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The impact of entrepreneurship education on students' desirability and intentions to pursue an entrepreneurial career: a study in general and vocational secondary schools of Cabo Verde

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Abstract

This study aims to evaluate the impact of the Entrepreneurship Curriculum Programme (ECP) on students' entrepreneurial attitudes, perception of social norms and entrepreneurial intentions. This programme was implemented in upper-secondary level classes in Cabo Verde. The study also assesses if the programme has different impacts in different years of schooling and the mediating role of personal factors (gender and family models), teaching factors (differences between general and vocational education) and contextual factors (different island). The research was conducted on six islands in 4 vocational schools and 8 schools of general studies. The research compared the results of two groups: one with 947 students who attended ECP and the other with 1140 students who did not. The findings reveal that ECP impacts all the dimensions considered, the effect is differentiated throughout schooling and that other factors affect students' entrepreneurial attitudes, beliefs and intentions. From the theoretical point of view, the study reinforces the knowledge about the impact of education in entrepreneurship in contexts where there are still few studies—the context of developing countries and the context of secondary education. From a practical point of view, the study provides indications for deepening/improving the design and implementation of entrepreneurship education programmes.

Keywords: Entrepreneurship education, Impact study, TPB, Secondary schools, Vocational schools, Developing countries, Cabo Verde

Introduction

Entrepreneurship education has experienced global growth since the 1990s, with a particular surge at the start of the twenty-first century (European Commission/EACEA/Eurydice, 2006; Fayolle, 2013; Fellnhofer, 2019; Gorman et al., 1997; Kabongo & Okpara, 2010; Katz, 2003; Kuratko, 2005). This expansion is attributed to the belief that education has a positive impact on entrepreneurship. It is assumed that by acquiring

entrepreneurial skills, students will be better equipped for their careers, whether as entrepreneurs or employees, and that this will have a favourable impact on the economy of countries.

Several authors (Florin et al., 2007; Guerrero et al., 2008; Krueger et al., 2000; Liñán et al., 2011; Peterman & Kennedy, 2003; Shapero & Sokol, 1982) contend that entrepreneurship education should focus on beliefs and desires, developing perceptions of desirability and viability of entrepreneurial actions since this will have a positive impact on the propensity to act. This argument is often based on the Theory of Planned Behaviour (TPB) (Ajzen, 1991). Several TPB-based studies have shown that entrepreneurship education plays a positive role in students' entrepreneurial attitudes, beliefs, intentions and/or behaviours (Ahmed et al., 2020; Amofah & Saladrighes, 2022; Fayolle et al., 2006; Fretschner & Weber, 2013; Liñán & Chen, 2009; Liñán et al., 2011; Rauch & Hulsink, 2015; Rodrigues et al., 2013; Zhang et al., 2014). However, the results are not unanimous (de Sousa et al., 2022). Doubts remain about whether curricular initiatives are effective or useful for developing an entrepreneurial mindset in students or entrepreneurial intentions, as well as the factors that can affect this relationship (Fayolle & Gailly, 2015; Longva & Foss, 2018; Oosterbeek et al., 2010). Hence, despite an increase in impact studies on entrepreneurship education, more research is required to better understand this phenomenon.

One possible explanation for the inconsistent results of impact studies on entrepreneurship education is the importance of the context in which such education takes place (Bae et al., 2014; Fretschner & Weber, 2013; Longva & Foss, 2018; Walter & Dohse, 2012). Bae et al. (2014) found that the effects of entrepreneurship education on entrepreneurial intentions could vary across different national cultures, and Longva and Foss (2018) pointed out that impact studies from Western European countries are overrepresented in the literature. To address these gaps, researchers have suggested exploring under-examined countries and regions, such as Russia, Brazil, and Africa, to better understand the generalizability or specific configurations of the theory (Nabi et al., 2017). In Africa, some governments and institutions have already started to invest in entrepreneurship education at various levels of education. Despite growing literature on the topic and its impact in Africa still needs to be more extensive if compared to the extant literature concerned with developed countries (e.g., Aga, 2023; Gielnik et al., 2015; Gird & Bagraim, 2008; Kabongo & Okpara, 2010; Libombo & Dinis, 2015; Malebana & Mothibi, 2023; Ndofirepi, 2020; Rodrigues et al., 2013).

Another aspect still under researched is exploring the impact of entrepreneurship education at other levels of education than higher education (Nabi et al., 2017). The majority of research focuses on practices and results in higher education institutions. For instance, a simple quest in the Scopus database with the words "impact + 'entrepreneurship education' + 'higher education'" returned 199 documents, while the search with "impact + 'entrepreneurship education' + 'secondary education'" only returned six documents.

The case of Cabo Verde represents an opportunity to address these research gaps. In 2014, the Ministry of Education of Cabo Verde, with the support of the United Nations Industrial Development Organization (UNIDO) and financial support from the Government of Portugal, introduced the Entrepreneurship Curricular Program (ECP), aiming to

promote an enterprising culture. The initiative comprised a 3-year pilot aimed at creating and executing a curriculum for entrepreneurship education in General Secondary Education (GSE) and Professional Technical Education (PTE) for grades 9–12. The program sought to align theoretical knowledge with practical application. This entrepreneurship training was taught within the scope of the *Education for Citizenship* discipline, a class of 2 hours per week. This project was implemented in 12 of the 50 secondary schools in Cabo Verde, located in 6 archipelago islands—Santo Antão, São Vicente, Sal, Boavista, Maio and Santiago—involving 4,744 students and 154 teachers. The number of graduates who left school with entrepreneurship training was around 1300 in 2015 and more than 2100 in 2016. This study forms part of a larger one carried out to assess the project's impact after the implementation phase and before its extension to all the schools of Cabo Verde (Dinis, 2017).

This study applies the TPB model to assess the effectiveness of the Entrepreneurship Curriculum Programme (ECP) in Cabo Verde secondary schools on students' attitudes towards entrepreneurship and their entrepreneurial intentions. According to Liñán's (2004) theory, personal attitudes and perceived social norms contribute to the perceived desirability of entrepreneurship. The study also aims to determine whether the impact of the ECP varies across different grades and if other factors besides entrepreneurship education have an impact on students' beliefs and intentions towards entrepreneurship.

Literature review on the impact of entrepreneurship education

Despite the increasing amount of literature on entrepreneurship education, there is still a debate on whether entrepreneurship can be taught (Florin et al., 2007). This debate is not only about the specific elements and methods used to teach entrepreneurship but also includes more specific questions such as whether the entrepreneurial perspective can be taught through a school curriculum or whether it is possible to develop measures to evaluate efforts to teach entrepreneurship (Neck & Greene, 2011; Vanevenhoven & Liguori, 2013). In addition, even if teaching entrepreneurship is possible, there is still a question as to why some students choose to be entrepreneurs and others do not (Turker & Selcuk, 2009). Therefore, doubts persist about the effectiveness and usefulness of curricular initiatives in developing an entrepreneurial mindset, intentions, and behaviors in students, as well as the factors that can affect this relationship. Consequently, impact assessment remains a crucial issue in this field.

