Methods in Entrepreneurship Education Research: A Review and Integrative Framework[1]

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Abstract

Purpose

– Research in entrepreneurship education faces substantial tensions and methodological challenges. Building on a review of extant empirical studies in the field, the purpose of this paper is to develop an integrative methodological framework for studying entrepreneurship education. Central questions are: What forms of entrepreneurship education research exist? Which data sources, research methods and approaches are used in this research? What are the methodological strengths

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The dataset used for the review and additional information on the method applied is available at: http://badm.au.dk/research/research-groups/icare/pace/data/

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and weaknesses of entrepreneurship education research? How can entrepreneurship education research be improved methodologically?

Design/methodology/approach

– The paper combines a literature review with a conceptual discussion. The review identifies 88 journal articles reporting empirical studies of entrepreneurship education published between 2002 and 2012. The literature is coded according to method used, type of study, data collection and analysis techniques. From the analysis of the reviewed literature, a conceptual discussion of the advantages and drawbacks of various methods is undertaken, and an integrated approach to entrepreneurship education research is proposed.

Findings

– Research in entrepreneurship education is fragmented both conceptually and methodologically. Findings suggest that the methods applied in entrepreneurship education research cluster in two groups: first, quantitative studies of the extent and effect of entrepreneurship education; and second, qualitative single case studies of different courses and programmes. Benefits and drawbacks haunt both clusters. Quantitative studies bring objectivity, comparability and generalizability, but show limited appreciation of the heterogeneity of the education they seek to measure. Qualitative single case studies are ripe with contextually sensitive descriptions and best pedagogical practices, but suffer from limited comparability and generalizability as well as severe biases of teacher-researcher conflation.

Originality/value

– The suggested methodological framework builds on a systematic review of the research methods applied in extant entrepreneurship education research. It integrates qualitative and quantitative techniques, the use of research teams consisting of insiders (teachers studying their own teaching) and outsiders (research collaborators studying the education) as well as multiple types of data. To gain both in-depth and analytically generalizable studies of entrepreneurship courses and programmes, the suggested framework integrates the empirical sensitivity of qualitative techniques and diverse research positions, with the rigour of quantitative measures. The authors argue that studies of entrepreneurship education benefit from this integration. Furthermore, the authors describe a variety of helpful methods, explore the potential relation between insiders and outsiders in the research process and discuss how different types of data can be combined. The integrated framework urges researchers to extend investments in methodological efforts and to enhance the in-depth understanding of the dynamics and challenges of teaching entrepreneurship.

Introduction

Entrepreneurship courses and programmes appear to be a mainstay of modern higher education institutions, and they are increasingly attracting interest and intervention from policy makers and higher education management (Gibb & Hannon, 2006; OECD, 2009). Entrepreneurship is important for the process of value creation, job creation and general economic development. This understanding has more or less fully translated into the expectation that higher education institutions teach entrepreneurship and turn out an increasing number of graduates with a broad set of enterprising competencies, and the skills and ambitions to become entrepreneurs (OECD, 2009). Entrepreneurship education has thus

transcended the boundaries of business schools and is now taught across faculties, to students with all kinds of educational backgrounds.

This evolution has increased the need for research into entrepreneurship education (Pittaway & Cope, 2007). How is entrepreneurship education done, who does it, who are the students, why are the institutions and teachers teaching it, why are the students taking the courses, and perhaps most importantly what are the consequences (Blenker et al, 2011)?

However, researching entrepreneurship education is not a straightforward matter. Indeed, such research finds itself in muddled waters, facing substantial tensions and potential sources of methodological challenges and biases (Pittaway & Cope, 2007).

There are lingering issues of legitimacy: Can we teach entrepreneurship at all (Haase & Lautenschläger, 2011)? Can business school or university faculty teach, when they are more familiar with research and theory than entrepreneurship as practice (Blenker & Christensen, 2010; Gibb, 2002; Hindle, 2007)? Such questions naturally extend to the legitimacy of researching this phenomenon.

In the field of entrepreneurship education research, entrepreneurship scholars who teach entrepreneurship often do research on themselves or the modules and programmes of other entrepreneurship researchers. While it holds some advantages, this model also poses important challenges due to the convergence of researcher and research object.

Moreover, the keen interest shown to entrepreneurship education by public agencies and policy-makers enforce a pragmatic but potentially problematic and often uni-dimensional focus on numbers, output and effect. Does entrepreneurship education create more entrepreneurs? While this question certainly is legitimate, singling out this dimension runs the risk of ignoring the many different meanings and purposes that influence and shape actual entrepreneurship education activities. Entrepreneurship researchers who emphasize economic growth as the (only) relevant output of entrepreneurial activities, run the risk of misrepresenting the lived realities of practicing entrepreneurs (Achtenhagen, Naldi, & Melin, 2010; Leitch, Hill, & Neergaard, 2010). Likewise, a singular focus on the pragmatic and policy-sponsored goals of creating more entrepreneurs will merely show parts of the complex meanings and purposes associated with entrepreneurship education in higher education institutions.

Furthermore, the field of entrepreneurship education is highly heterogeneous. Firstly, the definitional antagonisms of the entrepreneurship field spill over into teaching, so that entrepreneurship is taught from a variety of theoretical perspectives (e.g. discovery versus creation perspectives, entrepreneurship versus a broad enterprising behavior perspective). Secondly, learning objectives and teaching methods vary significantly since entrepreneurship is taught across faculties by scholars as well as non-academics (e.g. at entrepreneurship centers) with varied backgrounds and experiences. While this may be the case for most academic subject matters, it seems even more so for entrepreneurship education. While it may be a sign of healthy diversity, it certainly challenges researchers trying to measure, understand, and improve entrepreneurship education by means of comparison.

Finally, entrepreneurship education research is undertaken for a great number of reasons and serves a broad variety of purposes. However, it is possible to condense these purposes into two broad categories:

- The first and most prevalent of these categories include measuring effect in order to ensure or test the relevance and legitimacy of entrepreneurship education (e.g. Gorman, Hanlon, & King, 1997). This approach understands entrepreneurship education as the independent variable - and the effects or consequences of education as the dependent variable.

