



ENTREPRENEURSHIP EDUCATION: WHAT DO THE MOST RELEVANT PAPERS SAY? LITERATURE REVIEW AND RESEARCH AGENDA

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ABSTRACT

Aim of the study: this article aims to analyze the current literature in entrepreneurship education, identifying main topics and trends for future studies.

Methodology: the study adopted a Systematic Literature Review methodology, implementing a ranking algorithm to organize the relevance of a sample of 934 studies on entrepreneurship education.

Main results: with the algorithm, 54 articles corresponding to 50% of the total volume of cumulative mean citations were identified in the whole sample, which allowed contents analysis and an organization of topics and trends. Nine main groups were identified, with a great concentration of works on the topic "entrepreneurial intention". Three research horizons to be explored emerged from the analysis: (i) entrepreneurship education and new approaches within the classroom; (ii) the perspective of entrepreneurship ecosystems in education and students as actors in the educational process; (iii) emerging issues such as culture, gender and social affairs.

Theoretical / methodological contributions: the work contributes by presenting a differentiated method to define the relevance of articles in bibliometric studies, a method not found in previous reviews on entrepreneurship education. In addition, the results emerged as thought-provoking for robust studies, such as qualitative studies that allow the identification of relevant moderators.

Relevance / originality: besides the methodological differential, the work shows itself original by the organization of the various works in entrepreneurship teaching, being able to be a reference guide about fundamental works for different researchers in the subject at the beginning of their work.

Keywords: entrepreneurship teaching; entrepreneurship education; systematic review of literature; bibliometric studies; entrepreneurship.

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EDUCAÇÃO EMPREENDEDORA: O QUE DIZEM OS ARTIGOS MAIS RELEVANTES? PROPOSIÇÃO DE UMA REVISÃO DE LITERATURA E PANORAMA DE PESQUISA

RESUMO

Objetivo do estudo: o presente artigo tem como objetivo analisar o panorama da literatura acadêmica em ensino de empreendedorismo, identificando tópicos de concentração e tendências para estudos futuros.

Metodologia: este trabalho adotou como método a Revisão Sistemática de Literatura, implementando um algoritmo de ranqueamento para organização de relevância de uma amostra de 934 trabalhos sobre ensino de empreendedorismo.

Principais resultados: com o algoritmo, foram identificados 54 artigos correspondentes a 50% do volume total de citações médias acumuladas em toda a amostra, o que permitiu uma análise de conteúdo e organização de tópicos e tendências. Foram identificados 9 grupos principais, com grande concentração de trabalhos no tópico “intenção empreendedora”. Três horizontes de pesquisa ainda a serem explorados emergiram da análise: a) ensino de empreendedorismo e novas abordagens em sala de aula; b) a ótica de ecossistemas de empreendedorismo no ensino e estudantes como atores no processo de formação; c) temas emergentes, como cultura, gênero e negócios sociais.

Contribuições teóricas/metodológicas: o trabalho contribui em apresentar um método diferenciado para definição de relevância de artigos em estudos bibliométricos, método este não encontrado nas revisões anteriores sobre ensino de empreendedorismo. Além disso, dos resultados emergiram provocações para estudos robustos, tais como estudos qualitativos que permitam a identificação de variáveis moderadoras relevantes para o tema.

Relevância/originalidade: além do diferencial metodológico, esta pesquisa mostra-se original pela organização dos diversos trabalhos em ensino de empreendedorismo, podendo ser um material de consulta sobre referências fundamentais para diferentes pesquisadores no tema em começo de jornada.

Palavras-chave: Educação Empreendedora; Ensino de Empreendedorismo; Revisão Sistemática de Literatura; Estudos Bibliométricos; Empreendedorismo.



EDUCACIÓN EMPRENDEDORA: ¿QUÉ DICEN LOS ARTÍCULOS MÁS RELEVANTES? PROPUESTA DE UNA REVISIÓN DE LA LITERATURA Y UNA VISIÓN GENERAL DE LA INVESTIGACIÓN

Objetivo del estudio: este artículo tiene como objetivo analizar el panorama de la literatura académica sobre educación emprendedora, identificando temas de concentración y tendencias para futuros estudios.

Metodología: este trabajo adoptó la revisión sistemática de la literatura como método, implementando un algoritmo de clasificación para la organización de relevancia de una muestra de 934 trabajos sobre educación emprendedora.

Resultados principales: Con el algoritmo, se identificaron 54 artículos correspondientes al 50% del volumen total de citas promedio acumuladas a lo largo de la muestra, lo que permitió un análisis de contenido y la organización de temas y tendencias. Se identificaron nueve grupos principales, con una gran concentración de trabajos sobre el tema "intención emprendedora". Del análisis surgieron tres horizontes de investigación aún por explorar: (i) enseñanza del emprendimiento y nuevos enfoques en el aula; (ii) la perspectiva de los ecosistemas de emprendimiento en educación y estudiantes como actores en el proceso de formación; (iii) temas emergentes como cultura, género y negocios sociales.

Contribuciones teóricas/metodológicas: el artículo contribuye a presentar un método diferente para definir la relevancia de los artículos en estudios bibliométricos, un método que no se encontró en revisiones anteriores sobre educación en emprendimiento. Además, de los resultados surgieron provocaciones para estudios sólidos, como los estudios cualitativos que permiten la identificación de variables moderadoras relevantes para el tema.

