Entrepreneurship educators: a configurational analysis of factors influencing pedagogical choices

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Abstract

Purpose – Entrepreneurship education (EE) is critical for developing the skills of tomorrow's entrepreneurs and leaders. While significant research examines the content, student learning processes and outcomes, less studied are the entrepreneurship educators and their pedagogical preferences. Following a cognitive process model of decision-making, this study explores how self-efficacy, philosophy of teaching, entrepreneurship training and teaching experience influence entrepreneurship educator preferences to follow either a teacher-centric or a student-centric approach. This study also includes gender in a secondary analysis of the relationships.

Design/methodology/approach – The data were collected from 289 entrepreneurship educators in 2021, and fuzzy-set comparative qualitative analysis (fsQCA) was used to obtain configurations of conditions (causal recipes) that lead to teacher-centric or student-centric model. A secondary analysis explores whether there are different configurations of conditions when gender is added to the analysis.

Findings – The results of our fsQCA analysis reveal multiple configurations of conditions (causal recipes) that result in a preference for either a teacher-centric or student-centric approach to teaching entrepreneurship. The authors find that teaching experience is the main condition for the teacher-centric model, while self-efficacy and entrepreneurship training are the main conditions for the pathways leading to student-centric model. The fsQCA results also show that the configurations are affected when gender is taken into account in the analysis.

Originality/value – This study, one of the first of its kind, uses a configurational approach to examine pathways that contribute to the teaching preferences of entrepreneurship educators. This paper uses self-efficacy, teaching philosophy, teaching experience and entrepreneurship training as conditions to identify multiple unique pathways that result in either a teacher-centric or student-centric pedagogical model in EE. Notably, differences by gender are also found in this study.

Keywords Entrepreneurship education, Educator, Entrepreneurship pedagogy, fsQCA, Teacher-centric, Student-centric

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1. Introduction

Entrepreneurship education (EE) has become increasingly important as it can foster innovation and economic growth, particularly in today's rapidly changing and uncertain global economy. This field aims to develop the entrepreneurial behaviour, skills and mindset of students (Neck and Corbett, 2018). Research in EE has risen dramatically over the past decade, with scores of studies examining curriculum and content, as well as student learning processes and outcomes (cf. Fayolle and Klandt, 2006; Gabrielsson *et al.*, 2020; Hägg and Gabrielsson, 2019; Kuratko and Hoskinson, 2014; Landström *et al.*, 2022; Nabi *et al.*, 2016; Neck *et al.*, 2014; Neck and Corbett, 2018; Pittaway and Cope, 2007), or discussion around the importance of philosophical assumptions in EE research (Brentnall and Higgins, 2022). However, the focus of such research is mainly on the teaching content and curriculum design (what), learning processes of students (whom) and the use of various teaching methods (how) (Gabrielsson *et al.*, 2020). Less studied is the "who" of entrepreneurial education, or the role of the instructor (Gabrielsson *et al.*, 2020). This is an important omission because entrepreneurship educators not only have a central role in designing courses, creating materials and activities, but also in facilitating learning through interactions with students that directly influences the effectiveness of student learning and hoped for outcomes such as changes in students' entrepreneurial behaviour and attitudes, improvement knowledge and potentially venture creation (Finkle *et al.*, 2006). Further, the emphasis is frequently on the content, what students learn, rather than how they learn, or the pedagogy employed (Neck and Corbett, 2018).

Through the use of pedagogy, entrepreneurship educators seek to create a change in student behaviour. For example, Smith and Beasley (2011) argue that EE aims to foster entrepreneurial intentions with the goal of encouraging entrepreneurial behaviour from the beginning of higher education until graduation. Moreover, early entrepreneurial intention formation is crucial since it can result in a stronger desire for venture creation (DeGeorge and Fayolle, 2013). Through their teaching approach and pedagogy, entrepreneurship educators catalyse changes in student behaviour by developing an entrepreneurial mindset, or fostering entrepreneurial intentions, or helping to launch a venture (Bloom, 1971).

Numerous academic works, such as Rideout and Gray (2013) and Winkel (2013), have argued that because EE is about "taking action" and that teaching methods should be entrepreneurial as well. In this regard, based on a Delphi study of entrepreneurship educators, Neck and Corbett (2018), suggest that EE can be seen as instilling an entrepreneurial mindset in students and learners and argue that there is no one best way to achieve this. The authors propose a continuum of learning based on student or educator motivation and readiness to learn, where traditional teaching approaches are lecture-based and students are passive learners, more contemporary approaches see the educator as a coach, students learn through simulation and the focus of learning is shared between students and teachers. At the end of the spectrum, the ideal approach the educator is a facilitator, students are the centre of learning, and they learn by doing. Further, Béchard and Grégoire (2007), in their review of 25 years of EE research, posit that there are three basic entrepreneurial teaching models: supply model, demand model and competence model. Moreover, Wraae *et al.* (2021) in a qualitative study also identified three pedagogical approaches, labelled as, (1) teacher-centric model, (2) student-centric model and (3) network-centric model, both typologies similar to that of Neck and Corbett (2018).

Pedagogical approaches have similarly been examined in the teacher education literature. In fact, student-centred versus teacher-centred approaches to teaching in higher education institutions have been confirmed in large multi-disciplinary samples (Harshman and Stains, 2017; Postaref and Lindblom, 2008; Prosser *et al.*, 1994). It is argued that faculty who view teaching as an intention to transmit knowledge approach teaching as teacher-focused, while those who intend to change and develop student understanding, are characterised as student-focused (Harshman and Stains, 2017; Prosser and Trigwell, 2014). The benefits of both approaches have been explored and discussed at length in other disciplines. For example, a teacher-centric pedagogical

approach is correlated to teaching in the hard sciences, while a student-centric approach is more likely found in softer disciplines like language and social sciences (Kemp, 2013).

While current studies about entrepreneurship educators and teaching pedagogies are strongly anchored in theory that supports the approaches proposed, they are derived from aggregate studies rather than in-depth interviews with the entrepreneurship educators (e.g. Béchard and Grégoire, 2007; Neck and Corbett, 2018). In other words, the reasons why an educator might choose one pedagogical approach over another is not well understood (Henry, 2020). Given the increased metrics and focus on educator effectiveness for tenure and promotion and students rising expectations for quality education (Morris and Liguori, 2016), both educators and institutions would benefit from better understanding why some faculty choose a teacher-centric approach, and others a student-centric, and whether or not these approaches fit particular curricular needs, and ultimately, student learning outcomes.

From a more theoretical perspective, cognitive process theory offers a framework for examining factors that influence educators' pedagogical choices, arguing that they engage in a planning process to execute learning, which involves making decisions about learning objectives, learning activities, the organising and sequencing of activities and evaluation process (Borko and Shavelson, 1990). These decisions are based on assumptions about students and influenced by both contextual factors, such as the institution within which an educator works, nature of instructional task, classroom and school environment, as well as educators' characteristics which include beliefs and values, experience, training, perspectives, beliefs about self and self-enhancement (Ammeer *et al.*, 2022; Biesta *et al.*, 2015; O'Brien and Norton, 1991; Shavelson and Stern, 1981). Previous research shows a variety of factors influencing teacher pedagogy and orientation; for instance, teacher development and training (Hardy and Smith, 2006; Kemp, 2013) and experience teaching (Clandinin and Connelly, 1991). Further, the abilities of an educator to mobilise their personal resources (beliefs, knowledge, identity and orientations) is referred to as pedagogical design capacity (Forbes, 2009). In other words, educators make decisions about how they will use curricular tools and organise a class, which manifest in different approaches or forms of teaching practices (Forbes, 2009), but the author did not explore how personal factors influence these choices. Therefore, we asked; "*How do personal characteristics influence entrepreneurship educators' pedagogical choices*"?

