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*PEDAGOGICAL INNOVATIONS IN ENTREPRENEURSHIP EDUCATION:
OVERVIEW AND PERSPECTIVES OF ACADEMIC PRODUCTION¹*

**INOVAÇÕES PEDAGÓGICAS NA EDUCAÇÃO EMPREENDEDORA:
PANORAMA E PERSPECTIVAS DA PRODUÇÃO ACADÊMICA**

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ABSTRACT

Pedagogical innovation in entrepreneurship education in higher education has become a priority at Brazilian universities seeking to prepare students for an increasingly innovative and dynamic labor market. However, little is known about studies addressing new teaching practices in entrepreneurship education that are created and applied within the university context. In view of this, this research aims to build an integrated overview of academic production on pedagogical innovations in entrepreneurship education in higher education. This research is guided by a systematic literature review that served to assimilate, synthesize, and describe the results of different studies. The research survey was conducted using the CAPES journal database, including academic publications published between 2001 and 2023. The search was conducted only for articles in English and Portuguese. The results demonstrate that pedagogical innovations play a vital role in advancing entrepreneurship education (EE) and in training professors, support the reformulation of undergraduate curricula, and guide universities in improving their entrepreneurship teaching methodologies.

Keywords: entrepreneurship education, pedagogical innovation, higher education. systematic review.

RESUMO

A inovação pedagógica na educação empreendedora no ensino superior vem se tornando uma prioridade nas universidades brasileiras que buscam capacitar estudantes para um mercado de trabalho cada vez mais inovador e dinâmico. No entanto, pouco se conhece sobre os estudos que abordam novas práticas de ensino na educação empreendedora que são criadas e aplicadas no âmbito

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universitário. Diante disto, esta pesquisa tem como objetivo construir um panorama integrado da produção acadêmica sobre as inovações pedagógicas na educação empreendedora do ensino superior. Essa pesquisa orienta-se por uma revisão sistemática da literatura que serviu para assimilar, sintetizar e descrever os resultados de diferentes estudos. O levantamento da pesquisa foi realizado na base de periódicos da CAPES, incluindo as produções acadêmicas publicadas entre 2001 e 2023. A busca foi realizada apenas em artigos na língua inglesa e portuguesa. Os resultados demonstram que as inovações pedagógicas desempenham um papel vital no avanço da educação empreendedora (EE) e na capacitação de professores, apoiam na reformulação dos currículos dos cursos de graduação e orientam para que as universidades aprimorem suas metodologias de ensino do empreendedorismo.

Palavras-chaves: educação empreendedora, inovação pedagógica, ensino superior, revisão sistemática

INTRODUCTION

Entrepreneurship education is considered the foundation for promoting a society oriented toward creativity and innovation. As a prominent topic in the field of entrepreneurship studies, it concentrates research that discusses teaching-learning pedagogies focused on the creation of innovative businesses (Andrade Junior; Sato, 2019), entrepreneurial attitudes and behaviors (Araujo; Souza; Guimarães, 2022), and entrepreneurial intention (Barbosa et al., 2020). The growing evolution of academic production on entrepreneurship education points to its potential for advancing this field of knowledge (Vilas Boas; Nascimento, 2018), becoming promising (Lopes; Lima, 2019) for introducing new challenges in improving the entrepreneurship teaching-learning process.

The research landscape on entrepreneurship teaching pedagogies has important contributions, but they are insufficient to provide a holistic view of the topic (Wan; Lv; 2021). In this understanding, little is also known about studies that address new teaching practices in entrepreneurship education (Fayolle, 2018; Marcovitch; Saes, 2020). Thus, we know little about educational innovation



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experiences in entrepreneurship education that are produced and applied within the university context.

This brief research context presents a need to propose new pedagogies, practices, vocabularies, and connections for university education in general (Dodd et al., 2022), and for entrepreneurship education in particular, in order to stimulate new research horizons and provide a transformative educational initiative. In this way, it is relevant to understand innovative pedagogical practices for teaching entrepreneurship at universities, based on the existing literature. Therefore, from the reflections presented, it was possible to formulate the central research question: What is the overview of academic production on pedagogical innovations in entrepreneurship education in higher education?

In view of this, this research aims to build an integrated overview of academic production on pedagogical innovations in entrepreneurship education in higher education. To this end, it is necessary to conduct a systematic review of academic publications published in national and international journals, using the CAPES Journals database.

Regarding the contribution to higher education institutions and faculty, the research results may help them rethink pedagogical innovations in entrepreneurship education in undergraduate programs. Teaching innovations that are directed toward the local reality of universities and students, in order to develop projects that foster and mobilize discussion on teaching, research, and extension within the scope of entrepreneurship. In this way, it is important to understand the academic production on pedagogical innovations in entrepreneurship education in order to expand research on the topic and serve as a model for educators in the field.

In short, the research results may contribute to a better understanding of educational innovation experiences in entrepreneurship teaching, as well as regenerate and inspire new pedagogies. Entrepreneurship education has been



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seen as essential in developing skills, attitudes, and competencies that enable students to identify new opportunities, start and manage new ventures (Barral; Ribeiro; Carnever, 2018). Thus, it contributes considerably to the development of a more innovative and resilient entrepreneurial spirit, preparing students for the challenges of the labor market. Entrepreneurship teaching develops various competencies and areas of relevance that can be applied to any life situation, helping to develop skills such as leadership, critical thinking, decision-making, and creativity (Laurikainen et al., 2018).

