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Planning and evaluating youth entrepreneurship education programs in schools: a systematic literature review

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Abstract

Despite its importance, entrepreneurship education in upper secondary education is significantly less researched than in higher education. Many entrepreneurship education review studies are conducted at the university level, while relatively few are conducted at the high school level. Existing reviews favored discussing programs' impacts and outcomes over its designing, developing, and delivering. Adapting well-established processes described in multiple entrepreneurship education reviews, we systematically identified and synthesized thirty-year literature on entrepreneurship education in upper secondary schools using academic database search, expert consulting, and backward snowballing techniques. Results led to the development of the Youth Entrepreneurship Education Planning and Evaluation (or YEEPE) conceptual framework, which offers holistic details to the program planning and evaluating processes at pre-university levels. In addition to informing evidence-based practices, the YEEPE framework is intended to assist education researchers in positioning their research, identifying research opportunities, and elucidating their contributions to both the youth development and entrepreneurship education literature. Further research is encouraged to utilize YEEPE as a starting point for integrating other pertinent research or as a design tool to facilitate the development of entrepreneurship education programs in schools.

Keywords Systematic literature review · Entrepreneurship education · Upper secondary education · Adolescents

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Introduction

As significant changes in the corporate world, the disruption of technology, and the rise of emerging markets increase uncertainty and complexity, greater emphasis must be placed on entrepreneurship and approaches that foster it (Fiet, 2001). Entrepreneurship education as one such approach is found to benefit and improve society on multiple levels (Lourenço et al., 2013; Ratten & Usmanij, 2021). At the macro level, entrepreneurship education reduces unemployment and underemployment and promotes economic growth (Sutter et al., 2019), especially in underdeveloped communities (Du Toit & Kempen, 2018). At the meso level, it contributes to the growth of regional innovative activities and educational institutions (Adlim & Hasibuan, 2014; Karmokar & Shekar, 2018). At the micro level, the short- and long-term effects of entrepreneurship education on individuals have received substantial scholarly attention, such as their entrepreneurial skills, knowledge, attitudes, and career intentions (Oosterbeek et al., 2010; Wilson et al., 2007).

However, different education levels have received unequal research attention. Many existing reviews treat entrepreneurship education either as a whole topic without segmenting the education levels (e.g., Fellnhofer, 2019; Mwasalwiba, 2010), or with a focus on business education and university-based education (e.g., Chen et al., 2021; Martínez-Gregorio et al., 2021). Although these works have significantly contributed to the body of knowledge on entrepreneurship education, it is still unclear how entrepreneurship education is implemented in educational settings other than universities and colleges. Middle-to-late adolescents (15–19 years old) were much less studied as a segment of youth in the entrepreneurship education research (Lautenschläger & Haase, 2011; Oosterbeek et al., 2010). This research urges scholars to expedite their attention to this age group as it is seen as the most crucial time for cultivating young entrepreneurs (Filion, 1994). Eighty percent of youth reside in less-developed nations (e.g., Asia and Africa; United Nations, 2015), where many are forced to begin working at a young age, frequently in the informal economy, and do not have access to higher education (International Labour Organization, 2020). Therefore, compared to the well-researched and well-funded entrepreneurship education at the higher education level, studying entrepreneurship education at the upper secondary education level, especially in underdeveloped nations, carries critical research value and practical importance for researchers, educators, and policymakers. We would like to contribute to this still-young research field by synthesizing the scholarly discussions that have occurred in this area.

Our earlier synthesis endeavor has revealed that microsystems were the most examined ecological systems, where the school-based program reporting and analysis predominated (Lin et al., 2022). Therefore, sufficient literature exists to enable a timely synthesis of the knowledge on how to design, develop, deliver, and evaluate entrepreneurship education programs in schools, which plays an important role in determining the quality of entrepreneurship education and, consequently, the outcomes of entrepreneurial activities (Duval-Couetil, 2013;

Othman & Nasrudin, 2016). Many reviews focus on the effects or outcomes of entrepreneurship education on students (e.g., Brüne & Lutz, 2020; Martínez-Gregorio et al., 2021; Nabi et al., 2017), neglecting the importance of reporting processes and variables that precede the final evaluation. A recent review, for instance, investigated the effect of entrepreneurship education in schools on entrepreneurial outcomes and developed a conceptual framework that splits outcomes into four categories of short-term outcomes and one category of long-term outcomes (Brüne & Lutz, 2020); although gender, age and previous experience were discussed as moderators, other independent variables and process-related factors were not investigated.