- The second category seeks insight into the dynamics and mechanisms of learning entrepreneurship (e.g. Löbler, 2006), and contributes to the dissemination of experiences of entrepreneurship courses and programmes, and of best practice (e.g. Bager, Blenker, Rasmussen, & Thrane, 2011). This approach understands different approaches to entrepreneurship education (philosophy, theories, didactics and pedagogy) as the independent variable – and different types of courses and programmes as the dependent variable (Béchard & Grégoire, 2005).

All of these aspects make entrepreneurship education research a challenging venture for any researcher. Some of these challenges have been met by applying appropriate methodological frames to the study of entrepreneurship education. Yet, overall, the field of entrepreneurship education research remains fragmented both in terms of content, purpose and especially methods. Consequently, there is great potential in strengthening the methodological foundation of this important research.

In this article, we examine some of the methodological challenges faced by entrepreneurship education research. In order to advance the general methodological edifice of the field we suggest a new and integrative methodological framework from which future research projects may draw insights and inspiration. Hence, we explore ways to enhance the quality of entrepreneurship education research and subsequently entrepreneurship education. We argue that this challenge requires researchers to increase their sensitivity to differences in learning outcomes, teaching methods, institutional settings, student diversity etc. (Biggs & Tang, 2007), as well as to engage in faster and better dissemination of best practices; but without compromising the methodological solidity of the research. We believe that this will provide better validation of best practices, increase comparability of findings across contexts, as well as provide a deeper understanding of what works, where it works, how it works and why it works.

The starting point of the paper will be taken in a review of the methods applied in extant entrepreneurship education literature, emphasizing the strengths and weaknesses of the current research in the field. Then, an outline follows of an integrated methodological framework for researching entrepreneurship courses and programmes, before a discussion concludes the paper.

Review of the methods of entrepreneurship education research

To explore the deployment of methods in current entrepreneurship education research, we conducted a systematic literature review of journal articles published between 2000 and 2012. . This review is not exhaustive, but it covers a significant range of published studies on entrepreneurship education. To gain insight into the existing practices of research in entrepreneurship education the guiding question were: what methods are used to study different aspects of entrepreneurship education activities?

Building on established methods of literature reviews, we focused on peer-reviewed articles published in international journals (see e.g. Korsgaard, 2013; Short, Ketchen, Shook, & Ireland, 2010; Wang & Chugh, 2014). As pointed out by Podsakoff et al (2005) the intended purpose of publishing research in journals is to make results available to fellow researchers and potentially further the advancement of the research field. This is certainly also the case for other outlet forms such as working papers and conference papers. Still, the addition of a peer-review process, in most cases at least, provides quality assurance and quality enhancement mechanisms. Such mechanisms are also in play when publishing books and policy reports. Yet, for the purpose of consistency in the search and collection of sources for the review, we focused on journal articles only. These are typically available through databases that allow researchers to use explicit criteria to identify potentially relevant publications across a large number of journals in different fields.

We built our review on the assumption that entrepreneurship education research is of primary academic interest for researchers working within two fields: entrepreneurship and business/management education. For this reason, in the literature search, we targeted journals within these two fields.. Following Wang and Chugh (2014) we used the ABS list to identify journals within these fields. The ABS list is created by the Association of Business Schools. It seeks to provide comprehensive coverage of the research related to business as a general and inclusive term. It also provides categories of specific fields including “entrepreneurship and small business management” and “management development and education”. These categories were used for identification of relevant journals. A full list of the journals is provided below in table 1:

Insert Table 1 here

To access all the relevant journals, searches were conducted using the following databases: ABI/inform, Business Source Complete, and Education Research Complete. Restrictions at the local library meant that three journals were not available for database search, namely Innovations in Education and Teaching International, Industry and Higher Education, and Strategic Entrepreneurship Journal. The journal Industry and Higher Education includes significant contributions to entrepreneurship research. Articles from this journal was therefore included manually using direct browsing of titles and abstracts in the journal.

Inspired by Pittaway and Cope (2007), we constructed a search string emphasizing two concepts: entrepreneurship and education. They are both broad terms related to a range of other concepts. Consequently, the search was divided into a main search focusing on entrepreneurship and three sub-searches focusing on education. The main search included a number of associated terms known to be used in the literature, such as “entrepreneurship”, “enterprise”, “small business” and “SME”. Subsequently, the results of the main search was subject to three sub-searches identifying articles on entrepreneurship education. These three sub-searches focused on different aspects of education: business education, student, learning and teaching. Again, several synonyms were used to capture these three dimensions. If an article featured in the main search and in one the three sub-searches, it was included in the list for subsequent evaluation. A full list of the search strings is provided in table 2 below.

Insert Table 2 here

The final result of these searches were correlated with the previously constructed list of relevant journals. In total 646 articles were found. To confirm that the articles were in fact about entrepreneurship education and to identify that they included empirical contributions, the abstracts of all the 646 articles were read and categorized as clearly relevant, possibly relevant, or clearly not

relevant. The articles assessed as possibly relevant were read through in order to decide whether to include them or not. After this selection stage, 76 articles remained on the list. In addition, the manual search in the journal Industry and Higher Education yielded 12 relevant articles., bringing the number to a total of 88 articles.

These articles were analyzed by employing a deductive coding approach (Miles & Huberman, 1994) utilizing the NVivo 10 software. This approach involves the creation of a set of pre-defined codes. For this review, we coded the articles according to a set of basic attributes such as year of publication, journal of publication, and the main author's country of origin. In addition, a set of attribute codes were created, relating to the main dimensions of research methods, such as type of method used (qualitative or quantitative), inclusion of a methods section, use of data triangulation, primary data source etc. A full list of codes can be found in table 3.

Insert Table 3 here

Introducing systematic approaches to literature search and analysis should not seduce us into believing that we can completely review any field of research. In this review, however we believe that we have gained a comprehensive, but by no means complete overview of the methods used in entrepreneurship education research (cf. Günzel-Jensen, Korsgaard, & Müller, 2014).

Findings of the literature review

In the following, we present the main findings of our study. In the presentation we move from simple descriptive elements such as the development of publications over time and the distribution of publications across regions and journals. After the broad description, we look deeper into the methods used in entrepreneurship education research, in terms of methodological approaches, data

sources, and techniques for data analyses. Finally, we examine how dependent and independent variables are used in entrepreneurship education research.

