Entrepreneurship Education Revisited: The Case of Higher Education

by

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ENTREPRENEURSHIP EDUCATION REVISITED: THE CASE OF HIGHER EDUCATION¹

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ABSTRACT

This paper uses a theory-driven framework to analyze the educational underpinnings of the 112 journal articles on entrepreneurship education at the university level (EE) listed by the CELCEE database for the period 1984-2001. Results indicate that as far as education theories are concerned, the architecture underpinning research on EE is at best incomplete, with a primary focus on the economic and business content to be taught, the role of Business Schools in fostering entrepreneurship, and the design and evaluation of EE programs. By contrast, preoccupations about the use of communication and information technologies, cognitive processes, collaborative learning, personal growth, business ethics, or the development of critical thinking are all more or less absent from scholarly investigations of EE at the university level. As such, these results indicate that a number of relevant pedagogical dimensions are left under-addressed by current EE research. From a teaching perspective, we suggest that these issues point to a number of avenues that could allow the field to move beyond some of the current practices of entrepreneurship teaching. Furthermore, we argue that these avenues represent axes in which to advance scholarly research on entrepreneurship, notably through the integration of isolated entrepreneurship courses into research-grounded entrepreneurship programs.

¹ Please note that where appropriate, references to published works from the first or second authors were camouflaged in order to prevent identification in the blind review process.
ENTREPRENEURSHIP EDUCATION REVISITED: THE CASE OF HIGHER EDUCATION

In the wake of Vesper’s initial works (Vesper, 1974; 1975; 1976), a number of scholars have studied the pedagogy of entrepreneurship in higher education. By and large, four axes of research have retained the bulk of scholarly attention: 1) inventories of the nature and structure of entrepreneurship training programs (e.g. Gartner and Vesper, 1994; Hills, 1988; Menzies and Gasse, 1999; Plaschka and Welsch, 1990; Vesper and Gartner, 1999; Zeithaml and Rice, 1987); 2) exploration of the interactive dynamics between instructors and students (e.g. Fiet, 2000, Johannisson, 1991; Sexton and Bowman-Upton, 1987; Sexton et al., 1997; Young, 1997); 3) measures of the relative impact of different programs (e.g. Block and Stumpf, 1992; Garavan and O’Cinneide, 1994; Vesper and Gartner, 1997); and 4) investigations of the learning climate conducive to entrepreneurship and its teaching at the university level (e.g. Chrisman, 1997; Gibb, 1996; Laukkanen, 2000; Vesper, McMullan and Ray, 1989; Wyckham and Wedley, 1990).

However, a deeper analysis of this literature reveals a curious paradox. As Gorman, Hanlon and King (1997) observed, the majority of entrepreneurship education research is anchored by theoretical references drawn almost exclusively from the management sciences – as opposed to education theories. Yet, and as was pointed out by “one of the authors and colleagues” (e.g. list of relevant citations), one would think that education – i.e. the corpus of knowledge whose principal object is the study of teaching and learning dynamics – should be of primary importance when investigating entrepreneurship education.

Now, does this mean that research on entrepreneurship education is conducted without the proper theoretical foundations? Not necessarily. Evidence suggests that some of the educational preoccupations that entrepreneurship and management scholars have chosen to focus on reflect preoccupations that are central to the education literature. Furthermore, we would advance that there may be strong parallels between some of the theoretical perspectives mobilized by entrepreneurship and management scholars focusing on entrepreneurship education, and those perspectives that form the core of the education research. Nevertheless, the above observation by Gorman, Hanlon and King (1997) suggests that by and large, the educational underpinnings of research on entrepreneurship education remain largely tacit. As a result, a number of education-relevant issues, both theoretical and practical, may be occulted from entrepreneurship and management scholars, teachers and practitioners.

To address this problem, we propose to revisit scholarly work on entrepreneurship education with the specific intent of revealing its implicit educational underpinnings. More concretely, we ask the question: what are the main educational preoccupations anchoring the research on entrepreneurship education at the university level?

By offering an answer to this question, we show that as far as education theories are concerned, the architecture underpinning research on entrepreneurship education is at best incomplete, in the sense that a number of theoretically relevant issues remain under-addressed. After surveying four elements that may account for this state of affairs, we discuss the
implications that this incompleteness has for both the pedagogy and research on entrepreneurship.

THEORETICAL FRAMEWORK

The education literature is rich with many typologies whose aim is to provide a comprehensive picture of the main theories, models and approaches constitutive of the field. Following the classical models of Eisner and Vallance (1973), Joyce and Weil (1996), Lapp and colleagues (1975), and Vallance (1986) – among others, a series of classifications have been published and contributed to the development of an epistemology of the education sciences. But by and large, epistemological efforts of this sort have been anchored at either one of two levels.


At the second level (i.e. the macro-pedagogical), the focus is not on discrete learning and teaching phenomena, but rather on understanding the nature, structure and value of education as a whole. Among others, we can identify typologies focusing on the philosophical explanation (e.g. Burbules, 2000), the political explanation (e.g. Boyd and Plank, 1994), the human development explanation (e.g. Weinert, 1994), the sociological explanation (e.g. Saha, 1994), and the historical explanation (e.g. Sadovnik, Cookson and Semel, 2001).

Having made these distinctions, it is interesting to note that in general, these two epistemological schools coexist in parallel, but without much interaction. In other words, most epistemological typologies focus on one level, and pay little attention to the other.

