Towards a Global Entrepreneurial Culture: A Systematic Review of the Effectiveness of Entrepreneurship Education Programs

Jacinto Jardim 1,*; Ana Bártolo 2; and Andreia Pinho 1

Abstract: The number of entrepreneurship education programs (EEP) has increased exponentially over the past two decades. However, a systematic review has not yet been carried out to confirm the effectiveness of EEPs and their presence in the current global world. The main objective of this study was to provide a systematic synthesis of EEP, exploring their characteristics and effectiveness. The search was carried out in the following databases: Scopus, Web of Science, ProQuest, and ERIC. Twenty-nine articles were included, with programs developed mainly in European (n = 15), Asian (n = 6), and American (n = 5) countries. The programs were primarily aimed at higher education students (n = 17), addressing business plans and the development of entrepreneurial skills. However, greater attention is paid to entrepreneurial skills in both primary and secondary education. The development of the programs under analysis varied between one week and two years. The studies showed the effectiveness of most of these programs in promoting entrepreneurial skills at all levels of education. In turn, there was no verified increase in the intention to start a business since this intention is determined by predisposition, namely socio-cultural and family aspects. This systematic review of the EEP points to the need for this type of program to be preferentially developed in the early school years, since it is at that time that predispositions are created for the development of entrepreneurial skills and intentions. This condition is corroborated by the global geography of the EEP, which demonstrates that, where there is currently an entrepreneurial culture, countries have made a long educational journey, with strategic options from the perspective of educational policies defending entrepreneurship among the younger generations.

Keywords: entrepreneurial programs; pedagogical interventions; educational interventions; entrepreneurship education; entrepreneurial culture; effectiveness; globalization

1. Introduction

Entrepreneurship education (EE) is par excellence a field for advancing and developing societies, a trigger for economic growth, social cohesion, organizational success, and personal fulfillment [1-5]. For this reason, over the past two decades, entrepreneurship education programs (EEP) have increased exponentially on all continents [6-15]. This educational phenomenon originated at Harvard Business School, where the first entrepreneurship course, called Management of New Enterprises, was offered by Myles Mace in 1947; a year later, a research center in this field was created, the Research Centre in Entrepreneurial History [16,17]. However, courses began to appear at various universities in the USA, and in 1967, the first MBAs on entrepreneurship were held at Stanford University and New York University [18]. In the following year, 1968, Babson College offered the first degree in entrepreneurship [16].
This phenomenon has been spreading worldwide, given its relevance in the solutions to emerging problems. However, if the focus was initially on the creation and management of companies, in recent decades, the focus has also opened up to entrepreneurial skills, attitudes, and behaviors [19–21]. Education towards entrepreneurship began to take an approach that makes it possible to cover students from all higher education courses and all levels of education who need to develop these skills. Therefore, entrepreneurial programs have been developed and implemented on all continents as a way of preparing and enabling them to face professional challenges, to create their jobs, to create original and valuable solutions to various emerging social and economic problems, such as the environment, poverty, social exclusion, and sustainability. Moreover, entrepreneurship education assumed the objective of promoting an entrepreneurial culture, having the competencies mentioned above as a frame of reference [22–24].

With this objective, interest in educational actions in the form of intervention programs has grown, consisting in intentional and systematic actions, resulting from the identification of the needs of a population, directed to specific objectives, based on theoretical models, and suggesting activities and pedagogical resources for their execution and evaluation, as defined by Jardim [25]. Consequently, studies on these interventions have been carried out on all continents, with the most diverse recipients, such as students in higher education [26,27], primary school [28–32], and secondary education [33–35], as well as the most diverse contexts outside the school, such as municipal [36,37], agricultural [38], and retirement [39]. These references show that the actions of education towards entrepreneurship have multiplied around the world in recent years, which demonstrates the need for entrepreneurial skills. A paradigmatic example is that of EEP in Hong Kong secondary schools, presented by Cheung [9], who concluded that 70% of schools apply EEP for more than three years; that in most programs (48%), the activities are carried out over one or more school years; and that several teaching approaches are adopted, predominantly workshops (46%), competitions, case studies, and mentoring. However, 75% of schools also use traditional teaching methods.

Thus, the good results achieved through the EEP come from the programs’ conceptions, namely the leveled objectives, the competencies, the connection with the socio-economic context, the profile of the program facilitator, and the activities carried out, as has been demonstrated in the literature [10,15,29,40–43]. According to Jardim [25], there are three dimensions to be taken into account when designing an intervention program: the identity of the program (name of the program, characterization of the recipients and their socio-educational context, objectives, content, skills, and theoretical foundation), pedagogical options (activities, resources, number of sessions, total duration, and facilitators), and evaluation (research design, sample definition, assessment tools, results, and implications for subsequent interventions).

One of the constituent elements of the EEP is entrepreneurial skills (ES), which enable students to face the challenges of the current labor market, such as the sense of initiative, problem-solving, innovation, creativity, and teamwork. For this reason, several approaches and models of ES have emerged [44–52]. These skills have been progressively included in school curricula, and interventions have been carried out to promote them at all ages. Thus, it is possible to disseminate an entrepreneurial culture for all such that the economy and the market include not only those who were born in a family and socio-economic context favorable to entrepreneurship, but also those who, through learning and training, acquire the skills, competences, values, emotions, and tools of this culture [4].

The development of the elements of entrepreneurial culture requires creating an educational environment favorable to the creation of value propositions, unique socio-professional projects, useful products, and innovative services [53]. This teaching–learning process implies the use of a set of specific pedagogical strategies. They can be educational games, biographies of entrepreneurs, group dynamics, or business models and can be in digital or printed format, virtual or in-person, individual or in a group. As an example, we can observe some of these teaching–learning processes in Europe [53,54] and around the
world [14,55]. Moreover, there is a wide variety of procedures and resources representing evidence of the diversity of proposals according to economic, cultural, and social contexts [4]. Considering this diversity of approaches, a model composed of twelve strategies distributed over four objective domains was presented: tools to develop ideas, which are intended to be original, practical, and profitable; tools for the validation and dissemination of projects; tools to communicate effectively and quickly with customers; and tools to provide sustainability to organizations.