Insert Figure 1 here

The increase in the amount of papers, as shown in figure 1, is of no surprise. It is mirroring the upsurge in general entrepreneurship research, the growing number of courses and programmes offering entrepreneurship and enterprise education, as well as the political interest accompanied by funding opportunities. The fact that a growing number of papers go as far as journal publication could be a sign of improved quality, since journal reviewers consider methodological strengths.

The papers are however unevenly distributed across countries. Figure 2 shows how European researchers especially from the United Kingdom account for the vast majority of research into entrepreneurship education.

Insert Figure 2 here

There may be several reasons why entrepreneurship education is a "European discussion" or perhaps even a "British discussion". National and EU funding combined with support institutions like the NCEE (National Council for Enterprise Education) in the UK, the German EXIST-programme or the Danish "Fonden for Entreprenørskab" could be important. The existence of relevant outlets for the research could also influence the national distribution. As shown in figure 3, two thirds of the articles identified for this review, are published in three journals: Education + Training, Industry and Higher Education and Journal of Small Business and Enterprise Development. These three journals are all British. Hence, there seems to be a strong correlation between the number of publications on entrepreneurship education in a geographical area, and the presence of relevant journals interested in this kind of research. A further explanation could be the

existence of central “mentors” in the UK such as Allan Gibb, Paul Hannon, Harry Matlay, David Rae and Andy Penalula. They have all served as supervisors of PhD. studies within the field of enterprise education and edited a number of special issues on enterprise education within the three top journals of figure 3.

Insert Figure 3 here

Turning more specifically to the types of methods used in research on entrepreneurship education, figure 4 show the distribution of qualitative, quantitative, and mixed methods. Qualitative methods dominate, which is not surprising given the nature of the field.

Insert Figure 4 here

The notion of qualitative, quantitative and mixed methods covers a broad range of different data sources and analytical techniques. In figure 5 and table 4 these are further specified.

Insert Table 4 here & Insert Figure 5 here

Figure 5 indicates that surveys represent the dominating data source used in quantitative studies, while the dominating data source of qualitative studies is interviews. It also shows that a number of different sources are used in the qualitative and mixed methods based studies, such as group discussions, formal evaluations, observations, teacher/researcher reflections, and student learning logs[2]. The co-existence of many different data sources indicates a promising future for research in entrepreneurship education. We note, however, that the research still relies primarily on traditional

[2] Others include: experiment, online institutional mapping template, entrepreneurship textbooks, job adverts, video case study, action learning group. In the reviewed articles,each of those data sources have only been used once.

data sources such as interviews and surveys, despite the fact that researchers are likely to have easy access to alternative data sources such as exam reports, student business plans, prototypes etc.

Tabel 4 shows a rich variety of data analysis techniques, and again we note a predominance of qualitative methods being used. l

Insert Table 4 here

Despite the richness of data analysis techniques, table 4 also indicates one of the weaknesses in empirical entrepreneurship education research. The vast majority of both quantitative and qualitative studies only use descriptive data analysis techniques; more advanced forms of data analyses are rarely used.

To summarize from our findings, it seems fair to conclude that the interest in entrepreneurship education research has grown significantly, and that an increasing amount of this research have reached refereed research journals. This is, however, primarily a European or even British phenomenon, in the sense, that the majority of the researchers and the most central journals for this research are European and British.

The reviewed studies employ a variety of qualitative and quantitative methods, dominated by surveys and interviews used primarily in descriptive forms of analysis. We regard this as a serious limitation to entrepreneurship education research. The deployment of more refined forms of data analysis could enhance research from description to in-depth investigations into central mechanisms of entrepreneurship teaching and learning.

On the basis of this review of extant entrepreneurship education research, we are thus able to suggest improvements for future research designs. In particular, we emphasize that there is an

apparent need to explicify how entrepreneurship education activities are embedded in national, regional, and institutional settings. This is particularly important since the dominance of researchers and empirical material from Britain and Europe may have led to an unwarranted generalization of findings from these contexts. We also note a strong reliance on descriptive data analyses and emphasize what we consider a shortage of mixed methods studies. This shortage may hinder the development of theoretical understandings that integrate output oriented validation, the extent to which entrepreneurship education works, with processual understandings, how it works (or does not work).

An integrative methodological framework for entrepreneurship research

Our proposed integrated methodological framework entails four elements: The use of mixed methods, case studies as the preferred research strategy, the use of research teams consisting of insiders and outsiders, and the use of multiple types of data.

The framework is integrative in two ways. First, it targets research projects, which seek a combination of two or more of the following aspirations: validation of activities/best practices, understanding the processes of the education activities, and effect measurement. Second, the framework is integrative on several levels; qualitative and quantitative methods, generalized and localized elements, multiple researchers working in research teams, and multiple types of data.

Mixed methods

In the literature review it was evident that a majority of studies were mono-methodological. They made use of either qualitative or quantitative methods. It is commonly accepted that qualitative and

quantitative methods have partially complementary strengths and weaknesses (Van de Ven, 2007). An overview of some of these is provided in table 5.

Insert table 5 here

Given the multiple objectives pursued in entrepreneurship education research, it is surprising that the potential of mixing methods is not practiced to a larger extent. Our review of the literature indicates a division of labour between quantitative measures of outcomes, and qualitative descriptions of processes. This division of labour is not helpful in the overall pursuit of a research-based understanding of entrepreneurship education. It involves a detachment of outcome and process explanations, thereby ignoring how outcome is related to different learning processes. Furthermore, as pointed out by proponents of a mixed methods approach, there are several advantages of combining qualitative and quantitative methods in social science studies in general and studies of education in particular (Greene, Caracelli, & Graham, 1989; Johnson & Onwuegbuzie, 2004). While many have been quick to highlight fundamental differences between qualitative and quantitative methods, Johnson and Onwuegbuzie (2004; 15) suggest that in fact both methods share the aspiration to establish "warranted assertions" about social life and human beings. Indeed, to employ the complementary strengths of qualitative and quantitative methods is likely to provide superior research results in terms of validity and depth compared to single-method studies (Johnson & Onwuegbuzie, 2004).