Now, to investigate the educational underpinnings characterizing entrepreneurship education research, we propose to use the classification framework developed by Bertrand (1995). Three reasons have guided our choice for this particular typology. First, Bertrand’s framework is clearly an effort to integrate the two levels of epistemology, that is, the micro level focusing on teaching and learning phenomena per se, and the macro level centered on the nature, structure and value of education as a whole (c.f. Bertrand, 1995: 4). Second, this integration is achieved with the dual intent of comparing and situating various education theories, and of highlighting how they relate to some discrete empirical preoccupations (c.f. Bertrand, 1995: 1, paragraph 1; see also pp. 223-5). Third, and unlike its older predecessors, the framework explicitly acknowledges the more recent import of the cognitive and socio-cognitive schools, as well as the emergence of a focus on new technologies of information and communication (c.f. Bertrand, 1995: 2; paragraph 4).

Concretely, Bertrand’s (1995) classification highlights 7 educational paradigms that he anchors within four poles of research preoccupations (see Figure 1): 1) research preoccupations...
focusing on the content (with what he calls the “academic” theories); 2) research preoccupations focusing on the interface with society (with the “social” theories); 3) research preoccupations focusing on the individual (with the “humanistic” and “metaphysical” theories); and 4) research preoccupations focusing on the interactions between these three elements (with the “psycho-cognitive”, “socio-cognitive” and “technological” theories). While the first 3 poles focus on the nature, structure and value of education at the macro-pedagogical level, the fourth one highlights more micro-pedagogical dimensions associated with teaching and learning. The following paragraphs explain how we adapt Bertrand’s (1995) framework to analyze the educational underpinnings of entrepreneurship education research.

First, research works associated with a content preoccupation postulate that the value of education is directly linked to the content matter being taught. Accordingly, elements like the nature and structure of a discipline, the specific content matter to be taught, and processes like logical reasoning and critical thinking are of a primary importance to this pole of research. From a conceptual point of view, the “academic theories” associated with this perspective draw alternatively from classical literature, classical realism, philosophy, general education, general culture, liberal arts, humanities and critical thinking. Transposed in terms of entrepreneurship education, this focus on the content may take the form of research questions like:

- What content matter and disciplines should be taught?
- Should there be some formal training regarding logical reasoning and critical thinking?

Second, research works focusing on the interface with society posit that the value of education lies in its capacity to transform society. As such, cultural and social determinants are thought to bear important constraints on education. But symmetrically, education can be an important driver of change (or continuation). From a conceptual point of view, the “social theories” associated with this perspective reflect the views developed in classical and Marxist sociology, political science, critical theory, ecology, feminist theories and environment sciences. Transposed in terms of entrepreneurship education, this focus on the interface with society may take the form of research questions like:

- What are the roles and responsibilities that Business Schools may have in the development of society in general, and in the development of entrepreneurship in particular?
- Symmetrically, what are the roles and responsibilities that society in general, and entrepreneurs in particular, may have with respect to Business Schools?

Third, research works focusing on the individual are mainly characterized by interrogations about the ontological value that education may have for the person. From a theoretical standpoint, this perspective draws either from a metaphysical current (anchored in religions, Eastern philosophies, perennial philosophy), or from a more humanistic point of view (anchored humanistic psychology, hermeneutics, psycho-analysis). But in both cases, the emphasis is placed on the personal growth and ethical development of the individual. Based on this commonality and for sake of simplicity, we integrate the two humanistic and metaphysical currents identified by Bertrand (1995) under a single axis of research preoccupations.
Transposed in terms of entrepreneurship education, this focus on the individual may take the form of research questions like:

- *How can the needs and expectations of entrepreneurship students be met?*
- *How can entrepreneurship students be supported and accompanied in their personal development?*

Fourth, research works focusing on the interactions between the above elements place less emphasis on the overall nature, structure and value of education (denoting a macro-pedagogical perspective), and focus more on teaching and learning dynamics per se (at the micro-pedagogical level). In practice, this kind of research is delineated in three different molds.

A first mold highlights the *psycho-cognitive* processes that mediate individual learning. More specific examples of this preoccupation include learning processes and mechanisms, the role of prior knowledge, cognitive conflicts, motivation factors, personality traits, cognitive / learning profiles and abilities, counterfactual thinking, self-regulatory processes, metacognition, etc. From a conceptual point of view, this perspective draws principally from Piagetian psychology, cognitive psychology, constructivist epistemology and developmental psychology. Transposed in terms of entrepreneurship education, this focus on psycho-cognitive dynamics may take the form of research questions like:

- *What are the main parameters and mechanisms underpinning entrepreneurship students’ cognitive processes?*
- *What is the impact of prior knowledge, experience, motivation, and/or cognitive abilities on entrepreneurship learning?*

A second mold emphasizes the *socio-cognitive* counterpart to these learning processes anchored at the individual level. Specific examples of this type of preoccupation include the influence of cultural variables and processes, the role of social environments and culture, the role of social interactions, collaborative or group learning, group cognition, etc. Conceptually, this perspective is anchored in the disciplines of sociology, anthropology and social psychology. Transposed in terms of entrepreneurship education, this focus on socio-cognitive dimensions may take the form of research questions like:

- *What is the impact of students’ collaboration on their respective learning?*
- *How can “realistic” and “authentic” learning situations be developed and implemented?*

Finally, a third mold focuses on the technology of education in general, and of the teaching act in particular. In the present context, “technology” must be taken in its widest sense. As Bertrand himself notes, “(this focus on technology) covers procedures such as we find in systems approaches and in instructional design. It also covers instructional material for communication and processing information” (Bertrand, 1995: 6). In other words, attention is here focused on the “mechanics” and “systems” of education, from the construction of programs to the use of various teaching aids. From a conceptual point of view, the perspective draws alternatively from cybernetics, systemics, communication theory, behaviorism, cognitive...
psychology and artificial intelligence. Transposed in terms of entrepreneurship education, this focus on the technological dimensions of education may take the form of research questions like:

- How can entrepreneurship programs and courses be constructed, implemented, and evaluated?
- How can multimedia environments conducive to entrepreneurship learning be designed, implemented, and evaluated?