The following questions should be considered as a starting point for impact studies: "What are the objectives of entrepreneurship education? Or, more specifically, "What are the objectives of an entrepreneurship education programme, in the short and long term?" and related with this, "Which dimensions should be evaluated or measured?" and "What factors can affect the achievement of objectives", i.e., "What factors can interfere with the impact of teaching entrepreneurship?". Some central ideas of the discussions around these questions are presented below.

Objectives of entrepreneurship education and dimensions to be evaluated: a focus on attitudes, beliefs, and intentions

The starting point for assessing impacts is to understand the objective of the entrepreneurship programme and, based on that, what should be measured ("What do we want

to measure?”). Traditionally the education system has placed the emphasis on teaching skills and knowledge. However, it is also essential to address elements such as student mindsets, attitudes and career aspirations when teaching entrepreneurship. Generally speaking, the primary function of entrepreneurship education is to increase student awareness, highlight the entrepreneurial path as a viable career option, and develop positive attitudes, entrepreneurial knowledge and skills (Moberg, 2014a, 2014b).

According to several authors (Moberg, 2014a, 2014b; Neck & Greene, 2011; O'Connor, 2013), entrepreneurship education can be conceived based on three different purposes: education “about”, “for”, and “through” entrepreneurship. Based on the work of Neck and Greene (2011), O'Connor (2013, p. 4) summarised the four different worlds of entrepreneurship education, relating them with the diverse entrepreneurship education purposes and objective outcome for students. When the purpose is to learn “about” entrepreneurship, the objective outcome for students is ‘to emulate role models’ (the ‘world’ of the entrepreneur, focused on personal traits); when the purpose is to learn “for” entrepreneurship, the objective outcome is to promote the ‘decision to become an entrepreneur’ (the ‘world’ of cognition focused on decision-making to engage in entrepreneurial activity) and ‘replicate the entrepreneurial processes’ (the “world of entrepreneurial processes focused on new venture creation); when the purpose is learn “through” entrepreneurship the objective outcome for students is ‘to adopt entrepreneurial behaviours’ (the “world” of the entrepreneurial method, focused on a portfolio of techniques to practice entrepreneurship.). Moberg (2014a, 2014b) uses the distinction between *cognitive* and *non-cognitive* abilities to characterise these three types of education. Assuming that the entrepreneurial process simultaneously involves “art and science”, cognitive skills are associated with the “science” element and refer to codifiable aspects that are easy to teach through traditional teaching methods. In contrast, non-cognitive skills (associated with “art”) must be acquired through living/practical experience. Education “*about*” entrepreneurship primarily focuses on developing cognitive skills; education “*for*” entrepreneurship includes both cognitive and non-cognitive skills; education “*through*” entrepreneurship focuses mainly on non-cognitive skills. The latter is sometimes associated with action-oriented education or as a way of teaching other subjects by applying the entrepreneurial teaching method.

This author also refers to the elements that should be evaluated in each type of teaching. She posits that education “for” and education “about” entrepreneurship focuses on cognitive skills and seeks to raise awareness of self-employment as a possible career choice. Education “for” entrepreneurship, however, also seeks to develop non-cognitive entrepreneurial skills in students, thus implying the use of action-based teaching methodologies. Learning outcomes, such as increased skills in managing ambiguity and uncertainty and a heightened understanding of how to apply and use subject-specific knowledge, can also be seen as an objective and expected result of this type of teaching. In this sense, it is possible to bring education “for” entrepreneurship closer to education “through” entrepreneurship since both focus on similar learning outcomes and use similar teaching methods.

Teaching entrepreneurship as a viable career option is a challenge for educational institutions due to the limited job opportunities available, according to several authors (e.g., Jack & Anderson, 1999; Kassean et al., 2015). This type of education aims to

Table 1 Categories of outcome measures in Entrepreneurship Education impact studies

Impact category	Constituents
Cognitive	Knowledge (comprehension about entrepreneurship) and business basics traits (need for achievement, proactiveness, self-esteem, risk propensity)
Skill-based:	Business modelling; opportunity recognition; creative thinking; teamwork
Affective	Passion/inspiration; attitude to entrepreneurship; subjective norm
Conative	Entrepreneurial intention; entrepreneurial self-efficacy
Behavioural	Nascency; venture creation; intrapreneurship; social entrepreneurship; employability

Source: Longva and Foss (2018, p. 4)

develop both cognitive and non-cognitive skills, which cannot be evaluated using traditional teaching and assessment methods, making it difficult to assess the impact of entrepreneurship education in terms of knowledge acquisition, skill development, and the formation of entrepreneurial attitudes, intentions, and behaviors.

One of the major difficulties in conducting impact studies is the lack of widely accepted indicators, metrics, and assessment protocols. Longva and Foss (2018) developed five outcome categories for entrepreneurship education impact research based on previous frameworks (Table 1): cognitive, skill-based, affective, conative, and behavioral. Affective and conative categories are related to attitudes, beliefs, and intentions, which fall under the non-cognitive category.

Several authors, (e.g., Florin et al., 2007; Krueger et al., 2000; Shapero & Sokol, 1982) argue that entrepreneurship education should prioritise the development of attitudes towards and belief in the desirability and feasibility of entrepreneurship, as these factors have a positive influence on the likelihood of engaging in entrepreneurial activity.

The effects of attitudes on intention and behaviour have been extensively researched and supported in the social psychology literature (Ajzen, 1991). In the view of many authors, the creation of an organisation is planned and, therefore, is an intentional behaviour (Amofah & Saladrigues, 2022; do Paço et al., 2011; Fayolle & Gailly, 2015; Gird & Bagraim, 2008; Krueger et al., 2000; Liñán & Chen, 2009; Ndofirepi, 2020; Robinson et al., 1991; Shapero & Sokol, 1982; Vankov & Vankov, 2023). For this reason, intention appears to be a better predictor of behaviour than attitudes, beliefs, or other psychological or sociological variables. One of the most well-known schemes to assess attitudes, beliefs, intentions, and entrepreneurial behaviour as outcomes of entrepreneurship education falls within the scope of the Theory of Planned Behaviour (TPB). The TPB is part of a large family of intentional models used to explain the emergence of entrepreneurial behaviour (Fayolle & Liñán, 2014; Florin et al., 2007). This theory, propounded by Ajzen (1991), considers that intentions are determined by attitudes, and these, in turn, are affected by individual and contextual variables (indirect predictors of intention).

According to this model, it can be assumed that students' entrepreneurial behaviour is the result of their entrepreneurial intention, which is influenced by individual and contextual factors. Individual factors include attitudes towards entrepreneurial behaviour, which relates to the desirability of engaging in entrepreneurial action, and perceived behavioural control, referring to the individual's belief in their ability to perform entrepreneurial tasks. This concept is similar to the idea of "self-efficacy" as defined by Robinson et al. (1991) and Florin et al. (2007) or "perceived viability" as defined by Shapero and

Sokol (1982). Personal attitude towards start-ups also encompasses affective and evaluative considerations and is defined by Liñán and Chen (2009) as the degree to which individuals hold a positive or negative personal valuation about being an entrepreneur. Contextual factors include subjective norms, which refer to the perceived social pressure to engage or not engage in entrepreneurial behavior. As proposed by Liñán (2004), personal attitude and perceived social norms together define the perceived desirability of entrepreneurship.