The primary objective of this study is to systematically review and synthesize the literature on youth entrepreneurship education at the upper secondary education level and to develop a conceptual framework that can address the complex and dynamic interplaying factors in various processes of youth entrepreneurship education programs such as designing, developing, delivering, and evaluating. Compared to a previous similar review attempt at the pre-university education levels (Brüne & Lutz, 2020), we followed a more transparent and replicable review process and proposed a more holistic conceptual framework called Youth Entrepreneurship Education Planning and Evaluation (YEEPE), which we believe will benefit youth entrepreneurship education practitioners in program design and empower relevant researchers to position their studies and expand research boundaries. This study is supplementary to our previous synthesis research (Lin et al., 2022); together, they provide a comprehensive research landscape of entrepreneurship education at the upper secondary education level between 1990 and 2019, encompassing both program-level and environment-level considerations when designing and evaluating school-based entrepreneurship education interventions.

The following is the paper's structure. The methodology section will provide an overview of the systematic literature review procedure. The results will describe in depth the conceptual framework of YEEPE and how each component of the framework relates to the existing literature. The section on lessons learned will emphasize ramifications, recommend next activities, and identify potential research directions. Finally, a summary and limitations of the research are provided as a conclusion.

Methodology

Based on the research project of *Youth Entrepreneurship Education Review (YEER)*, the same systematic literature review approach, which was adapted from Tranfield et al. (2003) and Pittaway and Cope (2007), was used in this study and its preceding study (Lin et al., 2022). When compared to automatic filtering in other review approaches such as survey review and bibliometric analysis, this approach is based on manual filtering for replicability and transparency to minimize bias in the results of the literature review, is adequate for qualitative topics' literature review purposes, and allows reviewers to get more insights (Centobelli et al., 2017; Tranfield et al., 2003). This paper will not duplicate the work by providing methodological details already available in the review protocol (Lin,