Taken together, the above 12 questions define the theoretical framework that we use to classify entrepreneurship education research (see Appendix 1 for a synthesis of the model). In this sense, the present article is not a literature review, but rather an epistemological analysis of the educational theories underpinning the body of research on entrepreneurship education. Our starting premise is that as a whole, entrepreneurship education research should reflect all the theoretically relevant perspectives that form the core of the education discipline.

SAMPLE AND METHOD

Empirically, this paper analyzes 112 articles listed by the Center for Entrepreneurial Leadership Clearinghouse on Entrepreneurship Education (CELCEE) database for the period 1984-2001. CELCEE is the Entrepreneurship Education adjunct of the U.S. Educational Resources and Information Clearinghouse (ERIC) system. A non-profit organization funded entirely by the Ewing Marion Kauffman Foundation, CELCEE acquires information related to entrepreneurship education from diverse sources, including journal articles, websites, syllabi, conferences, pamphlets, curriculum guides, government publications, videos, books, computer software, and more. The CELCEE staff takes these acquired resources and writes brief summaries of them – what they call “abstracts”. These “abstracts” are then indexed and organized within a comprehensive online database “for all the world to use free of charge” (Please consult http://www.celcee.edu for additional information).

There are many reasons why we opted to use the CELCEE database in our search for entrepreneurship education articles. The main problem we had to face was the identification of a sample frame that would be legitimate, relevant, externally valid, and comprehensive. Up until very recently, there were no central forums from which we could have traced the essence of entrepreneurship education research. The recent launch of “The International Journal of Entrepreneurship Education” and “The Academy of Management Learning and Education” will likely form the basis for such forums. Nonetheless, it remains that historically, the corpus of entrepreneurship education research has been scattered in a number of different publications.

To work around this problem, we could have used the ABI Inform database and search engine to identify relevant entrepreneurship education articles. Other scholars have done just that to discuss the emergence of the field of entrepreneurship in management journals (e.g. Busenitz et al., 2003), or to survey the evolution of entrepreneurship research methods (e.g. Chandler and Lyons, 2001). In practice, we could have searched for articles where the two terms “entrepreneurship” and “education” jointly appeared in the articles’ titles, abstracts, keywords, or descriptors. The problem with such method is that the co-occurrence of both terms establishes a
criterion that becomes so narrow that a lot of relevant articles would be missed. Likewise, there is no guarantee that the articles identified by the search engine would be all that relevant to entrepreneurship education – owing in part to the very mechanics of the search engines. As many scholars could attest, any search for entrepreneurship pieces generate articles whose relevance to the field could at times be questionable. Additionally, and perhaps most importantly, a subjective decision might still have to be made as to which journals should – and should not – be included to form a representative sample frame. Again, this problem would be further accentuated by the relative scattering of entrepreneurship education articles in a wide array of journals.

In light of these problems, the CELCEE database arguably offers a number of advantages. First, it constitutes a pool where a large number of sources are scanned for relevant material on entrepreneurship education. Second, the decision of what constitutes a relevant entrepreneurship education piece is not made by us, but by a number of external experts who specialize in identifying the kind of material that is deemed relevant for scholars and practitioners in the field of entrepreneurship education. Third, the database is organized in such a way as to allow for the search and identification of material tailored to the needs of the interested party, something that allows for the use of broad or precise criteria. Finally, the constitution of CELCEE as the entrepreneurship adjunct of the ERIC system contributes to establish the institutional legitimacy of the database, as it draws from a close association with the U.S. National Library of Education and the U.S. Office of Educational Research and Improvement, the governing bodies of the ERIC system. Accordingly, the CELCEE database arguably constitutes a legitimate, relevant, comprehensive, and externally valid sample frame from which to identify material that is directly relevant for entrepreneurship education.

From the raw data available on the CELCEE database, we first inventoried all the papers that were jointly identified under the two rubrics “journal article” and “4-year colleges and graduate schools”: 112 articles were identified in total. The use of the “4-year colleges and graduate schools” criterion was to ensure that we identified articles focusing on issues peculiar to higher education, and not to the high-school or 2-year vocational college levels.

In a second step, we tabulated the distribution of all 112 articles along the 6 axes of educational preoccupations defining our theoretical framework. We also investigated whether such distribution had evolved in time by breaking down our classification along three 6-year periods: 1984-1989; 1990-1995; and 1996-2001. To generate the classification, the two of us independently coded each abstract a number of times (5+), and that until we reached a satisfying level of internal consistency. We then compared our respective lists and obtained an inter-rater reliability of 0.929. After discussing the discrepancies, we agreed upon a final classification.

In a third and last step, we investigated the substantive dimensions underlying each research preoccupation by analyzing the conceptual links between the most frequently cited abstracts’ descriptors. The identification of the most cited descriptors was compiled by copying all relevant descriptors into an Excel spreadsheet (Microsoft Office 2000). By sorting all the descriptors alphabetically, we were able to generate their respective frequency, and select the most cited ones. From this list of most cited descriptors, the first author constructed conceptual maps that are meant to reveal the particular form that each of the above preoccupations takes in
entrepreneurship education research. Such exercise was achieved through the use of version 2.9.1 of the Institute for Human and Machine Cognition (IHMC) software, a program developed by the University of West Florida (http://www.coginst.uwf.edu).