To address the question, this study conducted a survey in 2021 among 289 entrepreneurship educators and employed a fuzzy-set qualitative comparative analysis (hereinafter fsQCA) (Ragin, 2009), to examine the influence of educator characteristics on choice of pedagogy. Specifically, the authors consider entrepreneurial teaching experience, entrepreneurial education and training, philosophy of teaching and self-efficacy as the antecedents to the choice of either a teacher-centric or student-centric pedagogical approach. The constructs used in this research follow the cognitive process theory (Borko and Shavelson, 1990; Shavelson and Stern, 1981) and link directly to theoretical approaches noted in the EE literature (Béchard and Grégoire, 2007; Neck and Corbett, 2018), with the relationships between the constructs assumed to be causal. The fsQCA results revealed multiple configurations of conditions leading either to teacher-centric or student-centric model and that conditions (factors) influencing entrepreneurship educators' pedagogical choices varies between teacher-centric model and student-centric model. For example, teaching experience of more than 10 years, and the combination of self-efficacy and teaching philosophy are most important for a teacher-centric approach. On the other hand, self-efficacy is of primary importance in all configurations (solutions) for the student-centric approach.

Moreover, current literature in teacher education suggests women are expected to be more collaborative (student-centric), and men to be more dominant (teacher-centric) (Miller, 2008; McMinn *et al.*, 2022; Stratham *et al.*, 1991). Female professors are expected to be nurturing and warm, and men less sympathetic to students and these stereotypical perceptions are linked to gender bias in student evaluations of teachers (Mengel *et al.*, 2017; Mitchell and Martin, 2018).

A better understanding of possible gender differences in how educators see themselves may provide insight into these role expectations. Hence, we conducted a secondary analysis to examine whether gender influenced solutions, and it was found that for the teacher-centric approach, the absence of training and a strong philosophy or self-efficacy was important for females but not for males' educators. For females, self-efficacy and training were very important in leading to a student-centric approach, whereas experience was the primary factor for males.

The results of this research theoretically contribute to EE literature by demonstrating the existence of multiple pathways that lead to entrepreneurship educator pedagogical preferences. The fsQCA results showed that for a teacher-centric model, teaching experience is the most essential condition (factor), and for a student-centric model, the educators' self-efficacy and entrepreneurship training are the most important conditions (factors). The results highlight the importance of considering simultaneously both individual characteristics and context in understanding of EE pedagogy. The fsQCA results also showed that gender of educators plays an important role in the pathways leading to the pedagogical preferences. This highlights the importance of considering the role of gender in understanding the diversity of pedagogical preferences among entrepreneurship educators.

The remainder of this paper is organised as follows; first the background and theoretical foundation will be discussed, second, the research method and data collection will be presented, third the results and discussion will be presented, and finally the authors conclude the research with presenting limitations, implications and future research directions.

2. Background and theoretical foundation

In teacher education research, cognitive process models of decision-making have been widely studied to understand how teachers make decisions for planning their courses and carrying out instruction, as well as behavioural objectives, appropriate learning activities, organising and sequencing chosen activities and evaluation processes (Borko and Shavelson, 1990). Inherent in the planning process is the conception of teaching as a cognitive process (Shavelson and Stern, 1981). In other words, "any act of teaching is the result of a decision a teacher makes after a complex cognitive processing of available information" (Shavelson, 1973, p. 149).

This perspective assumes that educators are professionals and capable of making reasonable decisions in a complex environment and further, that the teaching itself involves a relationship between thought and action (Borko and Shavelson, 1990). Shavelson and Stern (1981), deduce that "teachers behave reasonably in making judgement and decisions in an uncertain, and complex environment" (pp. 456–457). As such, these assumptions are parallel to literature in EE, suggesting that teaching entrepreneurship is "complex, chaotic, and lacks any notion of linearity" (Fiet, 2001; Neck and Greene, 2011, p. 55) and to plan an entrepreneurial course involves putting the thoughts (decisions) and intents into action.

Linking to cognitive process theory, entrepreneurship educators' decisions about their teaching approach are influenced by two main bundles of factors: the contextual factors (antecedents) and educator characteristics. Fayolle (2018) stated that to strengthen and improve our entrepreneurship courses, entrepreneurship educators must first develop solid intellectual and conceptual foundations that draw from both entrepreneurship and education. Secondly, they need to critically examine their practices as researchers and educators and adopt a more critical stance toward a position that is all too frequently adopted and "taken for granted". Moreover, Bali *et al.* (2020) argued that a teacher using open textbooks in class is a teacher-centric and often teaches domain competences and is content-focused, while teaching social and self-competencies and engaging learners to create knowledge is often student-centric. However, contextual factors influence teachers' pedagogical preference (Nikou *et al.*, 2022a, b; Tseng *et al.*, 2019).

While the contextual factors are connected primarily to the immediate surroundings or the nature of the classroom, the educator characteristics are linked to who the educator is in terms of knowledge, experience (training included) and own beliefs on self and role (Shavelson and Stern, 1981). Contextual factors focus on the conditions that lead to particular teaching decisions, and these include the classroom, the educational environment, institutional constraints, nature of the class, the subject matter and information about the students (Borko and Shavelson, 1990; O'Brien and Norton, 1991; Shavelson and Stern, 1981). Further, national and regional contexts affect how entrepreneurship could be taught (Thomassen *et al.*, 2019). Educator characteristics influence decisions about pedagogy and include values and beliefs, conceptions of subject matter, level of experience, teacher perspectives, beliefs about self and identity role and professional knowledge of the field (Biesta *et al.*, 2015; Burroughs-Lange and Douetil, 2006; Calderhead, 1996; Shavelson and Stern, 1981). In fact, teacher's beliefs might be a stronger factor than knowledge in situations where the teacher must act on impulse rather than a reflective approach (Pajares, 1992). Morreover, Qiu *et al.* (2021) conclude that these beliefs will mirror the pedagogical approach: teachers with teacher-centric beliefs will tend to teach their class in a traditional way, whereas the opposite will be the case for student-centric beliefs.

Alternatively, there is research on a teacher's "pedagogical design capacity" that compares the teaching practice with a design activity, meaning that teaching includes understanding the existing resources, the constraints of the classroom and devising strategies in the pursuit of their instructional goals or learning objectives – all elements characterising design; hence, pointing towards a more creative process (Brown and Edelson, 2003). More specifically, these personal resources include their beliefs about students, experience, roles and responsibilities and curriculum subject matter (Richardson, 1996). No matter the perspective presented, the interplay in what could be termed as the local ecosystem of the educator is complex (Wraae and Walmsley, 2020). While recognising the critical influence of contextual factors, this study focuses only on educators' characteristics and how these influence choices of pedagogy.

The choice to focus on the personal characteristics of entrepreneurship educators was based on the idea that these factors can influence an educator's pedagogical preferences. Research from the teacher education literature argues that personal factors including teacher's evaluations of their own cognitive processes, as well as students are antecedent conditions that influence pedagogical choices (Shavelson and Stern, 1981). First, educators' beliefs (philosophy of teaching) about students can shape their teaching practices (Biesta *et al.*, 2015). For example, educators who believe that students are capable of learning independently may adopt a more student-centric approach, while educators who believe that students need to be guided may adopt a more teacher-centric approach. Second, educators' self-efficacy can also influence their pedagogical preferences (Bandura, 1997; Stets and Burke, 2000). For example, educators who have more confidence on their teaching may be more likely to adopt a student-centric approach. Second, teaching experience can also play a role in shaping educators' pedagogical preferences (Podolsky *et al.*, 2019) For example, educators with more experience may be more confident in their teaching abilities and may be more likely to adopt a student-centric approach. Overall, the rationale behind the selection of these personal characteristics of entrepreneurship educators is that they can influence educators' teaching practices and therefore can shape their pedagogical preferences. Understanding these factors can help in developing effective teaching strategies and policies that support the development of entrepreneurial skills and mindset among students.

2.1 Philosophy of teaching (beliefs)

From the general teacher education literature, it is known that teaching and the choice of pedagogy are strongly linked to the beliefs of the educator (Biesta *et al.*, 2015). Literature from

entrepreneurship proposes that beliefs and knowledge play a strong role in influencing pedagogical choices and that institutional requirements and context make a difference in the choice of pedagogy and teaching approaches (Béchard and Grégoire, 2007; Nabi *et al.*, 2016; Myrah and Currie, 2006). Recent qualitative studies find that educator instructional approaches are not only mirrored in the official learning objectives for the entrepreneurial course but also in the beliefs of the entrepreneurship educator about what the students need to learn (Wraae and Walmsley, 2020). Moreover, there is a link between the identity of the entrepreneurship educator and the chosen pedagogical approach (Wraae *et al.*, 2021). A study examining the consistency between student and faculty opinions about learning styles finds that faculty will design their courses based on what they think students should learn, or the knowledge they believe they should acquire (Dandy and Bendersky, 2014). Similarly, research surveying 54 faculty teaching computer science from 15 colleges found that those faculty with a developmental orientation and collaborative rather than competitive perspective were more likely to engage in student-centric pedagogy versus those with individualistic views of students, who were more likely to lecture (Hovey *et al.*, 2020).