ENTREPRENEURSHIP EDUCATION, ENTREPRENEURSHIP, AND PEDAGOGICAL INNOVATIONS

EE provides guidance on various principles of entrepreneurship, encouraging innovation and the search for creative solutions to social and economic problems (Araujo; Davel, 2020; Hashimoto; Krakauer; Cardoso, 2018). In addition, students are prepared to create their own employment opportunities and new businesses, generating jobs that contribute to economic growth. Such guidance makes entrepreneurship education responsible for a more active and organized citizenship (Silva; Schimiguel; Araújo, 2015).

Pedagogical innovations play a fundamental role in EE, as they introduce new educational methodologies, such as the integration of disciplines and the use of technology (Michels; Aragón, 2016; Daniel; Pita, 2019). In this way, innovative methods can make learning more applicable and interactive in the real world, using technologies and allowing a more personalized approach, addressing individuals' needs and making learning more effective (Maldaner; Pereira; Eckert, 2017). In addition, pedagogical innovations also encourage students to develop creativity and interdisciplinary competencies, aspects that are fundamental to entrepreneurship (Andrade Júnior; Sato, 2019; Moraes; Lizote, 2020).



Research on pedagogical innovations in entrepreneurship education has focused on different methodologies, such as various innovative teaching methods, partnerships and collaborations, the use of technology in entrepreneurship education, and curricular integration (Costa; Ribeiro; Guimarães, 2022; Barbosa; Mendonça; Santos, 2023). Thus, the studies present methodologies such as test debates, project-based learning, problem challenges, and Design Thinking (Michels; Aragón, 2016; Hashimoto; Krakauer; Cardoso, 2018). In addition to the existence of partnerships with technology parks and startup incubators (Maldaner; Pereira; Eckert, 2017).

Curricular integrations presented studies indicating a combination of entrepreneurship teaching in various programs, such as Business Administration, Forest Sciences, and Information Technology, promoting multidisciplinary education that is vital for the development of entrepreneurial skills (Barbosa; Mendonça; Santos, 2023; Moraes; Lizote, 2020). There is also curricular integration among entrepreneurship disciplines in technical programs (Barbosa; Mendonça; Santos, 2023).

However, even with so many advances, several gaps still need to be filled for a more effective and complete understanding of pedagogical innovations in entrepreneurship education. Studies on how to make entrepreneurship education more inclusive and accessible to diverse populations, including minorities and disadvantaged groups, are still needed (Luiz; Correa, 2021). Investigations into how to integrate entrepreneurship education with other disciplines in a more meaningful and effective way. Studies also point to the need for more in-depth research that follows students over time, thus assessing the long-term impact of EE (Santos, 2018).

The objective of this initial analysis was to explore the importance of entrepreneurship education and pedagogical innovations in EE, identifying the main methods, the impacts found, and the gaps existing in the literature, providing



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future directions for new research and educational practices that enhance the development of entrepreneurial competencies.

Integrated concepts of entrepreneurship for EE

Balanced by multiple fundamental concepts, entrepreneurship education brings an approach that guides the relationship between theory and practice. The theoretical and conceptual framework in teaching methodologies includes entrepreneurship, entrepreneurial intention, innovation, entrepreneurial competencies, and sustainability. The concept of "Entrepreneurship" identifies opportunities, gathers resources, and creates economic value in the development of new ventures or in bringing innovation to existing organizations. One of its main concepts is that it constitutes a method in itself, which can be understood as a central figure in entrepreneurship education, enabling people to think and act entrepreneurially. "Entrepreneurial Intention," on the other hand, addresses an individual's intention to create a venture, which is constantly discussed in studies on entrepreneurship education, with the objective of assessing the impact of educational programs on students' intention to become entrepreneurs (Rocha; Silva; Simões, 2012; Ferreira; Loiola; Gondim, 2017).

Regarding "Innovation," it is discussed from the perspective of new products, services, or processes that create value. EE emphasizes innovation as a fundamental skill, encouraging students to seek innovative solutions to existing problems and to think creatively (Fischer, 2019). In the conceptual discussion of "Entrepreneurial Competencies," the ability to take risks, leadership, communication, resilience, and problem-solving are discussed, considered crucial skills in the life of an entrepreneur. Developing these skills is at the core of the objective of entrepreneurship education (Arruda et al., 2023).

Regarding the topic of "Sustainability," the creation of businesses that consider their environmental and social impact, rather than focusing only on



profit, is discussed. The implementation of sustainability in entrepreneurship education is fundamental to preparing students for contemporary global challenges and for the field of entrepreneurship education in higher education, which has been widely studied, with a focus on understanding how universities can promote an entrepreneurial mindset and prepare students to create value in their future careers, thus constituting thinking toward social development (Fischer, 2019; Morais; Penedo; Pereira, 2018). Fundamental concepts such as innovation, entrepreneurship, and entrepreneurial competencies are vital to the theoretical development and practice of EE.