Thus, there was a clear need to design and implement EEP, aiming at promoting entrepreneurial skills, to disseminate an entrepreneurial culture in current society that requires creativity and innovation from all professionals in solving emerging problems. Moreover, multiple studies on entrepreneurship education have been carried out. However, regarding EEP, a review that describes and evaluates its effectiveness has not yet been carried out. For this reason, a systematic review approach was used to comprehensively review the available EEPs and explore their effectiveness in promoting ES. This study includes a summary of the methodologies used in the review, a description of the available EEPs, and a general discussion of the main findings, limitations, and implications for the practice.

2. Method

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines [36].

2.1. Search Strategy and Eligibility Criteria

A systematic search of the published literature was performed using four databases: Scopus, Web of Science, ProQuest, and ERIC. The keywords used were “entrepreneurial education program”, “pedagogical interventions”, “educational interventions”, and “entrepreneurship education”. The OR and AND functions were also used to combine the key terms. The searches were carried out in January 2021 and were complemented by a manual search of the reference lists of the included studies.

Studies were eligible for inclusion in the systematic review if they met the following criteria: (i) written in English, Spanish, or French; (ii) published between 2000 and 2020; and (iii) develop and evaluate EEP. No reviews or meta-analyses, conference abstracts, comments, dissertations, or editorials were included in this study.

2.2. Process of Data Extraction and Synthesis

The survey identified potential eligible entries. After removing duplicate records, the titles and abstracts were independently screened by two co-authors. Based on this process, a list of studies for “full-text examination” was produced. Entries that did not meet the inclusion requirements were excluded, namely, those that did not identify a program and/or whose focus was not entrepreneurship. All questions were discussed and resolved through discussion with a third reviewer. For each selected study, information was collected within the following categories: research design, sample size, duration of intervention, providers, conceptual framework, assessment tools, pedagogical activities and resources, and main results. A narrative synthesis of the studies included in this review was carried out due to the heterogeneity of data related to the design, type of program, measures used to evaluate the results, and impact.

2.3. Critical Appraisal

The included studies were critically assessed by the review team. The assessment was carried out using the Joanna Briggs Institute (JBI) Statistics Assessment and Review Instruments critical appraisal checklists [57–59] for quasi-experimental studies, case reports, case–control studies, and qualitative studies. Only articles in which more than 50% of the JBI criteria were met were included in the review, following the procedure by Bártolo et al. [60]. It should also be noted that the disagreements between the review team members in the evaluations were resolved by discussion.
3. Results

The study selection process is represented in the flowchart of Figure 1. As indicated, 631 studies were identified through database research. After removing 11 duplicate records, 620 studies were analyzed based on the title and summary, but 567 did not meet the eligibility criteria. The full text was retrieved for 53 studies, of which 24 were excluded. Among the deleted records, some studies addressed the theme of entrepreneurship but did not describe a program and its evaluation. Thus, 29 studies published between 2003 and 2020 were included in the review.

![Flowchart](image)

**Figure 1.** Flowchart with the description of the study selection process for inclusion in the systematic review [56,61].

3.1. Characterization of the Studies

The 29 studies included are from six continents and are distributed in 22 countries, three from the USA and two from France, two from South Korea, two from Portugal, two from Spain, and two from Taiwan; the remaining studies come from 16 countries, including Germany, Australia, Austria, Botswana, Canada, Chile, Slovenia, Finland, Ghana, The Netherlands, Italy, Malaysia, Norway, the United Kingdom, Romania, and Singapore. Most of the programs were envisioned for participants from a single country; however, one of them took place in a partnership between Italy, Germany, and Slovenia, as shown in Table 1.
Table 1. General characterization of the programs.

| Author, Year | Country | Sample | Research Design | Program Name | Recipients | Outcomes | Male | Female | Ages  | Total Training Hours | Program Facilitator | Conceptual Framework | Assessment Tools |
|--------------|---------|--------|----------------|--------------|------------|----------|------|--------|-------|---------------------|---------------------|---------------------|-------------------|
| Backs et al., 2019 [62] | Germany | 43 | Qualitative design | Practice in Entrepreneurship | Higher Education | Entrepreneurial skills | 25 | 18 | 18–25 | 6 months—36 h | Teachers and entrepreneurs | Collaborative learning | Interviews |
| Bernal Guerrero et al., 2017 [63] | Spain | 52 | Mixed method study design | Emprender en mi Escuela + Empresa Joven Europea + ICARO | Primary and middle education | Entrepreneurial skills | 26 | 26 | 10–12, 14–16 | 9 months—36 h | Teachers | Social learning theory | Questionnaire |
| Bisanz et al., 2020 [64] | Austria | 139 | Qualitative design | Empowering Each Child | Primary education | Self-confidence, spirit of initiative, innovation, creativity, mindfulness, empathy, self-motivation, and participation in society | - | - | 25–60 | During the field trial, a two-year in-service training, consisting of 3 training courses per year | Teachers | - | Interviews and questionnaires. |
| Boldureanu et al., 2020 [65] | Romania | 30 | Mixed method study design | Business Creation | Higher Education | Entrepreneurial skills | 9 | 21 | 22–46 | 6 months—36 h | Teachers | Learning by doing | Focus group |
| Dominguinhos & Carvalho, 2009 [66] | Portugal | 22 | Case study | Projeto Começar | Professionals | Business and entrepreneurial skills | 11 | 11 | 25–29 | 924 h (6 months) | Academic tutor in higher education institution and business tutor | “Adaptive” learning | Questionnaire |
| Fayolle & Gailly, 2009 [67] | France | 158 | Quasi-experimental design | Programme d’Enseignement en Entrepreneuriat | Higher Education | Entrepreneurial behavior | - | - | 23 more | 24 h | Teachers | Solution-based coaching | Interviews and questionnaire |
| Hebles et al., 2019 [68] | Chile | 38 | Qualitative design | Programa de Educación en Emprendimiento e Innovación | Higher Education | Entrepreneurial skills and behavior | 19 | 19 | 18–25 | 9 months—36 h | Teachers | Self-efficacy theory | Focus group |
| Heinonen et al., 2007 [69] | Finland | 34 | Case study | Entrepreneurship Programme | Higher Education | Entrepreneurial and business skills, knowledge, attitudes, and experience | - | - | 18–25 | 9 months—36 h | Teachers | Theory of planned behavior | Focus group |
Table 1. Cont.