Relevancia / originalidad: además del diferencial metodológico, el trabajo es original por la organización de los diversos trabajos en educación emprendedora, y puede ser un material de consulta sobre referencias fundamentales para diferentes investigadores sobre el tema en sus primeras etapas.

Palabras clave: Educación Emprendedora; Enseñanza de Emprendimiento; Revisión Sistemática de la Literatura; Estudios Bibliométricos; Emprendimiento.



1 INTRODUCTION

Over a decade ago, Kuratko (2005) called attention to the academic legitimacy reached by entrepreneurship education. This topic still feeds research, for example, on the best ways to encourage entrepreneurship in teaching environments. (Nabi et al., 2017; Fayolle & Gailly, 2015).

Alongside Kuratko's work – which highlights the formal mechanisms of teaching agents in supporting entrepreneurship between students in higher education – Politis (2005) published an article defending that “attempts to stimulate an entrepreneurial activity through formal training and education probably do not present any relevant and direct impact on the development of knowledge” (p.417). The contradictory visions arises from the different aims of the studies. While Kuratko sought to present possible horizons, adopting a more optimistic tone, Politis sought to carefully analyze the training of entrepreneurs in higher education, asserting that this process happens over the course of a lifetime, with the university having the responsibility of forming transversal competences, such as creativity, critical thought and self-reflection. From this debate, several questions emerge, such as: Has there been evolution in the literature about entrepreneurship education and its possibilities beyond the formal approach? Which new frontiers should be considered in this debate?

Maritz and Brown (2013) reinforce that, given the multiplicity of approaches, aims and so many other factors, the theme is weakened by the superficiality of results produced and the lack of systematized results. The organization of work, with efforts to categorize and conceptually structure has become fundamental. In Brazil, for example, even the translation of the term “entrepreneurship education” is difficult to deal with, with the most common form “*educação empreendedora*” being a fragile term due to the usage of an adjective to suggest finality. In an effort to organize, Neck and Greene (2011) classify four schools of literature about entrepreneurship education: (i) centered on the individual behavior of entrepreneurs and discussion about profiles; (ii) centered on the process of creation and the nature of businesses, stimulating the understanding of planning exercises; (iii) centered on the cognitive process of intention/decision, attending to the development of mental models; and



(iv) centered on method and effective action, developed through concrete experiences.

With attention to action, incorporating the debates about experiential learning in entrepreneurship (Corbett, 2005) and action-based entrepreneurship training (Gielnik et al., 2015; Frese, 2009).

In this evolution, the balance of the literature about entrepreneurship in Higher Education still swings towards classroom approaches, provoking a need for reflections about future agendas. As Rae, Gee and Moon (2010) state: learning about entrepreneurship is a social act, oriented in practice/experience that involves personal growth, not following a traditional expositional model with pre-established paths; it ought to be stimulating, pleasurable and relevant to the learner's context.

In this line of thought, recent work has appeared provoking the necessity of a new approach for the analysis of the formation of university students on the theme "entrepreneurship": the vision that considers training grounded in the extracurricular ecosystem, embracing not only the classroom, but also extracurricular activities such as competition groups, sporting activities and other activities created and managed by the students themselves, being the central actors in the phenomenon (Padilla-Angulo, 2019; Ribeiro, Zancul, Axel-Berg & Plonski, 2018; Preedy & Jones, 2015; Etzkowitz, 2013).

The present study analyzes the panorama of the academic literature on "education for entrepreneurship" and debate future trends, in order to orient educators, administrators, researchers to reflect on their practices and approaches. The article follows the following way: section two deals with the theoretical base, with emphasis on the main literature reviews produced in entrepreneurship education; section three presents the methodological aspects of the study; section four presents the results of the methodology; section five explores the discussions about the results; and section six concludes the study, with its limitations and possibilities for future studies.



2 THE CONSTRUCTION OF LITERATURE ON ENTREPRENEURSHIP EDUCATION THROUGH THE MAIN SYSTEMATIC REVIEWS

In the literature reviews and bibliometric studies well positioned in the academic production relating to the topic “entrepreneurship education” contain articles considered classics, such “*The chronology and intellectual trajectory of American entrepreneurship education 1876-1999*” (Katz, 2003), and other more recent papers, such as the recognized work by Nabi et al. (2017), which analyzes the impact of entrepreneurship education on higher education and the range of future developments. In this review, constructed from the main systematic reviews in the ranking of published articles on the subject (to be described in the next section), three main thematic groupings were identified: the assessments phase about the nascent scenario of the topic in academia; the proposition of conceptual frameworks; and the phase of meta-analyses. The three phases appear to have common temporality, albeit imperfectly, which is expected of the development of schools of thought in academic literature.