Methodologically, the analytical process described above is anchored on the work of Novak (1998) regarding the organization and the representation of knowledge. This analytical exercise is akin to what Anne Huff labels as cognitive maps that “assess the association and importance of concepts (within a particular domain)” (Huff, 1990: 15). In practice, the method rests first on the identification of a list of relevant concepts – which Novak defines as “a perceived regularity in events or objects, or records of events or objects, designated by a label” (1998: 22). According to this methodology, the task of the analyst is to “link” concepts by inserting verbs, adjectives or conjunctions in an effort to develop meaningful propositions – what Novak defines as “two or more words combined to form a statement about an event, object, or idea” (1998: 38). These propositions then become the fundamental units of analysis revealing the conceptual structure underlying an idea, or in our case, a particular research preoccupation.

It is important to note that the associations proposed with our analysis are not free: the descriptors are first ordered by descending order of occurrence frequency, and “links” can only be established between “neighboring” descriptors. Because of that, the final results take the form of inverted tree structures. Starting at the top with the single most cited keyword in a group of articles, we then proceed downward to see how this word can be linked to the second, third, or fourth most-frequently cited descriptors, and so on. Verbs, adjectives or other prepositions are inserted as vertical and horizontal “bridges” to link neighboring descriptors, and to highlight substantive associations. Eventually, distinct networks of roots and branches emerge from the exercise. It is those roots and branches that ultimately reveal the conceptual structure that characterizes subgroups of articles focusing on a particular educational preoccupation.

RESULTS

Characteristics of the Sample

Table 1 lists the most frequent sources of entrepreneurship education articles in the inventoried sample. In part owning to their centrality in entrepreneurship research – at least in the U.S., “Entrepreneurship: Theory and Practice” and the “Journal of Business Venturing” appear to be the principal sources of entrepreneurship education articles in our sample (with 12 and 10 articles respectively). Other entrepreneurship research-oriented publications are also represented, e.g. “Entrepreneurship and Regional Development” (5 articles) and “Journal of Small Business Management” (4 articles). The presence of the “Harvard Business Review” (with 7 articles) also suggests that some management journals have been important vectors for the diffusion of entrepreneurship education articles.

One also notes the presence of more specialized publications. As its name suggests, “Simulation and Gaming” (6 articles) focuses on the integration of new media technologies and teaching. On their part, “New Directions for Community Colleges” (5 articles) and “Journal of Higher Education” (2 articles) are more oriented towards educational questions, and especially
from an administrative and policy point of view. Interestingly, the sample also comprises non-
English sources, such as “Voprosi Ekonomiki” (“Questions of Economics”, from Russia – with 5
articles) and Obzhestvo i Ekonomika (“Economics and Society”, from Ukraine – with 2 articles).
Manifestly, the relatively low concentration of articles in specific journals echoes the observation
made above about the scattering of entrepreneurship education articles in a wide array of
publications, including some that fall outside of the business, economic and management
disciplines (e.g. Simulation and Gaming, Journal of Higher Education, etc.).

Along this line, Table 2 highlights the geographic origin of the articles. The table
illustrates that the sample is primarily composed of articles published in American journals (with
84 articles, representing 75% of the total). While the UK is a distant second (with 9 articles, or
8%), the presence of non-English sources is here reflected by Ukraine and Russia taking the third
and fourth places (with 8 and 6 articles respectively). The Netherlands, Canada and Switzerland
close the ranks (with 3, 1 and 1 articles respectively).

Distribution of Articles along different Education Preoccupations

Analyzing the 112 abstracts in light of the theoretical framework defined above generates
the portrait presented in Table 3. As can be seen, published research focusing on
entrepreneurship education is primarily anchored by preoccupations with the content to be taught
(with 62.5% of the sampled articles). Preoccupations with the interface with society, and with
the “technologies” of education also receive some attention (with 21.4% and 10.7% of the
articles respectively). By contrast, works focusing on psycho-cognitive dynamics, socio-
cognitive dimensions, as well as on the personal growth and ethical development of the
individual all count for a very small portion of the inventoried research.

Comparing the three 6-year periods, we observe that the distribution of articles within
each axis of preoccupation remains fairly constant, with the notable exception of a surge of
content-focused articles in the second period (1990-1995). A closer inspection of the period’s 51
content-focused articles revealed four distinct elements suggesting possible causes for this surge.
First, we note the presence of 13 of the 14 non-English articles from Ukraine and Russia. Second,
we observe that compared to other journals and to the periods before and after, “Entrepreneurship
Theory and Practice” accounts for a relatively high number of articles (9 of
the 12 articles from this journal). Interestingly, we note that groups of these ETP articles come
from single issues (for instance, 3 from the Winter 1990 issue, 2 from the Fall 1991 issue, and 3
from the two-volume special issue on the Field of Entrepreneurship (Winter 1991 and Spring
substantive dimension, a comparison of the articles identified in the periods before and after
points to a surge in the number of case studies illustrating the achievements of individual
entrepreneurs or successful start-ups (with 6 for the 1990-1995 period, compared to 0 and 2 for
the periods before and after). Fourth, the same comparison also reveals a surge in conceptual
articles reviewing the place of entrepreneurship in economic theory (with 8 articles for the 1990-
1995 period, compared to 1 and 0 for the periods before and after). Finally, it is interesting to
note an increase in the number of studies published in the US but commenting, reporting on or
analyzing non-US data. However, this increase remains relatively constant across all three
periods, ruling out this observation as a potential explanation for the surge in content-focused articles. We address some of the issues raised by these observations in the discussion.

