implementation is illustrating the use of makerspaces, creative spaces where students can create prototypes, develop ideas, and work with real technology and materials to solve real-world problems. The benefits include improving technical, creative, and entrepreneurial skills, as well as boosting confidence in managing projects or businesses.

Industry-based Approaches. This approach integrates real-world industry practices into entrepreneurship education, providing students with opportunities to interact directly with the professional world. This may involve internships, collaborative projects with companies, or problem-based learning related to specific industry challenges. It offers students a deeper understanding of how entrepreneurial theory is applied in industry, strengthens their connections with the professional world, and enhances their competitiveness in the job market (Oliver & Oliver,

2022). An implementation example is discussing how real-world practices integrated into online courses can help students understand industry needs and expand their practical skills. The benefits include a deeper understanding of how entrepreneurial theory applies in the industry, stronger professional relationships, and increased competitiveness in the job market.

Psychological and Social Competencies Development. This approach focuses on the psychological and social aspects that support entrepreneurship, including the development of an entrepreneurial mindset, risk management, optimism, and interpersonal skills. These psychological factors are critical for students who wish to succeed in entrepreneurship. This approach can foster positive attitudes, increase motivation, and help students overcome the failures or challenges they face during their entrepreneurial journey. It also helps manage interpersonal relationships that are crucial in the business world (Baluku et al., 2019).

Entrepreneurship Training. Training programs are designed to equip individuals with the practical skills necessary to start and manage a business. This training may encompass technical skills, including financial management, marketing, and product innovation, as well as soft skills such as leadership, communication, and time management. It helps students acquire the practical skills and knowledge needed to start their own businesses or work in a startup company. This program also increases students' self-efficacy in entrepreneurship (Baluku et al., 2019).

Online Learning and Digital Innovation. Online learning offers flexibility, allowing students to access learning materials from anywhere and study at their own pace. In entrepreneurship, this may also involve technology-based learning, such as utilizing business software, participating in entrepreneurship simulations, and engaging with online business games. It provides access to flexible learning that can be tailored to meet the individual needs of each student. It also enhances students' ability to use technology in managing businesses and adapting to the ever-evolving business environment (Munawar et al., 2023).

RQ4: What are the Challenges Faced in the Development of Student Entrepreneurship Towards Career Success in Higher Education?

Several studies have identified key challenges in developing student entrepreneurship, highlighting several important issues that need to be addressed.

Limited Resources and Educational Support. Many studies have shown that existing entrepreneurship programs in higher education are often constrained by limited resources, such as funding, facilities, and human resources, which may not provide adequate practical experience or industry-based training. The lack of competent mentors or external support, such as from the private sector, also becomes an obstacle in developing more effective programs (Zappe et al., 2023; Chen, 2024; Newman et al., 2019).

Difficulty in Integrating Real-World Learning. Research reveals that, despite advancements in entrepreneurship education, challenges persist in connecting the theoretical knowledge learned in class with real-world experiences that can be applied in the market. Learning focused on fictitious cases or simulations sometimes does not reflect the real challenges entrepreneurs face in the field (Kennedy et al., 2021; Oliver & Oliver, 2022).

Lack of Self-Confidence and Personal Development. Based on research findings, one of the main challenges is the low self-confidence among students in applying their entrepreneurial skills, even after undergoing training and education. Students often feel uncertain about their ability to start and manage their own businesses, especially when there is insufficient support to navigate uncertainty and risk (Kumar & Shukla, 2022; Chen, 2024; Kariv et al., 2025).

Cultural Differences and Social Influences. Research results show that a key challenge in entrepreneurship education is related to cultural differences and social influences that may limit students' ability to develop their entrepreneurial intentions. Some cultures or social structures may not support entrepreneurship, or students from certain backgrounds may face greater challenges in accessing effective entrepreneurship education (Cho et al., 2020; Baluku et al., 2019).