| Author, Year       | Country | Sample | Research Design | Program Name | Recipients | Outcomes                                                                 | Male | Female | Ages | Total Training Hours | Program Facilitator | Conceptual Framework | Assessment Tools                          |
|--------------------|---------|--------|-----------------|--------------|------------|---------------------------------------------------------------------------|------|--------|------|---------------------|---------------------|---------------------|------------------------------------------------|
| Kerrick et al., 2016 [70] | USA     | 121    | Pre-post study  | Launch It    | Professionals | Networking, entrepreneurship concepts, definition of target markets, market research, concept prototyping, financial markets, and intellectual property | 87   | 34     | 50-70 | 10 weeks—30 h       | trainer and experts in the community (lawyers, etc.) | Social entrepreneurship education model | Diaries; accountability documents; group interview |
| Kim et al., 2020 [71] | Korea   | 1934   | Quasi-experimental design | KAIST Social Entrepreneurship MBA Program | Secondary education | Social entrepreneurial skills | -    | -      | 30-60 | 2 years             | Teachers          | Theory of entrepreneurship ecosystem | Survey |
| Kim et al., 2020 [72] | Korea   | 106    | Case study      | Entship School + Hero School | Higher Education | Entrepreneurial, business, and self-efficacy skills | 957  | 977    | 12-20 | Entship School—12 h | Teachers          | Development of a business model | Semi-structured interviews and questionnaires |
| Klapper, 2005 [73]   | France  | 83     | Qualitative design | Project Entreprendre | Higher Education | Teamwork, business plan, interactivity, self-confidence, credibility, balance between formal, and informal. | -    | -      | 19-21 | 5 months            | Teachers, consultants | Theory of planned behavior | Questionnaires |
| Kubberød et al., 2017 [74] | Norway | 24     | Qualitative design | The Norwegian School of Entrepreneurship | Higher Education | Entrepreneurial, business, and self-efficacy skills | -    | -      | 23    | 3 months—48 h       | Teachers          | Develop local economies | Assessment report and interviews |
| Lekoko et al., 2012 [75] | Botswana | 325    | Case study      | Entrepreneurship Education | Higher Education | Awareness that entrepreneurship education in Botswana does not develop entrepreneurial skills, which makes it impossible to pursue a career in the field of entrepreneurship | -    | -      | 18-25 | -                  | Teachers          | Social entrepreneurship education model Ukids | Questionnaires |
| Lyons et al., 2018 [76] | USA     | 335    | Qualitative design | Next 36 | Secondary education | Increased likelihood of working or founding a startup | 0    | 335    | 18-25 | 1 year              | Teachers, entrepreneurs, funders | Theory of planned behavior | Questionnaires |
| Author, Year | Country | Sample | Research Design | Program Name | Recipients | Outcomes | Male | Female | Ages | Total Training Hours | Program Facilitator | Conceptual Framework | Assessment Tools |
|-------------|--------|--------|----------------|--------------|------------|---------|------|-------|------|---------------------|-----------------|---------------------|-----------------|
| Mohamed et al., 2012 [77] | Malaysia | 410 | Qualitative design | Basic Student Entrepreneurship Program | Higher Education | Skills to take advantage of business opportunities, marketing, entrepreneurial simulations, and analysis of the characteristics of successful entrepreneurs | - | - | 18–40 | 6 months—36 h | Teachers | Skills development | Interviews and questionnaires |
| Pedrini et al., 2017 [78] | Ghana | 30 | Mixed method study design | E4impact MBA | Higher Education | Business plan, international network of partners and investors | 25 | 5 | 27–49 | 12 months—24 h | Teachers | Active aging approach | Questionnaires |
| Pepin, 2018 [79] | Canada | 19 | Case study | School Shop Project | Primary education | Experience of what it means to be an entrepreneur | 9 | 10 | 7–8 | entire school year (from September to June) | Teachers | Skills development | Interviews |
| Peterman et al., 2003 [80] | Australia | 236 | Pre-post study | Young Achievement Australia | Secondary education | Perception of the benefits of starting a business; of the benefits of EE programs for training potential entrepreneurs as a professional career option | 90 | 146 | 15–18 | 9 months—36 h | Teachers and volunteers | Theory of planned behavior and Role theory | Questionnaires |
| Pinho et al., 2019 [81] | Portugal | 24 | Case study | UKids | Primary education | Valuation of individual capacities, such as creativity, self-confidence, the power of argument, as well as the construction of social skills, in interpersonal and group relationships; motivation to work on public causes in the logic of sustainable development, and openness to new concepts, such as creativity, respect for the environment, cooperation, communication of ideas. | 24 | 24 | 8–10 | entire school year | Teachers | Theory of planned behavior | Questionnaires |
| Author, Year | Country | Sample | Research Design | Program Name | Recipients | Outcomes | Male | Female | Ages | Total Training Hours | Program Facilitator | Conceptual Framework | Assessment Tools |
|--------------|---------|--------|----------------|--------------|------------|----------|------|--------|------|---------------------|-------------------|-------------------|------------------|
| Rigg et al., 2020 [82] | Netherlands | 8 | Pilot study | UKids | Professionals | Social entrepreneurial skills | - | - | 18-25 | 7 months | Teachers | Practice-based wisdom theory and Entrepreneurial ecosystem | Interviews |
| San Tan et al., 2006 [83] | Singapore | Pilot study | Problem-Based Learning | Higher Education | Professionals | Entrepreneurial skills | - | - | 18-25 | 16 weeks in a semester—32 h | Facilitator | - | Interviews and questionnaires |
| Sánchez–García & Hernández–Sánchez, 2016 [84] | Spain | 310 | Quasi-experimental design | PREU | Higher Education | Self-efficacy, proactivity and risk, finance, marketing, management, skills such as self-efficacy, proactivity, and risk; interactive practice with entrepreneurs | 177 | 133 | 19-22 | 8 months—28 h | Teachers | Problem-based learning | Focus group |
| Santini et al., 2020 [85] | Italy, Germany and Slovenia | 41 | Pre-post study | Be the Change | Professionals | Mentoring skills, for example, active listening and guidance, improving well-being and self-esteem, an attitude of social inclusion and active aging, Business and socio-relational skills, for example, benefiting from the full exploration of the mentors’ know-how and their relationship and trust. | 41 | 33 | 18-29/55-70 | OAEs—16 h of training Mentees—20 sessions (40 h) | Mentors, technical experts in education | Constructivist model | Focus-group Peer-evaluation |
| Smith et al., 2006 [86] | United Kingdom | 16 | Qualitative design | Discovering Entrepreneurship | Higher Education | Extroversion, taking risks, tolerance of ambiguity and novelty, independence, leadership, finding opportunities, creativity, and problem solving, contacts and social networks, interpersonal skills. | 8 | 8 | 18-25 | 10 sessions—20 h | Teachers | Learning by doing | Focus group and follow-up interviews. |
Table 1. Cont.