Greene et al. (1989) propose five different logics of mixed methods design each leveraging the complementary strengths of qualitative and quantitative methods:

- Methods triangulation design, where different methods are used independently and simultaneously in the study of the same phenomenon in order to offset the biases and limitations

of the methods. This will eventually lead to increased validity of the findings – given that the findings converge.

- Complementarity design, where results from one method are used to elaborate, enhance, illustrate, or clarify results from the other method. This will allow researchers to validate constructs and findings, as well as explore different facets of the same phenomenon.
- Development design, where results from one method is used to inform the other, typically in a sequential form. An example might be qualitative interviews used to inform the outline of a subsequent survey.
- Initiation design, where the aim is to find and explore paradoxes and contradictions in the findings. In such a typically iterative design, the use of the methods is designed to generate new interpretations, conclusions and research questions.
- Expansion design, where the two methods are used on different phenomena in order to extend the scope and range of the study. A typical example might be to use quantitative methods to explore the outcomes of a project, while the qualitative methods are used to study the implementation and process of the project (Greene, et al., 1989).

These mixed methods designs expand design variation and provide opportunities to leverage the strengths and weaknesses of qualitative and quantitative methods. Consequently mixed methods designs have the potential to increase the validity, depth, richness and creativity of entrepreneurship education research.

Case study research designs

The research strategy perhaps best equipped to incorporate mixed methods designs is the case study research (Eisenhardt, 1989; Yin, 2009). Indeed, many case study proponents encourage the use of

multiple methods. Case studies can be defined as “an empirical inquiry that investigates a contemporary phenomenon in depth and within its real life context especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009; 18). Case studies thus involve a commitment to depth as well as taking account of the localized, particular and contextual aspects of the phenomenon in question. As such case studies grow from a need to engage with the inherent complexity of social phenomena where researchers seek to retain “the holistic and meaningful characteristics of real life events” (Yin, 2009; 4). This does not mean, however, that case studies preclude quantitative measures of outputs and effects. On the contrary, the rationale of a case study may well be to supplement such measures with explorations and explanations of how the particular effect was realized.

By proposing case studies as a promising research strategy for entrepreneurship education research, our suggested framework points to the unexploited potential in making explicit the particular contextual and local aspects of the cases, the commitment to depth and richness, and the integration of exploratory and explanatory aspirations (Flyvbjerg, 2004).

Entrepreneurship education lends itself well to case studies as it consists of activities and entities that are easily identified despite their contextual embeddedness; entrepreneurship education activities are undertaken by students and teachers (and other stakeholders/participants), in courses and programmes. An outline of these activities and elements is included in table 6.

Insert Table 6

Case studies enable researchers to focus on particular activities or elements in their contextual embeddedness, and make it possible to explore the systematic processes. It also allows research on different levels of analysis.

Yin (2009) distinguishes between single and multiple case study designs, which again may include one (holistic design) or more embedded (embedded design) units of analysis. Choosing between a single or multiple case study design involves difficult tradeoffs between depth and detail on the one hand, and robustness and comparativeness of cases on the other. In some education research projects, single case designs are the only option if the courses or programmes studied are unique or if pragmatic limitations of e.g. time and resources restrict the researcher(s) to one case. Yet, in many instances the possibility of gaining additional insights and robustness through comparisons of multiple cases may outweigh the potential depth and detail reached in a single case.

Holistic and embedded designs refer to the relation between case and unit of analysis. A case may be identical with the unit of analysis (holistic design) or have multiple embedded units of analysis (embedded design) (Yin, 2009). Embedded designs may thus be the choice if a case has multiple logic subunits – e.g. courses in a programme, or students in a class. The choice between embedded and holistic designs is made in consideration of the purpose of the research and the research questions, and the characteristics of the case(s).

The different elements, activities and levels of entrepreneurship education laid out in figure 1 thus lend themselves to different types of case study designs. In table 6 an overview of designs for different levels is suggested.

As is indicated in table 6 consistent application of case study designs across levels, activities and elements hold potential for following change processes, comparing results across cases as well as aggregating findings from various levels.

The ability to follow change processes over time is a key strength of case study designs (Flyvbjerg, 2004; Stake, 1995). If we consider learning to be a change process (cf. Kolb, 1984), the ability to track changes over time on multiple levels is vital for advancing our understanding of the processes and outcomes of entrepreneurship education. A typical time span in entrepreneurship education research is the duration of a module. Effects on e.g. self-efficacy are typically measured at the end of the module. Yet, as pointed out by OECD (2009), the possibility of measuring "hard" outcomes such as actual business startup, is important, and requires longitudinal studies. This is well in accordance with a case study design (Yin, 2009).

Moreover, the ability to compare findings across cases on different levels is a key component for generating theories in the field of entrepreneurship education research. This can be done in a single study as well as across studies. The advantages of performing cross case comparisons within a single study is an essential precursor to empirically valid constructs and theoretical models (Eisenhardt, 1989, 1991). Similarly, case comparisons across studies is a hitherto overlooked source of robustness for findings in entrepreneurship education research (Pittaway & Cope, 2007). This, however, requires an extended commitment among researchers to clearly specify the contextual characteristics of the cases studied. While this goes for case studies in general, it is possible to explicate specific dimensions that should be included in case descriptions of entrepreneurship education activities. A preliminary outline of these is presented in table 7. Mapping these characteristics makes findings more transparent and useful for other researchers (Zahra, 2007). In particular, it allows future researchers to identify patterns of variation across types of cases. This helps towards an increased understanding of when and where certain types of entrepreneurship education activities do and do not work.

Insert table 7 here

Finally, a consistent application of case study designs allow for the aggregation of results across cases. Most obviously, this will be relevant for the output focused studies, employing a form of meta-analysis design (e.g. Brinckmann, Grichnik, & Kapsa, 2010). Such studies rely on the clear specification of measures and samples, but will also be helped by specifications of contextual factors.