Entrepreneurship education: experience and learning

EE has been a fundamental field in the development of students' competencies and skills to face social and economic challenges (Andrade Júnior; Sato, 2019). EE offers an educational approach that enables individuals to innovate and create social and economic value. This section addresses the various lessons and experiences from the implementation of EE in different educational contexts.

The knowledge reported in the literature on entrepreneurship education in higher education is quite diverse (Costa; Ribeiro; Guimarães, 2022). An ongoing approach is the application of active teaching methodologies, Massive Open Online Courses (MOOCs), and project-based teaching that involve students in practical and collaborative activities to solve real problems (Lima et al., 2019; Azevedo; Coyle, 2023). The use of MOOCs in EE has enabled the discovery of entrepreneurial skills and different entrepreneurial knowledge by a broader and more diverse audience (Lima et al., 2019).

Online courses offer accessibility, allowing individuals from different parts of the world to access high-quality content on entrepreneurship (Azevedo; Coyle, 2023). In project-based teaching, there is an approach that involves students in



long-term projects that require a demonstration of theoretical knowledge in practical contexts. In this way, the use of Vertically Integrated Projects (VIP) to foster entrepreneurship and various disciplines stands out (Azevedo; Coyle, 2023).

VIP is a project in which students work with professors in a long-term effort to identify challenges and opportunities, working with the community to analyze problems, develop solutions (with different techniques and approaches), and monitor their implementation (Azevedo; Coyle, 2023). Resulting in new learning approaches, involving students in real-world problems, adding value to their education and giving back to society the investment that was made in the Brazilian public university (Azevedo; Coyle, 2023).

The field of EE in higher education has been widely analyzed, with the main focus on understanding how universities can promote an entrepreneurial mindset and prepare students to create value in their future careers (Ferreira; Loiola; Gondim, 2017). Thus, several studies have investigated how entrepreneurship education influences entrepreneurial intention in the development of competencies and skills among university students (Arruda et al., 2023). It is important to highlight that entrepreneurship education programs significantly increase students' intention to start their own businesses (Ferreira; Loiola; Gondim, 2017). The implementation of active methodologies, such as practical projects and MOOCs, has been a common way to engage students and thus promote entrepreneurial learning (Lima et al., 2019; Azevedo; Coyle, 2023).

These methodologies have been effective in creating a dynamic learning environment that encourages problem-solving and innovation. EE in higher education integrates various disciplines to provide a holistic view of entrepreneurship. The importance of interdisciplinary approaches, which combine technical and business knowledge, forms well-rounded entrepreneurs (Arruda et al., 2023). Partnerships between industries and universities are



relevant for providing students with practical experiences and access to additional resources. Projects such as Tecnosinos explain how collaboration between technology parks and universities can stimulate innovation and entrepreneurship (Rocha; Silva; Simões, 2012).

The integration of sustainable experiences into EE is an increasingly growing trend. Thus, it is relevant to instruct students to consider the environmental and social impact of their ventures, fostering responsible entrepreneurship (Fischer, 2019; Moraes; Penedo; Pereira, 2018). Entrepreneurship education has been a highly fertile ground for pedagogical innovations, with the objective of making learning more relevant, engaging, and effective.

In this way, these active methodologies provide students with an opportunity to experience the outcomes of complex problems, working in teams, developing critical thinking and project management skills (Azevedo; Coyle, 2023). The main learning outcomes of entrepreneurship education are mixed and complex, such as the development of “behavioral competencies,” resilience, creativity, and the ability to take calculated risks (Arruda et al., 2023; Rocha; Silva; Simões, 2012). Thus, EE has shown a significant impact on individuals’ “entrepreneurial intention,” motivating them to consider entrepreneurship as a likely career (Ferreira; Loiola; Gondim, 2017). The inclusion of sustainability in teaching practices is another extremely important learning outcome in EE, because it develops socio-environmental awareness, encouraging students to create businesses that not only seek profit but also contribute to the sustainable development of society (Fischer, 2019; Moraes; Penedo; Pereira, 2018).

*EE and pedagogical innovations: methodologies and practices*

Methodologies such as experiential learning are widely used in entrepreneurship education; these approaches place students at the center of the learning process, promoting the practical application of knowledge and active participation (Lima et al., 2019; Azevedo; Coyle, 2023). *Design Thinking* is a methodology used in EE that helps students develop innovative solutions to real challenges, improving their collaboration and critical thinking skills (Arruda et al., 2023). In this teaching methodology, the application of entrepreneurship education programs encourages creativity and problem-solving.

Another important methodology, MOOCs, has helped popularize access to EE, providing free or low-cost online courses to a global audience (Lima et al., 2019). In addition, technologies such as artificial intelligence and augmented reality are being explored to enrich the learning experience (Arruda et al., 2023; Rocha; Silva; Simões, 2012). Furthermore, extracurricular activities, such as business plan competitions, *startup* incubators, and junior enterprises, offer students practical paths to increase their knowledge and develop their entrepreneurial skills (Rocha; Silva; Simões, 2012).

These methodologies increase student engagement and improve their experiences, complementing formal education. In this way, it can be seen that EE is a constantly evolving and extremely dynamic set, exploring its different areas of knowledge. These experiences and lessons stand out in the importance of interdisciplinarity, in the use of methodologies, and in integration regarding sustainability.