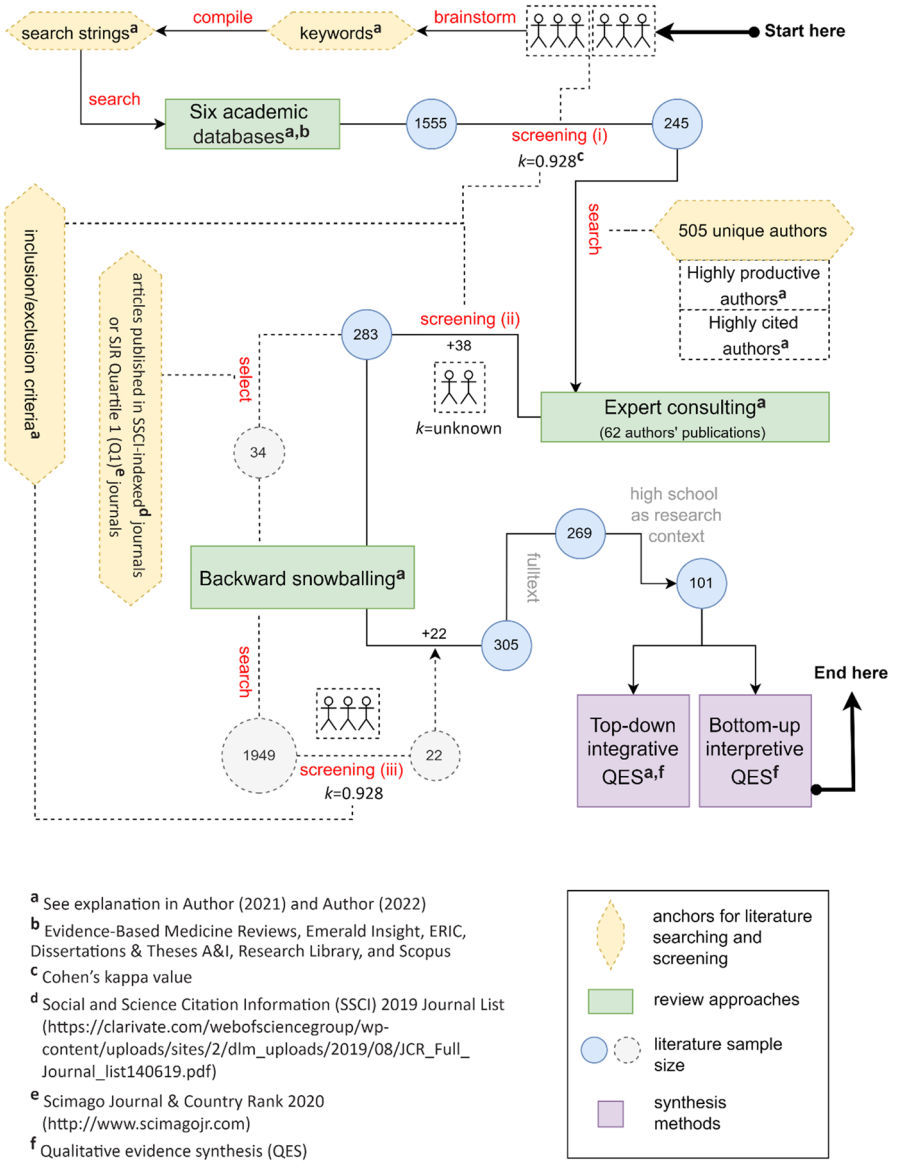

Fig. 1 The flowchart of systematic literature review steps

2021) and the methodology section of Lin et al. (2022); instead, it adds a flowchart (Fig. 1) to illustrate the three primary phases of data searching and cleaning in the whole YEER project (academic database search, expert consulting, and backward snowballing), and in the following paragraphs it reports intercoder reliability and explains the thematic analysis technique that was exclusively used to support this research.

The Cohen's kappa statistic (k) is a form of correlation coefficient that is useful for interrater or intrarater reliability testing. On the agreement level scale of 0 to 1 (low to high), any kappa below 0.60 indicates inadequate agreement among the raters and little confidence should be placed in the study results (McHugh, 2012). Our interrater reliability was high for both screening (i) and screening (iii) with k increasing from moderate ($k=0.732$) to near perfect ($k=0.928$) after discussion between raters.

The qualitative evidence synthesis (QES) approach was adopted as the principal summary measure to synthesize the 101 publications in the YEER project. The QES, as a response to an increasing demand from educationalists for review evidence that goes beyond "what works" afforded by systematic reviews of effectiveness, has increased in prominence and profile over the last decade as a discrete set of methodologies to undertake systematic reviews of primary qualitative research in education (Flemming & Noyes, 2021). Methods of QES can roughly be divided into two approaches: integrative synthesis and interpretative synthesis (Boland et al., 2017). Both synthesis methods were applied with the integrative synthesis results reported in Lin et al. (2022), and the interpretative synthesis' methods and results reported below in this paper.

The six-phase thematic analysis by Braun and Clarke (2006) was followed as a bottom-up/inductive QES approach to analyze texts in titles, abstracts, and researchers' reading summary notes of each selected study. The six phases are: (a) familiarizing yourself with data, (b) generating initial codes, (c) searching for themes, (d) reviewing themes, (e) defining and naming themes, and (f) producing the report. The purpose was to identify themes and produce thematic map out of multiple studies. The reason of including reading summary notes to develop themes was because solely relying on titles and abstracts has recognized weakness which was due to the writing quality of these texts (Pittaway & Cope, 2007; Pittaway et al., 2004).

Results

Overall, the growth of the literature on youth entrepreneurship education in upper secondary education level was increasing in thirty years between 1990 and 2019 (Fig. 2). Despite the collapse of publications after 2012, it regained the trend of growth in 2015 and kept the pace since then.

The review and synthesis resulted in the YEEPE conceptual framework (Fig. 3). It illustrates individual-level, program-level, and context-level factors in different developmental stages of a program. Details will be presented below, where the program planning part (as reflected in A and B areas) will be more explained than the program evaluation part (C).

Program planning

Student characteristics

Three groups of individual-level factors repeatedly appeared in the literature, which can influence the youth's entrepreneurial behavior dispositions. The psychological