In summary, the case study design allows for the integration of process and output studies. It increases the overall commitment to depth, richness, and robustness in research and findings. Furthermore, it allows for research on multiple levels, and it opens for the integration of findings across studies both horizontally (comparisons and analytical generalisations) and vertically (aggregation and statistical generalization). As such a strong case can be made for the increased use of case studies as a solid and useful research design for entrepreneurship education research.

Research teams

Two pairs of eyes are better than one. This truism is particularly relevant with relation to entrepreneurship education research. There is significant potential for the use of research teams, which consist of researchers (as educators) directly involved with the studied education activities (here: insiders), and researchers not involved in the activities studied (here: outsiders). In the literature review, the division between quantitative and qualitative studies often involved a division between studies that either embraced a detached and objectivized stance or an embedded stance.

The quantitative studies by virtue of their methodological design, detach the researcher from the context and experience of the educational activities. Therefore they maintain an analytical distance, as well as the possibility of quantification, aggregation of data, and statistical generalization. Often,

it is researchers, also acting in the role of teachers, who conduct the qualitative studies. They are strongly involved in the courses and programmes they study. This has obvious advantages in terms of sensitivity to context, but it also involves serious bias problems, as the researcher is completely "native" (e.g. Miles & Huberman, 1994). In an integrative methodological framework, the overlapping strengths of detached objectivity and the embedded subjective sensitivity is ideally maintained and balanced.

Combinations of outsiders and insiders can be made in a myriad of different ways. In the following, we draw a simplified sketch of the research process to outline possible roles and interactions of insiders and outsiders. We show how strengths and weaknesses of these complementary roles can be managed to improve research quality and we highlight potential pitfalls.

Insert table 8 here

An insider's perspective provides potential advantages throughout the study. In the early phase, insiders can balance and inspire questions that are sensitive and loyal to the specific purposes of the activities studied. The involvement of outsiders can insure that questions are of general research interest, and that the embedded position of the insiders do not dominate and suppress new perspectives hidden to the familiar eye.

In the data collection phase, insiders (in their role of teachers) may act as informants to be observed and interviewed. Yet, there is good reason to exercise caution in this phase. Insiders should not collect data from students and other stakeholders. If the interviewee depend on the interviewer for future grading, supervision (students), and collaboration (other stakeholders), their responses are

likely to represent what the interviewee believes the interviewer wants to hear; in other words an amplified social desirability bias. These tasks are therefore better left to outsiders.

During data analyses, the insider may enlighten coding and analysis due to their detailed knowledge of the researched activities and practices Such check-coding between outsiders and insiders increases reliability of the coding and enhances validity (Miles & Huberman, 1994). Still, it is crucial not to compromise the confidentiality of the interviewees or the observed and surveyed respondents. Caution and sensitivity must therefore be shown when deciding what data material insiders can or cannot analyse. Furthermore, it is important that native perspectives do not dominate and eventually restrain possible alternatives introduced by outsiders. Giving the outsiders a veto on coding and analysis judgments and decisions can for example ensure this.

Finally, when reporting the findings, the involvement of insiders may increase the chance of maintaining some of the contextual sensitivity and "drama" that can promote the impact and persuasiveness of the findings (Czarniawska, 2004; Flyvbjerg, 2004; Stake, 2000). Again, this needs to be balanced with the interest of maintaining a general research interest.

Multiple types of data

As the final element of our integrative methodological framework, we point to the potential in integrating multiple types of data in the study of entrepreneurship education activities. In the study of social phenomena in general, surveys and interviews are classical data sources. This is mirrored in our literature review of entrepreneurship education research. Yet, entrepreneurship education activities lend themselves well to alternative observation methods as they often involve the production of documents and artifacts that could be used as data. For the purpose of simplification, we divide quantitative and qualitative data types into two overall categories. Following OECD

(2009, p. 6), quantitative data can be characterized as “hard outcome evidence” (e.g. the number of individuals initiating a business start-up) and “soft outcome evidence” (e.g. changes in attitudes, intentions, self-efficacy, etc). While existing research have made abundant use of soft measures, there is clearly a need to engage in longitudinal studies that use hard measures (OECD, 2009; Pittaway & Cope, 2007).

Qualitative material can be divided into data generated by researchers and activity generated data. The former include interviews with students, teachers and other stakeholders. It also includes observation studies where researchers document actions and interactions through field notes. The latter include a range of other data types that are infrequently used in entrepreneurship education research as for example exam reports, evaluations, wiki’s, learning diaries, business plans or other documents and artifacts that are generated as part of the educational activities.

As is the case with the use of different methods, each data type has its advantages and disadvantages. While it would exceed the scope of this paper to solidly explore the strengths and weaknesses of each potential data type, it is possible to make general statements. Survey data is best suited for measuring correlations and variance (Van de Ven, 2007). They lend themselves to subsequent objective analysis using standard statistics packages, and allow for statistical generalization. Unfortunately, they are often insensitive to complexities and particularities arising from local characteristics. Researcher generated qualitative data have complementary strengths and weaknesses. As shown above, combining the two can be a useful and synergetic strategy. As for activity-generated data, there are obvious sources of bias. Exam reports, wiki’s, learning diaries and similar documents and artifacts, are likely to be highly biased as students often seek to produce content that mirrors what the teachers want (Frederiksen, 2013). Therefore, they cannot readily be treated as direct representations of the ideas, actions, and learning of students. Despite these

obvious problems, such data also has advantages. One could argue that they are the best description and depiction of what the students have learned, and possibly also how they have learned it. A good exam is designed exactly for the purpose of allowing the students to demonstrate what they have learnt from a course or programme. Similarly, these data sources can be easily accessed and already present themselves in formats that can be easily coded and analysed. Used in a balanced way and in combination with other types of data, it would be careless to ignore this source of rich insight into processes of entrepreneurial education, teaching and learning.

In order to leverage the rich sources of data relating to entrepreneurship education without compromising the methodological quality of the studies, it is imperative that multiple types of data are used whenever possible. In particular data triangulation must be used to the highest possible extent (Miles & Huberman, 1994) as convergence of findings across different types of data increases validity.