2.1 Phase 1: The Period of Assessments about the Scenario of Entrepreneurship Education.

The first broad analyses focused on the evaluation of the scenario of entrepreneurship education. Katz (2003), for example, in his seminal article, presents the details of the construction of entrepreneurship education as a scientific discipline in the United States – the history of the first course, offered in 1947 by Myles Mace in an MBA program at Harvard Business School – as well as the temporal evolution of publications and the creation of specific journals. Kuratko (2005), analyzing the emergence of the issue, its challenges and opportunities, came to the same conclusion as Katz: the theme has found relative maturity thanks to the consistency of publications, authors and journals. Adopting a more provocative tone than his predecessor, Kuratko presented ten large challenges for academics: (i) avoid the maturity trap, provoking the necessity of forming new teaching staff; (ii) establish itself in relevant journals; (iii) created specific programs for entrepreneurship; (iv) absorb modern practices based on technology, such as distance learning; (v)



orienting the formation of entrepreneurs with daring visions in terms of impact, not only focused on short term financial return; (vi) bring academics and entrepreneurs together to create curricula (vii) avoid becoming a generic and superficial topic, given its establishments as a “fashionable topic”; (viii) understand that teaching staff need to take risks to experience entrepreneurship, despite this contradicting the idea of life security in academia; (ix) point out consistency of administrators, guaranteeing the maintenance of policies and entrepreneurship programs in universities; (x) engage the individuals who make entrepreneurship education advance in universities; the professors.

2.2 Phase 2: The Emergence of Proposals for an Overall Framework

The studies of Katz and Kuratko can be considered those that brought a first systematic appreciation of the panorama of the scientific community on the theme of “entrepreneurship education”. After this period, there is a transition towards bibliometric studies, which seek better categorization for the construction of frameworks to orient academics and managers of higher education in planning their efforts. Various studies have appeared whose intention is to propose and analyze analytical frameworks (Bécharde & Gregoire, 2005; Pittaway & Cope, 2007; Fayolle, 2013).

For Bécharde & Gregoire (2005), the importance of frameworks is due to the fact that a number of them call attention to neglected topics in the literature, which authors treat as “research preoccupations”. In their argument, they highlight classic works as “opening wings” in the development of lines of research in entrepreneurship education, thanks to the research preoccupations they raise. Some emblematic cases indicated are: Vesper (1982), inviting academics to produce quantitative works with specific attention to the elements of teaching programs of entrepreneurship; and Young (1997), bringing greater emphasis on cognitive aspects on the formation of entrepreneurs, such as mental models and memory. In Bécharde & Gregoire’s (2015) framework, constructed from a literature review whose analysis of contents concentrates on studying abstracts, research objectives and conclusions, educational approaches about entrepreneurship education can be divided into four broad groups based on their focus; on the content, intentions, individual and interface with society.



Pittaway and Cope (2007) present a systematic approach, with a perspective oriented towards the university environment, producing an organization of the themes treated in academic articles about entrepreneurship education published between 1970-2004. The systematic review, which is one of the most highly cited works about entrepreneurship education, is notable for its contents analysis oriented to the codification of themes through character count, generating a broad framework.

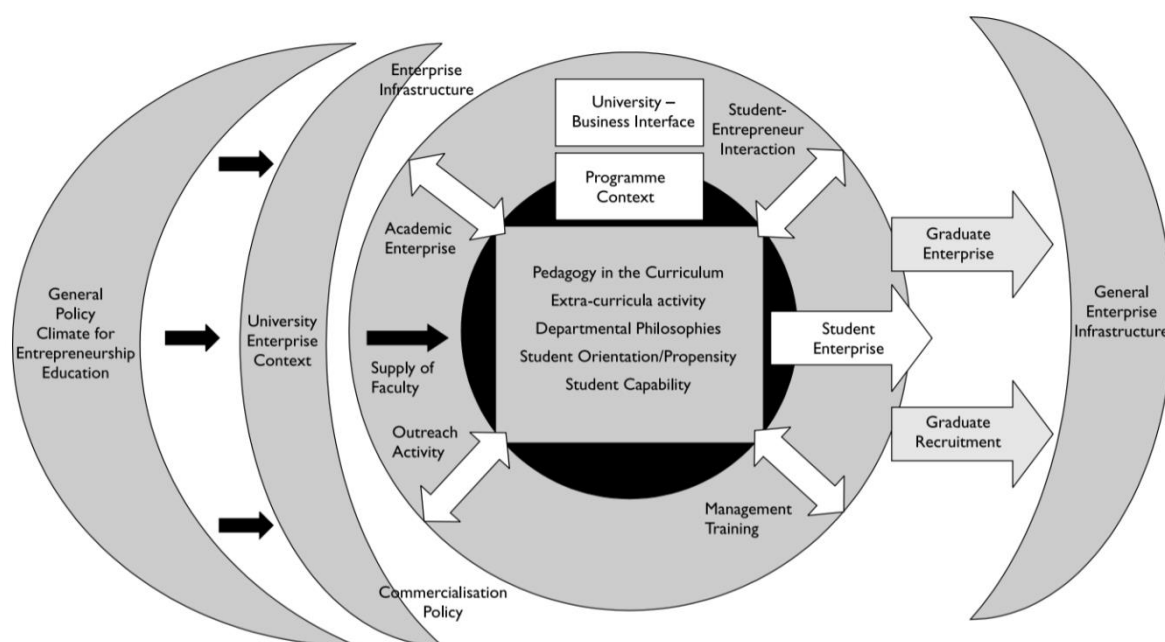


Figure 1: A Thematic framework for Entrepreneurship Education.
Authors: Pittaway & Cope (2007)

Finally, a third relevant framework for the literature is found in the article “Personal views on the future of entrepreneurship education” by Fayolle (2013). Despite the text constituting a critical essay, not using a systematic literature review, the author makes it clear that his observations are the result of three reviews carried out by him. In contrast with Pittaway and Cope (2007), whose focus was a broad framework about the university environment as a whole, Fayolle (2013) proposes a model focused on entrepreneurship education activities based on two levels – the didactic and the philosophical. At the philosophical level, the model provokes professors to question themselves about (i) the “why” of the activity, with objectives and goals; (ii) the “for who”, with a defined target audience; (iii) the “how”, with pedagogical methods and approaches; (iv) the “what”, with specific content; (v) the



“for which results”, with a well-designed system of evaluation. On the philosophical level, the questions explore the meaning of entrepreneurship education, the meaning of education for the entrepreneurship context and the roles of educators and participants in this process.