Limitations of Online Learning Models. Research identifies challenges related to online learning in entrepreneurship education, where, despite technology providing access to various materials, direct interaction with mentors and the industry becomes limited. Students who only study online may miss opportunities to develop professional networks or receive direct guidance necessary for success in entrepreneurship (Oliver & Oliver, 2022; Munawar et al., 2023).

Entrepreneurship Development in Underrepresented Student Groups. Based on research, challenges in engaging underrepresented student groups (e.g., students from low-income or minority backgrounds) in entrepreneurship education are often related to a lack of access to programs that can provide them with support. These programs may not sufficiently address the unique needs or challenges they face in developing their entrepreneurial careers (Cadenas et al., 2020; Mwasiaji et al., 2022).

Mismatch Between Education and Labor Market Needs. There is a gap between what is taught in entrepreneurship education and the skills needed in the labor market. This can make students less prepared to enter the workforce or start their own businesses because the skills they acquire are not always relevant or sufficient to meet the demands of a rapidly changing job (Decker-Lange et al., 2024; Rodriguez & Lieber, 2020).

Lack of Interdisciplinary Collaboration. In some cases, the lack of collaboration between disciplines or between entrepreneurship education faculties and other faculties can hinder the development of more holistic entrepreneurship education. Entrepreneurship education that is isolated from fields such as STEM or the arts, for example, may reduce the potential for innovation and creativity that could be generated through interdisciplinary approaches (Zappe et al., 2023; Mwasiaji et al., 2022).

These challenges demonstrate that, although entrepreneurship education is increasingly important and evolving, numerous obstacles persist to ensure that students can access relevant and in-depth education that supports their career success, both in entrepreneurship and other fields.

RQ5: What are the Research Gaps in the Context of Student Entrepreneurship Development and Career Success in Higher Education?

Research gaps related to student entrepreneurship development and career success in higher education can be identified in several key areas, as explained below.

Long-Term Impact of Entrepreneurship Education. Many studies have been conducted on the impact of entrepreneurship education on entrepreneurial skills and intentions (Zotov et al., 2021; Oliver & Oliver, 2022; Newman et al., 2019), but few have explored the long-term impact of entrepreneurship education on career success, particularly in terms of how these skills are translated into sustainable career development after graduation (e.g., in relation to jobs in startups or large corporations).

Integration of Entrepreneurship Education with Real-World Experience. The application of real industry practices in entrepreneurship education. However, gaps still exist in understanding how these real-world experiences directly impact students' career readiness, especially in terms of developing practical skills that can be applied in broader careers, such as in non-entrepreneurial sectors (Oliver & Oliver, 2022; Raine & Pandya, 2019).

Social and Cultural Entrepreneurship. While research on student entrepreneurship in general exists, there remains a lack of research linking students' social and cultural contexts to the development of entrepreneurship and their career success. Further research is needed to explore how cultural and social factors influence the implementation and success of entrepreneurship education at the university level (Rodriguez & Lieber, 2020; Mwasiaji et al., 2022; Chiu et al., 2021).

Entrepreneurship for Non-Entrepreneurial Students. The development of entrepreneurial skills for students who are more likely to pursue conventional careers rather than start their own businesses. However, there is still a lack of research connecting entrepreneurship education with increased career success for those who do not plan to become entrepreneurs but apply entrepreneurial skills in leadership and innovative roles in large companies (Kennedy et al., 2021; Mwasiaji et al., 2022).

The Role of Psychology and Character in Entrepreneurship. Many studies focus on the psychology of entrepreneurship, but there is a lack of understanding about the role of non-cognitive traits, such as mental resilience and social skills, in career success after entrepreneurship education. More research is needed to explain how these psychological traits interact with entrepreneurship education to enhance career success in broader professional contexts (Kumar & Shukla, 2022; Baluku et al., 2019).

Impact of Online Learning on Entrepreneurship. With the rise of online learning, much remains to be explored regarding how online entrepreneurship education affects students' career success, particularly in terms of building

networks and relationships with mentors, as well as integrating with real-world industries (Oliver & Oliver, 2022; Munawar et al., 2023).