Conceptual Maps

Given that 94.6% of all inventoried articles are classified under the content, society, and technology preoccupations, we concentrate our substantive analysis only on those three groups of articles. Figures 2, 3, and 4 highlight the conceptual links between the most frequently cited descriptors within the relevant abstracts, and that for each of these three categories. Again, the roots and branches on the maps represent the conceptual dimensions that characterize entrepreneurship education research focusing on each of these three educational preoccupations.

The map on Figure 2 focuses on the descriptors delineating a content preoccupation, i.e. those emphasizing the disciplines and content matter to be taught. Analyzing the links between the most frequently cited descriptors reveals three substantive vectors that have been emphasized in entrepreneurship education research (see Figure 2, from left to right). First, entrepreneurship is identified as an activity that is embedded in economics. Further delineations suggest that this anchoring is based on an understanding of economic education and history. This anchoring of entrepreneurship content is also associated with the development of economic theories, models and research. Second, and over and above this economic focus, the content of entrepreneurship education is also anchored within the larger context of the business and administration sciences. Interestingly, entrepreneurship education is more specifically associated with small business contexts, and is tied to very specific problems (e.g. legal, capital) and concerns (e.g. success). Links are further made with regards to the roles played by entrepreneurs in terms of economic development, and particularly with respect to innovation and technology. Finally, entrepreneurship is also seen as being embedded within a legal and public policy context: while implications are made in terms of how governments can support entrepreneurship (and particularly in developing nations), entrepreneurship is seen as being an integral part of the capitalist system of free enterprise, which values self-employment, the private sector, investments and ownership. In sum, the conceptual structure emerging from entrepreneurship education research focusing on the content to be taught highlights the anchoring of entrepreneurship in terms of economics, business and administration disciplines, as well as within the legal and public policy contexts of small businesses and economic development. As such, these elements would appear to form the “classical” core of entrepreneurship education. Having said that, we note that entrepreneurship education research does not seem to address the issues of logical and critical thinking, issues that were part of the theoretical delineation of a preoccupation for the content to be taught.

The map on Figure 3 focuses on the descriptors highlighting a preoccupation with the societal role of education. Four substantive vectors are manifest within this sub-sample of abstracts’ descriptors (see Figure 3, from the top right, then left to right). First, entrepreneurship is portrayed as taking place within the context of higher education (e.g. colleges, universities, community colleges, research universities). The second vector suggests the developmental role that entrepreneurship education might play within society, whether in terms of economic development, in terms of fostering competition, or in terms of influencing public policies and financial support. The third vector highlights a more immediate dimension of entrepreneurship
in institutions of higher education, that which valorizes the commercialization of universities’ R&D efforts, products and research, the questions of innovation and technology transfers, and the role played by Faculty entrepreneurs. Interestingly, a parallel link hints at how this valorization of business activities in institutions of higher education is seen as providing additional sources of income and revenue. Finally, the last vector evokes the social and vocational missions of institutions of higher education, as illustrated by the themes of business education, vocational training and school-business relationships. In sum, entrepreneurship education research focusing on the interface with society appears characterized by the emphasis it places on the role that entrepreneurship may have in terms of economic development for the larger community, as well as for institutions of higher education.

Lastly, the map on Figure 4 focuses on the descriptors highlighting a preoccupation with the “mechanics”, “systems”, and “technologies” of education. We recall that technology is taken here in its widest sense, and includes considerations about the development, implementation and evaluation of education programs. Overall, the map on Figure 4 reveals a relatively simple network of themes and preoccupations. Essentially, the conceptual map demonstrates the anchoring of entrepreneurship education in a business curriculum emphasizing a basic education in business and management theories, and in the practice of administration (with perhaps a special insistence on the skills relevant in small business contexts). The network also suggests a concern for program evaluations. Having said that, the use of new media and information technologies does not appear as a major preoccupation in entrepreneurship education research. Indeed, this observation remains valid for all three periods under consideration.

DISCUSSION

In revisiting scholarly work on entrepreneurship education, we attempted to answer the question: what are the main education preoccupations anchoring the research on entrepreneurship education at the university level?

On the one hand, we note that most of the entrepreneurship education research proceeds from preoccupations with the content to be taught, with the interface with society, and with the “technologies” of education. By and large, articles proceeding from a content preoccupation refer primarily to the anchoring of entrepreneurship within the disciplines of economics and business administration (management), with an emphasis on the policy and legal contexts relevant to small businesses and economic development. On their part, articles proceeding from a social preoccupation have been mostly focused on the respective roles of Business Schools within society, with an additional emphasis on the implications that Faculty-driven entrepreneurship might have for institutions of higher education. Finally, articles proceeding from a “technological” focus have been mostly concerned with the questions of curriculum design and evaluation.

On the other hand, we observe that over and above the occasional article, there has been little research focusing on entrepreneurship students’ cognitive processes, or on the impact of their prior knowledge (i.e. the psycho-cognitive perspective). Likewise, studies highlighting the impact of interactions between students or the role that collaborative learning may play have also
been few, just as have been studies focusing on real-life learning situations (i.e. the socio-cognitive perspective). We also observe that research on entrepreneurship education at the university level has more or less evacuated the questions relative to students’ personal growth and ethical development (i.e. preoccupation with the individual).

Furthermore, we note that within the group of articles focusing on the content preoccupation, there has been little questioning relative to the teaching and learning of logical reasoning and critical thinking, whether in the general sense or with respect to the specific context of entrepreneurship. Likewise, we observe that within the articles preoccupied with the “technologies” of entrepreneurship education, research on the use and import of new information and communication technologies does not seem to have generated much interest, even when we consider the evolution of such interest within the last 18 years.