2.3 Phase 3: The Meta-Analysis Period.

In the recent literature, a larger number of studies has appeared whose main proposal is the analysis of what is being produced academically. This movement comes as the result of the maturation of the academic production in entrepreneurship education, allowing a systematic reflection on the methods employed and the validity of results.

Martin, McNally and Kay (2013), for example, highlight some contradictions in the results of their meta-analysis: some studies point to a positive association between teaching and training in entrepreneurship with firm creation, while others found a negative association. In a systematic analysis of 42 different samples (n=16,657), the authors conclude that the literature on teaching and training still lacks high quality studies – of the 42 samples analyzed, 31 were not high quality and methodologically rigorous (such as the use of pre and post testing, as well as treatment and control groups for bias minimization).

Like Martin, McNally e Kay’s study, the review presented by Rideout and Gray (2013), which used Storey’s (2000) model to evaluate the studies of entrepreneurship education. The model divides the methodological quality into six steps, in two large groups: steps 1 to 3 are characterized by the nature of monitoring, in which the emphasis is to offer only descriptions from the stakeholders, being data linked to attitudes, opinions and perceptions, allowing little sustenance for systematic inference; steps 4 to 6 become progressively more robust in methodological terms, working with control groups and other sophisticated treatments. After surveying studies about entrepreneurship education in universities produced between the years 1997 and 2011, only 12 studies presented a level of robust sophistication (step 4 or higher). According to the authors, the phenomenon occurs through its nature - *“entrepreneurship education seems to be one of these phenomena in which the*



action and the intervention happen a long way ahead of the establishment of theory, pedagogy, and the academic research necessary to justify and explain them” (p.346).

As horizons for future studies, the authors state the necessity for (i) travel in the direction of research with greater inferential power; (ii) use more studies based on quasi-experiments; (iii) seek robustness in high powered experiments; and (iv) produce detailed case studies to identify potential mediating elements.

Finally, there is Nabi et al.’s (2017) study, which reinforces the concept of science as a construction on the shoulders of giants; the literature review is concentrated on analyzing 159 studies published in the period 2004-2016, being based on the framework proposed by Béchard and Grégoire (2005), Fayolle and Gailly (2008) and Jack and Anderson (2002). Some of these authors are present in previous topics of this review, corroborating the idea of a conceptual construction of the literature based on temporal waves of specific efforts. Nabi et al. (2017) highlight the necessity of deepening analysis, with important suggestions:

- Given that entrepreneurship depends on individual disposition to take action, better indicators are needed related to emotional questions and connected to mentality in the training of students.
- There is a higher number of studies based on entrepreneurial intention, but it is necessary to produce studies that analyze the intention to behavior transition.
- There are contradictory results about the impact of teaching and entrepreneurship activities, therefore, way in which context affects this needs to be studied more deeply (course type, institution type, gender, local culture, etc.) and
- Different teaching approaches can generate different results, with discriminating studies being necessary to allow comparison and inferences about their effectiveness.

The authors also touch on the question of entrepreneurship education based on experiences, as well as the experiences of student-led groups in stimulating entrepreneurship. This configuration reflects the introduction to this study with the following research question: has the academic literature accompanied new



approaches to entrepreneurship education, specifically producing relevant knowledge for contexts outside of the traditional classroom model?

3 INSTRUMENTS AND METHODS

For this study, the Systematic Literature Review method was employed, with data analysis based on contents. In attempting to respond to the above question, the method employed aims to analyze the panorama of academic literature on entrepreneurship education, debating future trends in order to orient educators, administrators and researchers to reflect on their practices and approaches. With this objective in mind, it is worth highlighting that the research was not focused on analyzing main authors, co-citation networks and main journals, common procedures in bibliometric studies, but that are not within the scope of identifying the current situation of the literature and future research trends.

The procedures used follow the stages proposed by Cooper (2009), divided into six steps: 1) definition of topics for bibliometric search and organization of search algorithm; 2) search and initial cleaning of the first results database; 3) structuring of data base; 4) treatment of database to generate a ranking of academic relevance; 5) categorization of main works; and 6) contents analysis.

In order to guarantee comprehensiveness, the definition of topics for the bibliometric search involved the following terms: “entrepreneurship education”; “entrepreneurship training”; “entrepreneurial learning”; “enterprise education”. The search algorithm was based on the Boolean operator “OR”, in order to capture different uses independent of the expressions. The search was carried out on the platform Web of Science – considered a good option because it includes other academic databases (Scopus, ProQuest and Wiley) and supplies relevant metadata for the treatment of data (Carvalho, Fleury & Lopes, 2013).