| Author, Year          | Country | Sample | Research Design       | Program Name       | Recipients          | Outcomes                                                                 | Male | Female | Ages   | Total Training Hours | Program Facilitator                                                                 | Conceptual Framework          | Assessment Tools          |
|-----------------------|---------|--------|-----------------------|--------------------|---------------------|---------------------------------------------------------------------------|------|--------|--------|-----------------------|--------------------------------------------------------------------------------------|-------------------------------|--------------------------|
| Soundarajan et al., 2016 [87] | USA     | 98     | Quasi-experimental design | Newpath            | Higher Education    | Entrepreneurial skills                                                  | -    | -      | 18-25  | 3 weeks (campus and visit to Silicon Valley) + 12 weeks (internship in a company)—375 h = 15 weeks 5 h | Teachers + internship supervisors + local businessmen | Shapero’s Model | Questionnaires |
| Ulvenblad et al., 2020 [88] | Sweden  | 109    | Mixed method study design | Leader Practice + Lean Agriculture | Professionals | Self-leadership and team leadership, delegation of tasks, communication with employees and family, work routines, time management. | -    | -      | 50 + 53 years—average | - | - | Trainers and Coaches | - | Questionnaires |
| Wu et al., 2018 [89] | Taiwan  | 21     | Mixed method study design | PowToon            | Higher Education    | Perception that animated presentations attracted more investment; creating videos helped the team better present their business ideas to investors; whoever generates a business idea does not necessarily influence investor decisions. | 25   | 20     | 23     | 25 20 23 EMBA—36 h | Teachers                                                                 | Theory of planned behavior | Questionnaires and interviews |
| Wu et al., 2019 [90] | Taiwan  | 32     | Qualitative design     | MOOCs course       | Higher Education    | Social entrepreneurship courses with a mixed approach can be used effectively to help students achieve different levels of teaching objectives in the affective domain, which is a lengthy process, especially at higher education levels. | 12   | 20     | 21-24  | 9-week course—18 h | Teachers                                                                 | Approach constructivist-interpretive | Interviews and focus groups |
Thus, this results in a global roadmap of the EEP geography in the current world, where all continents are represented.

Regarding design, the studies varied between qualitative studies (31%), case studies (21%), mixed studies (17%), quasi-experimental designs (14%), pre and post-test design (10%), and pilot study (7%).

The participants in the studies were aged between 7 and 70 years old, with about 48% being between 7 and 17 years old and about 52% being between 18 and 70 years old. In addition, it was found that 2% of the total participants attended primary school, 20% secondary education, 33% secondary education, 35% higher education, and 10% were professionals. Some studies did not show the differentiation between genders, and only 68% indicated it explicitly. Among the studies that reported gender, 45% of the participants in these studies were male and 55% were female.

The recipients of the programs of the 29 studies were distributed across all levels of education, highlighting higher education (59%), professionals with 21% of participants, 7% of secondary education, 7% of primary education, 3% of middle and primary education, and 3% of middle and secondary education.

In terms of duration, the programs reported in the different studies vary between 18 h [90], 24 h [67,78], 36 h [69], and 924 h [66], corresponding to courses taught between two months, a semester, a year, or two years.

These studies are focused on programs that specifically target the development of ES [62,63,65,66,87], the development of business plans and models [73,74,78,91], and the promotion of skills within the scope of social entrepreneurship and sustainability [64,81,82] in the scope of agriculture [77,88] and of technologies [63,87,90]. Some specific competences also stand out, such as teamwork [63,67,73,81,86,89], self-efficacy [64,70,72,74,78,84], leadership [86,88], self-confidence [64,73,81], proactivity and initiative [64,66,84], innovation [64,66,68,84], problem solving [66,72,86], empathy [64,81], self-esteem [85] and time management [88].

Most studies had teachers as the only facilitators of the programs (66%) (n = 19), but in addition to teachers, some studies presented the collaboration of local entrepreneurs [76,87], volunteers [80], mentors and coaches [85,88], professional internships supervisors [87], and community specialists such as lawyers and military personnel [70].