In the end, the above results suggest that as far as education theories and preoccupations are concerned, the architecture underpinning research on entrepreneurship education seems at best incomplete. But what could account for this?

Four Possible Reasons for this State of Affairs

We propose four arguments to account for the theoretical incompleteness of entrepreneurship education research: the first refers to the nature of the field of entrepreneurship; the second elaborates on scholars’ pedagogical knowledge and expertise; the third highlights the roles that institutions of higher learning play with respect to research on education in general; and the fourth draws from the lack of a legitimate forum for the publishing of research on entrepreneurship education.

The first argument has to do with the evolution of the field of entrepreneurship. For some time now, many have argued that the field is still in a development stage (c.f. Aldrich, 1992; 2000; Aldrich and Baker, 1997; Busenitz et al., 2003; Chandler and Lyons, 2001; Low and MacMillan, 1988; Venkataraman, 1997; Wortman, 1986; 1987). Accordingly, most scholars in the field remain preoccupied with questions of theoretical development (e.g. Busenitz et al., 2003; Bygrave, 1993; Shane and Venkataraman, 2000) and institutional legitimacy (e.g. Busenitz et al., 2003; Finkle and Deeds, 2001; Meyer, 2001), giving little thought to the questions of knowledge transfer and education. As entrepreneurship and management scholars focus on what should be taught, then little knowledge is developed about how this content should be taught, or about how entrepreneurship students and practitioners effectively get to master this content. In turn, scholarly research on entrepreneurship education remains characterized by a noted emphasis on macro-pedagogical issues (e.g. a focus on what should be taught and on the social impact of entrepreneurship education), with little consideration of teaching and learning dynamics per se. In practice, the end result is that more often than not, at the university level, little is done outside the beaten path of “Business Plans, Guess Speakers and Case Studies”, the three classical ingredients of a typical entrepreneurship course (Gartner and Vesper, 1994).

A second argument has to do with the pedagogical expertise of university professors in general, and of entrepreneurship and management Faculty in particular. We propose that because most scholars have had little pedagogical training (if at all), the questions of knowledge
transfer and education are likely to remain peripheral for them. Likewise, we offer the argument that as a number of entrepreneurship and management scholars are not even teaching entrepreneurship-specific courses – leaving the teaching of entrepreneurship classes to non-tenured track adjunct instructors (Finkle and Deeds, 2001; Katz, 1999), the interest for pedagogical innovation and research in entrepreneurship education can only fall outside the preoccupations of those very scholars building the field of entrepreneurship.

The third argument has more to do with the system of rewards in place at most research universities, and the roles that institutions of higher learning play in fostering education research. By tradition, the modus operandi of most universities is anchored on an expertise of disciplinary research (Boyer, 1990). Accordingly, one might advance that research at the interface of education and entrepreneurship is not likely to generate as much professional rewards as an equally rigorous research centering on a single area of inquiry associated with the scholar’s core discipline. Considering the potentially minimal rewards, as well as the costs for developing the necessary expertise in education, we argue that entrepreneurship and management scholars are likely to have little motivation to conduct research at the interface between education and entrepreneurship.

The last argument has to do with the lack of a legitimate forum for the publishing of entrepreneurship education research. When we observe other administration disciplines such as marketing, accounting, and management proper (to name but those few), we note that at a certain point in time, scholars in these disciplines have felt it necessary to establish a forum specifically dedicated to the diffusion of theoretical and empirical research regarding the pedagogy of their disciplines. Hence, we have seen the birth of publications such as the Journal of Marketing Education, Issues in Accounting Education, the Journal of Management Education, and the Journal of Teaching in International Business. Similarly, established social science disciplines have long had such forums, as is exemplified by publications like Teaching Sociology, Teaching Psychology or Journal of Economic Education. Whereas they still feed the theoretical, methodological and empirical development of their anchoring disciplines, these publications also permit the construction of a legitimate pedagogical expertise. But up until recently, this kind of forum has been missing in entrepreneurship – with the double consequence that work focusing on entrepreneurship education has been scattered among a number of publications, and that the legitimacy of such area of inquiry has been somewhat lessen.

While their respective importance may vary, we maintain that the four dynamics illustrated above contribute to the state of incompleteness that, at least from an education theory standpoint, seems to characterize research on entrepreneurship education at the university level. Having said that, we remain optimistic regarding the effect that such dynamics may have in the future. First, we contend that the field’s development and its increased legitimacy might eventually encourage entrepreneurship and management scholars to include the question of knowledge transfer within their preoccupations. Second, we trust that the continuing emergence of Faculty Development Programs and other specialized initiatives – like the “Lifelong Learning for Entrepreneurship Education Professionals”\(^2\) and the “Price Babson College Fellows