After a first cleaning, which focuses on selecting only articles and reviews (excluding editorial materials, books and other less useful documents), arriving at a base of 934 articles published between 1977 and 2019. The structuring of the database was carried out in MS-Excel, aiming to organize the most relevant



information, such as authors, year, title, key-words, journal and number of citations, which allows a first interpretation of the data and possible cleaning needed.

There was then a treatment of the database as a ranking of academic relevance. The use of the number of citations alone can generate biases in the data – in which older articles naturally have a larger number of citations than the more recent ones. To minimize this effect, a normalization was used that allowed the articles to be measured according to number of citations per year – commonly used in the construction of impact factors in academic journals (Uthman, Okwundu, Wiysonge, Young & Clarke, 2013), which generates a balanced emergence of recent articles, but with a number of relevant citations according to their relative degree of novelty. This strategy minimizes the bias, despite not eliminating it, given that older articles also benefit from network effects that their dissemination affords. With the ranking generated, a calculation of participation was added of the number of citations a paper received relative to the total number of citations received by the sample of 934 articles (using the annual mean calculation).

From this, a filter of accumulated percentage was applied: the articles that represent 50% of the number of citations (using the annual mean calculation) resulted in a sample of 54 papers – in other words: 54 articles accounted for 50% of the total mean volume of citations accumulated in the sample of 934 articles. This is an effective strategy to rank relevance and priority. With these 54 articles being treated as the most relevant in the literature, a viable filter for analyses was guaranteed for robust contents analysis of the current situation of the theme.

The abstracts of the studies were then read, aiming for categorization and thematic organization. After this, reading and interpretation of the studies was carried out, in order to construct a theoretical reference for the present study, as well as analysis of results, which will be presented in the following sections.



4 STUDY RESULTS

After filtering, hierarchization and analysis of the 54 main articles, a categorization of them in order to understand the main fields of concentration of the current literature. Such a categorization resulted in nine main groups:

- 1) articles referring to the relation between entrepreneurship education and entrepreneurial intention, with 15 articles;
- 2) articles referring to learning processes in entrepreneurship education, with 8 articles;
- 3) articles in critical essay format about entrepreneurship education, with 8 articles;
- 4) articles based on systematic literature reviews of entrepreneurship education, with 7 articles;
- 5) articles about best classroom practice for entrepreneurship education, with 6 articles;
- 6) articles about gender and entrepreneurship education, with 3 articles;
- 7) articles approaching entrepreneurship education from the perspective of opportunity recognition, with 3 articles;
- 8) articles on entrepreneurship education in the context of social businesses, with 3 articles;
- 9) articles approaching entrepreneurship education from the point of view of competences, with 2 articles.

The thematic distribution is shown in the graph below.

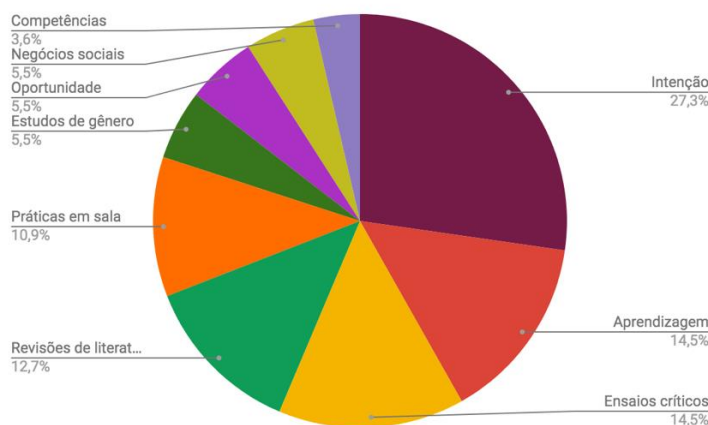


Figure 2: Distribution of the categories identified in the analysis of relevant literature
Source: the authors.



As we see, the topic of the intention to become an entrepreneur (often labelled entrepreneurial intention) represents over a quarter of the sample of studies. The main justification found is the fact that it represents a series of articles with a more quantitative focus, usually analyzing the impact of an experience on a course or program, through data collection – with some cases involving longitudinal studies. Such consistency implies a greater number of citations and replicability of studies, which impacts on the increase in relevance of the work. It is worth noting that a number of these studies are relatively recent, with over 50% of them published since 2013. The main studies on the theme are presented in the table below:

Table 1: Main articles referring to the relation between entrepreneurship education and entrepreneurial intention.