This approach has been used by several authors to study entrepreneurial attitudes, intentions and behaviours of students (Autio et al., 2001; Draksler & Sirec, 2021; Franke & Lüthje, 2004; Lope Pihie & Bagheri, 2011; Rodrigues et al., 2013; Saptono & Wibowo, 2018; Yurtkoru et al., 2014) and to study the impact of entrepreneurship education (Ahmed et al., 2020; Amofah & Saladrighes, 2022; Cera et al., 2020; Dinis et al., 2013; Duval-Couetil, 2013; Fayolle et al., 2006; Fayolle & Gailly, 2015; Fretschner & Weber, 2013; Moberg, 2014a, 2014b; Nabi et al. 2016, 2017; Peterman & Kennedy, 2003; von Graevenitz et al., 2010). Most studies have shown that entrepreneurship education positively influences students' entrepreneurial attitudes, beliefs, intentions and/or behaviours (de Sousa et al., 2022; Pittaway & Cope, 2007; Wardana et al., 2020). However, the results are not unanimous (de Sousa et al., 2022; Liñán & Fayolle, 2015; Moberg, 2014a, 2014b). For instance, the results of Oosterbeek et al. (2010) show that the program does not have the intended effects since the effect on students' self-assessed entrepreneurial skills was insignificant, and the effect on the intention to become an entrepreneur was negative. The findings of Von Graevenitz et al. (2010) support the aforementioned results. However, they also discovered that students revise their beliefs about their entrepreneurial skills. During this process, a student may realise that he or she may not be a good fit for entrepreneurship or may not enjoy it. Similarly, Nabi et al. (2016) found that the impact of entrepreneurship education is inconsistent, and in some cases, it may even decrease entrepreneurial intentions.

In light of these results, Fayolle and Liñán (2014) conclude that "the results of empirical research reveal significant differences in attitudes and levels of intention of students who participate in entrepreneurship education programs and those who do not". However, this author also notes that "whether and how a generalisation of these results to a variety of configurations can occur remains an open question." (p. 664). This predicament of generalisation is especially relevant in the context of developing countries where such studies are scarce.

As previously mentioned, most studies on the impact of entrepreneurship education have focused on university/higher education students. However, there are some studies that involve secondary and vocational education students (Cardoso et al., 2018; Elert et al., 2015; Hasanah et al., 2016; Kirkley, 2017; Lackéus & Sävetun, 2019; Malebana & Mothibi, 2023; Ni & Ye, 2018; Saptono et al., 2020), and little is known about how the same program impacts different levels of schooling. The importance of age and maturity level that can influence entrepreneurial attitudes, beliefs and intentions has been underscored in previous studies by Florin et al. (2007) and Pittaway and Cope (2007). Peterman and Kennedy (2003) also noted that the perceived feasibility and desirability of entrepreneurship can be influenced by a person's stage of life or age, among other external factors.

To further explore the influence of age on entrepreneurial attitudes and intentions, Peterman and Kennedy (2003) suggested that future research should investigate how the life stage of individuals affects their perception of personal capabilities and entrepreneurial intentions. They argued that young people may not place much emphasis on their capabilities as they do not foresee starting a business in the near future, while adults may view their capabilities as a crucial factor in their intentional behaviours. In the path of the work of Heckman et al., (2013), who explained the mechanism through which an early childhood program boosts adult outcomes, Obschonka (2016) proposes a life-span development approach to entrepreneurship, putting a special emphasis on the early formative years in childhood and adolescence. However, the results of such interventions often are only evident years later, in the long-term, when there is a need to apply these skills.

In the case of the ECP, the program's objectives are clearly defined in the manuals that served as the basis for its implementation in schools: the program appears as "a measure to make secondary education practical and interactive to prepare students with relevant skills for working life and the *generation of jobs for themselves and others, fundamentally aiming to tackle unemployment*" (Ministry of Education and Sports, 2015, p. 2—our italics). The same documents indicate the following general objectives of this course:

- Develop a positive attitude and mindset towards work and self-employment;
- Develop a personality with entrepreneurial skills;
- Identify and take advantage of opportunities in the environment;
- Develop enterprise management capabilities.

The objectives of the Entrepreneurship Curriculum Programme highlight the importance of both cognitive and non-cognitive skills in entrepreneurship education, which aligns with the categories of impact identified by Longva and Foss (2018). However, this study focuses specifically on affective and conative factors, in accordance with the perspectives of Shapero and Sokol (1982), Florin et al. (2007), and Krueger et al. (2000).

Thus, based on these previous studies, the following hypotheses are settled.

H1: Entrepreneurship education positively affects entrepreneurial attitudes

H2: Entrepreneurship education positively increases positive perception of social norms concerning entrepreneurship

H3: Entrepreneurship education positively affects entrepreneurial intentions

Based on Peterman and Kennedy (2003) it is assumed that the older young people are and the closer they are to entering the job market, the more (short-term)¹ impact entrepreneurial education has, resulting in the following hypotheses:

H4: The maturity (year of schooling) of the students positively affects the impact of entrepreneurship education on entrepreneurial attitudes, perception of social norms and entrepreneurial intentions.

¹ The long-term effects of the programme are not analyzed in this study.

Factors that affect the impact of entrepreneurship education

The literature shows that, in addition to entrepreneurship education, other factors can explain "why some students choose to be entrepreneurs and others not". As O'Connor (2013, p. 3) stated, "beyond education, there is a diverse range of factors that influence the individual's decision to become an entrepreneur." Follows some of the factors discussed in the literature.

Personal factors: gender and role models

Gender and family background are among the personal factors that have been identified to impact students' entrepreneurial attitudes, perceptions, and intentions according to various authors. For instance, in their systematic review, Pittaway and Cope (2007) concluded that male and younger students with family business experience have a higher intention to engage in entrepreneurship. Similarly, Liñán and Fayolle (2015) identified a large category of studies in their systematic review that focused on personal-level variables such as gender and prior family exposure to entrepreneurship. Moreover, Bae et al. (2014) suggested that gender and entrepreneurial family background can moderate the impact of entrepreneurship education.

After controlling for pre-education entrepreneurial intentions, Bae et al. (2014) concluded that *gender* is not a significant moderator. However, other studies reveal that personal factors such as students' gender can affect students' entrepreneurial attitudes, intentions, and behaviours (Gird & Bagraim, 2008; Karimi et al., 2013; Maes et al., 2014; Maresch et al., 2016; Wilson et al., 2007). Gird and Bagraim (2008), a study in the South African context, conclude that the variable of gender explains the entrepreneurial intention in university students. These findings, as elucidated by Maes et al. (2014), can be attributed to the existence of "male stereotypes that help form preferences for entrepreneurship, as a career to succeed in life, more than as a form of organisation" (p. 791). As Shneor et al. (2013) argue, "the levels of entrepreneurial intentions of individuals in different sex groups are subordinated to the culture from which they originate" (p. 795). In addition, Maes et al. (2014) found that the effect of gender on entrepreneurial intentions was mediated by personal attitude but not social norms, indicating that there was no gender difference in terms of perception of the entrepreneurial climate. However, they did not find a direct effect of gender on entrepreneurial intentions. In contrast, Karimi et al. (2013) concluded that male students are more influenced by entrepreneurial attitude when forming their entrepreneurial intention, while the effect of subjective norms on entrepreneurial attitude was more substantial in the female group. Maresch et al. (2016) found that female students have a lower level of entrepreneurial intention than male students. However, Amofah and Saladríguez (2022) did not find any significant difference between genders in terms of entrepreneurial intention. Nonetheless, they found gender differences regarding the antecedents of entrepreneurial intention.