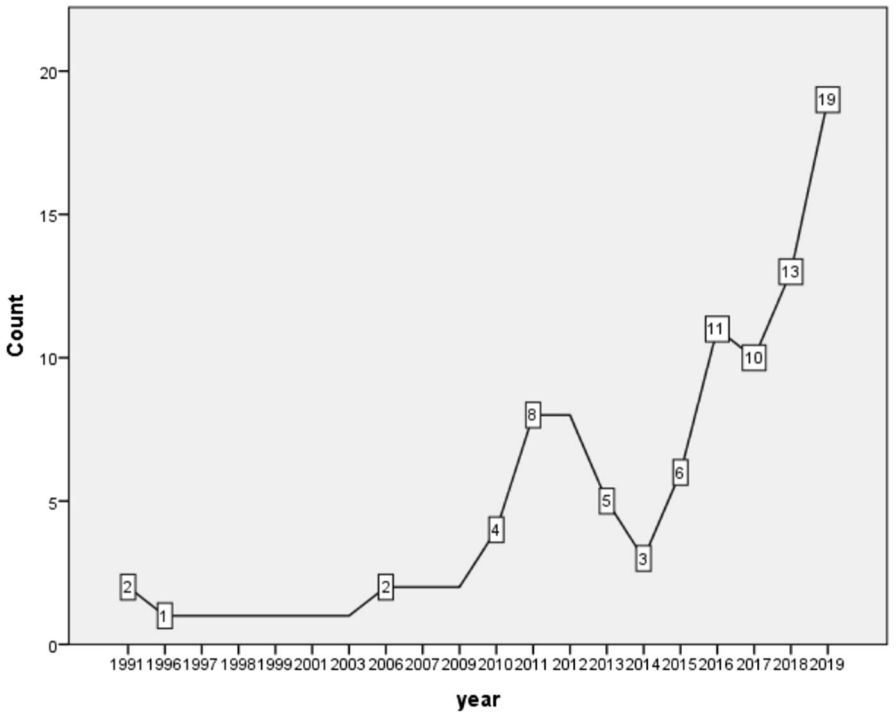

Fig. 2 The distribution of 101 publications over years

approach studies personality traits. The behavioral approach studies changeable facets such as attitudes, knowledge, and competencies. The demographic characteristics cover gender, family background, and ethnicity, etc. To begin with, the psychological approach was the classic way to study entrepreneurship (Marques et al., 2012; Steenekamp et al., 2011). Several scholars believed that entrepreneurs possess unique personality traits, which distinguish them from non-entrepreneurs. These traits include but are not limited to the locus of control (Rodrigues et al., 2012), need for achievement (McClelland, 1961), self-efficacy (Wilson et al., 2007), risk taking propensity (Douglas & Shepherd, 2002), opportunity recognition (Allinson et al., 2000), and tolerance for ambiguity (Teoh & Foo, 1997). Personality traits can play an important role in early entrepreneurial development.

The behavioral approach has been adopted by many scholars because it provides a more productive perspective compared with the psychological approach (Gartner, 1988; Steenekamp et al., 2011). This approach deems entrepreneurship to be a set of activities involved in the organization creation process. One common research topic using this approach is the intention study (Elqadri et al., 2017; Kibuka, 2010; Mothibi & Malebana, 2019). The two most popular intention-based models are the entrepreneurial event model (EEM) by Shapero and Sokol (1982) and the theory of planned behavior (TPB) by Ajzen (1991) (Cardoso et al., 2018; Liñán, 2004). They emphasize different constructs: EEM on perceived desirability and feasibility (Liñán, 2004), and TPB on attitudes toward the behavior, subjective norms, and