Authors (year)	Title	Citations per year
Souitaris, V; Zerbinati, S; Al-Laham, A (2007)	Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources	47.5
Bae, TJ; Qian, SS; Miao, C; Fiet, JO (2014)	The Relationship Between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review	42.2
Oosterbeek, H; van Praag, M; Ijsselstein, A (2010)	The impact of entrepreneurship education on entrepreneurship skills and motivation	33.4
Peterman, NE; Kennedy, J (2003)	Enterprise education: Influencing students' perceptions of entrepreneurship	31.3
Fayolle, A; Gailly, B (2015)	The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence	29.3
Mcgee, JE; Peterson, M; Mueller, SL; Sequeira, JM (2009)	Entrepreneurial Self-Efficacy: Refining the Measure	26.4
von Graevenitz, G; Harhoff, D; Weber, R (2010)	The effects of entrepreneurship education	20.8
Nabi, G; Walmsley, A; Linan, F; Akhtar, I; Neame, C (2018)	Does entrepreneurship education in the first year of higher education develop entrepreneurial intentions? The role of learning and inspiration	16.0
Linan, F; Rodriguez-Cohard, JC; Rueda-Cantuche, JM (2011)	Factors affecting entrepreneurial intention levels: a role for education	15.9
Rauch, A; Hulsink, W (2015)	Putting Entrepreneurship Education Where the Intention to Act Lies: An Investigation Into the Impact of Entrepreneurship Education on Entrepreneurial Behavior	15.3
Karimi, S; Biemans, HJA; Lans, T; Chizari, M; Mulder, M (2016)	The Impact of Entrepreneurship Education: A Study of Iranian Students' Entrepreneurial Intentions and Opportunity Identification	15.0
Sanchez, JC (2013)	The Impact of an Entrepreneurship Education Program on Entrepreneurial Competencies and Intention	14.5
Zhang, Y; Duysters, G; Cloudt, M (2014)	The role of entrepreneurship education as a predictor of university students' entrepreneurial intention	13.2
Maresch, D; Harms, R;	The impact of entrepreneurship education on the	11.0



Kailer, N; Wimmer-Wurm, B (2016)	entrepreneurial intention of students in science and engineering versus business studies university programs	
Sanchez, JC (2011)	University training for entrepreneurial competencies: Its impact on intention of venture creation	10.0

Source: the authors.

A second area of attention is on the learning process, which usually analyzes questions such as mentality and contextual factors for entrepreneurial disposition. The main studies on the theme are in the table below:

Table 2: main articles referring to learning processes in entrepreneurship education

Authors (Year)	Title	Citations/year
Cope, J (2005)	Toward a dynamic learning perspective of entrepreneurship	27.0
Cope, J (2011)	Entrepreneurial learning from failure: An interpretative phenomenological analysis	25.4
Politis, D (2005)	The process of entrepreneurial learning: A conceptual framework	25.3
Wang, CL; Chugh, H (2014)	Entrepreneurial Learning: Past Research and Future Challenges	18.0
Cope, J (2003)	Entrepreneurial learning and critical reflection - Discontinuous events as triggers for 'higher-level' learning	17.5
Gompers, P; Lerner, J; Scharfstein, D (2005)	Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999	14.6
Holcomb, TR; Ireland, RD; Holmes, RM; Hitt, MA (2009)	Architecture of Entrepreneurial Learning: Exploring the Link Among Heuristics, Knowledge, and Action	13.2
Harrison, R; Leitch, CM (2005)	Entrepreneurial learning: Researching the interface between learning and the entrepreneurial context	10.1

Fonte: dos autores.

The critical essays – works usually presented as personal reflections or proposition of models without establishment of methods are also highly cited in the literature. Some of these, like Fayolle (2013) are sustained by previous studies, being a personal conclusion to results discovered; others bring a provocative tone, encouraging researchers and communities to pay attention to some topic or trend, as was the case in articles by Hisrich, Langan-Fox e Grant (2007). The main studies on the theme are found in the table below:

Table 3: main articles in the format of critical essays about entrepreneurship education

Authors (Year)	Title	Citations/year
Fayolle, A (2013)	Personal views on the future of entrepreneurship education	21.7
Gibb, A (2002)	In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge	16.8
O'Connor, A (2013)	A conceptual framework for entrepreneurship education	13.5



	policy: Meeting government and economic purposes	
Bullough, A; Renko, M; Myatt, T (2014)	Danger Zone Entrepreneurs: The Importance of Resilience and Self-Efficacy for Entrepreneurial Intentions	12.8
Zhou, L (2007)	The effects of entrepreneurial proclivity and foreign market knowledge on early internationalization	11.4
Duval-Couetil, N (2013)	Assessing the Impact of Entrepreneurship Education Programs: Challenges and Approaches	9.7
Hisrich, R; Langan-Fox, J; Grant, S (2007)	Entrepreneurship research and practice - A call to action for psychology	9.5
Edelman, LF; Manolova, TS; Brush, CG (2008)	Entrepreneurship education: Correspondence between practices of nascent entrepreneurs and textbook prescriptions for success	9.0

Source: the authors

Literature reviews cover a little over 12% of the main articles in the ranking. Among them are found classics by Kuratko (2005) and Katz (2003), as well as meta-analyses that greatly influence research in entrepreneurship education, such as the study by Martin, McNally and Kay (2013). The main works on the theme are found in the table below:

Table 4: Main articles based on systematic literature reviews in entrepreneurship education

Authors (Year)	Title	Citations/Year
Kuratko, DF (2005)	The emergence of entrepreneurship education: Development, trends, and challenges	45.7
Martin, BC; McNally, JJ; Kay, MJ (2013)	Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes	39.5
Pittaway, L; Cope, J (2007)	Entrepreneurship education - A systematic review of the evidence	33.0
Katz, JA (2003)	The chronology and intellectual trajectory of American entrepreneurship education 1876-1999	26.1
Nabi, G; Linan, F; Fayolle, A; Krueger, N; Walmsley, A (2017)	The Impact of Entrepreneurship Education in Higher Education: A Systematic Review and Research Agenda	22.5
Rideout, EC; Gray, DO (2013)	Does Entrepreneurship Education Really Work? A Review and Methodological Critique of the Empirical Literature on the Effects of University-Based Entrepreneurship Education	16.8
Bechard, JP; Gregoire, D (2005)	Entrepreneurship education research revisited: The case of higher education	9.6

Source: the authors

The work exclusively focused on presentation of good classroom practice compose around 10% of the ranking. This topic is much more difficult to categorize, given that many studies on entrepreneurial intention also present good classroom practice (they were separated by the singular emphasis on the measurement of impact on intention).