2.2 Self-efficacy

The confidence an individual builds in his or her abilities is one of the most significant aspects in individual behaviour to execute or not perform an activity (e.g. becoming an entrepreneurship educator, or starting a new business). Self-efficacy refers to a person's belief in her or his own capacity to achieve in a specific subject or situation. As Bandura (1994, 1997) stated, self-efficacy is one's ability to plan and carry out the steps necessary to achieve a specific objective. Self-efficacy, according to Stets and Burke (2000), is linked to the motivational aspect of performing in a role and asserted that "individuals may categorise themselves in particular ways (in a group or a role) to not only fulfil their need to feel important and worthy (the self-esteem motive), but also to feel competent and productive (the self-efficacy motive)" (p. 233).

In the EE context, self-efficacy is defined as the degree to which entrepreneurship educators believe they can influence student behaviour and learning results (Bandura, 1994). Further, the author suggested that mastery experiences, social role model experiences, social persuasion and attempting to change unfavourable emotional inclinations about oneself can all have a positive or negative impact on the level of self-efficacy (Bandura, 1997). It is argued that teacher efficacy is a form of self-efficacy, and this is an individual teacher's expectation of what they will bring to student learning (Ross *et al.*, 1996). More specifically, teachers believe that certain teaching actions will lead to student success. Teachers' beliefs in their efficacy affect their general orientation toward the educational processes (Bandura, 1997, p. 241), which means that even while an educator knows of a certain pedagogical approach but lacks self-efficacy then the said approach will not be put into practice indicating a strong link between self-efficacy and pedagogical choice (Zee and Koomen, 2016). Studies show a positive relationship between teacher self-efficacy and student-centred teaching practices in 296 community college teachers (Magno and Sembrano, 2009) and in secondary school teachers (Choi and Lee, 2008).

2.3 Teaching experience

From general teacher education, a review on US research reveals a positive link between teacher experience and student outcome or said in another way, experience fosters student learning (Podolsky *et al.*, 2019). Further research in teacher education finds approaches vary by years of experience, on the one hand more experienced and older faculty were more "old school" and applied a teacher-centric approach (McMinn *et al.*, 2022). On the other hand, research shows that contrary to what might be believed, experienced teachers continue to

foster students learning and raise their students' achievement (Podolsky *et al.*, 2019). Teaching experience and effectiveness are highly dependent on working in supportive educational environments, which includes an environment where experienced teachers have the possibility to support less experienced colleagues (Podolsky *et al.*, 2019). For example, Kabongo and McCaskey (2011), provided a description of the educational and research background of entrepreneurship faculty relative to the ranking of their programs. Further, experience is linked with teacher beliefs, in this case, if the teacher believes in the collective's ability to overcome challenges, they will likely improve their students' achievement (Podolsky *et al.*, 2019).

From EE studies, a qualitative study of Estonian entrepreneurship shows that lecturers who participated in a training program were more likely to adopt a learning centric approach and change their teaching method (Toding and Venesaar, 2018). An observation that is somewhat confirmed by Wraae (2021), where entrepreneurship educators indicate that with experience – over time – their pedagogical approach has changed from being teacher-centric to becoming student-centric. In addition, the educators' past-experience also influences their pedagogical perception and approach. For instance, a study shows how entrepreneurial experience prior or during teaching entrepreneurship likely means having a teacher-model approach (Wraae *et al.*, 2021).

2.4 Entrepreneurship training

Building self-efficacy takes mastery experiences, Lamonte and Engels (2010), suggest that teacher training and mentorship affects the self-efficacy of the educator positively. Moreover, confidence and building beliefs about one's own teaching and being able to make decisions might not evolve without teacher training (O'Brien and Norton, 1991). In general teacher education, teacher training is viewed as "the professional preparation of teachers, usually through formal education and practice teaching" (Toding and Venesaar, 2018, p. 697). Teacher training influences teacher's self-efficacy (Lamote and Engels, 2010) and that teacher self-efficacy is strongly linked with the pedagogical choices in the classroom (Zee and Koomen, 2016). According to entrepreneurship literature, educators that experienced training changed their perspectives on their pedagogical approach (Toding and Venesaar, 2018). Similar results have been found in a Danish study as well as a Finnish study, in which educators changed their perception of EE through training (Gustafsson-Pesonen and Remes, 2012; Teerijoki and Murdocj, 2014).

A recent study links educator identity, sensemaking and training and argues that educators are sensemaking and co-constructing meanings in relation to teaching entrepreneurship (Peura and Hytti, 2022). The authors posit that educators can make sense of entrepreneurship and engage in identity development through an entrepreneurial training camp (Peura and Hytti, 2022). But training in terms of entrepreneurship must be feasible for the educator; hence, seeing a "connection between their disciplinary teaching and entrepreneurship teaching" (Peura and Hytti, 2022). Nonetheless, entrepreneurship training is a way to broaden the possibilities for offering entrepreneurship courses to more students from different disciplines (Teerijoki and Murdocj, 2014).

In summary, we acknowledge that there might be potential interactions across entrepreneurship educators' personal characteristics when it comes to their influence on their pedagogical preferences. For example, from a theoretical standpoint, it can be argued that the combination of conditions such as the educator's beliefs (philosophy of teaching) about students and teaching experience may interact to shape their pedagogical preferences. An educator who has many years of teaching experience and holds a positive view of students' capabilities may adopt a more student-centric approach when teaching a course on social entrepreneurship, while the same educator may adopt a more teacher-centric approach

when teaching a course on new venture creation. To capture this complexity, we adopted a configuration approach which considers the interdependencies between multiple conditions in shaping educators' pedagogical preferences. This analytical approach not only allows to identify patterns of personal characteristics that are associated with different types of pedagogical preferences, but also it allows to capture the complexity underpinning the driving conditions that shape educators' pedagogical preferences. This approach aligns with the idea that personal characteristics and context interact in shaping educators' pedagogical preferences (Borg, 1998; Klassen and Kim, 2017; Shavelson and Stern, 1981). We note that personal characteristics of entrepreneurship educators are not static and can change over time by, e.g. professional development and that the same personal characteristics may have different effects in different contexts (Gautam *et al.*, 2015).

2.5 The role of gender in pedagogical preferences

There is evidence that gender may play a role in the decisions an educator makes with regards to pedagogical choices in the classroom (Miller, 2008; Stratham *et al.*, 1991). While gender and pedagogical approaches have not been studied in the EE arena, other disciplines outline principles for a feminist pedagogy, or a theory about the teaching/learning process that guides choices of classroom practices and challenges the current emphasis on efficiency and rationality, boldness, competitiveness and individualism that dominates masculine pedagogies of teaching (Scering, 1997; Webb, 2002). These principles include shared power between students and teachers' empowerment of students, building community, individual voices, respect for diversity of personal experiences and challenging traditional views (Webb, 2002).

From the teacher education literature, research shows female teachers are more likely to engage in classroom discussions or group models of teaching while male teachers are more likely to use a dominant lecture teaching style (Miller, 2008; McMinn *et al.*, 2022; Stratham *et al.*, 1991). It is argued that the difference between men and women in terms of pedagogical choice is linked to socialisation, where women are encouraged to be more compassionate, helpful and directly work with students and men are expected to be more dominant and less likely to work directly with students. Other studies show that females report higher self-efficacy than men (Raudenbush *et al.*, 1992; Ross *et al.*, 1996), because teaching is viewed more as a female occupation (Apple and Jungck, 1992) and that women are more likely to use active collaborative teaching methods more often than men faculty (Stratham *et al.*, 1991). Relatedly, other studies show that men score higher on a teacher-centric approach and women higher on student-centric approach (Lacey and Saleh, 1998; Stes and Petegem, 2014). Moreover, a recent study in Saudi Arabia finds women had higher teaching qualifications and were more student-centric in their approach, while men used more of a teacher-centric approach (McMinn *et al.*, 2022).