In short, EE in higher education has an important impact on entrepreneurial intention and the development of students' competencies. Pedagogical innovations, such as Design Thinking, MOOCs, and interdisciplinary collaboration, have been quite crucial in this evolution.

*Educational experiences of pedagogical innovation in EE*

The educational experience in entrepreneurship education involves various practices and methodologies aimed at developing skills and knowledge about entrepreneurship. Maldaner, Pereira and Eckert (2017) present a project to promote the university as an agent fostering technological development, conducting applied research in Innovation and Entrepreneurship; the methodology was a case study, describing the strategic Tecnosinos project, which promotes innovation and entrepreneurship in undergraduate education through related academic activities.

Almeida, Cordeiro and Silva (2018) recommend analyzing, based on the literature review, propositions concerning entrepreneurship teaching in Brazilian HEIs; methodologically, a literature review was conducted, mapping propositions on entrepreneurship teaching, highlighting the interaction between society, HEIs, and programs aimed at developing entrepreneurial skills. The research identified that the integration of society (with HEIs and schools) is necessary for the construction of quality entrepreneurship education. Henrique and Cunha (2008) present a state-of-the-art review of didactic-pedagogical practices used in entrepreneurship teaching in national and foreign undergraduate and graduate programs. This article used the state of the art as its methodology. The authors analyzed pedagogical practices in entrepreneurship teaching, highlighting the importance of balancing traditional methods and practical experiences in junior consulting firms or small businesses in incubators and practical experiences in entrepreneurship teaching.

Costa et al. (2017) emphasize the importance of Innovation and Entrepreneurship as tools for the development of new teaching/learning models so that there is an education that meets new social demands. Through bibliographic research, they demonstrate the evolution of educational models and the adoption of innovative practices. Ghobril et al. (2020) identify that a new



generation of high-impact entrepreneurs is one of the relevant roles of universities around the world. For this purpose, it is necessary not only to offer a set of entrepreneurship courses, but also to articulate them with an Entrepreneurship and innovation strategy. It reflects on the importance of articulation between entrepreneurship courses and institutional strategies; the authors used a case study as methodology, describing the implementation of an entrepreneurial strategy at Illinois Tech, analyzing processes, structure, and actions, such as the creation of projects for students and partnerships with industry.

The study by Araujo and Davel (2020) suggests that entrepreneurship teaching should foster learning about: a) the importance of entrepreneurship education in professional training and higher education; b) how to train educators with sensitivity and awareness of the needs and particularities of entrepreneurship; and c) how to develop critical reflection on the pedagogies of Entrepreneurship education; methodologically, qualitative exploratory research was conducted, based on a cultural entrepreneurship course for business administration students, combining theory, practice, and critical reflection on pedagogies and challenges of entrepreneurship education.

Campos and Davel (2018) stimulate learning about the importance of culture, territorial identity, as well as the challenges, needs, and potential of art in the entrepreneurship education process; the methodology is summarized in a case study, in which they reported the entrepreneurial journey of young people in music, analyzing challenges and learning about cultural entrepreneurship. The approach was contextualized within territorial identity and local needs.

Fonsecal and Nassif (2022) situate the information that supports the entrepreneurial mindset of academics from a public university in Brazil and a university in Canada, characterizing the family and academic environments to which they are exposed. Methodologically, a case study was conducted with data collected from 14 participants (seven professors from UFMG and seven alumni



from Western University). The interviews explored the interaction between family and academic environments in the construction of the entrepreneurial mindset.

Copelli et al. (2022) understand entrepreneurship and entrepreneurship education in the context of other areas of knowledge, seeking multidisciplinary, such as graduate nursing education at a university in southern Brazil. Highlighting three categories and 11 subcategories that, interrelated, represent the phenomenon “Envisioning Entrepreneurship and entrepreneurship education in graduate education.”

Machado, Martens and Kniess (2023) analyze the factors that constitute innovative entrepreneurship based on the literature on the topic. The method is based on a bibliographic analysis with the development of an integrative conceptual framework; the authors identified six conceptual clusters that describe critical factors of innovative entrepreneurship, focusing on public policies, entrepreneurial ecosystems, and digital education.

Silva and Schimiguel (2018) develop an educational strategy that generates actions directed toward Secondary-Level Technical Professional Education (FPTNM), based on teaching with a focus on Science, Technology, and Society (STS) and entrepreneurship education, with innovation environments as supporting elements for sustaining a transdisciplinary teaching proposal; methodologically, exploratory research was conducted with the development of a conceptual framework, constructing an educational strategy based on the science, technology, and society (STS) approach and entrepreneurship education. The approach used transdisciplinary methods to structure an educational proposal.

Lima et al. (2019) conduct an analysis of courses offered on Massive Open Online Course (MOOC) platforms that relate the topics of entrepreneurship and sustainability. The methodology was a multiple case study; the analysis was based on educational parameters and references to understand innovative



practices in sustainability-oriented entrepreneurship teaching. This proposal emerged from an experience in an intensive course on these topics, contextualized in real problems, mobilizing students to learn about and undertake innovative and sustainable solutions to different challenges.