Other studies have shown that entrepreneurship education programmes are not 'gender neutral' (Florin et al., 2007; Johansen, 2013, 2017; Johansen et al., 2013). Wilson et al. (2007) concluded that entrepreneurship education assumes greater significance to women than men in increasing entrepreneurial self-efficacy and motivation for self-employment. In a similar vein, Johansen (2017) concluded that the perceived effect

of an entrepreneurship programme on skills and knowledge and preference for self-employment is more substantial among girls, while the perceived effect on the likelihood of owning a company is more robust among boys. Thus, as stated by this author, “it is important to recognise that the same entrepreneurship education programme does not necessarily satisfy the needs of both genders equally, and that ‘gender-sensitive programming’ may be needed.” (p. 9).

Thus, the above results in the literature point out that entrepreneurship education is not gender-neutral. However, the results are mixed and often depend on the contextual (cultural) factor (in some dimensions and in some contexts affect more girls in other affect more boys), Thus the following hypothesis is settled:

H5: Besides entrepreneurship education, gender affects entrepreneurial attitudes, beliefs, and/or intentions.

The existence of *entrepreneurial role models*, often through family relationships, is also a variable frequently used in the literature to explain individuals’ entrepreneurial attitudes, intentions, perceptions, and behaviour (Amofah & Saladríguez, 2022; Liñán & Fayolle, 2015; Malebana & Mothibi, 2023; Pittaway & Cope, 2007). Bae et al. (2014) pointed out that entrepreneurial family background is not a significant moderator. In contrast, Karimi et al. (2013) concluded that knowing role models are positively associated with attitudes towards entrepreneurship and subjective norms. However, they did not influence entrepreneurial intentions. On the other hand, Athayde (2009) concluded that the family background of self-employment positively influenced pupils’ intentions to become self-employed. Rosique-Blasco et al. (2016) concluded that students whose role model is an entrepreneur have a better understanding of him/her and show a greater propensity towards an entrepreneurial career. Kološta et al. (2018) concluded that role models (self-employed parents and friends owning enterprises) significantly influence students’ EI from villages. However, this was not the case for students living in cities. Malebana and Mothibi (2023) found that the knowledge of successful entrepreneurs was positively related to attitude towards entrepreneurship, subjective norms, and entrepreneurial intention.

These studies suggest that students who have family members involved in entrepreneurship are more likely to develop entrepreneurial traits and intentions.

H6: Besides entrepreneurship education, the presence of entrepreneurial role models in personal networks positively affects entrepreneurial attitudes, beliefs, and intentions.

Teaching factors

Entrepreneurship curriculum includes several teaching variables, such as its objectives, program design, and pedagogical approaches. Several authors (Fayolle et al., 2006; Gibb, 2002; Kassean et al., 2015; Oyugi, 2014) contend that these variables’ configuration is a critical factor in providing better professional training and learning models and, consequently, affects entrepreneurial intentions. Therefore, the configuration of entrepreneurship education offers, including the interactions it establishes with its more immediate context and the “modes” of entrepreneurship education (Walter & Dohse, 2012), varies from school to school and can affect the impact of entrepreneurship education. It is in this sense that O’Connor (2013) states that “although positive results can be found from a study of a program, it cannot be assumed that all programs will have similar results

due to variations in content, pedagogy, and styles of learning" (p. 2). Given the different nature and objectives of vocational education and general education, variations between the two systems in approaches to entrepreneurship education, as well as in contents and styles of teaching, can interfere with the issue of impact evaluation. As there are no studies in the literature that make clear which of the two systems is more favourable to the development of an entrepreneurial profile (and not being this the purpose of this study), with the aim of controlling the effect of this variable the following hypothesis is established:

H7: Besides entrepreneurship education, the type of education (vocational vs general studies) affects entrepreneurial attitudes, beliefs and intentions.

Contextual factors

A growing number of authors draw attention to the importance of context for understanding the phenomenon of entrepreneurship (Dorado & Ventresca, 2013; García-Cabrera & García-Soto, 2008; Gartner, 1993; Krueger et al., 2013; Shneor et al., 2013; Walter & Dohse, 2012; Welter, 2011). In 1993, Gartner points to the need for entrepreneurship research to recognise the context in which entrepreneurship takes place by saying that "observers tend to underestimate the influence of external factors and overestimate the influence of internal or personal factors when making judgments on the behaviour of other individuals (p. 234). Responding to this challenge, Welter (2011) argues that "the context is important for understanding when, how and why entrepreneurship happens and who gets involved" (p. 166). The 'where' and 'when' dimensions are particularly interesting when determining the backdrop of entrepreneurship research. The relevance of culture in explaining entrepreneurial intentions and behaviours has been discussed by Liñán and Chen (2009). Specifically in Cabo Verde, García-Cabrera and García-Soto, (2008) found that the territories (*Concelhos*) of higher orientation towards individualism were the ones where entrepreneurship was highest. Thus, considering that Cabo Verde is constituted by islands with different socio-economic dynamics and that this circumstance may also affect the results of entrepreneurial education,² with the aim of controlling the effect of this variable the following hypothesis is established.

H8: Besides entrepreneurship education, the different spatial (and cultural) contexts where the ECP has been implemented effects entrepreneurial attitudes, beliefs and intentions.

Research design and methods

Based on the literature review, a research model was developed (Fig. 1) to answer the three research questions: (i) what was the impact of the ECP on personal attitudes, perception of social norms and intentions of the students? (RQ1); (ii) was the impact in different years of schooling the same? (RQ2) and (iii) what other factors, besides entrepreneurship education, influence personal attitudes, perception of social norms

² The cultural context associated with each island is a multidimensional phenomenon. The analysis of these dimensions and how they relate (positively or negatively) with the variables being impacted by ECP, is not the aim of this study. The hypotheses established only aims to control this factor.

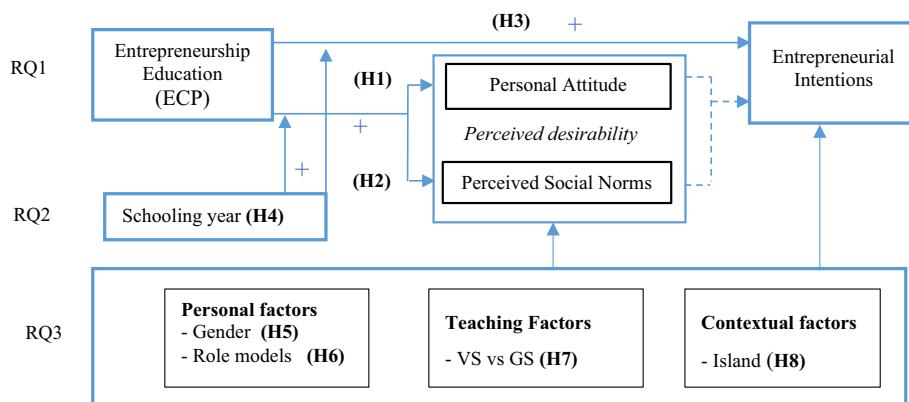


Fig. 1 Research model

and intentions of the students? (RQ 3). The model also specifies the eighth hypothesis presented in the previous section.