\(^2\) [http://www.lleep.net/](http://www.lleep.net/)
Programs” – might eventually facilitate the development, diffusion and appropriation of theoretical knowledge regarding the processes of teaching and learning in higher education (see for instance Fry et al., 1999; Gaff and Simpson, 1994; and McKeachie and Hofer, 2001). Third, we think that Boyer’s (1990) plea regarding the multiple delineations of scholarship in institutions of higher learning might encourage a reconsideration of the rewards system in place at many universities. Already, Frost and Fukami (1997), Lazerson, Wagener and Shumanis (2000), Taylor Huber (2001) and Yorke (2000) advance that the scholarship of teaching is taking more and more importance within Faculty’s careers, offering a counterweight to the traditional paradigm anchored on a research expertise within a single discipline. Despite the traditional dichotomy between research and teaching, we second these authors in noting that this shift towards the scholarship of teaching is not to be devoid of research, but might instead encourage it. For instance, the work of Cunzolo et al. (1996) on Canadian Faculty shows that averaging across departments, more than half of the scholars who had distinguished themselves in their teaching were also actively conducting research at the interface between education and their ancillary discipline. In this light, the inclusion of the scholarship of teaching along with the scholarships of discovery, research and application (Boyer, 1990) should encourage scholars to conduct research at the interface between education and entrepreneurship. Furthermore, and as this kind of research remains first and foremost an act of scholarship, it should be judged by the same standards of theoretical and methodological rigor that characterize all form of higher learning – a central argument in the works from the Carnegie Association for the Scholarship of Teaching and Learning (CASTL) and on the «Classroom Assessment and Research» (c.f. Angelo, 1998). Finally, we hope that the recent creation of “The International Journal of Entrepreneurship Education” and “The Academy of Management Learning and Education” will contribute to the field’s development by providing legitimate forums in which to engage in a continuing scholarly conversation on entrepreneurship education.

Limitations

Naturally, the above research is not exempt from certain limitations. We have already noted the difficulty of selecting a relevant sample frame from which to inventory published research on entrepreneurship education (see the “sample and method” section above). Nevertheless, it is not impossible that by using a different sample frame, we could have generated a somewhat different picture. But then again, we argue that until publications like “The International Journal of Entrepreneurship Education” and “The Academy of Management Learning and Education” emerge as central forums for the publication of entrepreneurship education research, the CELCEEE database offers a legitimate, comprehensive and externally valid sample frame from which to inventory material that is directly relevant for entrepreneurship education.

Having said that, our investigation might have highlighted certain problems inherent to computerized sample frames like the CELCEEE database. For instance, the surge of content-focused articles during the 1990-1995 period raised a certain number of questions regarding the
constitution of the database, notably with respect to the relative coverage of both English and non-English sources outside American journals. Likewise, one could question the choices made by the CELCEE experts regarding the relevance of certain articles to the entrepreneurship education domain, even if we maintain that using the CELCEE database ensured an external validity that would have been difficult to obtain otherwise. Nevertheless, the observation that most of the entrepreneurship education research is focused primarily on what to teach, on the role of entrepreneurship within society and the academic community, and with the evaluation of different program seems to retain a strong face-validity. It is our hope that along with the future development of an expertise in entrepreneurship education, both the research literature and databases like CELCEE will gain in their level of specificity.

On a different note, it remains that just like research on organizational cognition and strategic thought (e.g. Huff, 1982; 1990; Porac et al., 1989; Porac and Thomas, 1990; Porac et al., 1995; Walsh, 1995), the classification and conceptual analyses presented above rest on expert judgment. In strategy research, the experts in question are generally top-level managers who can rely on years of experience spent working in a particular industry, or at the helm of a particular firm. In the present case, the classification of articles and the construction of the conceptual maps rest in part on our own expertise in both the education and entrepreneurship literatures, on our respective years of teaching entrepreneurship in different institutions of higher learning, and on our knowledge of different entrepreneurship programs and courses. As such, expert judgment is not exempt from potential biases. Having said that, we took care to maximize the reliability and validity of our measures, and submit that by and large, other experts in the field working from the same sample frame would have obtained results comparable to ours.

Finally, we recognize that other methods could have been used to generate our conceptual maps. For instance, an approach like co-occurrence networks or some other structured qualitative technique could have provided more robust ways of generating the maps (see relevant citations from one of the authors and colleagues). However, it is worth pointing out that given the relatively broad characteristics that we were aiming to reveal, the additional costs of using these methods might have overwhelmed the precision that would have been gained. Accordingly, we argue that few meaningful differences would have been obtained from using more sophisticated techniques.

Hence, we maintain that epistemological analyses of a corpus like the one on entrepreneurship education demand that we go beyond the more traditional approach of literature review. By anchoring our study on a proven theoretical framework, we hope to have cast additional light on research at the interface between education and entrepreneurship.

Implications

In the end however, we remain with the observation that at least from an education theory perspective, research on entrepreneurship education at the university level appears at best incomplete. Now, is this a problem? We think so, and at least in the two dimensions of teaching and research. But we also contend that this incompleteness provides rich opportunities for future developments.
For teaching practitioners, the results first suggest that relevant pedagogical dimensions are left under-addressed by the current research on entrepreneurship education. As we noted above, most of this research has been preoccupied with the content to be taught. We are not claiming that this shouldn’t be important: quite the contrary. Likewise, we are not saying that concerns about the role of entrepreneurship within institutions of higher learning or concerns about the relative merits of different programs do not have their place in scholarly research. However, we propose that the theoretical incompleteness characterizing entrepreneurship education research causes entrepreneurship and management educators to be deprived of knowledge that could be of relevance to their practice. At the same time, these under-addressed issues point to direction in which teachers and entrepreneurship scholars could focus their efforts if they are to move the field beyond its traditional emphasis on Business Plans, Case Studies and Guest Speakers (Gartner and Vesper, 1994). For instance, a number of interesting pedagogical innovations could be anchored on the under-addressed dimensions of individual cognitions, socio-cognitive dynamics between students and with other stakeholders (e.g. instructor, family, investors, clients, etc…), on the development of logical and critical thinking, on the question of personal and business ethics, or on the use of new information and communication technologies.