Arruda et al. (2023) assess the impacts of Entrepreneurship education on students enrolled in undergraduate entrepreneurship courses at Brazilian Universities through quantitative research using primary data collection through structured questionnaires. Bortoluzzi-Balconi et al. (2023) present activities developed by faculty members at a Brazilian public higher education institution, analyzing the influence of these activities on the Entrepreneurial Behavioral Characteristics (EBC) of undergraduate students. The article's methodology is multimethod, including observations and analysis of activities. Practical activities that promote autonomy, dialogue, and interactive learning were identified. The research assessed students' entrepreneurial behavioral characteristics (EBC) in relation to the activities carried out.

The educational experiences researched present various approaches to entrepreneurship education, combining theory and practice, innovation and traditional methods. Thus, they promote a learning environment that prepares students to face challenges and take advantage of opportunities in the world of work.

The impact of entrepreneurship education on competency development

EE has increasingly stood out as a vital component in the development of competencies that prepare students for the challenges of the labor market. Thus, it has gained significant prominence in Higher Education Institutions (HEIs) around the world. This educational evidence, in addition to providing students with theoretical knowledge, also seeks to develop fundamental competencies in the creation and management of new businesses.



The literature shows that entrepreneurship education not only mobilizes the entrepreneurial spirit, but also adds innovation to teaching methodologies, positively impacting the development of students' competencies. This topic will explore the innovative impacts of entrepreneurship education on competency development, based on a literature review of various studies.

With the implementation of entrepreneurship courses in Higher Education Institutions (HEIs), students have been prepared for the challenges of the labor market in the contemporary world. Projects aimed at promoting applied research and technological development, in order to create an axis of academic work in the areas of Innovation and Entrepreneurship, are increasingly seen (Maldaner; Pereira; Eckert, 2017). In this way, entrepreneurship teaching in Brazilian HEIs highlights a great need to integrate society and higher education institutions for the transformation of quality EE (Almeida; Cordeiro; Silva, 2018).

The importance of universities adopting more effective didactic-pedagogical methodologies, balancing innovative and traditional methods, is crucial for the good performance of EE. Practical experiences, such as junior consulting firms or work in small businesses, are essential for entrepreneurial learning (Henrique; Cunha, 2008). Reinforcing the need to adopt practices and new resources motivates entrepreneurship through innovation. Teaching/learning models must meet current social demands, since education must continually reinvent itself, preparing students for the challenges of the labor market (Costa et al., 2017).

It is the role of universities to create a strong entrepreneurial culture, offering resources such as entrepreneurship centers, laboratories, and technology parks (Ghobril et al., 2020). These are essential approaches to integration and coordination in the development of entrepreneurial competencies. The relationship between practice, theory, and reflection contributes to students understanding the conflicts and difficulties of the act of entrepreneurship. In



addition, the impact of the pandemic on students' entrepreneurial behavior revealed the importance of this university support in maintaining entrepreneurial willingness and self-efficacy (Rocha; Pelegrini; Moraes, 2022). Despite moments of uncertainty, EE proved to be resilient and adaptable, offering students some of the necessary tools to face different scenarios.

EE demonstrates various innovative impacts, preparing students to deal with uncertainty and the constant changes in the labor market. Such a perspective helps them develop practical skills, offering students opportunities such as participation in business projects, *startups*, and the development of problem-solving skills. By fostering a culture of innovation, HEIs nurture a culture of innovation among students that is vital for the emergence of new ideas and businesses, which contribute to the economic development of the region in which the educational institutions are located. In addition, social impacts and collaboration between universities and companies are very important, as they facilitate the transfer of knowledge and technology, generating new companies and jobs. Thus, promoting corporate responsibility and social innovation.

In this way, entrepreneurship education has shown important impacts on the development of students' competencies, integrating and developing skills and contributing to the evolution of an entrepreneurial culture in universities. These actions are fundamental to preparing future entrepreneurs. Universities play a crucial role by providing a study environment that induces resilience, creativity, and an entrepreneurial spirit.

METODOLOGY

Methodologically, this research is guided by a systematic review that serves to assimilate, synthesize, and describe the results of different studies on a given topic (Dickson; Cherry; Boland, 2017), in this case on pedagogical innovations in EE. In addition, the systematic review also makes it possible to



identify gaps that may contribute to the development of future research (Booth; Sutton; Papaionnou, 2016), providing a deeper understanding of the concepts and themes related to entrepreneurship education and pedagogical innovation, which helped in the construction of this research.

For this purpose, the systematic literature review facilitated the understanding of the overview of academic production on pedagogical innovation practices in entrepreneurship education through the exploration, description, and interpretation of teaching pedagogies. The search in the CAPES Journals database via CAFE includes publications published between 2001 and 2023. The terms used for the search were: entrepreneurship education, education for entrepreneurship, higher education, entrepreneurship education, higher education. The terms searched were identified in the titles of the publications, abstracts, and keywords.

The search was conducted only for articles in English and Portuguese. The analysis process of these publications adopted a qualitative approach, with the aim of constructing conceptual categories (Alvesson; Skoldberg, 2000) and generating discussions that may guide future research. The survey took place in a process structured in two stages. The first stage (mapping) involved searching for articles through CAPES Journals using various search combinations; initially, the combination used was (("entrepreneurship education" OR "education for entrepreneurship") OR ("entrepreneurship education") AND (higher education OR higher education)), and 2,000 articles were found. Subsequently, with a more refined combination, (("entrepreneurship education" OR "education for entrepreneurship") OR ("entrepreneurship education") AND ("higher education" OR "higher education") AND ("pedagogical innovations" OR "pedagogies innovations")), 250 articles were mapped.