To address the complexity of evaluating the impact of entrepreneurship education, this study employed a quantitative approach using a cross-sectional and post-test-only design, with a treatment group that received entrepreneurship education and a control group that did not. This method allowed for the control of confounding variables, such as maturity, which could influence the results over time.

By including a control group and making the entrepreneurship education program compulsory for all classes in the treatment group, sampling biases were reduced. The study used a questionnaire to gather data from both groups of students, and the scales used to measure constructs were selected based on a review of previous studies in the field of entrepreneurial education, specifically in the age groups of the students being studied. (Autio et al., 2001; Liñán & Chen, 2009; Liñán et al., 2011).

The questionnaires were implemented in person in schools and applied to students who attended ECP in the previous academic year and those at the same level of education that did not attend the ECP. The questionnaires administered to the students consisted of various types of questions such as multiple choice questions, dichotomous questions with only two options (yes or no), and statements to be evaluated on a Likert scale ranging from 1 to 5. The questions were designed to elicit subjective responses from the students regarding the impact of the entrepreneurship education program (for the treatment group only) and their perceptions of the value of entrepreneurship, their abilities, willingness, or intention to pursue entrepreneurial activities or jobs. The study only included students who attended the ECP to assess the factors that influence the impact of the program on students.

In sum, the research design presents the following characteristics:

- *Nature of the research design:* quantitative
- *Type of research design:* cross-sectional and post-test only design with both test and control groups;
- *Time of data collection:* some time (months) after the end of the program
- *Type of assessment strategies:* thought-based (subjective measures).

Table 2 Distribution of the number of questionnaires

	9th grade	10th grade	12th grade	Total
Students with ECP	462	385	100	947
Students without ECP	415	335	390	1,140
Total	877	720	490	2,087



Fig. 2 Islands of Cabo Verde archipelago surveyed. Source: Adapted from CIA–CIA, *The World Factbook*, 2004, Public Domain, available in <https://commons.wikimedia.org/w/index.php?curid=89377>

Based on the 2179 questionnaires collected, fully or partially completed, 92 were excluded since it was impossible to assess whether the respondent participated in the ECP. A total of 2,087 valid questionnaires were collected, including the two groups—students who attended the ECP (27% of the universe) and students who did not attend the ECP—distributed over 3 years of schooling³ (Table 2).

The study was conducted in the 12 schools where ECP was implemented and distributed for six islands (Santo Antão, São Vicente, Sal, Boa Vista, Maio and Santiago) (Fig. 2).

Table 3 presents the sample distribution by schools and by frequency (and non-frequency) of the ECP.

The data collected were analysed using the SPSS programme. The reliability of the scales was evaluated for variables defined as "constructs" by calculating Cronbach's alpha. A value of 0.7 or more was considered as indicating reliable scales. To achieve a reliable scale, it was sometimes necessary to reduce the number of indicators and/or cases. The analysis involved descriptive statistics and tests for differences, such as *T* test

³ All the school years in which the programme had been implemented.

Table 3 Number of questionnaires collected and validated: by schools and schooling years

Island	Municipality	School	With ECP				Without ECP				Total
			10th	11th	12th	Total	10th	11th	12th	Total	
Barlavento			221	151	65	437	265	165	176	606	1043
Santo Antão	Rib. Grande	1	57	32	7	96	54	39	29	122	218
	Porto Novo	2*	50	37	18	105	45	34	42	121	226
São Vicente	São Vicente	3*	61	23	13	97	37	26	23	86	183
	São Vicente	4	8	21	20	49	53	25	45	123	172
Sal	Sal	5	36	6	3	45	76	35	37	148	193
Boa Vista	Boa Vista	6	9	32	4	45	0	6	0	6	51
Sotavento			241	234	35	510	150	170	214	534	1044
Santiago	Praia	7	47	40	4	91	42	30	46	118	209
	Praia	8*	15	45	5	65	1	2	0	3	68
	Praia	9	48	28	2	78	50	45	40	135	213
	S. Salv. do Mundo	10	46	36	7	89	30	32	34	96	185
	Santa Catarina	11*	33	36	9	78	24	37	36	97	175
Maio	Maio	12	52	49	8	109	3	24	58	85	194
		Total	462	385	100	947	415	335	390	1140	2087

*Technical–professional schools

1 Escola Secundária Suzete Delgado

2* Escola Técnica João Varela

3* Escola Industrial Mindelo

4 Escola Secundária Jorge Barbosa

5 Escola Secundária Olavo Moniz

6 Escola Secundária Boa Vista

7 Escola Secundaria Pedro Gomes

8* Escola Técnica Poliv. Cesaltina Ramos

9 Escola Secundaria Cónego Jacinto

10 Escola Secundaria Carlos Alberto Gonçalves

11* Escola Técnica Grand Duque Henry

12 Escola Secundária Maio

(for comparing two groups) and ANOVA (for comparing more than two groups). In the case of ANOVA, a series of tests were carried out to ensure the applicability of the analysis. If the assumptions for ANOVA were not met, the Kruskal–Wallis or Brown–Forsythe test was used instead.

Results

The impact of ECP on entrepreneurial attitudes, perception of social norms and entrepreneurial intentions

The impact of ECP on students was assessed by comparison between the group of students who attended the ECP and the group of those who did not, along the following dimensions:

- i) the level of desirability of the entrepreneurial activity/self-employment (entrepreneurial attitude),
- ii) the perception of the value of entrepreneurship /the entrepreneur's role in society (beliefs/social norms) and
- iii) entrepreneurial intentions.

Table 4 Personal attitude towards self-employment: differences between students with and without ECP

Construct/variable	Students with ECP		Students without ECP		Sig. ^a
	n	Mean	n	Mean	
Personal attitude towards entrepreneurship	476	3.9799	574	3.8342	0.004 (***)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Personal attitude towards entrepreneurship

The personal attitude towards self-employment/entrepreneurship construct refers to the level of appeal or attractiveness of entrepreneurial activity. This construct was assessed using four items, which yielded a Cronbach’s alpha value of 0.71.

- Being self-employed has more advantages than disadvantages*
- For me, the entrepreneurial career is not very interesting*
- If I had opportunities and resources, I would very much like to create a company*
- For me becoming an entrepreneur would give me great satisfaction*

Results (Table 4) reveal significant differences in attractiveness for entrepreneurial activity, showing more positive attitudes in students who attended ECP.

These results confirm that entrepreneurship education positively affects entrepreneurial attitudes (H1).

Perception of social norms

The perception of social norms refers to the perceived social pressure to have (or not) an entrepreneurial behaviour. This perception was measured through the following items:

- The culture of my country is favourable to entrepreneurial activity.*
- Most people in my country consider it not much acceptable to be an entrepreneur.*
- In my country, it is considered that the activity of an entrepreneur is too risky.*
- The role of the entrepreneur in the economy is highly recognised in my country.*
- In my country, it is common to think that entrepreneurs take advantage of others.*

Table 5 shows that students who took part in the ECP have significantly different perceptions of the entrepreneurial culture and the role of entrepreneurs in the economy compared to those who did not participate. The students who attended the ECP had higher positive perceptions in these areas.