Conclusion

Currently, entrepreneurship education expands into new institutions and it prospers in terms of theoretical content and teaching methods. Therefore, it is necessary that the concomitant research follow suit by embracing this increased heterogeneity while strengthening its commitment to methodological quality. Otherwise, entrepreneurship education research risks losing both relevance and legitimacy. In this paper we have tried to address this issue. First, we reviewed existing research, looking for patterns in the applied methods, in order to identify methodological strengths and weaknesses. Second, based on the review, we formulated a methodological framework indicating ways in which the current weaknesses can be managed and strengths leveraged. We argue that the solution is integration. Consequently, our framework integrates qualitative and

quantitative methods in case studies. It integrates outsiders and insiders in research teams, and multiple types of data.

On the one hand, the resultant framework should be considered as a call for increased methodological care and effort in entrepreneurship education research. On the other hand it serves as a tool-kit to inspire researchers and future research projects. We do not purport this to be *the* recipe for doing entrepreneurship education research. Still, this methodological framework offers an opportunity to consider how research questions may be answered in reliable and valid ways and generalized (if appropriate). This increases the overall value of research both in terms of the validation of effects, the validations of best practices, as well as the understandings of the complex and fascinating dynamics of entrepreneurship education.

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Table 1: Overview of journals searched

Entrepreneurship	Education
Entrepreneurship & Regional Development	Academy of Management Learning and Education
Entrepreneurship Theory & Practice	Accounting Education
Family Business Review	Active Learning in Higher Education
International Journal of Entrepreneurial Behaviour & Research	Advances in Developing Human Resources
	British Educational Research Journal
International Journal of Entrepreneurship and Innovation	British Journal of Guidance and Counselling
	Education and Training
International Small Business Journal	Educational Management, Administration & Leadership
Journal of Business Venturing	
Journal of Enterprising Culture	European Journal of Training and Development
Journal of International Entrepreneurship	Higher Education Quarterly
Journal of Small Business and Enterprise Development	Industry and Higher Education
	Innovations in Education and Teaching International
Journal of Small Business Management	
Small Business Economics	International Journal of Training & Development
Social Enterprise Journal	Issues in Accounting Education
Strategic Entrepreneurship Journal	Journal of Accounting Education
The International Entrepreneurship and Management Journal	Journal of Education and Work
	Journal of Education Policy
The Journal of Entrepreneurship	Journal of Further and Higher Education
Venture Capital	Journal of Higher Education
World Review of Entrepreneurship, Management and Sustainable Development	Journal of Management Development
	Journal of Management Education
	Journal of Marketing Education
	Journal of Vocational Education and Training
	Journal of Workplace Learning
	Management Learning
	Quality Assurance in Education
	Studies in Higher Education
	Teaching in Higher Education
	The International Journal of Management Education

Table 2: Overview of search strings applied

Main search: Entrepreneurship	ti((entre* OR enter* OR "small business" OR SME)) OR ab((entre* OR enter* OR "small business" OR SME)) OR cc((entre* OR enter* OR "small business" OR SME))
Sub-search 1: Business education	ti((business NEAR/2 education) OR (business NEAR/2 school*) OR college* OR (higher NEAR/2 educat*) OR universit*) AND ab((business NEAR/2 education) OR (business NEAR/2 school*) OR college* OR (higher NEAR/2 educat*) OR universit*) AND cc((business NEAR/2 education) OR (business NEAR/2 school*) OR college* OR (higher NEAR/2 educat*) OR universit*)
Sub-search 2: Student	ti(student* OR graduate* OR undergraduate* OR postgraduate* OR MBA) OR ab(student* OR graduate* OR undergraduate* OR postgraduate* OR MBA) OR cc(student* OR graduate* OR undergraduate* OR postgraduate* OR MBA)
Subsearch 3: Learning and teaching	ti((Student NEAR/2 learn*) OR "continuing education" OR "vocational education" OR (student NEAR/2 competenc*) OR (Student NEAR/2 skill*) OR teach*) OR ab((Student NEAR/2 learn*) OR "continuing education" OR "vocational education" OR (student NEAR/2

	competenc*) OR (Student NEAR/2 skill*) OR teach*) OR cc((Student NEAR/2 learn*) OR "continuing education" OR "vocational education" OR (student NEAR/2 competenc*) OR (Student NEAR/2 skill*) OR teach*)

Table 3: Overview of codes (basic attribute codes not included)

Code	Options (examples)
Type of study	Survey, single case study, multiple case study, simulation, etc.
Type of method	Qualitative, quantitative
Primary data source	Survey, interviews, Focused discussion, Author's self-reflection, etc.
Secondary data source	Survey, interviews, Focused discussion, Author's self-reflection, etc.
Tertiary data source	Survey, interviews, Focused discussion, Author's self-reflection, etc.
Data analysis technique	Descriptive, inductive coding, grounded theory, ANOVA, correlation technique
Independent variable	Entrepreneurship program, Entrepreneurship courses, symbolic role models, etc.
Dependent variable	Employability in SME's, propensity to start a business, entrepreneurial self-efficacy, etc.
Level of analysis	Course level, institutional level, student and teacher level, program level, regional and national level.
Data triangulation	Binary, yes or no.
Methods section	Binary, included or not