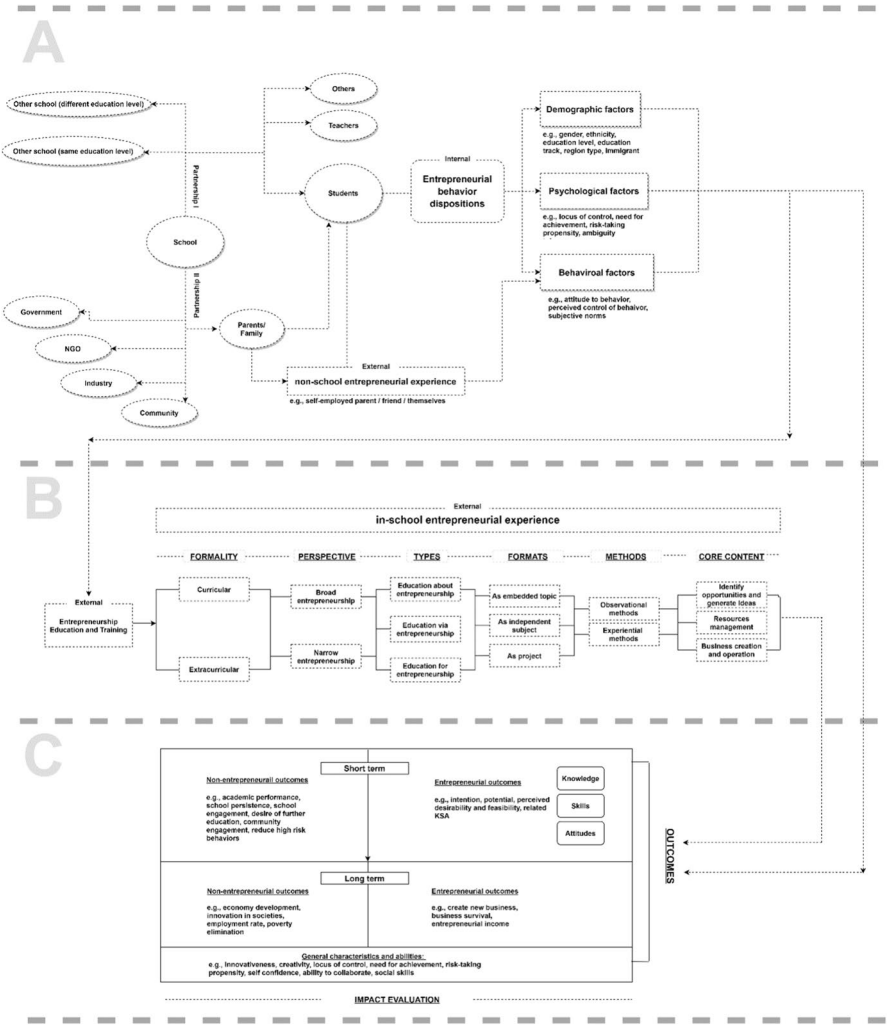

Fig. 3 Theoretical Framework of Youth Entrepreneurship Education Planning and Evaluation (YEEPE)

degree of perceived behavior control (Marques et al., 2012). However, TPB is the more mentioned theory (Kibuka, 2010; Marques et al., 2012; Mothibi & Malebana, 2019; Noworatzky, 2018), with the personal attitude towards entrepreneurship as a frequently measured construct in the preintervention phase (Athayde, 2009; Elqadri et al., 2017; Pihie & Bagheri, 2010, 2011; Purwana et al., 2018; Saptono & Wibowo, 2018).

Demographic characteristics are often used as control variables when evaluating youth entrepreneurship education intervention. Research results on the role of demographic characteristics are contradicting. One of the most discussed demographic characteristics is gender. Although gender has no practical effect

in causing differences in students' attitudes toward enterprise (Steenekamp et al., 2011), gender can influence the interest to start a new venture (Kourilsky & Walstad, 1998). In two studies investigating influencing factors of entrepreneurial intention, gender has no significant correlation with the intention (Ierapetritis, 2017; Marques et al., 2012). In two other studies, gender was found to influence the consideration of students to choose entrepreneurship as a career, with females being less likely to plan on such a career choice (Mahadea et al., 2011; Obschonka et al., 2017).

Ecosystem of partnership

To best promote and deliver entrepreneurship education, the program developers should consider establishing different partnership to better integrate the program into the bigger entrepreneurial ecosystem. This study identified eight types of partnership and compared them against the literature.

(1) The intraschool partnership is that between in-school members/units, such as teachers, headmaster teachers, principals, and student support offices (e.g., Johansen, 2018; Winarno, 2016).
(2) The interschool partnership is between different schools of the same education level but was not found in the reviewed publications, thereby suggesting a research gap.
(3) The cross-education-level partnership is that between institutions of different education levels (e.g., the university and upper secondary school partnership; see in Jones & Iredale, 2006).
(4) The school–family partnership aims to introduce the parental roles or family members as partners in the program. Parental influence appears in the literature often as one of the control variables and is commonly measured through students' self-reported data. Despite the significant influence students can receive from parents and family members, only a few studies have made efforts to collect data directly from parents (Birdthistle et al., 2007; Johansen, 2018).
(5) The school–industry partnership can allow students to directly interact with entrepreneurial role models (e.g., Blenker & Christensen, 2007).
(6) The school–community partnership tightens the collaboration between schools and their surrounding communities (e.g., Tingey et al., 2016).
(7) The school–NGO partnership, which involves collaboration between NGOs and educational institutions, is the most frequently identified partnership in this study's sample due to the popularity of JA Worldwide, the most-mentioned NGO associated with the internationally renowned entrepreneurship education program, JA-YE Company Program (e.g., Athayde, 2012; Bonnett & Furnham, 1991).
(8) The school–government partnership can be implemented through using policy guidelines (e.g., curriculum policy), financial support, and trainings from the government (e.g., Casey, 1996).

Program profile

Formality: curricular or extracurricular

Depending on the level of formality the entrepreneurship education can be divided as curricular activities (offered by/at schools to be part of the school learning experience) and extracurricular activities (offered by non-school parties as a voluntary learning experience). An approximately equal number of publications exists between the two divisions (curricular: 35, extracurricular: 31, without entrepreneurship education: 35). Unsurprisingly, a high level of heterogeneity in the curricular activities was found, considering that the availability and offerings of entrepreneurship education curriculums are very different from country to country. Among 35 curricular studies, 14 countries were introduced. Indonesia (12), the United States (6), and South Africa (5) were the three most reported. Among 31 extracurricular studies, a high level of homogeneity was found in their reported extracurricular activities, with students participating mainly in the business creation activities (22). The most reported activity is related to the JA-YE Company Program (14 out of 22) offered by JA Worldwide. The JA-YE Company Program owns a high reputation for entrepreneurship education because of its dedication to educating upper secondary school students in Europe on how to implement business ideas and run new companies (European Commission, 2005). A total of 14 countries reported the Company Program activities. Among them scholars from Norway, the United Kingdom, the United States, and Belgium have provided the most examples of the program. Another observation is that scholars of the developing countries seemed to report more on curricular matters inside schools, whereas those of the developed countries are getting more evidence from extracurricular entrepreneurial activities.