The pedagogical activities presented in the studies were quite diverse, with emphasis on classes, lectures, workshops, business simulations, group dynamics and games, visits to companies, and internship experiences in incubators, simulating the early stages of a startup. However, it was found that in the early stage of education, there were activities such as the creation of a market in the school [79], storytelling and mindfulness [64], and educational games [82]. In turn, in secondary and higher education, activities were carried out to create, develop and implement an entrepreneurial project, using business models [73,78,80], marketing studies [71,77,80,84], and finance [70,80].

For the evaluation of the programs, the studies presented several instruments, highlighting interviews as focus groups and the questionnaires elaborated for the assessment of the effectiveness of the programs. However, specific questionnaires were used for each program, such as the ATE test [92], which measures students’ entrepreneurial potential or attitude; EP Scale [93], which measures entrepreneurial passion; and the COE questionnaire (Entrepreneurial Orientation Questionnaire) [94].

The theoretical models on which the study interventions were based are very diverse, naturally combining these theoretical approaches with the pedagogical resources and techniques of entrepreneurial pedagogy. Among the theoretical models, we highlight those of the theory of planned behavior [95], the theory of social learning [96], of self-efficacy [97], of passion as a key to entrepreneurial action [93], of the entrepreneurial ecosystem [71], and collaborative learning [98].
3.2. Methodological Quality Assessment

Considering the four significant types of study (case reports, case control, quasi-experimental studies, and qualitative studies), we followed the JBI criteria. We evaluate the items of each of these four checklists, with the respective scale (No, Yes, Unclear, Not applicable). As such, it is concluded that all studies met the inclusion quality criteria. Regarding the case study and pilot study (n = 8/28%), on average, 73% of the criteria were met. It should be noted that the less clear items were those of demographic characteristics and the adverse effects of the intervention, which were not properly described. In qualitative studies (n = 9/31%), on average, 80% of the criteria were fully met. The item with the lowest score was the sample’s representativeness. Furthermore, some of the studies do not report how the interviews were conducted. In quasi-experimental studies (n = 4/13%), the criteria were fully met at 80%, which explains the value of this type of study for interventions through skills development programs. In turn, in the mixed-method study design and pre–post study (n = 8/28%), the criteria were fully met at 66%, and among the remaining 26%, the criteria were not met and 8% did not apply. In addition, there was a lack of explanation of ethical issues in several articles.

3.3. Results of Interventions

The results achieved by the programs are varied, revealing the diversity of objectives, teaching methods, target groups, and contexts.

The quasi-experimental studies, mixed-method study design, and pre-post study [63,65,67,70,71,78,80,84,85,87–89] revealed consistent statistical results on the interventions’ gains. There were global improvements between pre- and post-intervention. The qualitative designs [62,64,68,76,77,86,90,99], the case studies, and pilot studies also showed, through the data obtained in the interviews and focus groups, that there were improvements in the participants in terms of the acquisition of ES, which demonstrates that the evaluation of entrepreneurial skills training must be carried out not only through statistical analysis but also with content analysis and the triangulation of these types of analyses.

Gains can be grouped into three major thematic groups. The first group is related to entrepreneurial skills (69%) (e.g., NewPath [87], Standup [62], EME, EJE, and ÍCARO [63]). These skills are understood as the knowledge, attitudes, and skills that enable someone to be successful in the development of original and valuable projects, products, or services, having as a starting point the needs of a target population and as a result the fulfillment of functional, social, or emotional goals [47]. In turn, the second thematic group is associated with business management (38%) (e.g., Launch It [70], PREU [84], Project Start [66]). Business management refers more to the capabilities to maximize the potential of an organization so that the people and resources involved are effective in meeting the expectations of customers and employees. Finally, the third group is related to social entrepreneurship (10%) (e.g., UKids [82], Kaist [71], and MOOC [90]). Social entrepreneurship refers to the set of actions and processes carried out by citizens who create products, services, technologies, or entities with the primary objective of helping people. At the heart of its operation are community participation and the social responsibility model, motivated by the common good, social gain, and good living conditions. It should be noted that some of these studies deal with more than one thematic area, as shown in the following examples.

The Next 36 program (N36) demonstrates how participating in a program significantly increases the subsequent likelihood that a finalist will work at a startup, either as a founder or as a collaborator [76].

The School Shop Project program (SSP) shows how students learn what it means to be an entrepreneur, both through the processes of reflection from the questions of the inquiry and the processes of investigation, which allows knowing this domain and the development of the skills of dialogue and critical reflection [79].

The Discovering Entrepreneurship program (DE) brought results regarding motivation, ES, and the creation of new companies. In this sense, it motivated students to be
more expansive, to have greater clarity on the value of contributing to the community, to take risks, to focus themselves on the satisfaction of their achievements, for rebellion, to have self-control, high tolerance to ambiguity and novelty, independence, and autonomy, but with a focus on people and the search for challenges. In turn, the developed ES were social skills, leadership in networking, coaching and mentoring, identifying opportunities, creativity, and creative problem-solving. Finally, in terms of creating new companies, there were gains in establishing contacts through networking, risk-taking, and interpersonal skills [86].

The Leader Practice program (LP) revealed gains in self-leadership and the role of leader; in addition, students achieved gains in understanding the fact that leaders can delegate tasks and responsibilities and recognized the need for continuous improvement in communication with employees and with their family members; in turn, the Lean Agriculture program (LA) proved to be effective in discovering ways of working smoothly, establishing work routines and following previously established procedures, and managing time in a correct way [88].

The Project Entreprendre program (PE) proved to be useful in achieving results in the following areas: teamwork, business plan development, interactivity in project development, demand for continuous improvement, self-confidence, empowerment, attention to credibility, and seeking a balance between the formal and the informal [73].

Most studies have shown positive results from the interventions. However, it is worth highlighting a case in which the programs used in primary and middle education did not fully reach the objectives initially defined [63]; this fact is justified by the authors with the possibility that they did not correctly elaborate what was intended to be achieved explicitly with this entrepreneurship education action and/or the fact that the design of the evaluation strategies was not the most appropriate.