Table 5 Perceptions of social norms towards entrepreneurship and entrepreneurs: differences between students with and without ECP

Construct/variable	Students with ECP		Students without ECP		Sig. ^a
	n	Mean	n	Mean	
The culture of my country is favourable to entrepreneurship	916	3.30	1092	3.15	0.015 (**)
The role of the entrepreneur in the economy is highly recognised in my country	922	3.40	1093	3.19	0.000 (***)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Table 6 Entrepreneurial intentions: differences between students with and without ECP

Construct/variable	Students with ECP		Students without ECP		Sig. ^a
	n	Mean	n	Mean	
Entrepreneurial intention	939	3.4162	1132	3.2501	0.000 (***)

^a Significance level equal to or less than 1% (***) , 5% (**) or 10% (*)

These results confirm that entrepreneurship education positively affects entrepreneurial beliefs (H2).

Entrepreneurial intention

Entrepreneurial intention is the construct that refers to the inclination to become self-employed or engage in entrepreneurial activities. This construct was evaluated by means of five items, which demonstrated a Cronbach’s alpha coefficient of 0.826.

- I am willing to do anything to be an entrepreneur*
- My professional goal is to become an entrepreneur*
- I will make every effort to work on my own*
- I am determined to create my own business in the future*
- I seriously think about creating/managing a company*

The comparison between the groups (Table 6) shows that the construct of “entrepreneurial intention” is significantly higher in the groups that attended the ECP.

These results confirm the hypothesis that entrepreneurship education positively affects entrepreneurial intentions (H3).

The impact of ECP on different years of schooling

The total samples of students were split by grade to assess the impact of ECP on schooling. In each grade, *T* tests were performed along some variables/constructs—entrepreneurial attitudes, beliefs (social norms) and intentions—to analyse differences between test and control groups.

Personal attitude towards entrepreneurship Results (Table 7) show that attraction to entrepreneurial activity tends to be higher in all the groups with ECP (in all grades). The difference between the test and the control group is more evident in the 10th grade allowing the rejection of the null hypothesis (equality of means) with a confidence level of 99.8%.

Perception of social norms Table 8 displays that students who took part in the ECP have a tendency to hold more favourable perceptions towards entrepreneurship culture and a greater recognition of the entrepreneur’s role. However, there is an exception regarding the perception of the entrepreneur’s role in the 12th grade. The differences are more noticeable and statistically significant in the 10th grade regarding the perception of the country’s culture and in the 11th grade regarding the entrepreneur’s role.

Table 7 Attraction to entrepreneurial activity: differences between students with and without ECP by school year

10th grade	n	Mean	Sig.^a
With ECP in 9th grade	195	3.9504	0.002 (***)
Without ECP	175	3.6786	
11th grade	n	Mean	Sig
With ECP in 10th grade	217	4.0061	n.s
Without ECP	179	3.8976	
12th grade	n	Mean	Sig
With ECP in 12th grade	64	3.9805	n.s
Without ECP	220	3.9064	

^a Significance level equal to or less than 1% (***) , 5% (**) or 10% (*)

Table 8 Perception of social norms: dimensions with significant differences between groups by year of schooling

The culture of my country is favourable to entrepreneurship		n	Mean	Sig^a
10th grade ^o	with ECP	442	3.33	0.091 (*)
	without ECP	400	3.16	
11th grade	with ECP	375	3.29	n.s
	without ECP	315	3.21	
12th grade ^o	with ECP	99	3.25	n.s
	without ECP	377	3.10	
The role of the entrepreneur in the economy is highly recognised in my country		n	Mean	Sig^a
10th grade ^o	with ECP	445	3.43	n.s
	without ECP	399	3.28	
11th grade	with ECP	377	3.41	0.041 (**)
	without ECP	313	3.18	
12th grade ^o	with ECP	100	3.30	n.s
	without ECP	381	3.31	

^a Significance level equal to or less than 1% (***) , 5% (**) or 10% (*)

Entrepreneurial intention Results (Table 9) show that entrepreneurial intention tends to be higher in all the groups with ECP (in all grades). The difference between the test and the control group is more evident in the 10th grade allowing the rejection of the null hypothesis (equality of means) with a confidence level of 99.5%.

In sum, the analysis by years of schooling shows that the differences tend to be more relevant in younger students, becoming less relevant in subsequent years. These results do reject the hypothesis that the impact of entrepreneurship education on attitudes, beliefs and intentions increases with the maturity (year of schooling) of the students (H4) but allow partially confirm the opposite hypothesis that *the impact of entrepreneurship education on attitudes, beliefs and intentions decrease with the maturity (year of schooling) of the students.*

Table 9 Entrepreneurial intention

Entrepreneurial intention		n	Mean	Sig ^a
10th grade ^o	with ECP	456	3.4103	0.005 (***)
	without ECP	413	3.1893	
11th grade	with ECP	384	3.4022	n.s
	without ECP	330	3.2972	
12th grade ^o	with ECP	99	3.4975	n.s
	without ECP	389	3.2716	

Analysis of differences between groups by year of schooling

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Other factors that influence ECP impact

In the following subsections, some factors that can influence perceptions are analysed, namely, personal factors (gender and personal role models), teaching/educational factors (type of school attended) and contextual factors (island of residence).

Personal factors

Gender Results of the tests (Table 10) reveal differences between boys and girls (who attended the ECP). Girls tend to be more attracted to entrepreneurial activity and have a higher entrepreneurial intention.

These results partially confirm hypothesis H5 since gender affects *entrepreneurial attitudes and intentions*, but there is no statistical evidence that it affects the perceptions of social norms (beliefs). Girls tend to show a higher attraction for entrepreneurship and higher entrepreneurial intention.

Role models The outcomes of the analysis in Table 11 demonstrate noteworthy variations between students who have personal connections with entrepreneurs (family members, friends who are running businesses, knowledge of someone who is an entre-

Table 10 Variables with significant differences between gender

Construct/variable	n	Girls	Boys	Sig. ^a
The attraction for entrepreneurial activity	473	4,06 (n = 202)	3,85 (n = 269)	0,006 (***)
Entrepreneurial Intention	931	3.41 (n = 520)	3.28 (n = 411)	0,031 (**)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Table 11 Variables with significant differences between students with and without role models

Construct/variable	n	With models	Without models	Sig. ^a
The attraction for entrepreneurial activity	464	4.04 (n = 383)	3.68 (n = 81)	0,000 (***)
In my country, it is considered that the activity of an entrepreneur is too risky	887	3.01 (n = 702)	3.25 (n = 185)	0,046 (**)
Entrepreneurial Intention	922	3.47 (n = 729)	3.18 (n = 193)	0,000 (***)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Table 12 Variables with significant differences between students in General Secondary Education (GSE) and Professional and Technical Education (PTE)

Social norms	n	GSE	PTE	Sig ^a
In my country, it is common to think that entrepreneurs take advantage of others	924	3.18 (n=587)	3.43 (n=337)	0.016 (**)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

preneur) and those who do not, across multiple dimensions of all constructs such as personal attitudes, perception of social norms, and entrepreneurial intentions. The results reveal that students who have entrepreneurial role models in their networks consistently hold a higher level of appreciation for entrepreneurial dimensions.