Gender and Demographic Differences. On the topic of gender-based entrepreneurship (Cho et al., 2020), there are still gaps in how entrepreneurship education can be tailored to meet the demographic needs of different groups, such as students from low socio-economic backgrounds or minority groups, and how this contributes to their career success.

Further research addressing these gaps will provide deeper insights into how entrepreneurship education can more effectively prepare students for success in various careers, both as entrepreneurs and as professionals across multiple sectors.

CONCLUSION

This research was conducted through a comprehensive and structured literature review to explore the relationship between entrepreneurship education and career success in higher education. For this purpose, 26 research papers were obtained from five publishers, with appropriate search criteria formulated in advance. The findings indicate that key factors influencing students' entrepreneurship and career success include students' competencies, mindset, psychological factors, and entrepreneurial intentions, all of which contribute to achieving career success in their future. The methods or approaches most frequently used are case studies, experiential learning, and industry-based approaches. These approaches allow students to learn from real-world business cases and gain direct experience of what happens in the field or industry. This systematic review presents several limitations. Many studies indicate that entrepreneurship programs in higher education are often limited due to resource constraints, a lack of student confidence, misalignment between educational and labor market needs, and a lack of interdisciplinary collaboration. These challenges demonstrate that, although entrepreneurship education is increasingly important and evolving, many obstacles remain to be addressed to ensure that students can improve their competencies in line with labor market demands, enabling them to achieve career success in both entrepreneurship and other fields.

ACKNOWLEDGMENTS

Thank you to all colleagues who have helped, so that this research can be carried out and completed.

REFERENCES

Ajani, O. A., Khumatake, M. R., & Gamede, B. T. (2023). A systematic review of entrepreneurship education in higher education as panacea to unemployment reduction in South African graduates. *International Journal of Research in Business and Social Science (2147-4478), 12*(9), 392-404. https://doi.org/10.20525/ijrbs.v12i9.3000

Al Balushi, S., Al Balushi, H., Al Shukaili, N., Rao Naidu, V., Reales, L., & Jesrani, K. (2023). The influence of higher education curriculum on entrepreneurship education. *IX(26)*, 92-99. https://doi.org/10.46529/socioint.202331

Alifia, A., Tyas, W., Tholibi, I., & Wulandari, S. S. (2024). Trend of entrepreneurship education and entrepreneurial practices on entrepreneurial interest in higher education. *Edutama Education Journal, 11*(2), 84-93.

Baluku, M. M., Matagi, L., Musanje, K., Kikooma, J. F., & Otto, K. (2019). Entrepreneurial socialization and psychological capital, cross-cultural and multigroup analyses of impact of mentoring, optimism, and self-efficacy on entrepreneurial intentions. *Entrepreneurship Education and Pedagogy, 2*(1), 5-42. https://doi.org/10.1177/2515127418818054

Biney, I. K. (2023). Adult education and entrepreneurship, getting young adults involved. *Journal of Innovation and Entrepreneurship, 12*(1). https://doi.org/10.1186/s13731-023-00277-0

Cadenas, G. A., Cantú, E. A., Lynn, N., Spence, T., & Ruth, A. (2020). A programmatic intervention to promote entrepreneurial self-efficacy, critical behavior, and technology readiness among underrepresented college students. *Journal of Vocational Behavior, 116*, 103350. https://doi.org/10.1016/j.jvb.2019.103350

Chen, H. X. (2024). Exploring the influence of proactive personality on entrepreneurial intention, the mediating role of entrepreneurial attitude and moderating effect of perceived educational support among university students. *SAGE Open, 14*(1), 1-14. https://doi.org/10.1177/21582440241233379

Chiu, M. S., Xiong, W., & Kuan, P. Y. (2021). Graduates career success predicted by mathematical and affective abilities, effective higher-education learning and economic contexts, a bioecological positivity to success model. *Journal of Education and Work, 34*(3), 313-330. https://doi.org/10.1080/13639080.2021.1931668