3. Research methodology

In this paper, fsQCA approach is used as it has recently been applied as relatively new approach in research domains such as business and entrepreneurship (Douglas *et al.*, 2020; Fiss *et al.*, 2013; Kraus *et al.*, 2018; Nikou *et al.*, 2019; Santos *et al.*, 2021). We use this method to answer the call by Parente and Federo (2019) who encouraged entrepreneurship researchers in their understanding and exploring of the causal complexity to pay more attention on contingency arguments (configurational thinking) and to examine the interactions rather than simply linear relationships in theory-testing research. This method deems appropriate addressing the research question stated earlier. Configurational thinking method seeks to develop explanations that suggest a pattern of conditions (various independent factors) that

are collectively related to the outcome of interest, as opposed to the conventional statistical approach, which seeks to obtain individual net effects of each variable (Ragin and Fiss, 2008). In other words, configurational thinking method enables researchers to understand the patterns and combinations of conditions and how they, as configurations, lead the outcome of interest to occur. The fsQCA, introduced by Ragin (2009, 2014), considers the subjective nature of evaluations, which is more in line with qualitative method compared to the typical statistical techniques that consider the relationship between variables. However, in quantitative studies, it helps to uncover configurations that incorporate essential and sufficient conditions for the outcome to occur. In this approach, the relationship between an outcome of interest and its antecedents is often asymmetric; thus, the causal explanations can be obtained (Kaya *et al.*, 2020). In addition, fsQCA enables not only to identify the configurations of conditions that lead to an outcome of interest, but also it enables to obtain configurations of conditions of the absence of the same outcome of interest, as these two sets of configurations are typically not simply the opposite of each other. However, in this research, we only present and discuss the results of configurations of conditions that lead to the outcome of interest.

Additionally, because asymmetric relationships are the focus of this research, the concept of equifinality is essential when applying the fsQCA as it suggests that various independent coexisting explanations for a complex occurrence exist. In the context of this research, it means that there are independent explanations that relate to different choices an entrepreneurship educator makes when choosing her or his pedagogical approach. Therefore, when assessing complex phenomena like pedagogical preferences, one should not assume that there is a simple explanation in terms of specific defining factors that describes why a potential pedagogical model is chosen.

In summary, we apply fsQCA as it is an appropriate methodological approach to determine and identify multiple configurations of conditions that characterise the entrepreneurship educators' pedagogical preferences, either a teacher-centric model or student-centric model. The application of fsQCA requires several steps from data calibration to truth table analysis (Rihoux and Ragin, 2008). In the calibration step, the original data is transformed into fuzzy sets by specifying full membership, full non-membership, and a crossover point, more on this in section 3.3.

3.1 Data collection

An online survey based on the literature on EE was developed and distributed it via the authors' professional and social networks to professors and educators from around the world. To find and fix any unclear phrasing or expressions, the questionnaire was analysed, and pilot tested. The survey consisted of twofold sections (1) asking demographic information and (2) measurement items forming the four latent constructs used in the research. The dataset consists of 343 educators' responses. Of 343 submitted replies, 54 were disqualified from further analysis because they had not previously taught entrepreneurship courses at their respective universities in the preceding five years. This consideration helped us to create a dataset where the cases are sufficiently similar and heterogeneous, especially when fsQCA is used. The final useable dataset includes 289 eligible responses.

It should be noted that as the respondents participated in this research are from different countries, we accounted for the heterogeneity of the sample. AS fsQCA is a useful method for examining causal relationships, and it can unpack heterogeneity (Douglas *et al.*, 2020). In other words, one of its strengths is that it can handle diverse samples, including samples with variations in country of origin. It does this by using a fuzzy-set approach, which allows for the possibility that a case may have a partial membership in a particular set or category (Lee, 2014). This means that, rather than assigning cases to discrete categories, fsQCA allows for

the possibility that a case may have a degree of membership in multiple categories (Nikou *et al.*, 2022a, b). Thus, handling the heterogeneity that may arise in the sample.

Of the respondents, 150 (51.9%) were females, and 136 (47.1%) were males, some preferred not to indicate their gender. The average age of the respondents was 49.1 years old with standard deviation 11.1. The respondents' age ranged between 27 and 79 years old. This study also asked for how long they had taught entrepreneurship courses, and the length of teaching ranged from one year to 45 years, but most of the respondents (n = 156) taught entrepreneurship courses between 5 and 15 years. Moreover, 219 (75.8%) respondents have indicated that they primarily taught courses to undergraduate and 189 (65.4%) to master's level students (see Table 1).

3.2 Measurement model

The variables (conditions) utilised in the current paper were all measured via previously validated items using a 5-point Likert-scale, ranging from 1 being "Strongly disagree" to 5 being "Strongly agree". For measuring the philosophy of teaching (beliefs), four items from Greenberg *et al.* (2007) and Wraae *et al.* (2021) were used. For measuring pedagogical approaches (student-centric and teacher-centric), nine items were obtained from Béchard and Grégoire (2007), Greenberg *et al.* (2007) and Wraae *et al.* (2021). Five items were used to measure the student-centric model, and four items were used to measure the teacher-centric model. Finally, self-efficacy was measured with nine items from Lucas and Cooper (2004) and Neck and Corbett (2018). We asked, "with regard to the teaching you undertake at university, indicate how confident you are that you can", e.g. "engage students in entrepreneurial activities", or "facilitate students' ideation, creation and launch of a new venture or initiative". Self-efficacy is considered a relevant construct in the field of education because it has been found to be positively associated with teaching effectiveness, motivation and persistence (Bandura, 1994). In the context of this study, self-efficacy may be relevant as it pertains to the beliefs and confidence of the entrepreneurship educators in their ability to effectively teach and facilitate learning in their students. Furthermore, it may also reflect the level of comfort and experience of the educator in using a certain teaching approach or method. The list of full items is presented in Appendix A, but it should be noted that some items were removed due to loadings below the recommended threshold. The Cronbach alpha showed acceptable values of internal consistency for most of the constructs exceeding the threshold value of 0.70. However, Cronbach α test result does not always comply with the cut-off values. This is mainly due to over- or underestimation of the true reliability. This issue may occur when, e.g. there is not enough items for measuring a particular variable. As such, this issue may violate tau-equivalence and thus generating a lower reliability coefficient and a low Cronbach value (Dall'Oglio *et al.*, 2010).

Demographic	Information	Distribution
Gender	Female	150 (51.9%)
	Male	136 (47.1%)
Age	Average 49.1 years old	
Teaching experience	From 1 to 45	11.25 as an average
Type of course taught	Undergraduate	219 (75.8%)
	Mater's level	189 (65.4%)
Position at the university	Assistant, Associate, Full professor	198 (68.5%)
	Lecturer and researcher	33 (11.4%)
	Part time employee	24 (8.3%)
	Others	34 (11.7%)
Entrepreneurship training	Yes (n = 134) 46%	No (n = 155) 54%

Source(s): Authors' own work

Table 1. Demographic information

3.3 Data pre-processing for fsQCA

The data was calibrated using a fuzzy transformation. The teaching experience (EXP) was coded as a binary indicator, taking value 1, when the respondent has more than 10 years of experience in entrepreneurial teaching, and value 0 for those who have less than 10 years of experience. The entrepreneurial training (TRA) was coded as binary and the value of 1 is given if the respondent has participated in an entrepreneurship-teaching program and value of 0 is given otherwise. When gender is included in the analysis, female participants is coded as 0 and males are coded as 1. The items for the other constructs (philosophy of teaching/beliefs (PHI), self-efficacy (SEL), and the outcome variables were combined using arithmetic mean operator to obtain an average score and direct calibration was implied. To transform the survey data into fuzzy membership values in the [0, 1] interval, some R-packages were used to compute the quantile for each variable (condition) and determine the three threshold values corresponding to non-membership (transformed value 0), cross-over point (transformed value 0.5) and full membership (transformed value 1), or the three thresholds as the 5th, 50th and 95th percentiles of the variables (see Table 2).