4. Discussion

Regarding the effectiveness of the EEP, this systematic review provided an overview of the current literature, analyzing 29 programs, from 24 countries. Overall, programs dedicated to primary school students [62–64,79,81] showed a positive effect above all on entrepreneurial skills, highlighting the enhancement of individual skills, such as creativity, self-confidence, power of argument, and construction of social skills in relationships and interpersonal and groups settings. In addition, there were gains in the motivation to work on public causes such as sustainability and social innovation; improvements were found in respect for the environment, cooperation, and communication of ideas. Moreover, teachers at this level of education [82] also revealed self-confidence, initiative, innovation, creativity, mindfulness, empathy, self-motivation, and participation in society after the intervention program. These results are consistent with those presented by other studies that indicate gains when these skills are developed in childhood and adolescence [19,24,27,31].

On the other hand, studies related to secondary education [71,76,80] revealed that at these ages, in addition to fundamental entrepreneurial skills, it is already possible to deepen some more specific skills, such as business skills, reflection on the probability of founding a startup, perception of the benefits of starting a business, and the awareness of the consequences of choosing to pursue an original professional career. This is in line with studies that refer to the contents to be deepened with secondary school students and the strategies used in its promotion [4,9,17,47].

In turn, in higher education [62,65,67–69,72–75,77,78,83,84,86,87,89,90] and programs aimed at adult professionals [66,70,82,85,88], the programs focused on more advanced entrepreneurship concepts, namely networking, target market definition, market research, concept prototyping, financial markets, and intellectual property. Also significant are the effects on awareness of the difficulties and obstacles to following an entrepreneurial career. Thus, at this level, the programs emphasize those skills related to management, economics, finance, and marketing, highlighting the reference to those that enable them to take advantage of business opportunities, develop business models, prepare marketing
plans, to use social networks properly, to deal with the risk inherent to the business activity, and to solve problems and conflicts. This growth in the specification of skills developed over the progressive levels of education is in line with several experts in the area, who point out as essential a progressive and complementary teaching–learning process, which alludes to the fact that it is a time-consuming process [1,3,14].

More specifically, the results obtained from this review suggested that approaches focused on ES had a significant effect on the promotion of a certain type of culture, as is clearly shown in the UKids initial teacher training program, which aims to establish entrepreneurship, especially social entrepreneurship, as an element of teaching in primary schools [82]. This option has also been followed in other contexts, such as in Brazil, Portugal, and Sweden [99–101].

As suggested by Lyons and Zhang [76], the programs prove to be more effective for those who have limited access to entrepreneurial opportunities. Thus, they are more beneficial to participants who would have more difficulty accessing the resources and skills of the programs. For this reason, the dissemination of this culture among all students becomes very significant in the logic of an inclusive education that promotes social ascension [102–106]. In this review, there was a tendency for the EEPs to have a digital format, as is clearly shown in Newpath [87], for the development of projects in the scope of social entrepreneurship [38,71,82].

Among the strategies that stand out are those that promote communication skills for an adequate exposition of products and services [62,73,89,107]. According to McCollough et al. [108], it is essentially a streamlining of the model for the rapid presentation of ideas. Moreover, being an entrepreneur presupposes skills regarding effective communication, namely the management of social networks and the use of digital platforms and communication channels best suited to a particular customer segment [47,109]. It has also been shown that networking is crucial in EE, with specific attention to partnerships established with institutions outside the school itself. This is in line with Cheung’s research in the context of secondary education in Hong Kong [9].

In summary, and based on the review carried out, many problems emerged in the current socio-educational context, such as the high rate of unemployment, ecological and environmental issues, and academic failure. Considering this contextual complexity, most of the reviewed programs were developed based on the definition of a unique identity, pedagogy, and evaluation but always aiming to educate for the development of a culture where the capacity to create value is predominant. Among the identified entrepreneurial skills are the spirit of initiative, innovation, problem-solving, global leadership, teamwork and networking, digital and communication skills, the use and creation of business models, and marketing and e-commerce.

We concluded that the effectiveness of the EEP is mainly due to the quality of the design of the programs themselves, proven, for example, by their pedagogical approach, such as teaching methods, excellence of the facilitator, and activities carried out; by the predispositions of the participants—that is, if they started working on entrepreneurial skills since childhood, it becomes much more natural to be an entrepreneur; and by their integration or not in entrepreneurial ecosystems, verifying that whoever was born and lived in an entrepreneurial family or regional ecosystem more easily takes chances to innovate. Thus, the promotion of an entrepreneurial culture is the consequence of combining these elements, mobilizing individuals and societies for a continuous creation in this global world. For all these reasons, it is necessary to take advantage of the opportunities and face the current challenges, namely those related to the integration of EE in all levels of education, but giving priority to those aimed at younger generations, as well as seeking to improve the quality of scientific production in this field.

Despite the results obtained, this review is not exempt from limitations. First, the characteristics of the studies included vary widely, for example, in study design, the focus of the intervention, number of sessions, sample size, and main outcomes. For this reason, meta-analyses and statistical comparisons were not possible. Second, by restricting
the literature search to include only articles published in scientific journals in the past two decades, publications such as conference papers and dissertations may have been lost. Finally, although the methodological rigor of the studies has been assessed, it is important to note that this only indicates the overall quality of each study, including details of the program, but not specifically how information and strategies were addressed in the intervention.

Further research with rigorous designs is still needed to achieve stronger evidence about the effectiveness of the EEP. Furthermore, we suggest carrying out comparative studies of entrepreneurial pedagogy, in order to assess the effectiveness of the different methods of teaching entrepreneurship used by the different facilitators.

5. Conclusions

This study demonstrated that there has been a steady increase in EEP, and the vast majority of these programs are aimed at students in higher education, a few in secondary education, and even fewer in basic and pre-school education. In addition, it has been shown that most studies are more conceptual than empirical, thus neglecting cognitive and behavioral results. When their effectiveness was assessed empirically, the EEP revealed a moderate effect in activating entrepreneurial intent and a more notable effect on the development of ES. It was also found that, more than the EEP, it is the personal predispositions and family, economic, and cultural contexts that most influence the option for the development of entrepreneurial projects.