Cho, Y., Park, J., Han, S. J., Sung, M., & Park, C. K. (2020). Women entrepreneurs in South Korea, motivations, challenges and career success. *European Journal of Training and Development, 45*(2-3), 97-119. https://doi.org/10.1108/EJTD-03-2020-0039

Decker-Lange, C., Lange, K., & Walmsley, A. (2024). How does entrepreneurship education affect employability? Insights from UK higher education. *International Journal of Entrepreneurial Behaviour and Research, 30*(5), 1249-1269. https://doi.org/10.1108/IJEBR-08-2023-0856

Haque, M. R., & Kour, M. (2023). Exploring the growth and future research direction of entrepreneurial self-efficacy in entrepreneurial intention research, a bibliometric analysis. *Journal of the Knowledge Economy*, 12392-12421. https://doi.org/10.1007/s13132-023-01578-1

Ho, C. S. M., Chiu, M. M., Chiu, S. W. kai, & Liu, L. C. kit. (2024). Development and validation of the adolescent entrepreneurial attributes inventory, a mixed-methods approach. *International Journal of Management Education, 22*(3), 101033. https://doi.org/10.1016/j.ijme.2024.101033

Jurgelevičius, A., & Raišienė, A. G. (2024). Key factors for student startup success, insights from higher education professors. In *Proceedings of the 19th European Conference on Innovation and Entrepreneurship, 2024*.

Kaiyanan, C., Atthakorn, S., Ludpa, U., Seti, S., Lavong, A., Plianjham, P., & Phoorisophon, T. (2024). Integrating entrepreneurship into education, cultivating skills for innovation, leadership, and future workforce success. *Journal of Education and Learning Reviews, 4*(July-August), 49-62. https://doi.org/10.60027/jelr.2024.795

Kariv, D., Giglio, C., & Corvello, V. (2025). Fostering entrepreneurial intentions, exploring the interplay of education and endogenous factors. *International Entrepreneurship and Management Journal, 21*(1). https://doi.org/10.1007/s11365-024-01020-1

Kennedy, E. D., McMahon, S. R., & Reis, D. (2021). Independence in the making, using makerspace experiences to build foundational entrepreneurial competencies. *Entrepreneurship Education and Pedagogy, 4*(3), 549-563. https://doi.org/10.1177/2515127420946036

Kesuma, T. A. R. P., Rosidin, U., Yulianti, D., Pargito, Ridwan, Ciciria, D., Wardani, Purwasih, A., Mustofa, I., Zainaro, M. A., Isnainy, U. C. A. S., Tusianah, R., Irawan, E., Mulyanah, A., Zalmansyah, A., & Sujarwo. (2023). A systematic literature review, entrepreneurship learning in higher education. *WSEAS Transactions on Systems, 22*, 56-68. https://doi.org/10.37394/23202.2023.22.7

Killingberg, N. M., Kubberød, E., & Blenker, P. (2021). Preparing for a future career through entrepreneurship education, towards a research agenda. *Industry and Higher Education, 35*(6), 713-724. https://doi.org/10.1177/0950422220969635

Kitchenham, B., Pearl Brereton, O., Budgen, D., Turner, M., Bailey, J., & Linkman, S. (2009). Systematic literature reviews in software engineering, a systematic literature review. *Information and Software Technology, 51*(1), 7-15. https://doi.org/10.1016/j.infsof.2008.09.009

Kumar, R., & Shukla, S. (2022). Creativity, proactive personality and entrepreneurial intentions, examining the mediating role of entrepreneurial self-efficacy. *Global Business Review, 23*(1), 101-118. https://doi.org/10.1177/0972150919844395

Li, X., Zhang, Y., Qi, F., & Tang, Y. (2024). The lagged effect of university-based entrepreneurship education on employees retention at entrepreneurial startups. *International Journal of Management Education, 22*(3), 101016. https://doi.org/10.1016/j.ijme.2024.101016