Perspectives: broad or narrow

Entrepreneurship education can be discussed from either the broad perspective or the narrow perspective (Fayolle, 2013; Lewis & Massey, 2003; Nketekete & Motebang, 2008; Norberg, 2017). The narrow perspective equates entrepreneurship education with a specific course, aiming to train young people to start their own business (Cheng et al., 2009; Fejes et al., 2019). The broad perspective equates entrepreneurship education with entrepreneurial competencies and general skills that all students should learn so that they can be better prepared for life and work (European Commission, 2004; Fejes et al., 2019; Nelson, 1977; Patel, 2004). The dichotomy is commonly observed in the policy documents and among teachers. Some researchers suggested that the narrow perspective on entrepreneurship education is "much easier for teachers to understand and act upon" (Fejes et al., 2019, p. 560) and more influential than the broad perspective (Norberg, 2017). Others deemed the narrow perspective to have numerous weaknesses and are more likely to encounter resistance from staff and students when implemented (Kearney, 1996; Lewis & Massey, 2003). In this study's sample, most studies take the narrow perspective, whereas the broad perspective is less studied.

Types

Entrepreneurship education has three types, namely, education about, via, and for entrepreneurship (Caird, 1990; Du Toit & Kempen, 2018; Heinonen & Hytti, 2010; Johnson, 1988; Lackéus, 2015; Lewis & Massey, 2003; O'Connor, 2013; Sirelkhatim & Gangi, 2015). Ierapetritis (2017, p. 273) noted that education about entrepreneurship "examines entrepreneurship as a social phenomenon, studying the types of people that become entrepreneurs and analyzing the factors that push them toward this direction" (e.g., Schröder & Schmitt-Rodermund, 2006). Education via entrepreneurship "uses the business process as a didactic method or tool to achieve a series of wider didactic goals" (e.g., Adlim & Hasibuan, 2014; Zabaneh, 2017). Then, education for entrepreneurship "focuses on acquiring the necessary skills and knowledge to start an enterprise (business planning, budget preparation, marketing strategy, etc.)" (e.g., Athayde, 2012). Among these three types, the "education for" is the most seen (64% among 66 studies with entrepreneurship education as intervention), and the "education via" is the least explored (12%). Despite the limited number of "education via entrepreneurship" research, entrepreneurship education programs were found to be a promising educational intervention to boost the interest of students in STEM classes, such as science (Karmokar & Shekar, 2018), biotechnology (Adlim & Hasibuan, 2014), and engineering (Strimel et al., 2019).

Format of integration

Entrepreneurship education can be integrated into schools in different ways. The first way is to embed entrepreneurship education as a topic in other subjects. More than half of European countries have entrepreneurship education as an embedded topic in courses related to economics and management and education on the secondary school level (Carvalho et al., 2015). In South Africa's high schools, entrepreneurship education was also offered as an embedded topic in other subjects (Du Toit & Kempen, 2018). The second format is delivering entrepreneurship education as an independent subject (optional or compulsory). In Bulgaria, for vocational high schools, entrepreneurship is a separate and compulsory subject starting from Grade 11 (Cardoso et al., 2018). In Lithuania, Poland, Slovenia, and Sweden, entrepreneurship is a compulsory subject in the curriculum of math, science, technology, and information and communication technologies (Carvalho et al., 2015). In Greece, general (high schools) and vocational lyceums have dedicated entrepreneurship education subjects (Ierapetritis, 2017). The third format is as a project that can take place completely as an extracurricular activity, as explained in the formality section, which involves students in a business creation (or pupil enterprise) endeavor. The project can also be a curricular element inside a subject or a program (Jones & Iredale, 2006).

Pedagogical methods

They can briefly include two categories: (a) observational approaches, such as lecture, workshop, guest speaker, field trips to companies, and role model interaction, and (b) experiential approaches, such as mentoring, simulations, business plan

writing, business competition, and business creation (Fumero et al., 2015; Gartner & Vesper, 1994; Hills, 1988; Kuratko, 2005; Solomon et al., 2002). Entrepreneurship education at the secondary education level should have different educational purposes compared with that for adult learners, such as at the higher education level and in small and medium enterprises. Entrepreneurship education should aim to offer opportunities for learners to gain entrepreneurship experience via a more experiential approach (Aronsson, 2004; Cheung & Au, 2010; Fuchs et al., 2008; Gendron, 2004; Honig, 2004; Izquierdo, 2008; Kuratko, 2005; Pihie & Bagheri, 2010; Solomon et al., 2002). Among reviewed studies the effort of introducing the pedagogical rationale behind an entrepreneurship education program was rarely seen, and most studies lacked the discussion of educational theories. Entrepreneurship education programs were often evaluated to be effective despite their deficiency and weakness in sound instructional design and content knowledge.