ESs were targeted at all levels of education and in all studies; however, greater attention was paid to these competencies in basic and secondary education. Moreover, the results of the studies show the effectiveness of these programs in promoting self-efficacy, an entrepreneurial attitude, resilience, risk-taking, and openness to novelty. In turn, there is no increase in the intention to create the business itself, since this intention is determined by predisposition, namely socio-cultural and family aspects.

The challenges that entrepreneurial leaders have in the current context are also noted, clearly marked by technologies and remote work, by the social complexity and unpredictability of work, and by the need to reconcile health and economy, entrepreneurship and citizenship. Moreover, one of the privileged strategies in this area is the educator himself. The educator’s active, inspiring, and differentiating presence in the most diverse promotional contexts of entrepreneurship will allow entrepreneurial culture values. They should be skilled in using these and other useful tools to promote an entrepreneurial mindset.

Thus, this systematic review of the EEP points to the need for this type of programs to be applied preferentially since the early school years, since it is at that time that the predispositions for the development of entrepreneurial skills and intentions are created. This condition is corroborated by the EEP’s global geography, which demonstrates that, where there is currently an entrepreneurial culture, countries have had a long educational journey, with strategic options from the point of view of educational policies that defend entrepreneurship among the younger generations. Our data also suggested that the promotion of an entrepreneurial culture takes place based on an interdisciplinary approach so that school curricula transversally integrate behaviors such as innovation, initiative, teamwork, and the creation of socio-professional projects based on business models.

Finally, this study also demonstrates the urgency of the entrepreneurial sciences, such as management, economics, and pedagogy, to promote a global entrepreneurial culture with the dissemination, through international educational networks, of programs on entrepreneurial skills. These skills will globally enable the transfer of knowledge to society, as they help solve some problems, such as unemployment and poverty, the environment and sustainability, health, and quality of life.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.
28. De Lourdes Cárcamo-Solís, M.; del Pilar Arroyo-López, M.; del Carmen Alvarez-Castañón, L.; García-López, E. Developing entrepreneurship in primary schools. The Mexican experience of “My first enterprise: Entrepreneurship by playing.”. Teach. Teach. Educ. 2017, 64, 291–304. [CrossRef]
29. Barba-Sánchez, V.; Atienza-Sahuquillo, C. The development of entrepreneurship at school: The Spanish experience. Educ. Train. 2016, 58, 783–796. [CrossRef]
30. Jardim, J.; Soares, J.H.; Moutinho, A.; Calheiros, C.; Cardoso, P.; Cardoso, M.S. Brincadores de Sonhos; Theya: Lisboa, Portugal, 2015.
31. Jardim, J.; Rodrigues, R.; Gouveia, T.; Pereira, M.; Gomes, F.; Paolineli, L.A.; Borges, L.; Lima, J.; Pinho, J.B. Exploradores de Sonhos; Theya: Lisboa, Portugal, 2018.
32. Hercz, M.; Pozsonyi, F.; Flick-Takács, N. Supporting a Sustainable Way of Life-Long Learning in the Frame of Challenge-Based Learning. Discourse Commun. Sustain. Educ. 2021, 11, 45–64. [CrossRef]
33. Kirkley, W.W. Cultivating entrepreneurial behaviour: Entrepreneurship education in secondary schools. Asia Pacific J. Innov. Entrep. 2017, 11, 17–37. [CrossRef]
34. Steenekamp, A.G.; Van der Merwe, S.P.; Athayde, R. An investigation into youth entrepreneurship in selected South African secondary schools: An exploratory study. South Afr. Bus. Rev. 2011, 15, 46–75.
35. Jardim, J.; Lima, J.; Grilo, C. Os Originais: Programa de Empreendedorismo Social com Jovens [The Originals: Program of Social Entrepreneurship with Youth]; Theya: Lisboa, Portugal, 2019.
36. Karlsson, H. Summer Entrepreneur an Activity for stimulating Entrepreneurship Among Youths: A Case Study in a Swedish County. US-China Educ. Rev. 2011, 1, 715–725.
37. Audretech, D.B.; Obschonka, M.; Gosling, S.D.; Potter, J. A new perspective on entrepreneurial regions: Linking cultural identity with latent and manifest entrepreneurship. Small Bus. Econ. 2017, 48, 681–697. [CrossRef]
38. Forcher-Mayr, M.; Mahlknecht, S. A Capability Approach to Entrepreneurship Education: The Sprouting Entrepreneurs Programme in Rural South African Schools. Discourse Commun. Sustain. Educ. 2020, 11, 119–133. [CrossRef]
39. Cumberland, D.M. Training and Educational Development for “Veterpreneurs”. Adv. Dev. Hum. Resour. 2017, 19, 88–100. [CrossRef]
40. Alalwany, H.; Saad, F. Entrepreneurial education programmes and their impact on entrepreneurs’ attributes. In Proceedings of the 10th European Conference on Innovation and Entrepreneurship; Dameri, R.P., Beltrametti, L., Eds.; ACPI: London, UK, 2015; pp. 15–24.
41. Bell, R. Unpacking the link between entrepreneurialism and employability: An assessment of the relationship between entrepreneurial attitudes and likelihood of graduate employment in a professional field. Educ. Train. 2016, 58, 2–17. [CrossRef]
42. Morris, M.H.; Kuratko, D.F. Building university 21st century entrepreneurship programs that empower and transform. Adv. Study Entrep. Innov. Econ. Growth 2014, 24, 1–24.
43. Gibb, A.; Price, A. A Compendium of Pedagogies for Teaching Entrepreneurship; IEEP and NCEE: London, UK, 2014.
44. Bacigalupo, M.; Kamypilis, P.; Punie, Y.; Van den Brande, G. EntreComp: The Entrepreneurship Competence Framework; Publication Office of the European Union: Luxembourg, 2016.
45. Czyzewska, M.; Mroczek, T. Data Mining in Entrepreneurial Competencies Diagnosis. Educ. Sci. 2020, 10, 196. [CrossRef]
46. Hebles, M.; Llanos-Contreras, O.; Yániz-Alvarez-De-Eulate, C. Perceived evolution of the entrepreneurial competence based on implementing a training program in entrepreneurship and innovation. Rev. Esp. Orientac y Psicopedag. 2019, 30, 9–26.
47. Jardim, J. Entrepreneurial skills to be successful in the global and digital world: Proposal for a frame of reference for entrepreneurship education. Educ. Sci. 2021, 11, 356. [CrossRef]
48. Jardim, J.; Pereira, A.; Vagos, P.; Direito, I.; Galinha, S.A. The Soft Skills Inventory: Construction procedures and psychometric analysis. Psychol. Rep. 2020, 0, 1–29.
49. Jardim, J. 10 Competências Rumo à Felicidade: Guia Prático para Pessoas, Equipas e Organizações Empreendedoras; Instituto Piaget: Lisboa, Portugal, 2012.
50. Vega-Gómez, F.; Miranda González, F.J.; Chamorro Mera, A.; Pérez-Mayo, J. Antecedents of Entrepreneurial Skills and Their Influence on the Entrepreneurial Intention of Academics. SAGE Open 2020, 10, 215824402092741. [CrossRef]
51. RezaeiZadeh, M.; Hogan, M.; O’Reilly, J.; Cunningham, J.; Murphy, E. Core entrepreneurial competencies and their interdependencies: Insights from a study of Irish and Iranian entrepreneurs, university students and academics. Int. Entrep. Manag. J. 2017, 13, 35–73. [CrossRef]
52. Quieng, M.C.; Lim, P.P.; Lucas, M.R.D. 21st Century-based Soft Skills: Spotlight on Non-cognitive Skills in a Cognitive-laden Dentistry Program. Eur. J. Contemp. Educ. 2015, 11, 72–81. [CrossRef]
53. European Commission. Entrepreneurship Education: A Guide for Educators. EU Commission—Entrepreneurship 2020 Unit; Directorate-General for Enterprise and Industry: Brussels, Belgium, 2014.
54. Polińska, J. Best Practices in Teaching Entrepreneurship and Creating Entrepreneurial Ecosys; Fundacja Światowego Tygodnia Przedsiebiorczości: Warszawa, Poland, 2014.
55. Ashoka, U.; Brock, D.D. Social Entrepreneurship Resource Handbook; Ashoka: Haryana, India, 2011.
56. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Butron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ 2021, 372, n71.
57. The Joanna Briggs Institute (JBI). Checklist for Quality Experimental (Non-Randomized Experimental Studies); Joanna Briggs Institute: Adelaide, Australia, 2017.
87. Soundarajan, N.; Camp, S.M.; Lee, D.; Ramnath, R.; Weide, B.W. NEWPATH: An innovative program to nurture IT entrepreneurs. *Adv. Eng. Educ.* 2016, 5, 1–27.