Figure 1 – Year of publication

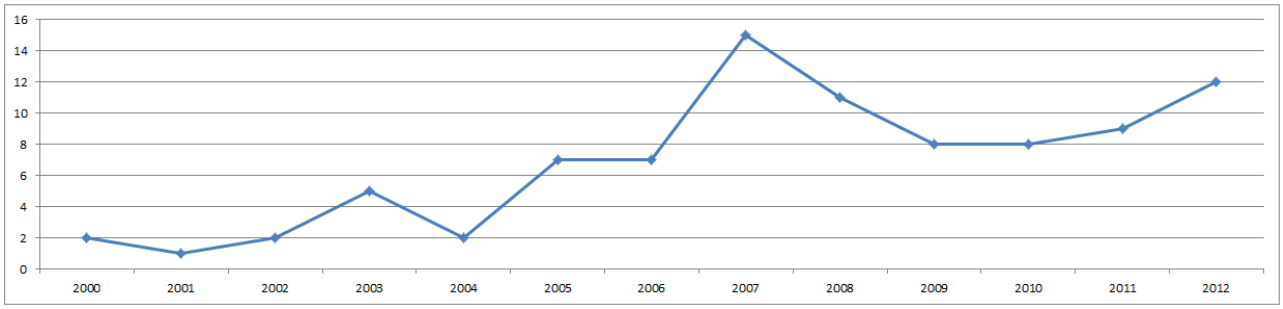

Figure 2 – Country of first author

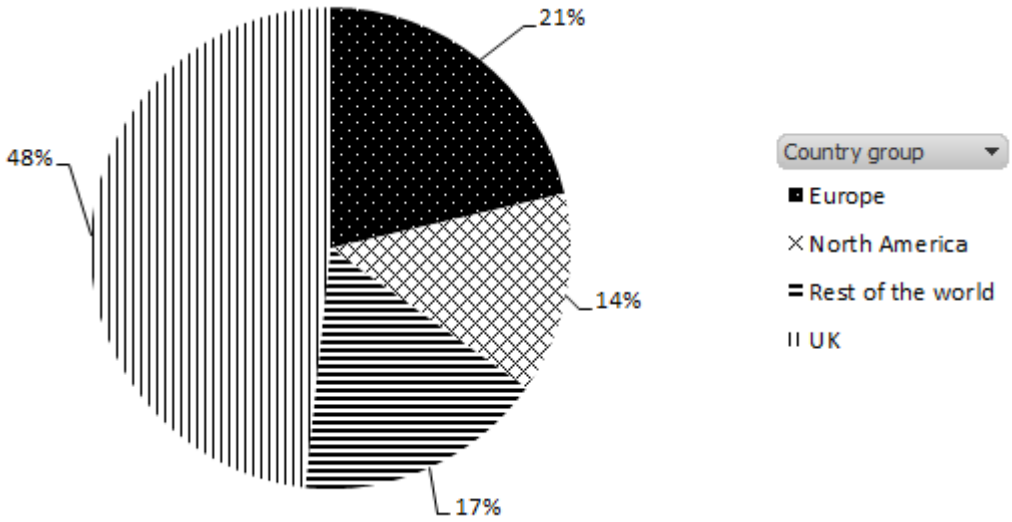

Figure 3 – Journal of publication

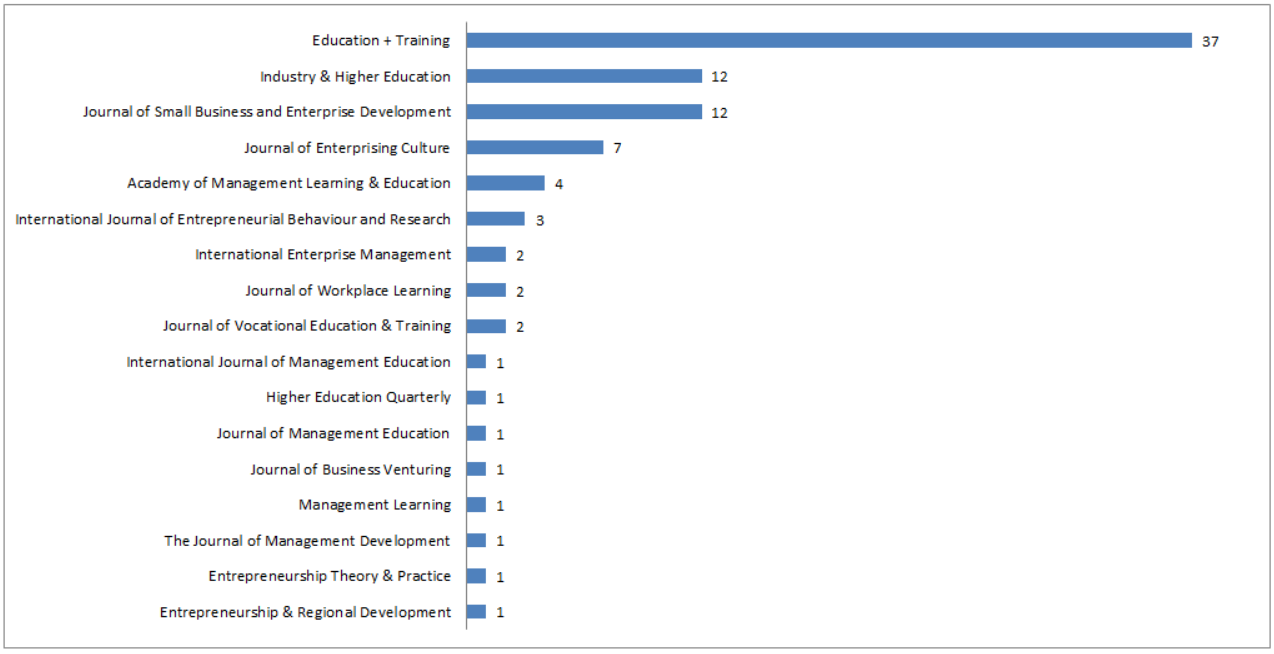

Figure 4 – Method

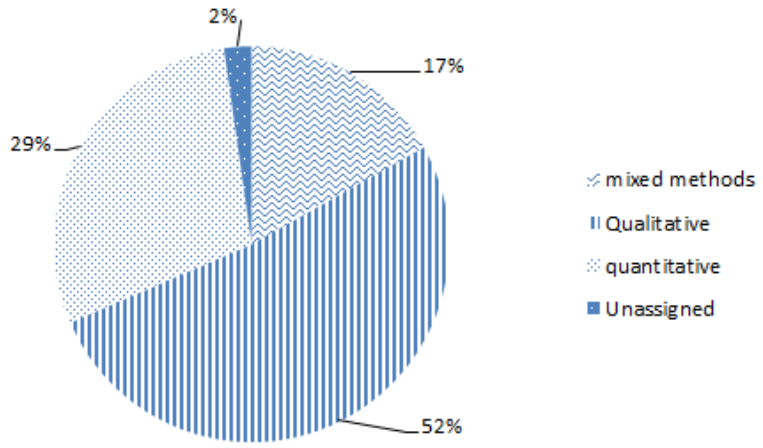

Figure 5: Data sources

Table 4: Data analysis techniques

Table 4: Data analysis technique	
Qualitative	**46**
Descriptive	16
Unassigned	14
inductive coding	12
Manual thematic approach	1
Cognitive mapping	1
Cluster analysis	1
Action research	1
Quantitative	**26**
Descriptive	8
Correlation analysis	3
Logistic regression	3
Correlation analysis and regression	3
inductive coding	1
ANOVA	1
Chi-square analysis	1
Multiple response technique	1
Partial Least Squares	1
structural equation modeling	1
Mixed methods	**15**
Descriptive	11
inductive coding	2
Correlation analysis	2
Unassigned	**2**
Descriptive	2