Next, the necessity analysis was computed to obtain the values for necessary conditions (Schneide, 2012). If a condition is defined as necessary, it implies that the antecedent condition should (nearly) always have high values whenever the outcome variable has high values. The necessity analysis results are presented in Table 3 (teacher-centric) and 4 (student-centric). To determine whether a variable is a necessary condition, the values of consistency and coverage measures are considered. Consistency values higher than 0.9 indicate the presence of a necessary condition, as it measures the strength of the relationship; the greater the value, the stronger the association between a condition and the presence of an outcome (Ragin, 2009). The results of necessity analysis show that none of the conditions had value higher than threshold value, see Tables 3 and 4. We also performed the sensitivity analysis, and results are discussed in Appendix B.

Variable (condition)	5%	50%	95%
Philosophy of teaching (Beliefs)	3.00	4.25	5.00
Self-efficacy	3.27	4.44	5.00
Teacher-centric	2.79	4.01	5.00
Student-centric	2.88	4.20	5.00

Source(s): Authors' own work

Table 2. Calibration threshold values

Variable (condition)	Consistency	Coverage
Not GEN	0.519	0.753
GEN	0.481	0.764
not EXP	0.576	0.747
EXP	0.424	0.775
not TRAIN	0.589	0.754
TRAIN	0.411	0.764
not PHIL	0.406	0.868
PHIL	0.764	0.898
not SELF	0.318	0.747
SELF	0.824	0.862

Source(s): Authors' own work

Table 3. Necessity analysis (teacher-centric)

Variable (condition)	Consistency	Coverage
Not GEN	0.556	0.636
GEN	0.444	0.557
not EXP	0.592	0.606
EXP	0.408	0.587
not TRAIN	0.528	0.534
TRAIN	0.472	0.691
not PHIL	0.438	0.739
PHIL	0.804	0.745
not SELF	0.305	0.663
SELF	0.890	0.751

Source(s): Authors' own work

Table 4.
Necessity analysis (student-centric)

In both models, the highest values are for self-efficacy, but still lower than the accepted cutoff value. Moreover, coverage values are used to determine the significance of the relationship between the conditions, and the lower the coverage value is, the fewer cases the identified relationship applies to. The measures are calculated for both the presence and the absence (indicated with "not" in the tables) of each condition.

The final stage of fsQCA procedure is to test sufficiency analysis and constructing the truth table based on all the combinations of the five conditions (including gender) in order to reveal the configurations of conditions leading to outcome of interest (Pappas and Woodside, 2021). As we have two outcomes (teacher-centric and student-centric), and we need to run the analysis once without gender being considered as a condition, and once with gender included. This results in construction of four truth tables (1) teacher-centric, (2) student-centric, (3) teacher-centric with gender included and (4) student-centric with gender included. Configurations that frequently exist in the data can be used in sufficiency analysis. In this paper, the frequency threshold is set to 1, which is a common threshold. Based on the number of conditions utilised in the analysis, we have $2^4 = 16$ possible configurations without gender and $2^5 = 32$ possible configurations when gender is included as a condition. To assign each configuration a label showing whether it relates to the presence or absence of an outcome, value of consistency was used (Ragin, 2009). The consistency value for the current analysis was set at 0.85, which is higher than the value of 0.75 recommended by Ragin (2009).

4. Results

The result of the sufficiency analysis for teacher- and student-centric pedagogical approaches as the outcome are presented and discussed in this section. In the fsQCA analysis, the frequency cut-off value and the consistency threshold were set to 1 and 0.85, respectively (Ragin, 2009). The fsQCA results are presented in Table 4 (teacher-centric) and 5 (student-centric). In the tables, the black circles (●) present the presence of a condition and the blank circles (○) present the absence of a condition. Moreover, for teaching experience, the black circles indicate teaching experience with more than 10 years and the blank circles indicate teaching experience with less than 10 years. Similarly, for entrepreneurship teaching training, black circles indicate that an educator has attended a training program focused on how to teach entrepreneurship, and blank circles indicate otherwise. As it can be seen from Table 5, four configurations of conditions leading to educators expressing preferences towards a teacher-centric approach were obtained.

In solution one, the presence of experience with more than 10 years, and the absence of training are sufficient conditions to become a teacher centric. In solution two, the presence of both the philosophy of teaching (beliefs), and self-efficacy are sufficient conditions leading to

teacher-centric model. In solution three, the presence of teaching experience (with more than 10 years) the presence of self-efficacy and the absence of philosophy of teaching (beliefs) lead to the teacher-centric model. In solution four, the presence of entrepreneurship training and teaching experience (with more than 10 years) lead to teacher-centric model. The overall solution consistency is 0.823, and the overall solution coverage is 0.854, indicating that these four solutions cover almost 85% of the cases.

As for the student-centric approach, three configurations of conditions were obtained, as shown in Table 6. Similar to the teacher-centric approach, the conditions can be grouped based on mainly the teaching experience and self-efficacy. For the first solution, educators who have more than 10 years of teaching experience and had the entrepreneurship training are necessary conditions to become a student-centric educator. In solution two, the presence of self-efficacy and entrepreneurship training lead to student-centric model, while in solution 3, it is the presence of self-efficacy and the presence of philosophy of teaching (beliefs) lead to student-centric model. The overall solution consistency is 0.847, and the overall solution coverage is 0.873. This indicates the three solutions cover almost 87% of the cases.

For a secondary analysis, the gender of the educators was included in the fsQCA analysis to see if further differences can be observed amongst the entrepreneurship educators. Like earlier approach, the authors first provide the results for teacher-centric model, and then results for student-centric will be provided, see Tables 7 and 8, respectively.

The fsQCA analysis revealed five configurations of conditions for teacher-centric model. Solution one indicates that for male educators, the presence of teaching experience with more than 10 years, and the presence of entrepreneurship training and self-efficacy lead to a teacher-centric model. Solution two shows that for males, in this configuration, the presence

FsQCA result: Teacher-centric model

Solution	EXP	TRA	PHI	SEL	Raw coverage	Unique coverage	Consistency
1	●	○			0.353	0.118	0.856
2			●	●	0.189	0.055	0.811
3	●		○	●	0.656	0.257	0.931
4	●	●			0.130	0.018	0.949
Solution coverage					0.854		
Solution consistency					0.823		

Note(s): EXP = Years of teaching experience (less than 10 years (○); more than 10 years (●); TRA = Training (no (○), yes (●); PHI = Philosophy; SE = Self-efficacy
Source(s): Authors' own work

Table 5. Configurations sufficient for teacher-centric

FsQCA result: Student-centric model

Solution	EXP	TRA	PHI	SEL	Raw coverage	Unique coverage	Consistency
1	●	●		●	0.209	0.019	0.809
2	●			●	0.429	0.041	0.824
3			●	●	0.745	0.398	0.834
Solution coverage					0.873		
Solution consistency					0.847		

Note(s): EXP = Years of teaching experience (less than 10 years (○); more than 10 years (●); TRA = Training (no (○), yes (●); PHI = Philosophy; SE = Self-efficacy
Source(s): Authors' own work

Table 6. Configurations sufficient for student-centric

of philosophy of teaching (belief), the absence of sufficient experience (more than 10 years) and the absence of entrepreneurship training together lead to a teacher-centric approach. Moreover, in solution three, which applies only to females, the presence of teaching experience (more than 10 years), the presence of self-efficacy and the absence of entrepreneurship training lead to teacher-centric model. Solution four, again applicable to females, indicates that the absence of entrepreneurship training and the presence of philosophy of teaching (belief) lead to teacher-centric model. Finally, in solution five, which applies to females, the absence of entrepreneurship training, the presence of philosophy of teaching (belief) and the presence of self-efficacy together lead to teacher-centric model. The overall solution consistency is 0.879, and the overall solution coverage is 0.719. This indicates these four solutions cover almost 72% of the cases in the dataset.

In summary, it can be argued that self-efficacy and teaching experience have a significant impact on the teacher-centric approach even when gender is not taken into consideration. However, when gender is included, for males, teaching philosophy and self-efficacy are important. In the absence of training experience and self-efficacy, then philosophy of teaching leads to a teacher-centric for males. For females to adopt a teacher-centric approach, the lack of entrepreneurship training, the philosophy of teaching (belief) and self-efficacy are the main conditions.