88. Ulvenblad, P.; Barth, H.; Ulvenblad, P.-O.; Ståhl, J.; Björklund, J.C. Overcoming barriers in agri-business development: Two education programs for entrepreneurs in the Swedish agricultural sector. *J. Agric. Educ. Ext.* 2020, 26, 443–464. [CrossRef]

89. Wu, Y.J.; Yuan, C.-H.; Pan, C.-I. Entrepreneurship Education: An Experimental Study with Information and Communication Technology. *Sustainability* 2018, 10, 691. [CrossRef]

90. Wu, W.H.; Kao, H.Y.; Wu, S.H.; Wei, C.W. Development and evaluation of affective domain using student's feedback in entrepreneurial Massive Open Online Courses. *Front. Psychol.* 2019, 10, 1109. [CrossRef]

91. White, R.E.; Thornhill, S.; Hampson, E. Entrepreneurs and evolutionary biology: The relationship between testosterone and new venture creation. *Organ. Behav. Hum. Decis. Process.* 2006, 100, 21–34. [CrossRef]

92. Athayde, R. Measuring enterprise potential in young people. *Entrep. Theory Pract.* 2009, 33, 481–500. [CrossRef]

93. Cardon, M.S.; Gregoire, D.A.; Stevens, C.E.; Patel, P.C. Measuring entrepreneurial passion: Conceptual foundations and scale validation. *J. Bus. Ventur.* 2013, 28, 373–396. [CrossRef]

94. Sánchez-García, J.C. Evaluación de la personalidad emprendedora: Validez factorial del cuestionario de orientación emprendedora (COE). *Rev. Latinoam Psicol.* 2010, 42, 41–52.

95. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 1991, 50, 179–211. [CrossRef]

96. Bandura, A. *Social Learning Theory*; General Learning Press: New York, NY, USA, 1971.

97. Bandura, A. *Self-Efficacy: The Exercise of Control*; Freeman and Company: New York, USA, 1997.

98. Dillenbourg, P.; Traum, D. Sharing solutions: Persistence and grounding in multimodal collaborative problem solving. *J. Learn. Sci.* 2006, 15, 121–151. [CrossRef]

99. Dolabela, F. Teoria Empreendedora dos Sonhos. In *Empreendipédia—Dicionário de Educação para o Empreendedorismo*; Jardim, J., Franco, J.E., Eds.; Gradiva: Lisboa, Portugal, 2019; pp. 713–718.

100. Lackéus, M.; Sävetun, C. Assessing the Impact of Enterprise Education in Three Leading Swedish Compulsory Schools. *J. Small Bus. Manag.* 2019, 57 (Suppl. 1), 33–59. [CrossRef]

101. Jardim, J.; Silva, H. Estratégias de educação para o empreendedorismo. In *Empreendipédia—Dicionário de Educação para o Empreendedorismo*; Jardim, J., Franco, J.E., Eds.; Gradiva: Lisboa, Portugal, 2019; pp. 338–342.