In the second stage (refinement and expansion), articles that were not directly related to pedagogical innovations in entrepreneurship education in



higher education were eliminated, excluding articles with parallel topics, such as EE in secondary and elementary education. The result of this exclusion was a selection of 125 articles. Subsequently, 62 duplicate articles were eliminated, leaving 63, which were analyzed in detail based on the coherence, consistency, and relevance of the texts on EE and pedagogical innovations. In this case, the consistency and coherence of each study were verified (whether each article fit the proposed topic). As a result, at the end of this stage, a total of 14 works were found, which were read and analyzed in full. Thus, confirming that all these 14 articles fit the research topic, pedagogical innovations in entrepreneurship education.

RESULTS ANALYSIS

Although this systematic review covers the period between 2001 and 2023, it shows a trend of increasing scientific production on EE over the years. Most of the selected studies are recent, with 2023 being the year with the highest number of publications, which may demonstrate greater attention from researchers in the field. The journals are varied, with no journal identified as having significant numbers of articles on the topic, as well as the countries of origin of the publications.

As briefly mentioned in the topic “Educational experiences of pedagogical innovation in EE”, the selected articles raise various practices and methodologies aimed at the development of skills and knowledge about entrepreneurship.

In the study by Arruda et al. (2023), the authors assess the impacts of entrepreneurship education on students in entrepreneurship courses at the undergraduate level at Brazilian universities. Using primary data collection through structured questionnaires among 398 entrepreneurship students from 10 undergraduate courses at six Brazilian universities, involving twelve professors. Resulting in elective entrepreneurship courses with a greater positive impact,



especially on entrepreneurial attitude, perceived behavioral control, and entrepreneurial intention for undergraduate students in Brazil.

In the work by Lima *et al*. (2019), the authors suggest that contemporary entrepreneurship is one of the driving forces of economic development. Educational institutions can use educational technologies to innovate in fostering sustainable entrepreneurship initiatives. The authors analyze courses offered on Massive Open Online Course (MOOC) platforms that relate the topics of entrepreneurship and sustainability. Seeking to observe such an experience in online courses, a multiple case study was developed analyzing practices in MOOC offerings according to parameters and references for sustainability-oriented entrepreneurship education. The provision of MOOCs can contribute to the dissemination of entrepreneurial skills and sustainable attitudes. It was found that the MOOC format is an important channel for the university to contribute socially to sharing sustainable entrepreneurial innovation practices, also innovating in its mission to educate by exploring new educational technologies.

In the research by Silva and Schimiguel (2018), the authors develop an educational strategy that generates actions directed toward Secondary-Level Technical Professional Education (FPTNM). Such education is based on teaching with a focus on Science, Technology, and Society (STS) and entrepreneurship education. Having innovation as a supporting element for sustaining transdisciplinary teaching. Based on this experience, the research presents a conceptual framework, which brings a structured teaching proposal based on an educational process strategy. The proposal proved relevant due to the scarcity of scientific works that address the topic with the scope presented.

Machado, Martens and Kniess (2023) analyze the factors that constitute innovative entrepreneurship. The research contributes to understanding the conceptualization and practices of EE, providing insights into innovative



entrepreneurship in public policies, digital economy education, and the formation of new ventures as strategies to overcome the economic bottlenecks of institutions and countries. The authors propose an integrative conceptual framework of innovative entrepreneurship, based on the six clusters obtained from the literature analysis, such as: conceptualization, entrepreneurial education, innovative entrepreneurship as an engine of the economy, entrepreneurial ecosystem, public policies as support for innovative entrepreneurship, and digital entrepreneurship.

For Bortoluzzi-Balconi et al. (2023), it is important to identify the activities developed by faculty members at a Brazilian public higher education institution, analyzing the influence of these activities on the Entrepreneurial Behavioral Characteristics (EBC) of undergraduate students. Through a multimethod approach, activities developed by faculty members were identified as possible practical activities focused on student autonomy, directed toward reality, with correlations between subjects, and with interactive participation, dialogue, and an environment favorable to teaching. Experiential learning must converge with the development of students' entrepreneurial behavioral characteristics. The result of the research is that the institution presents a promising scenario for the development of entrepreneurship education; however, the activities carried out at the institution are still not efficient or sufficient because, while the existence of entrepreneurial activities was demonstrated, students presented some unsatisfactory EBCs.

Copelli et al. (2022) understand entrepreneurship and entrepreneurship education in the context of graduate education at a university in southern Brazil. Highlighting three categories and 11 subcategories that, interrelated, represent the phenomenon "Envisioning Entrepreneurship and entrepreneurship education in graduate education". Noting that entrepreneurship and entrepreneurship education, in the context of graduate education, are incipient and promising



processes, the methodology is based on a qualitative study based on analytical categories; the authors identified three categories and 11 subcategories related to entrepreneurship and entrepreneurship education in the context of graduate education. The analysis sought to understand the interrelationship among these categories.