The fsQCA analysis, revealed five configurations of conditions leading to student-centric model when gender included in the analysis, see Table 8. Solution one, which applies to males, indicates that the presence of teaching experience with more than 10 years, self-efficacy and the absence of entrepreneurship training are the sufficient conditions to become a student-

Table 7.
Configurations sufficient for teacher-centric with gender included in the analysis

FsQCA result: Teacher-centric model								
Solution	GEN	EXP	TRA	PHI	SEL	Raw coverage	Unique coverage	Consistency
1	●	●	●		●	0.492	0.272	0.810
2	●	○	○	●		0.429	0.019	0.824
3	○	●	○		●	0.115	0.001	0.734
4	○		○	●		0.170	0.003	0.822
5	○		○	●	●	0.161	0.007	0.861
Solution coverage							0.719	
Solution consistency							0.879	

Note(s): GEN = Gender (female (○), male (●); EXP = Years of teaching experience (less than 10 years (○); more than 10 years (●); TRA = Training (no (○), yes (●); PHI = Philosophy; SE = Self-efficacy
Source(s): Authors' own work

Table 8.
Configurations sufficient for student-centric with gender included in the analysis

FsQCA result: Student-centric model								
Solution	GEN	EXP	TRA	PHI	SEL	Raw coverage	Unique coverage	Consistency
1	●	●	○		●	0.432	0.372	0.833
2	●	●	○	●		0.151	0.001	0.852
3	○		●		●	0.519	0.012	0.841
4	○		●	○	●	0.135	0.001	0.834
5	○	○	●		●	0.131	0.003	0.891
Solution coverage							0.742	
Solution consistency							0.882	

Note(s): GEN = Gender (female (○), male (●); EXP = Years of teaching experience (less than 10 years (○); more than 10 years (●); TRA = Training (no (○), yes (●); PHI = Philosophy; SE = Self-efficacy
Source(s): Authors' own work

centric educator. Solution two, again only applicable to males, shows that the presence of teaching experience and philosophy of teaching (belief) and the absence of entrepreneurship training are the conditions leading to student-centric model. Solution three, applicable only to females, indicates that the presence of entrepreneurship training and the presence of self-efficacy are sufficient conditions for female educator to choose the student-centric approach. Solution four, also for females, shows the presence of entrepreneurship training and the self-efficacy, and the absence of philosophy of teaching (belief) lead to student-centric model. Finally, in solution five, only applicable to females, it is the presence of entrepreneurship training and self-efficacy, and the absence of teaching experience are sufficient conditions for female to choose the student-centric model as their pedagogical approach. The overall solution consistency is 0.882, and the overall solution coverage is 0.742. This indicates the four solutions cover almost 74% of the cases.

In summary, it can be concluded that without gender included in the analysis, teaching experience and self-efficacy play major roles for student-centric model. When gender is included, for male educators, teaching experience and either philosophy of teaching (belief) or self-efficacy, are important conditions. If they have both teaching experience and entrepreneurship training together, then self-efficacy should also be present. But if they do not have entrepreneurship training and sufficient teaching experience (more than 10 years), then the only important condition is philosophy of teaching (belief). For female educators, the presence of both entrepreneurship training and self-efficacy are important conditions to choose the student-centric model as their preferred teaching approach for all three solutions, while the absence of sufficient experience (more than 10 years) and philosophy of teaching are also important conditions, Table 9 shows the main findings of the fsQCA analysis.

5. Discussion

There is a growing recognition of the need to understand the factors that shape the pedagogical preferences of entrepreneurship educators, as their teaching practices can have a significant impact on student learning and development. Our study was grounded in cognitive process theory which proposes influences on entrepreneurship educator pedagogical choices and their decision to choose of either a teacher-centric or student-centric models. The teacher-centric pedagogy is associated with a more controlling, directive and often lecture-based pedagogy, based on the presumption that students need to learn from the professor's knowledge and facilitation; therefore, students have a more passive role (Béchard and Grégoire, 2005; Nabi *et al.*, 2016). We identified four configurations of conditions leading to the teacher-centric model. In three out of four solutions, the teaching experience is an important condition, and for the fourth solution, the teaching philosophy and self-efficacy together are important conditions. This finding is comparable to one made by Podolsky *et al.* (2019, p. 300), who claim that "teachers are better equipped to support student learning as they gain experience – both within their first few years in the classroom, and later in their careers".

	Teacher-centric	Student-centric
General conditions	Teaching experience more than 10 years, and self-efficacy	Entrepreneurship training and self-efficacy
Female	Absence of entrepreneurship training	Less than 10 years of teaching, entrepreneurship training and self-efficacy
Male	More than 10 years of experience, self-efficacy, and philosophy of teaching	

Source(s): Authors' own work

Table 9. Conditions leading to student and teacher centric approaches

On the one hand, we might have expected experience to be associated with a more student-centric approach, whereby experience teaching develops confidence and a greater willingness to give students more agency in their own learning. In other words, following Bandura (1997), they have strong self-efficacy and believe they will be successful, and therefore, are more likely to experiment and try new things (Ross *et al.*, 1996). However, McMinn *et al.* (2022) findings, it was found that greater teaching experience is associated with a teacher-centric approach. Further, the combination of self-efficacy and beliefs suggests that a strong belief that the educator's role is in transmission of knowledge and reinforced over time as the educator develops confidence in this approach. In other words, with the greater confidence in applying a teacher-centric approach, the more the educator becomes committed to it. On the other hand, the relationship between experience and a teacher-centric approach may suggest that experienced educators stick to what they know to avoid failure, opting to control their situation more carefully, and therefore, adopt a teacher-centric approach. Alternatively, there is evidence that educators are more likely to adopt a teaching-centric approach more in line with how their own personal experiences in education rather than their formal education were educated and trained (Burroughs-Lange and Douetil, 2006). It is possible that their formal education was more traditional in nature rather than experiential, which was common in the management and other disciplines in past decades.

In the entrepreneurship context, there are certainly situations where a teacher-centric approach is most appropriate. For example, facilitating case studies of entrepreneurs or lecturing about the professor's personal entrepreneurial experiences, which are more of a one-way transmission of knowledge (Neck and Corbett, 2018). For certain classroom learning objectives where the goal is to remember, understand or apply, a teacher-centric approach may work best (Krathwohl, 2002). For instance, an introductory course on entrepreneurship to younger college students might be suited to a teacher-centric model.

When gender of the entrepreneurship educators was considered in the fsQCA analysis, for teacher-centric model and male educators, two profiles can be distinguished; for the first, teaching experience, entrepreneurship training and self-efficacy are important conditions and for the second, teaching philosophy and the absence of training and experience are important. In contrast, for female educators, self-efficacy is associated with a teacher-centric approach. Our findings show that there are different combinations of factors leading to a teacher-centric approach for males and females, and, for both, there is an absence of entrepreneurship training, except in one solution. Perhaps the most notable difference by gender is the importance of self-efficacy for female educators, whereas this plus other conditions are important for male educators. Previous research suggests women tend to be more collaborative and student-centric, hence if this is the case, then women may perceive themselves as less suited to a teacher-centric role which is characterised by being dominant and controlling and a lecture style (Miller, 2008). In other words, a teacher-centric approach could present a role conflict with expectations of women educators. Therefore, greater confidence would help women educators to be more comfortable in this a teacher-centric role.

In contrast to a teacher-centric approach, a student-centric approach means that the educator is helping students to "learn by doing" where they may employ problem-solving and self-directed learning approaches, acting more as a consultant. For example, in the entrepreneurship domain, this might mean feasibility projects, design thinking or starting a new venture outside of a class (Neck and Corbett, 2018). The approach is characterised as an intent to change and develop student understanding and support their conceptual change rather than just transmitting knowledge (Prosser and Trigwell, 2014). Student-centric approaches are based on beliefs of an open orientation, constructive and learner centred where learners take responsibility for their own learning.

Our fsQCA results show three configurations of conditions, were found related to the student-centric approach, and in all three, self-efficacy is the most important condition. In one

configuration, entrepreneurship training and teaching experience are important conditions, and in other configuration, teaching philosophy is important condition. Given the importance of self-efficacy, this suggests that an educators' self-confidence is a prerequisite for loosening control of the class and allowing students to set the agenda, or to work on projects (new ventures) about which the educator may not be an expert. However, self-efficacy operates together with different factors, either entrepreneurship training, teaching experience or philosophy of teaching, but self-efficacy alone may not be enough to lead to a student-centric pedagogical approach. It is possible that those with a student-centric approach may have a teaching philosophy in which they view teaching as more of a lifelong learning process, where they are learning from their students and more likely to reflect on their teaching and experiment with different methods of teaching (Qiu *et al.*, 2021). This is similar to what Carol Dweck (2016) refers to as a growth versus fixed mindset, and it may well apply to entrepreneurship educators.