Another difficulty in the categorization was, for example, the work of Neck and Greene (2011), which can be considered as a critical essay (personal view not supported by an explicit method), but were categorized as good practice because they go into detail on the pedagogical approach of some courses. The main work on the theme can be found in the table below:

Table 5: Main articles on good practice in the classroom for entrepreneurship education.

Authors (Year)	Title	Citations/year
Neck, HM; Greene, PG (2011)	Entrepreneurship Education: Known Worlds and New Frontiers	35.5
Honig, B (2004)	Entrepreneurship Education: Toward a Model of Contingency-Based Business Planning	21.6
Piperopoulos, P; Dimov, D (2015)	Burst Bubbles or Build Steam? Entrepreneurship Education, Entrepreneurial Self-Efficacy, and Entrepreneurial Intentions	19.5
Pittaway, L; Cope, J (2007)	Simulating entrepreneurial learning - Integrating experiential and collaborative approaches to learning	14.1
Rasmussen, EA; Sorheim, R (2006)	Action-based entrepreneurship education	13.7
Gielnik et al. (2015)	Action and Action-Regulation in Entrepreneurship: Evaluating a Student Training for Promoting Entrepreneurship	10

Source: the authors

The studies of gender are more sophisticated, giving the emergence of new moderators – in this case, gender – to analyze the effectiveness of approaches to entrepreneurship education for specific contexts. It is worth highlighting the work of Wilson, Kickul and Marlino (2007), which act as a cornerstone in this area by demonstrating that women participating in a specific program showed greater self-efficacy than men after the experience. The main studies on the theme are found in the table below:

Table 6: Main articles on gender studies in entrepreneurship education.

Authors (year)	Title	Citations/year
Wilson, F; Kickul, J; Marlino, D (2007)	Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education	39.3
Hoogendoorn, S; Oosterbeek, H; van Praag, M (2013)	The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment	10
Westhead, P; Solesvik, MZ (2016)	Entrepreneurship education and entrepreneurial intention: Do female students benefit?	10

Source: the authors



Articles on the topic “opportunity recognition” were identified – a dimension explored following the seminal article by Shane and Venkataraman, whose provocation was the existence and recognition of opportunities is necessary for the existence of entrepreneurship. The main work on the theme is found in the table below:

Table 7: Main articles approaching entrepreneurship education from the perspective of opportunity recognition

Authors (Year)	Title	Citations/year
Baron, RA (2006)	Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities	29.1
Levie, J; Autio, E (2008)	A theoretical grounding and test of the GEM model	14.1
DeTienne, DR; Chandler, GN (2004)	Opportunity Identification and Its Role in the Entrepreneurial Classroom: A Pedagogical Approach and Empirical Test	13.6

Source: the authors.

Another category that appeared with the attention towards specific contexts was that of social enterprise, whose main works analyze the impact of courses and training for this scenario. In the case of the work by Smith, Gonin and Besharov (2013), only mentions of university courses and entrepreneurship courses were found, but the article was kept because presents the context and entrepreneurship education in the context of social enterprise as a topic for future studies. The main work on the theme is presented in the table below:

Table 8: Main articles on entrepreneurship education in the context of social enterprise

Authors (year)	Title	Citations/year
Smith, WK; Gonin, M; Besharov, ML (2013)	Managing Social-Business Tensions: A Review and Research Agenda for Social Enterprise	25.5
Karlan, D; Valdivia, M (2011)	Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions	21
Nga, JKH; Shamuganathan, G (2010)	The Influence of Personality Traits and Demographic Factors on Social Entrepreneurship Start Up Intentions	12.6

Source: the authors.

Finally, a vision based on competences was placed as a category for being a possible future trend and having specific frameworks. There is a possibility of



aggregating this topic in the category of learning, given that the works discuss similar concepts. The main articles on the theme are found in the table below:

Table 9: Main articles approaching entrepreneurship education from a vision based on competences

Authors (year)	Title	Citations/year
Morris, MH; Webb, JW; Fu, J; Singhal, S (2013)	A Competency-Based Perspective on Entrepreneurship Education: Conceptual and Empirical Insights	15
Lans, T; Blok, V; Wesselink, R (2014)	Learning apart and together: towards an integrated competence framework for sustainable entrepreneurship in higher education	14

Source: the authors

5 DISCUSSION

Presenting the panorama of articles in the results section, it is worth discussing trends and future perspectives. This section is divided into three topics: (i) the research about classroom approach; (ii) the research about teaching ecosystem; (iii) emerging themes.

5.1 Classroom Teaching Of Entrepreneurship Education

In the context of entrepreneurship education in the classroom, some research opportunities have appeared, such as the exploration of actions with greater detail and experience based approaches. As Martin, McNally and Kay (2013) suggest, different approaches, including different instructors, impact on the results of the course – this possibly being the reason for distinct results when evaluating the impact of courses.