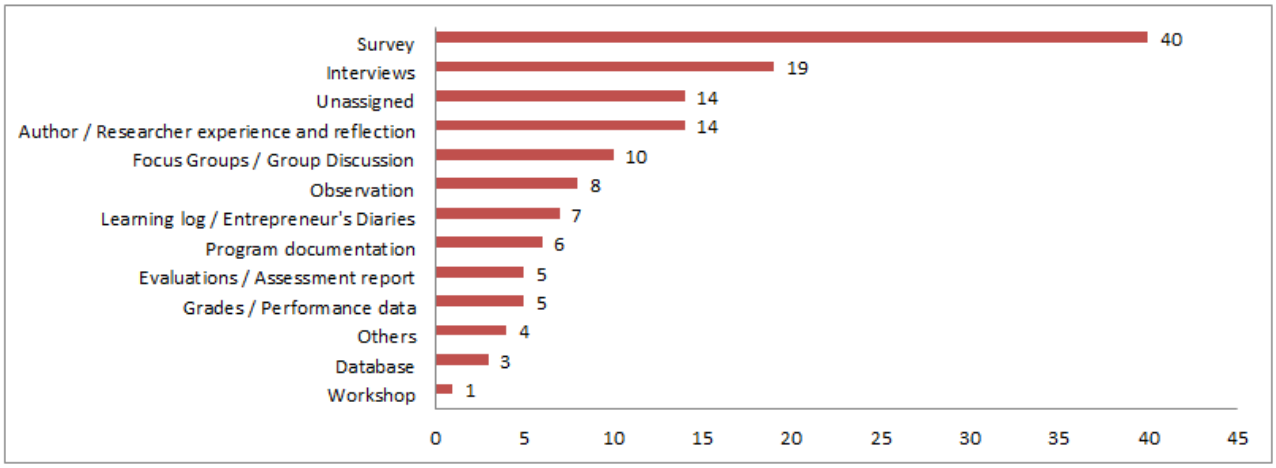

Table 5: Complementary strengths and weaknesses of quantitative and qualitative research (cf. Van de Ven, 2007)

Strengths	• Measuring variance and correlation • The possibility of statistical generalization • Objective methods of analysis • Theory testing	• Description and explanation of processes and change • Theory building (Eisenhardt, 1989) and analytical generalization (Yin, 2009) • Sensitivity to context • Ability to integrate multiple perspectives
Weaknesses	• Limited ability to capture processes and change. • Difficulty in establishing linear causality (Pentland, 1999) • Lacking sensitivity to context	• Inability to generalize to populations • Limited ability to test theory • (Overly) reliant on subjective judgments in analysis

Table 6: Levels of analysis and suggested research designs

Level	Suggested designs	Examples
Regional and national levels	Single/multiple embedded designs	Studies of the processes and effects of entrepreneurship education on regional and national levels. With e.g. cities/regions/universities/programs/groups as logical subunits of analysis
Institutional level	Single/multiple embedded designs	Studies of the processes and effects of entrepreneurship education e.g. at individual universities. With e.g. programs/faculties/courses as logical subunits of analysis
Program level	Single/multiple embedded and holistic designs	Studies of the processes and effects of entrepreneurship education programs. With e.g. individual courses or activities as possible subunits of analysis
Course level	Single/multiple holistic and embedded designs	Studies of the processes and effects of individual courses. With e.g. individual students/student groups/teachers as subunits of analysis
Student and teacher level	Single/multiple embedded designs	Studies of the learning and development processes and their outcomes on individual level. The individual as case.

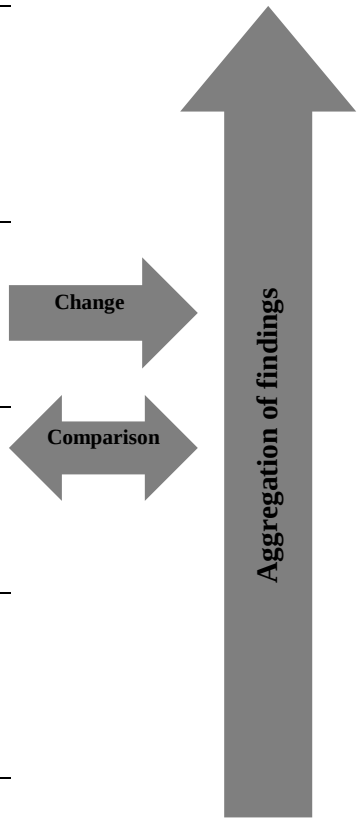

Table 7: Important dimensions of entrepreneurship education cases (the internal – external distinction established from a course/program level)

External dimensions:	National and regional context Institutional context
Internal dimensions (adapted from Löbler 2006):	Educational goals/learning objectives Educational content and didactics The role of the teachers The role of the learners/students Assessment form Pedagogy applied

Table 8: Roles in the research process

	Outsiders	Insiders	Key challenges
Formulation of research questions and purpose	Formulating questions relevant for research, i.e. of general interest	Inspiration for research questions. Ensuring coherence or compatibility between research questions and methods and the local objectives and meanings.	Balancing specific interests with general research interests and discussions
Data collection	Data collection	Source of data, e.g. as interviewees	To incorporate as much relevant information and insight from the insiders without compromising the ability of the outsiders to act independently in data collection.
Data analysis	Data analysis	Data analysis Enhancing validity of findings (cf. Kvale, 1995)	To make sure that the outsiders are not overruled by insiders. To insure confidentiality in relation to students, other teachers and stakeholders is not compromised.
Reporting	Writing and presenting	Writing and presenting	To maintain sensitivity to local and specific context while addressing issues of general research interest.