When gender is considered; however, it is clear that when male educators choose a student-centric approach, teaching experience and either teaching philosophy or self-efficacy, in addition to the absence of entrepreneurship training are important conditions. For males, the strong sense of self-efficacy that they will be successful and having confidence leads to a student-centric approach. But, for female educators, entrepreneurship training and self-efficacy are important in all configurations. For females, it is self-efficacy combined with EE training. The link between entrepreneurship training and self-efficacy has also been confirmed by Newman *et al.* (2019). This finding seems to support previous research in teacher education which shows females have stronger self-efficacy and may be more student-centric in their approach (Lacey and Saleh, 1998; Raudenbush *et al.*, 1992; Ross *et al.*, 1996). Arguably training might lead to greater confidence in a student-centric pedagogical approach which is less traditional, but it is noticeable that this only applied to females. It would seem that the presence EE training leading to student-centric approaches would apply equally to males and females. Notably, opportunities for learning experiential teaching approaches in entrepreneurship are few [1] but there does not seem to be evidence that females were more likely to have this additional training than males in this sample. Another possible explanation for why teacher self-efficacy is more important for females rather than for males in determining a student-centric approach is that because entrepreneurship is seen as a male dominated/typed activity (Bird and Brush, 2002). It is possible that entrepreneurship educators have similar gender stereotypes, which makes women educators less assured when teaching experiential classes like a new venture creation course where entrepreneurship expertise may be required. Hence having greater self-efficacy is more important for women to adopt this approach.

5.1 Limitations

This research is not without limitations. Notably, the authors could not collect information about the type and extent of entrepreneurial teaching experience of the sample. While the authors know that they have at least five years of experience, information about the types of classes, level of classes and structure was not captured. Therefore, in future research the addition of this information would be most helpful for better understanding the role of teaching experience in determining pedagogical choices. Moreover, while we do know whether or not they had training in EE, we do not know the type, extent or nature of the training. Further, we have no information on the outcomes of the teacher-centric or student-centric pedagogies. For instance, it is suggested that student-focused training can promote learner inclusion and increase academic success and lead to greater teacher enjoyment, and this might be an avenue for future research (Prosser and Trigwell, 2014). Moreover, as survey data was used in this study, the authors may not be able to generalise the findings. Also, the

measures of teaching philosophy were scaled, rather than individualised reporting of educator beliefs and values. A qualitative data collection and analysis of educator's personal beliefs about a particular class, or students' ability to learn would further our understanding of assumptions underlying pedagogical approaches, following the teacher decision-making framework (Shavelson and Stern, 1981).

6. Conclusions and implications

When acting in the role of an entrepreneurship educator, one plans a process to carry out learning, during which decisions are made regarding what should happen in the classroom and what should not. While previous research suggests different strategies and pedagogical learning approaches for delivering entrepreneurial learning (Béchard and Grégoire, 2005; Nabi *et al.*, 2016; Wraae *et al.*, 2021), our study empirically examines the factors influencing their pedagogical decisions (Henry, 2020). In teacher education research, cognitive process models of decision-making have been widely studied to understand how teachers make decisions for planning their courses and carrying out instruction (Borko and Shavelson, 1990). The decisions are identified as planning instruction, selecting content, grouping students and ways to interact with students (Shavelson and Stern, 1981). Drawing on this theory, the authors used a dataset of 289 international entrepreneurship educators, identified several key variables referred to as personal (or teacher) characteristics and empirically tested how they influence different teaching pedagogy models. Specifically, the authors assessed the impact of self-efficacy, teaching philosophy, entrepreneurship training and the teaching experience on the entrepreneurship educators' pedagogical preferences for choosing from teacher-centric or student-centric model. To assess the effect of these factors, fsQCA was used as an analytical approach to obtain multiple pathways leading to the pedagogical choices. In other words, the aim is to obtain configurations of conditions that lead to either teacher-centric or student-centric model.

This study theoretically contributes to this line of research, by showing that there are no single drivers of pedagogical choices, rather multiple combinations of conditions (pathways) result in different pedagogical approaches. Teaching experience, self-efficacy, entrepreneurial training and teaching philosophy contribute differentially in the configurations leading to either a student-or teacher-centric approach. Prior to this study, there was evidence that entrepreneurship educators employed different approaches, but we had little information as to why some would prefer one approach over another. In addition, our study suggests that the preferences for either teacher or student-centric pedagogy are likely intentionally executed in the classroom, although this is something that would be better studied using a qualitative approach and observation. The authors found that for a teacher-centric approach, teaching experience is the most essential condition. These results are consistent with earlier findings of (Ruskovaara and Pihkala, 2015), who argue that the more real-life professional experience of business and teaching an educator has, the more inclined he or she will be in leading or taking a central role in an EE course. For the student-centric model, the educators' self-efficacy is the most important condition, which supports the idea that in experiential learning, educators take on a role of facilitation and advising, giving students the chance to choose their own projects. As a result, the educator may not be the authority on a particular business idea, rather they must be flexible in advising the process and have confidence yield control for setting the agenda to students. We also acknowledge that by only examining two pedagogies, student and teacher-centric, which are arguably two ends of the pedagogical spectrum, there are likely other pedagogical approaches that exist such as network-centric model (Wraae *et al.*, 2021). Future research should consider other pedagogical approaches that may synthesise or integrate elements of the student and teacher-centric models.

When the educators' gender is considered in the analysis, it was found that for male educators pursuing a teacher-centric, teaching experience and entrepreneurship training impact their pedagogical approaches. However, for female educators, the presence of teaching philosophy (belief) and the absence of entrepreneurship training influence their decision to choose teacher-centric model. As for the male educators and in the student-centric model, teaching experience (more than 10 years) and the absence of entrepreneurship training are considered as the most important factors. But, for female educators, the presence of both entrepreneurship training and self-efficacy are important conditions. Goldstein (2021) argue that entrepreneurship training is associated with teacher self-efficacy. However, it would be of interest to further explore the effects of entrepreneurship training on self-efficacy by gender as well. Another contribution of this paper is the fsQCA results emphasise on the importance of entrepreneurship training of the educators, especially for women, providing support to earlier finding by Foliard *et al.* (2018, pp. 10–11), who also argue that "professional and entrepreneurial training for teachers affect the educators' entrepreneurship educational practices in a positive way".

In addition, this study focused only on the influence of personal factors on the pedagogical choices, rather than contextual factors, which have been extensively studied by other authors (e.g. O'Brien and Norton, 1991; Shavelson and Stern, 1981). Universities and colleges have set standards for degree requirements and often country standards that dictate student contact hours, assessment, learning objectives and other curricular aspects are considered as the degree requirement. To better understand the influence on pedagogical choices, a future research direction would be to consider new ways of understanding the institutional requirements and institutional support provided to entrepreneurship faculty. The relative importance of entrepreneurship as a discipline, resources and incentives are also factors that can be quite important in influencing how faculty think about developing their courses. To take this one step further, understanding the institution's perspective on teaching and learning and staff and students' positioning as inter-related dimensions in this particular field would be of interest (Neck and Corbett, 2018). Hence to achieve what Pittaway and Cope (2007, p. 479) claimed "the explicit goal of entrepreneurship and enterprise education is to make changes in society via changes in individual behaviour", then one needs to explore how educators meet the students and what type of pedagogical approaches are effective in transforming student entrepreneurial behaviour (Neergaard *et al.*, 2020).

6.1 Practical implications

The findings of this research provide some practical implications. For instance, department chairs need to consider the pedagogical preferences of their faculty members and appropriateness of these preferences depending on the type of class they are assigned to teach. For classes that are exploratory (e.g. introduction to entrepreneurship), a teacher-centric approach (more lecture, case study) might be appropriate, whereas for new venture creation and experiential classes, student-centric pedagogy might be more appropriate. In considering the classes that would be better taught with a student-centric approach, higher education institutions and schools need to consider the extent to which faculty in these classes have strong self confidence in their teaching because faculty need to give students more responsibility for their learning. Alternatively, our research shows factors influencing educators' preference for teacher or student-centric approaches, but it is also possible that entrepreneurship educators learn to be flexible and apply one or the other approach depending on the class or learning environment. This has practical implications for educator training to recognise when one or the other approach is more appropriate and to learn to "flex" away from their default preferred pedagogy. It should also be noted that these pedagogical approaches, depending on the context, are appropriate situationally and schools should have

a "mix of faculty" able to teach using various types of pedagogy because students have different learning styles, as some students learn better by doing, others learn better by listening and thinking (Kolb, 1984). Further, some pedagogical styles may be better suited for different types of courses and associated learning objectives (e.g. developing an entrepreneurial mindset or launching a venture).