Teaching content

What to teach as the core areas of content is also an under-researched topic. The only study that might be counted as dedicated to this topic is that by Azizi and Mahmoudi (2019). Kourilsky and Esfandiari (1997) may potentially shed some light to inspire further research. They introduced three core areas for high school entrepreneurship education: (a) the identification or recognition of market opportunity and the generation of a business idea (service or product) to address the opportunity; (b) the marshaling and commitment of resources, in the face of risk, to pursue the opportunity; and (c) the creation of an operating business organization to implement the opportunity-motivated business idea (Kourilsky, 1995; Kourilsky & Esfandiari, 1997).

Program evaluation

Most studies examined only evaluated the short-term entrepreneurial outcomes at the individual (student) level. Although young people still at school are "unlikely to have immediate intentions to become entrepreneurs" (Athayde, 2009, p. 483), entrepreneurial intention or propensity was the most reported stand-alone outcome in the sample. Heinonen and Poikkijoki (2006) suggested that the results of entrepreneurship education for youth can be measured by three dimensions, namely, knowledge, skills, and attitudes (KSA). The KSA outcomes appeared to be the biggest cluster of outcomes with the entrepreneurial attitudes being most reported and followed by entrepreneurial skills and entrepreneurial knowledge. Other outcomes with less coverage include entrepreneurial potential, perceived desirability and feasibility, and entrepreneurial mindset.

The short-term nonentrepreneurial outcomes can be briefly divided into four groups. The first group reported entrepreneurship education's effect on academic performance, academic achievement, academic motivation, school attendance, academic engagement, and interest in pursuing higher education (Barma et al., 2017; Fumero et al., 2015; Johansen, 2014, 2018; Jones & Iredale, 2006; Osgood, 2011;

Zabaneh, 2017). The second group reported entrepreneurship education's influences on learning specific subjects. For example, entrepreneurship education was found to affect the conceptual test score and total motivation toward biotechnology learning (Adlim & Hasibuan, 2014). Moreover, entrepreneurship education was found to enhance interest in science and technology (Karmokar & Shekar, 2018) and promote more authentic engineering design activities in secondary classrooms (Strimel et al., 2019). The third group of outcomes is associated with at-risk youth regarding dropout prevention, substance use, suicide prevention, or delinquency prevention (Casey, 1996; Osgood, 2011; Tingey et al., 2016). The fourth group involves community engagement and empowerment (Morakinyo & Akinsola, 2019; Paquin, 1990).

The effort to empirically study the long-term outcomes (entrepreneurial and non-entrepreneurial outcomes) of entrepreneurship education to the youth in this study's sample is almost nonexistent. The study of Elert et al. (2015) is the only quantitative research that demonstrates that compared to not participating in any entrepreneurship education programs, participating in Swedish Junior Achievement Company Program (JACP) during high school can positively affect long-term entrepreneurship performance such as propensity to create a new startup and entrepreneurial income.

Lessons learned

Measuring the psychological, behavioral, and demographic characteristics of students is important when attempting to evaluate an entrepreneurship education intervention. Several studies only partially measured these factors as independent or control variables, which may cause fluctuations in the explanatory power of entrepreneurship education toward outcome variables. This case may also explain the conflicting results in the literature regarding the influence of different independent, mediator, and moderator variables (e.g., gender). "Conflicting results may be explained by unidentified mechanisms or depiction of unidentified mechanisms that have not been discovered because they may cancel each other out in empirical results" (Post et al., 2020, p. 357). Dedicated research is needed to carefully examine the methodology of relevant studies and rigorously evaluate the strength of the evidence to decide which direction of evidence is more convincing.