Fonsecal and Nassif (2022) situate the information that supports the entrepreneurial mindset of academics between a public university in Brazil and Western University, in Canada, characterizing the family and academic environments to which they are exposed. Based on two case studies, the research collected data from structured interviews that considered the life histories of seven professors from UFMG and seven alumni from Western University. Showing that the determining information for the entrepreneurial mindset was constructed from two interacting factors: the biological characteristics of the research subjects, open to entrepreneurial initiative, and the initial influence of the family environment, whether through life experiences or memories of words and attitudes of parents and family members. The academic environment proved relevant, being able to encourage or present itself as a barrier to entrepreneurship. The authors highlight the relevance of entrepreneurship education, fundamental to the formation of the knowing and decision-making subject, in constant interaction with other subjects and environments.

In the study by Campos and Davel (2018), the authors stimulate learning about the importance of culture, territorial identity, as well as the challenges, needs, and potentialities of art in the entrepreneurship education process. In the teaching case, the pioneering journey of young people who face the possibility of becoming music entrepreneurs and who need to deal with various challenges is reported, such as: (a) thinking of entrepreneurship as something collective, (b) considering the identity singularities of their neighborhood and; c) obtaining



relevant qualifications. The entrepreneurial journey is conceived in terms of challenges, surprises, and learning about what it means to be a cultural entrepreneur. The case proves useful for cultural managers, artistic entrepreneurs, educators, as well as community leaders seeking to foster local development based on art.

Araujo and Davel (2020) foster learning about: a) the importance of entrepreneurship education in professional education and higher education; b) how to train educators with sensitivity and awareness of the needs and particularities of Entrepreneurship; and c) how to develop critical reflection on the pedagogies of entrepreneurship education. The authors portray the experience with undergraduate Business Administration students throughout a curricular component at a public university focused on cultural entrepreneurship. Recurrently, professor and students combine theory, practice, and reflection, provoking a discussion about the pedagogical challenges and experiences of entrepreneurship education.

Ghobril et al. (2020) believe that a new generation of high-impact entrepreneurs is one of the relevant roles of universities around the world. For this purpose, it is considered necessary not only to offer a set of entrepreneurship courses, but also to articulate them with an entrepreneurship and innovation strategy. Using the case study, the authors present how Illinois Tech, which declares entrepreneurship education as a core value in its mission, developed and implemented strategy, structure, and processes to create a strong entrepreneurial culture, offering opportunities for student projects in all courses, through multiple levels of coordination. Contributing with theoretical/methodological actions, EE offers students who want to develop and launch their startups a variety of campus resources, from facilities to mentors and access to external resources. Illinois Tech is also committed to identifying business needs in the community and connecting students with industry contacts



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to meet these needs, particularly through partnerships with the I-PRO program, faculty support, career centers, and research centers.

In the study by Costa et al. (2017), the authors emphasize the importance of innovation and entrepreneurship as tools for the development of new teaching/learning models so that there is an education that meets new social demands. The research was structured based on bibliographic research on teaching/learning theories and models through an analytical reading capable of identifying the characteristics for the effective implementation of entrepreneurship in education in an innovative way. Demonstrating how education models are in a constant process of evolution, the adoption of good practices and new resources that can assist teaching-learning as a motivating agent of entrepreneurship in education through innovation is a reality to be reviewed by society as a whole.

The state-of-the-art study conducted by Henrique and Cunha (2008) on the didactic-pedagogical practices used in entrepreneurship teaching in national and foreign undergraduate and graduate programs presented the history of entrepreneurship teaching in HEIs and its importance in the socioeconomic development of countries. The authors demonstrated how HEIs are implementing entrepreneurship teaching in their curricular structures in synergy with the most effective didactic-pedagogical methodologies and practices for its learning, but without setting aside, on many occasions, traditional teaching methods. For the authors, the faculty member must establish a balance between the role of facilitator of the learning process and that of professor; using past experiences and work in small businesses or junior consulting firms that can assist the student in the process of learning to become an entrepreneur.

Almeida, Cordeiro and Silva (2018), in turn, analyze, based on the literature review, propositions regarding entrepreneurship teaching in Brazilian HEIs. The authors identified that, for the construction of quality entrepreneurship education, the integration of society (with HEIs and schools) is necessary, in



addition to entrepreneurship programs focusing on: know-how, entrepreneurial education, skills development, business creation, entrepreneurial spirit, business engagement, recognition of aptitudes, learning, personal development, business experience, development of disciplines, etc. For the authors, it is important that EE disciplines, courses, and programs focus on the teaching-learning process and on the development of students' aptitudes and skills, in interaction with professors.

Maldaner, Pereira and Eckert (2017) reflect on the proposal to create an axis of academic activities in the areas of innovation and entrepreneurship, to teach these topics to undergraduate students. Thus, the research presents the origin of the university's strategic project called "Tecnosinos Project – São Leopoldo Technology Park". The intention is to promote the university as an agent fostering technological development, conducting applied research in innovation and entrepreneurship. The results of this study show that there is a growing number of students participating in different activities related to the entrepreneurship axis.

The studies indicate a growing appreciation of EE, highlighting its relevance to the development of students' skills, stimulating entrepreneurial attitudes and sustainable solutions for practice. However, challenges such as institutional barriers, lack of methodological standardization, and insufficient impact of activities still require attention in EE. There is a consensus on the need for greater articulation between theory and practice, interdisciplinary integration, and the use of innovative educational technologies to maximize results and expand the reach of EE.