These results confirm hypothesis H6 since familiar role models positively affect *personal attitudes, perceptions of social norms and entrepreneurial intentions*.

Teaching/educational factors

From the set of variables tested, significant differences between General Secondary Education and Professional and Technical Education were found only in the perception of the entrepreneur’s status/behaviour (social norms) (Table 12). There are no significant differences in the constructs related to entrepreneurial attitudes or intentions.

These results partially confirm hypothesis H7, once only *perceptions of social norms* differ between vocational and general studies. Students from professional and technical education perceive a less positive image of the entrepreneur.

Contextual factors

Results show significant differences between islands in the perception of social norms (Table 13). However, no significant differences exist in the entrepreneurial attitude or intention constructs.

These results partially confirm hypothesis H8, once only *perceptions of social norms* differ between students living in a different spatial context (island).

A summary of the results is presented in Table 14.

Table 13 Variables with significant differences between islands

Social norms	n	S. Antão	S. Vicente	Sal	Boa Vista	S. Tiago	Maio	Sig. ^a
Most people in my country consider not much acceptable to be an entrepreneur	910	2.76 (n=197)	2.72 (n=146)	3.12 (n=42)	3.27 (n=44)	3.00 (n=376)	3.03 (n=105)	0,050 (**)
In my country, it is common to think that entrepreneurs take advantage of others	924	3.33 (n=199)	3.24 (n=144)	3.47 (n=43)	3.40 (n=45)	3.40 (n=388)	2.64 (n=105)	0,000 (***)

^a Significance level equal to or less than 1% (***), 5% (**) or 10% (*)

Table 14 Summary of results

Hypothesis	Results
H1: Entrepreneurship education positively affects entrepreneurial attitudes	Confirmed
H2: Entrepreneurship education positively increases positive perception of social norms concerning entrepreneurship	Confirmed
H3: Entrepreneurship education positively affects entrepreneurial intentions	Confirmed
H4: The maturity (year of schooling) of the students positively affects the impact of entrepreneurship education on entrepreneurial attitudes, perception of social norms and entrepreneurial intentions	Rejected. Partially confirmed the opposite hypothesis; <i>the impact of entrepreneurship education on attitudes, beliefs and intentions decrease with the year of schooling</i>
H5: Besides entrepreneurship education, gender affects entrepreneurial attitudes, beliefs, and/or intentions	Partially confirmed: Girls tend to show a higher <i>attraction for entrepreneurship</i> and higher <i>entrepreneurial intention</i> , but there is no statistical evidence that it affects the perceptions of social norms
H6: Besides entrepreneurship education, the presence of entrepreneurial role models in personal networks positively affects entrepreneurial attitudes, beliefs, and intentions	Confirmed
H7: Besides entrepreneurship education, the type of education (vocational vs general studies) affects entrepreneurial attitudes, beliefs and intentions	Partially confirmed: only <i>perceptions of social norms</i> differ between vocational and general studies. Students from professional and technical education perceive a less positive image of the entrepreneur
H8: Besides entrepreneurship education, the different spatial (and cultural) contexts where the ECP has been implemented affects entrepreneurial attitudes, beliefs and intentions	Partially confirmed: only <i>perceptions of social norms</i> differ between students living in a different spatial context (island)

Discussion

The impact of the Entrepreneurship Curriculum Programme (ECP) on students was investigated, and the results indicate that attending the program had a positive effect on students' entrepreneurial attitude, perception of social norms, and entrepreneurial intentions. This finding is consistent with Pittaway and Cope's (2007) systematic review, which also concluded that entrepreneurship education programs have a positive impact on students' entrepreneurial intentions. Moreover, empirical results from Ahmed et al. (2020); Malebana and Mothibi (2023) and Ndofirepi, (2020) in developing countries and Cera et al. (2020) in a transition economy. In addition, the study by Fayolle and Gailly (2015) found a significant positive impact on attitudes 6 months after the completion of an entrepreneurship education program.

This impact is more relevant in younger students. This result can be explained by the fact that students closer to entering active life will tend to weigh more on the advantages and difficulties they will have to face or, as pointed out by Peterman and Kennedy (2003), the younger may not consider their capabilities as vital because they do not foresee that they will undertake a business venture in the near future and thus had time to acquire relevant skills. Older students may consider their capabilities as a fundamental influence on their intentional behaviours. Another explanation for the age-related difference in impact could be the type of curriculum taught. In earlier years, students may receive more behavioural content, whereas in later years, they may receive more technical instruction that emphasises the difficulties and demands

of entrepreneurship. This finding is consistent with the notion that entrepreneurship training helps students understand career options and create learning opportunities to assess which career path is best suited for them (von Graevenitz et al., 2010). It is in the later years of school when the career option is considered more seriously. Students who had learned that they would not be promising entrepreneurs or would not enjoy being entrepreneurs, rather than performing a potentially costly real-world experiment of starting a firm and failing at the task, decide not to pursue an entrepreneurial career.

Results also confirm that, besides entrepreneurship education, a diverse range of factors affect students' personal attitudes, perceptions of social norms and entrepreneurial intentions, as stated by several authors (Liñán & Fayolle, 2015; O'Connor, 2013).

The study findings reveal that gender has an impact on students' personal attitudes and entrepreneurial intentions. Specifically, girls have higher levels of attraction towards entrepreneurial attitudes and intentions, but not towards the perceptions of social norms. This result aligns with the conclusions of Maes et al. (2014), who found that the effect of gender on entrepreneurial intentions was mediated through personal attitudes but not through social norms, implying that there is no difference in terms of perceptions of the entrepreneurial climate between genders. Minniti & Naudé (2010) suggest that this can be attributed to the position of women in these societies and the labour market, where women face higher barriers to entry into the formal labour market, leading to higher rates of female entrepreneurship and self-employment, particularly in developing countries. According to Otoo et al. (2011), women in Africa with low educational levels and other challenges have fewer opportunities than men for wage income, and thus self-employment in the informal sector becomes the only option. Therefore, for these women, entrepreneurship is a way out of unemployment and often, out of poverty. This explains why women may be more responsive to entrepreneurial opportunities due to their isolation from many economic activities in traditional cultures.

The results confirm that the existence of entrepreneurial *role models* affected personal attitude, perception of social norms and entrepreneurial intentions, thus showing that students who personally know entrepreneurs (family or friends) tend to find entrepreneurship more desirable (more favourable personal attitudes and perception of social norms) and have more entrepreneurial intentions.

This result contradicts Amofah and Saladrigues' (2022) and Karimi et al. (2013) conclusions that parental role models do not have a significant impact on entrepreneurial intentions and also Malebana and Mothibi (2023) conclusions that having family members and friends who are running businesses, and knowledge of someone who is an entrepreneur did not have a statistically significant relationship with entrepreneurial intention. However, in their study, knowing *successful* entrepreneurs in the community was significantly positively related to student's entrepreneurial intention. It also contradicts Bae et al. (2014) results, who concluded that entrepreneurial family background is not a significant moderator of entrepreneurial education.