Munawar, S., Yousaf, H. Q., Ahmed, M., & Rehman, S. (2023). The influence of online entrepreneurial education on entrepreneurial success, an empirical study in Pakistan. *International Journal of Management Education, 21*(1), 100752. https://doi.org/10.1016/j.ijme.2022.100752

Mwasiaji, E., Mambo, S., Mse, G. S., & Okumu, J. (2022). Conceptualizing non-cognitive attributes, entrepreneurship training, pedagogical competencies and STEM education outcome, an integrated model and research

proposition. *International Journal of Technology and Design Education, 32*(3), 1925-1939. https://doi.org/10.1007/s10798-021-09671-9

Naudin, A., & Agusita, E. (2021). Rethinking cultural and creative entrepreneurship education. In *Proceedings of the European Conference on Innovation and Entrepreneurship (ECIE)* (pp. 628-634). https://doi.org/10.34190/EIE.21.040

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy, a systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of Vocational Behavior, 110*(October 2017), 403-419. https://doi.org/10.1016/j.jvb.2018.05.012

Okolie, U. C., Igwe, P. A., Ayoola, A. A., Nwosu, H. E., Kanu, C., & Mong, I. K. (2021). Entrepreneurial competencies of undergraduate students, the case of universities in Nigeria. *International Journal of Management Education, 19*(1), 100452. https://doi.org/10.1016/j.ijme.2021.100452

Oliver, P. G., & Oliver, S. (2022). Innovative online learning in entrepreneurship education, the impact of embedding real-life industry practice in the virtual learning environment. *Industry and Higher Education, 36*(6), 756-767. https://doi.org/10.1177/09504222221121283

Pérez-López, M. C., González-López, M. J., & Rodríguez-Ariza, L. (2019). Applying the social cognitive model of career self-management to the entrepreneurial career decision, the role of exploratory and coping adaptive behaviours. *Journal of Vocational Behavior, 112*(March), 255-269. https://doi.org/10.1016/j.jvb.2019.03.005

Pérez-Pérez, C., González-Torres, T., & Nájera-Sánchez, J. J. (2021). Boosting entrepreneurial intention of university students, is a serious business game the key? *International Journal of Management Education, 19*(3), 1-14. https://doi.org/10.1016/j.ijme.2021.100506

Rafiana, N. N. (2023). Technopreneurship strategy to grow entrepreneurship career options for students in higher education. *ADI Journal on Recent Innovation (AJRI), 5*(2), 110-126. https://doi.org/10.34306/ajri.v5i2.995

Raine, A. L., & Pandya, M. (2019). Three keys to entrepreneurial success, curiosity, creativity, and commitment. *Entrepreneurship Education, 2*(3-4), 189-198. https://doi.org/10.1007/s41959-019-00019-y

Rodriguez, S., & Lieber, H. (2020). Relationship between entrepreneurship education, entrepreneurial mindset, and career readiness in secondary students. *Journal of Experiential Education, 43*(3), 277-298. https://doi.org/10.1177/1053825920919462

Saputra, Y. A., Novilia, F., & Hendrayati, H. (2023). Entrepreneurship curriculum in higher education, a systematic literature review (SLR). *West Science Interdisciplinary Studies, 1*(12), 1408-1420. https://doi.org/10.58812/wsis.v1i12.502

Zappe, S. E., Cutler, S. L., & Gase, L. (2023). A systematic review of the impacts of entrepreneurial support programs in science, technology, engineering, and math fields. *Entrepreneurship Education and Pedagogy, 6*(1), 3-31. https://doi.org/10.1177/25151274211040422

Zotov, V., Frolova, N., Prasolov, V., & Kintonova, A. (2021). The effectiveness of case studies in entrepreneurship education. *International Journal of Instruction, 14*(4), 1033-1046. https://doi.org/10.29333/iji.2021.14459a