The detailing, this way, allows the identification of potential mediators and moderators, as well as being useful for teachers interested in improving their practices. The attention to entrepreneurship education based on experiential learning and in problems is prevalent in the literature (McNally, Honig & Martin, 2018; Nabi et al., 2017; Taatila, 2010;), with recent articles – despite not being present in the ranking – analyzing specific contexts of undergraduate courses based on experience



and practical projects, such as programs in MIT (Ribeiro, Uechi & Plonski, 2018) and Berkeley (Sidhu, Singer, Suoranta & Johnsson, 2014). This call for detail and concrete action is not limited to the context of entrepreneurship education, but to the context of entrepreneurial universities in general (Guerrero, Urbano, Fayolle, Klofsten & Mian, 2016).

5.2 Entrepreneurship Education based on Ecosystems and the Students as Actors in the Formation Process

The second aspect for discussion is the perspective of a vision based in ecosystems, in which the students are not only formed by the courses in their curriculum, but also by the experiences in the study environment – such as Young Enterprise, athletics, and academic centers (Moraes, Iizuka & Pedro, 2018; Ribeiro et al., 2018; Padilla-Angulo, 2017; Ferreira e Freitas, 2014; Politis, 2005). As Hindle (2007) points out in *Handbook of Research in Entrepreneurship Education*, entrepreneurship education can be defined as an activity focused on the transfer of information – independently of how this effort is done, who offers it and with which effects – stimulating the creation of goods and services from the exploitation of opportunities. This definition removes the responsibility to educate from being exclusively for teachers in classrooms, opening possibilities for an ecosystem of formation of entrepreneurs in universities.

According to Preedy and Jones (2015), an interdepartmental approach, as well as extracurricular activities, are more effective in the development of competences and motivation to become an entrepreneur. As this is what provoked the research question, the majority of studies concentrate only in analyses of courses and proposals for the classroom, where the relation between instructor and student has large influence.

As Etzkowitz (2013) states, an approach that focuses excessively on the role of institutional agents giving support to entrepreneurship is risky because it is possible to neglect modern mechanisms proposed by the students themselves independently. The author presents a case of a support mechanism created in



Stanford by undergraduate students themselves that was able to overcome the activities neglected by the university in supporting startup creation:

"Unrealized capabilities, hidden behind a bureaucratic maxim for legitimating the status quo: 'if it's not broken, don't fix it', were brought to light by StartX, an extra-curricular student-originated experiential entrepreneurship education and mentoring initiative, based on a converse premise: 'if it's working well, make it better.'" (Etzkowitz, 2013, p. 608).

In this respect, the results reinforce the fact that the gap revealed by such studies still lacks a greater volume of studies and of attention capable of positioning this type of debate among the most relevant articles in the area. The student as a central actor in the process of creating entrepreneurs is a theme that has been addressed for decades, with studies such as that of the sociologist Burton Clark, in his book "Sustaining Change in Universities", defending the role of student-led organizations and grassroots movements in the transformation of universities to give support to entrepreneurs.

The concept of grassroots movements – support mechanisms created by the students themselves and gaining institutional relevance, in a top-down transformation process is a relevant trend for research. Such a phenomenon occurs not only globally, as in Stanford, MIT and the UK, but also in national contexts, as Ribeiro and Plonski (2019) show with cases of Unicamp and the Universidade de São Paulo (USP).

5.3 Emerging Themes in Entrepreneurship Education

On emerging themes, two categories that appear are social enterprise and gender issues. Both are characterized by the suggestion that specific contexts can imply different results, and that further study is needed to improve the design of programs not to exclude or marginalize participants. The need to explore approaches and stimulate models of entrepreneurship education that considers gender debates is fundamental for the Brazilian context, in which, of the 16 unicorn startups (market value over US\$1bn), there is only one woman (Naoe, 2019).



The analysis of the implications of gender and self-efficacy can offer new frontiers in studies about entrepreneurship education, allowing robust readings and sophisticated program outlines.

The future horizon is the existence of studies that abandon the “one size fits all” model and starts to value context in the formation of entrepreneurs. Nabi et al. (2017) highlight, for example, studies that identify specific contexts with dual moderators (double moderator effect), in which culture and gender, when combined, generate different results than expected. A recognized case is Packham, Jones, Miller, Pickernell and Thomas’ study (2010), which found that entrepreneurship education negatively affected entrepreneurial intention in the specific context of men in Germany. Gielnik et al. (2015) also reinforce the need for greater study of specific contexts – as is the case in their work, which analyzes the African context and already is found on the list of most relevant articles.

6 CONCLUSIONS

This study aimed to analyze the panorama of the academic literature in entrepreneurship education, reflecting on future horizons, in order to orient educators, administrators and researchers to reflect on their practices and approaches.

The use of a systematic literature review with content analysis allowed an exploration of the main topics treated, as well as anticipating potential horizons for research in the area. It is worth restating that a significant part of the literature is still focused on classroom approaches, which suggests that academia still does not pay attention to the changes identified in the introduction to this study.

The article contributes with a theory to organize debates about entrepreneurship education, as well as how to collaborate with practice by presenting an argument for professors and administrators connected to the theme. As limitations and proposals for future studies, deeper bibliometric analyses, as proposed by Gomes, Facin, Salerno and Ikenami (2018) could be a worthwhile effort.



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