Another implication that concerns student characteristics is that we should not deny the diversity of students in entrepreneurial abilities and characteristics and blindly expect everyone to choose entrepreneurship over other careers. As the literature grows, its underlying assumptions tend to become increasingly shared, accepted, and implicit (Post et al., 2020, p. 359). Most studies implicitly desire the positive effect of entrepreneurship education to prove the success of the intervention. One common understanding seems to be that if an entrepreneurship education intervention is set to increase the entrepreneurial intention of a class, the postintervention evaluation will prefer seeing such a result at the whole class level. An alternative evaluation method of Schröder and Schmitt-Rodermund (2006) provides a rather refreshing perspective. In their study, students were divided into the intervention and the control group to assess the important role of entrepreneurial personality traits (V1) and prior contact with entrepreneurship in their family (V2) in crystalizing

enterprising interest. Four segments of students were compared: high V1 but no V2 (segment 1), low V1 and no V2 (segment 2), high V1 and V2 (segment 3), and low V1 and V2 (segment 4). After the intervention, segment 1 increased interest, segment 2 decreased interest, segment 3 remained a high interest, and segment 4 confirmed low interest. They suggested that "rather than fostering enterprising career interests in all participants, an intervention program should promote the exploration of enterprise as a career option and give students a broader basis for further career decisions" (Schröder & Schmitt-Rodermund, 2006, p. 496). Future research may also consider adopting and improving this approach when evaluating the effectiveness of an entrepreneurship education intervention.

The program design and development as the "cogs and wheels" of the entrepreneurship education intervention are less documented and reported by the literature, when compared with the amounts of pre-intervention analysis studies and the post-intervention evaluation studies. Although some factors were provided by this study to guide the process of designing and developing a youth entrepreneurship education program, they merely provide directions than detailed instructions. Questions on what and how to teach remain in an entrepreneurship education for the youth need further exploration.

The environment-level studies were significantly missing. Implementing entrepreneurship education is a complex process that needs good management and collaboration. Schools in particular play an important managerial role as a terminal to connect internal and external partnerships, resources, and personnel. The schools' organizational behavior to integrate entrepreneurship education into their education ecosystem is a research topic that is worth further exploration. This direction can embrace topics, such as policy interpretation and transformation by the school management team, anatomy of school infrastructure (e.g., resources and personnel) that support entrepreneurship education, teacher training, partnerships, and collaboration. Schools must be more proactive in merging with the existing surrounding entrepreneurship ecosystem. When such an ecosystem is still underdeveloped, schools can take the initiatives to assemble resources and become entrepreneurial organizations to pave the first block. When schools in some areas are not capable of taking on the game-changing role, other organizational role players should be approached to offer helps in shared infrastructure and facilities for entrepreneurial activities. Moreover, they can establish inter-level and multi-agency partnerships for bettering youth entrepreneurship education in their residing region. Possible practices can include enabling school-to-school sharing teaching or activities, transferring university-level research and educational products to upper secondary education level, and organizing entrepreneurship training for parents.

If the government is to continue promoting entrepreneurship education, evaluative research should be conducted or funded on existing practices to determine what is working educationally and institutionally especially in the long term. For instance, good practices such as the Company Program in Europe have been operating for years in different western countries. Conducting synthesis research or comparative research on the multiple-nation level of analysis and preferably of a longitudinal type aiming to evaluate its long-term entrepreneurial outcomes will be beneficial. Such research will help to evaluate if this type of extracurricular program for adolescents

seriously affects entrepreneurship development in the society. Accordingly, scholars are recommended to conduct additional systematic literature review studies and holistically present sound research evidence as the knowledge base to better inform policymakers.

Conclusion

This systematic review synthesizes 30-year literature (1990–2019) on youth entrepreneurship education at the upper secondary education level. Consequently, the study develops the YEEPE framework (Fig. 3) to inform further actions in both research and education practices. The YEEPE framework reveals factors and relationships in a visual that was not displayed before. It breaks down the factors to consider when planning a youth entrepreneurship education program into student characteristics, ecosystem of partnership, and program profile (formality, perspectives, types, formats, pedagogical methods, and teaching content). It differentiates different types of outcomes by considering their long-term or short-term impacts and of (non-)entrepreneurial characteristics. It is intended that both education researchers and educators can benefit from reading this research.

Limitations related to sample biases should be taken into account when viewing the contributions of this study. First, we excluded several studies that used secondary education in general (lower and upper) as the research context. However, we are aware that policies regarding entrepreneurship education for secondary education are usually directed at the entire secondary education level, not only at the upper secondary education level. Therefore, the exclusion criteria of this study may result in some relevant policy studies being missed. Second, we also included in the sample some publications from the same research project that may bring an inherent risk of presenting redundant evidence to the review, such as nine studies in Norway (Johansen, 2013, 2014, 2016, 2017, 2018; Johansen & Clausen, 2011; Johansen & Foss, 2013; Johansen & Schanke, 2013; Johansen et al., 2012, 2013). Third, the interrater agreement level was not calculated in the screening (ii) process, which may also have influenced the result of this study.

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Declarations

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