However, results are consistent with prior research, such as shown in some systematic literature reviews (Liñán & Fayolle, 2015; Pittaway & Cope, 2007). Specifically, the findings of this study are in line with Athayde's (2009) research which found that having a family background in self-employment positively influenced students' intentions to pursue

self-employment. These results also support Karimi et al.'s (2013) findings that knowledge of role models is positively associated with attitudes towards entrepreneurship and subjective norms, as well as Rosique-Blasco et al.'s (2016) conclusion that students whose family members are entrepreneurs are more likely to pursue entrepreneurial careers.

The different alignment with the results can be related with the context of the students surveyed. Kološta et al. (2018), found that the entrepreneurial intentions of students in rural areas are significantly positively affected by role models (such as parents who are self-employed) and friends who own businesses, whereas this was not the case for students living in urban areas. Accordingly, the positive association between role models and entrepreneurial intention in this study can be by the fact that most of the students surveyed in this study lived in villages or small communities.

Results did not show differences in entrepreneurial attitude or entrepreneurial intentions of students that attended ECP, related to the attendance of *different education* systems or the residence in different spatial contexts (*islands*). However, in both cases, it affected the perception of social norms concerning entrepreneurship. Differences were found between the island regarding the perception of the role/behaviour of the entrepreneur. These differences may be due to sociocultural and/or economic differences (García-Cabrera & García-Soto, 2008) related, for instance, to differences in institutions and/or business density in each community. According to the results, entrepreneurs' image differs between education systems, with a less positive image in technical education. These differences can be due to specific educational methodologies and approaches or different role models in each system. In the case of technical and professional education, work for others could be more usual, and the idea of an entrepreneur could be associated with the idea of an exploitative "boss". The clarification of the explanation is a venue for further research.

Therefore, the way entrepreneurship education is structured and how it interacts with its immediate environment can influence its impact, as noted by O'Connor (2013) and Walter and Dohse (2012). However, this study indicates an impact only on the perception of social norms and not on intentions. While social norms are considered precursors of intentions in the TPB, it is important to note that this finding is consistent with other studies (Krueger et al., 2000; Liñán, 2004; Maes et al., 2014) that did not find a direct effect of social norms on entrepreneurial intentions.

Conclusions

The goal of this study was to assess the impact of a mandatory entrepreneurship education program, the ECP, in upper-secondary level classes in Cabo Verde. The study aimed to answer several questions, including whether the program affected the students' entrepreneurial attitudes, beliefs, and intentions, whether the impact was consistent across different years of schooling, and what other factors influenced the students' attitudes, beliefs, and intentions towards entrepreneurship.

The study used a quantitative methodology with a cross-sectional and post-test-only design, comparing a treatment group of students who were not selected for their interest in entrepreneurship to a control group. The results showed that the ECP had a positive impact on the students' entrepreneurial attitudes, beliefs, and intentions, with a stronger effect in the early years of secondary education.

The study also found that, in addition to entrepreneurship education, personal factors such as gender and family models, teaching factors such as the type of education (general or vocational), and contextual factors such as the geographic location (islands) affected the students' attitudes, beliefs, and intentions towards entrepreneurship. For instance, female students were more attracted to self-employment and had higher levels of entrepreneurial intentions, while students who knew entrepreneurs (either family or friends) had more favourable perceptions of social norms and stronger intentions to become entrepreneurs. The school system and spatial context also influenced the students' perception of social norms related to entrepreneurship. However, these factors did not directly impact the students' entrepreneurial attitudes and intentions.

This study adds to the existing theoretical knowledge that entrepreneurship education has a positive impact on students' entrepreneurial attitudes and intentions. It also provides new insights into the impact of entrepreneurship education in developing countries by highlighting the importance of gender and familiar role models in shaping entrepreneurial intentions.

From a practical point of view, the study has made it possible to learn about program implementation results and provide indications for deepening/improving measures to support students in their teaching–learning process.

These results have implications for public policy concerning entrepreneurship education.

The finding that the impact of entrepreneurship education is not as strong in later years of schooling may not necessarily be a negative outcome, as von Graevenitz et al. (2010) have noted. In fact, with more information about the challenges and risks of entrepreneurship, students may choose not to pursue entrepreneurship and avoid costly failures. Therefore, entrepreneurship education should be viewed as a way to inform students about career options and provide them with learning opportunities to assess which career path is most suitable for them. This learning can be applied later in life when students are more mature and experienced and feel more confident in exploring entrepreneurial opportunities. Further research is needed to better understand this explanation.

The study's second finding suggests that entrepreneurship education may not have a uniform impact on students, as the results show that gender is a significant factor. The study highlights that girls have higher entrepreneurial attitudes and intentions, which implies that entrepreneurship programmes should be tailored to meet the specific needs of each gender. This finding supports previous research, such as that by Karimi et al. (2013), which emphasises the importance of customising entrepreneurship education to maximise its effectiveness. The study's results also provide insights into the potential of girls to become entrepreneurs and underscores the need for strategies that enable them to move from the informal economy to creating formal businesses that generate income, employment, and growth. The study concludes that gender-sensitive programming is necessary because the same entrepreneurship education programme may not be sufficient to meet the needs of both genders. For girls, the challenge is to channel their desire for self-employment into more productive and innovative entrepreneurship.

Despite these contributions, the study has limitations. The study is based on perceptions and intentions. However, perceptions may not correspond to actual knowledge and skills and intentions may not turn into behaviours. As pointed out by (Ahmed et al., 2020):

“although entrepreneurship education programmes have a positive impact on graduates’ entrepreneurial attitudes and intentions, barriers in the environment can prevent them from taking entrepreneurial action” (p. 11). Thus, a future line of research will be to understand how far entrepreneurship intentions become effective behaviours and how these barriers are overcome; for policy-makers and educators, the challenge is to promote the capabilities and conditions to transform these intentions into behaviours, i.e., to find ways to remove real and apparent barriers to this young people become real entrepreneurs.

Another area for improvement is its only post-test design, imposed by the research conditions, which did not allow assessing the students’ evolution from the beginning to the end of the programme. Thus, it does not uncover what happens during education regarding when, how, and why students develop their entrepreneurial competencies (Lackéus, 2014; Lackéus & Sävetun, 2019). In addition, the study’s cross-sectional design limits the ability to understand changes in perceptions, beliefs, and intentions over time. Future research should explore these avenues to gain a more comprehensive understanding of the impact of entrepreneurship education. Lackéus (2014) and Lackéus and Sävetun (2019) have also highlighted the importance of assessing students’ development of entrepreneurial competencies throughout the program.

Finally, unanswered questions constitute lines for further research, such as “Are there differences of impact between schools? How vital are pedagogical methods and teachers’ specific training relevant to forming entrepreneurial attitudes and intentions?”

Abbreviations

ECP	Entrepreneurship Curricular programme
UNIDO	United Nations Industrial Development Organization
TPB	Theory of Planned Behaviour
GS	General studies
VS	Vocational studies
ANOVA	Analysis of variance
SPSS	Statistical Package for Social Sciences

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Availability of data and materials

The data that support the findings of this study are available from UNIDO but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of UNIDO.

Declarations

Competing interests

The author(s) declare(s) that they have no competing interests.

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