Another implication of this study has to do with gender. The data suggest that schools should recognise that the drivers of pedagogical choices do vary by gender, where experience and philosophy of teaching influence male's choices for a teacher-centric approach and self-efficacy, philosophy of teaching (beliefs) and lack training influence female educators. This implies that Department Chairs need to be cognisant that gender differences exist when it comes to factors influencing pedagogical approaches and that the role of teaching experience and training may play a different role for males and females.

One of the highlights of the current research is the finding that shows for both female and male, the absence of entrepreneurial training influences the educators' preference for teacher-centric approach. It is reasonable to expect that the absence of entrepreneurship training would lead to a teacher-centric approach, but the authors were surprised to see that entrepreneurship training was not strongly associated with a student-centric approach, as they assumed that the entrepreneurship training would logically, train and prepare the educators in how to teach entrepreneurship. Given the direction and approach for most entrepreneurship educator programs, which help educators to practice teaching in an experiential manner, the authors expected that entrepreneurship training would lead to a more student-centric approach (Neck *et al.*, 2014) [2]. However, it might be argued that educators need to take part in the training programs to learn the range of pedagogical approaches in entrepreneurship courses, and how these include different assumptions and beliefs about students. Perhaps, it can be speculated that the existing training is too generic and not specific enough to the needs and desired outcomes of EE. In our research, a small number of (134 out of 289) participants had training on EE, and it is hard to know exactly what their training consisted of. Therefore, it can be asked "should faculty learn ways to 'switch' their pedagogy?", or in other words, if entrepreneurship educator default role is teacher centric, can they learn how to be student-centric with training? This is something that could be explored. Further, because self-efficacy is especially important in the student-centric approach, training that covers pedagogical approaches and allows educators to learn and practice ways to encourage student-centric learning would be appropriate. For individual entrepreneurship educators, it is important to recognise the differences between student-centric and teacher-centric models and to self-reflect on whether their default approach is appropriate for the course they are teaching. In fact, having educators observe classes of other educators to identify when teacher-centric or student-centric approaches are appropriate is another implication. Therefore, a next step for research would be to determine when student-centric or teacher-centric approaches are most effective, by considering student or faculty assessments of student learning.

Finally, we suggest that the educational institutions should facilitate the development of educators' pedagogical competence and professional skills through professional training and mentoring. The results show that emphasising on entrepreneurship training does have an impact on the educators' pedagogical preferences, especially for those who do not have sufficient teaching experience (i.e. more than 10 years of experience). Relatedly, Toding and Venesaar (2018, p. 711) contend that raising knowledge of entrepreneurial learning among entrepreneurship educators is necessary in order to implement the entrepreneurial teaching and learning model in a more systematic manner. This is also in line with the Ho *et al.* (2001) statement, who argue that if the educators' teaching practices need to be changed, the teaching conceptions must be changed first. Peura and Hytti (2022, p. 12) also argue that "especially in a multidisciplinary university, there is a need for a variety of pedagogies and

contents in events to expose teachers to entrepreneurship from different perspectives in order to facilitate authenticity and relevance".

Notes

1. Perhaps best known is the Price Babson Symposium for Entrepreneurship Educators which provides an overview of different pedagogies appropriate for different aspects of entrepreneurship education. https://www.babson.edu/professional/entrepreneurship-education/faculty-and-staff-programs/price-babson-symposium-for-entrepreneurship-educators/
2. See for example the Price Babson Symposium for Entrepreneurship Educators https://www.babson.edu/professional/entrepreneurship-education/faculty-and-staff-programs/price-babson-symposium-for-entrepreneurship-educators/

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Appendix A

Self-Efficacy

SELF1: Present the fundamentals of entrepreneurship to students.
SELF2: Engage students in entrepreneurial activities.
SELF3: Facilitate students' ideation, creation and launch of a new venture or initiative.
SELF4: Mentor individual students or student teams in the launch and growth of their venture or small business.
SELF5: Evaluate arguments and evidence students present so competing alternatives can be considered.
SELF6: Catalyse discussion and debate about entrepreneurial topics.
SELF7: Ask probing questions while supervising entrepreneurial project.
SELF8: Motivate students to work together on entrepreneurial projects.
SELF9: Assist students on their entrepreneurial learning journey.
Source: Lucas and Cooper (2004), Neck and Corbett (2018)

Philosophy of teaching

PHL1: To be successful in entrepreneurship, students need to learn the models and theories of the discipline.
PHL2: To be successful in entrepreneurship, students need to develop as whole people.
PHL3: To be successful in entrepreneurship, students need to develop strong interpersonal skills combined with an ethical, and global mindset.
PHL4: To be successful in entrepreneurship, students should have a clear sense of who they are, be able to express their feelings, and be able to engage dialogue with others.
Source: Greenberg *et al.* (2007), Wraae *et al.* (2021)

Teacher-centric

TEACHER1: Delivering interactive lectures.
TEACHER2: Facilitating case studies.
TEACHER3: Presenting theoretical concepts and models.
TEACHER4: Overseeing application of concepts and models.
Source: Béchard and Grégoire (2007), Greenberg *et al.* (2007), Wraae *et al.* (2021)

Student-centric

STUDENT1: Mentoring students to start a new venture outside of class or as part of a project.
STUDENT2: Enabling students to design their own learning activities.
STUDENT3: Encouraging students-led feasibility projects.
STUDENT4: Encouraging students' reflection on learning.
STUDENT5: Providing a safe learning environment where students can act entrepreneurially.
Source: Béchard and Grégoire (2007), Greenberg *et al.* (2007), Wraae *et al.* (2021)

Appendix B

Sensitivity analysis

After generating solutions for different analysis, it is important to perform a sensitivity analysis to evaluate the robustness of the fsQCA results. This involves determining whether changing various parameters and threshold values will affect the outcome and the extent of any change. For the sensitivity analysis, three key parameters need to be identified for each analysis. Researchers should use recommended values for each step, such as a consistency cut-off value of 0.90 in necessity analysis (Ragin, 2009), a frequency cut-off value of one for small data sets and two or higher for larger sets (Pappas *et al.*, 2019), and a consistency cut-off value of 0.75 (Ragin, 2009). Thus, we performed sensitivity analysis, as suggested by Pappas and Woodside (2021). Due to limited space for this manuscript, we only performed the sensitivity analysis for conditions leading to teacher-centric model, and without including

gender as a condition. In our study, the focus is on the consistency threshold value to validate the results. When analysing the necessity of the results, the highest value found in Table 3 was 0.824 for the teacher-centric model. This value is lower than the recommended threshold of 0.90, indicating that there is no necessary condition for teacher-centric model. Regarding the frequency threshold, increasing the threshold value would result in losing a significant amount of data, because the data set is small. So, we have not changed the frequency threshold in the sensitivity analysis. But, to evaluate the solutions obtained, we experimented with different consistency threshold values between 0.75 and 0.85 to examine how sensitive the fsQCA results are to the threshold selection. If the configurations vary significantly with a small change in the threshold value, it suggests that the configurations are not stable enough. The sensitivity analysis illustrates that the threshold range can be separated into three intervals. As shown in below Table B1, the results were stable since the generated configurations did not considerably vary by a modest modification of the employed value of 0.85 for consistency.

Table B1.
Sensitivity analysis

Consistency	Sensitivity results
0.75–0.76	Fifth solution was obtained in addition to those in Table 5 (new configuration shows that the presence of self-efficacy and teaching experience are sufficient for the teacher-centric model)
0.77–0.80	we obtain three solutions, exact solutions 2–4 from Table 5, highlighting the core importance of teaching expectance and self-efficacy
0.81–0.85	no major changes, we obtain the four solutions as shown in Table 5

Source(s): Authors' own work

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