Arruda et al. (2023) identified a positive impact of undergraduate entrepreneurship courses at Brazilian universities, especially on entrepreneurial attitude, perceived behavioral control, and entrepreneurial intention. Elective courses were more effective.



For Copelli et al. (2022), in the context of graduate education, EE proved to be incipient but promising, with categories that connect entrepreneurial practice to an integrated view of entrepreneurship education.

Fonsecal and Nassif (2022) highlighted the interaction between biological characteristics, family environment, and academic environment as determinants of the entrepreneurial mindset. They emphasized institutional and cultural barriers.

Maldaner, Pereira and Eckert (2017) highlighted the implementation of academic activities in innovation and entrepreneurship in the “Tecnosinos Project”, which fosters applied research and technological development.

Entrepreneurship education as a driver of sustainability

According to Lima et al. (2019), the analysis of MOOCs indicated that digital education can foster sustainable entrepreneurship. The online format is efficient for disseminating entrepreneurial practices focused on sustainability.

Machado, Martens and Kniess (2023) propose an integrative conceptual framework that associates innovative entrepreneurship with public policies, digital ecosystems, and the economy as strategies for economic overcoming.

DISCUSSION AND IMPLICATIONS

The analysis of these studies shows that pedagogical innovations play a vital role in advancing entrepreneurship education (EE) and in enabling professors and universities to improve their methodologies (Bortoluzzi-Balconi et al., 2023). These innovations are fundamental to preparing students to face the challenges of the contemporary market and contribute to the development of an entrepreneurial mindset in society (Araujo; Davel, 2020).

By introducing new pedagogical practices, such as active methodologies, the use of educational technologies, and the integration of practical and real



contexts into the teaching-learning process, universities create more dynamic environments adapted to students' needs (Costa *et al*., 2017). This not only increases student engagement, but also facilitates the development of essential skills, such as the ability to innovate, resilience, and autonomy, essential characteristics for the entrepreneur.

The adoption of platforms such as MOOCs and the incorporation of real-time case studies allow students to acquire a broader and more practical view of what it means to be an entrepreneur (Lima *et al*., 2019). These approaches and tools create opportunities for students to apply knowledge in real situations, increasing innovation and the creation of solutions to real-world problems.

For institutions, these innovations are an opportunity to position themselves as transformative agents, not only in the education of qualified professionals, but also in creating an environment conducive to the emergence of new ideas and businesses. By investing in innovative methodologies and in an education that goes beyond theory, institutions become incubators of future entrepreneurs who will have an enormous impact on their communities and economy (Machado; Martens; Kniess, 2023).

For professors, these innovations require a rethinking of their traditional role. They must assume the role of knowledge transmitters and facilitators of teaching that is collaborative and student-centered. This requires constant updating and professional development, so that they can integrate new technologies and pedagogical approaches into their daily practices, thus promoting teaching that is more aligned with current demands (Araujo; Davel, 2020).

In addition, the impact of these innovations transcends university walls. By educating people with an entrepreneurial mindset, capable of taking calculated risks, identifying difficulties, and creating innovative solutions, universities contribute to the development of a more resilient, dynamic, and



economic society. Thus, pedagogical innovations are not only a means of improving entrepreneurship education, but also a way to drive social and economic progress on a large scale.

CONCLUSIONS

This study aimed to build an integrated overview of academic production on pedagogical innovations in entrepreneurship education in higher education. Thus, the systematic review on pedagogical innovations in entrepreneurship education reveals the growing importance of this field for the development of competencies that enable students to face the challenges of the contemporary world. The analysis conducted in the studies demonstrates that there is a diversity of innovative methodologies and practices being applied in educational institutions, such as active methodologies, including *Design Thinking*, MOOCs, and Interdisciplinary Curricular Integration. These innovations have the potential to make learning more dynamic, applicable, and relevant to the reality of students, promoting the creation of social and economic value.

However, despite these advances, there are still significant gaps that need to be further explored for a complete and effective understanding of pedagogical innovations in entrepreneurship education. For example, it is noted that several studies indicate problems between the practical application of entrepreneurship and its theoretical teaching. Many undergraduate programs still use traditional methods, which are not very effective for the development of entrepreneurial skills. This may result in an education that does not adequately prepare students for the real challenges of the market and for entrepreneurship.

Higher education institutions need to promote active methodologies that integrate theory and practice, such as real projects, case studies, and business simulations through games. These methods help prepare students for the reality of the market and help them develop practical skills, making them better prepared



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for the work environment. For the development of future studies, it is important to strengthen the need to make entrepreneurship education more accessible and inclusive across different educational levels (basic education, vocational courses, etc.), in addition to investigating the long-term impact of these teaching practices.

Pedagogical innovations in entrepreneurship education not only contribute to the development of new competencies and skills among students, but also inspire the development of transformative pedagogies that can regenerate and revitalize higher education as a whole. The search for educational practices that consider sustainability and social impact is of utmost importance for educating entrepreneurs prepared to face the challenges of the future, thus consolidating the role of entrepreneurship education as an essential tool for social and economic development.



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