From a research standpoint, we argue that these under-addressed issues in entrepreneurship education reflect questions that have also been under-addressed within the field of entrepreneurship research itself. Now, we maintain that this is not because these questions are theoretically irrelevant. However, we do note that at least some of these questions might pose particular methodological, empirical, and practical problems for research scholars. But here again, we argue that if the field of entrepreneurship as a whole is to further its theoretical development – and its institutional legitimacy, it might be worth questioning how we can face these methodological, empirical and practical challenges. In this vein, we propose that the under-addressed dimensions of cognitive and socio-cognitive processes, real-life learning, logical reasoning, critical thinking, personal and ethical growths, and the use of information and communication technologies might all constitute theoretically-relevant areas of investigations in which to further our scholarly understanding of the entrepreneurship phenomenon.

From a methodological and empirical standpoint, we would further argue that scholarly investigations of entrepreneurship education could prove a fertile ground to test a number of those propositions. Practically, we think that this calls for the integration of isolated entrepreneurship courses into research-grounded entrepreneurship programs. Already, this kind of integration seems to be emerging in certain institutions, notably at the University of Louisville, Kentucky (c.f. Fiet, 1996; Fiet, Norton and Clouse, 2002; Nixon, Fiet and Gupta, 2002), and at the University of Victoria, British Columbia (c.f. Mitchell, 1996; Mitchell and Chesteen, 1995) – to name but those two. Obviously, programs like this demand that we question the traditional approaches to the teaching of entrepreneurship: this would include the heavy reliance on Business Plan Competitions, Guest Speakers, and Case Studies (Gartner and Vesper, 1994), or even the place of entrepreneurship within Business Schools, or outside of them (e.g. Meyer, 2001; Vesper, McMullan and Ray, 1989). Likewise, these approaches suppose significant institutional commitments, as well as strong theoretical reflections about the nature and structure of each part of the program. However, we maintain that this kind of effort could provide for a better understanding of this elusive but fascinating domain of human action that
entrepreneurship represents. In all events, the future of research at the interface of entrepreneurship and education is promised to interesting developments.

REFERENCES


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### TABLE 1:

**Most Frequent Sources of Entrepreneurship Education Articles, 1984-2001**

<table>
<thead>
<tr>
<th>Journal</th>
<th>count</th>
<th>Journal</th>
<th>count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship Theory and Practice</td>
<td>12</td>
<td>Daedalus (Journal of the American Academy of Arts and Sciences)</td>
<td>4</td>
</tr>
<tr>
<td>Journal of Business Venturing</td>
<td>10</td>
<td>Journal of Small Business Management</td>
<td>4</td>
</tr>
<tr>
<td>Harvard Business Review</td>
<td>7</td>
<td>Business History Review</td>
<td>3</td>
</tr>
<tr>
<td>Simulation and Gaming</td>
<td>6</td>
<td>Obzhestvo i Ekonomika (Economics and Society - Ukraine)</td>
<td>2</td>
</tr>
<tr>
<td>New Directions for Community Colleges</td>
<td>5</td>
<td>History of Political Economy</td>
<td>2</td>
</tr>
<tr>
<td>Voprosi Ekonomiki (Questions of Economics - Russia)</td>
<td>5</td>
<td>Journal of Applied Business Research</td>
<td>2</td>
</tr>
<tr>
<td>Entrepreneurship and Regional Development</td>
<td>5</td>
<td>Journal of Higher Education</td>
<td>2</td>
</tr>
<tr>
<td>Geographic origin</td>
<td>count</td>
<td>%</td>
<td>Geographic origin</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>----</td>
<td>-------------------</td>
</tr>
<tr>
<td>United States</td>
<td>84</td>
<td>75.0</td>
<td>The Netherlands</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>9</td>
<td>8.0</td>
<td>Canada</td>
</tr>
<tr>
<td>Ukraine</td>
<td>8</td>
<td>7.1</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Russia</td>
<td>6</td>
<td>5.4</td>
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TABLE 3:
Distribution of Articles by Research Preoccupations, 1984-2001

<table>
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<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td></td>
<td>count</td>
<td>count</td>
<td>count</td>
<td>count</td>
<td>freq. (%)</td>
</tr>
<tr>
<td>Content</td>
<td>8</td>
<td>51</td>
<td>11</td>
<td>70</td>
<td>62.5</td>
</tr>
<tr>
<td>Society</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>Interactions: technology</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>10.7</td>
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<tr>
<td>psycho-cognition</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>socio-cognition</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.9</td>
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<tr>
<td>Individual</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>3.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20</td>
<td>68</td>
<td>24</td>
<td>112</td>
<td>100.0</td>
</tr>
</tbody>
</table>
FIGURE 1

Four Poles of Education Preoccupations and Underlying Theories

Focus on the content
(academic theories)

Focus on the individual
(humanistic and
metaphysical theories)

Focus on the interactions:
- psycho-cognitive theories
- socio-cognitive theories
- theories regarding the “technology” of education

Focus on the interface with society
(social theories)

b

Taken from Bertrand’s Figure 1.2 (1995: 4): “Contemporary Theories of Education According to the Four Components”
FIGURE 2

Conceptual Map of the Descriptors Denoting a Focus on the Content to be taught
FIGURE 3

Conceptual Map of the Descriptors Denoting a Focus on the Interface with Society
FIGURE 4

Conceptual Map of the Descriptors Denoting a Focus on the Technologies of Education
## APPENDIX 1

**Analytical Framework: a Focus on Educational Research Preoccupations**

<table>
<thead>
<tr>
<th>Focus on the nature, structure and value of education as a whole</th>
<th>Research preoccupations</th>
<th>Education theories</th>
<th>Structural elements</th>
<th>Theoretical anchors</th>
<th>Preoccupations in terms of entrepreneurship education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Academic theories</td>
<td>Content, subject matter, disciplines, logic, reasoning, intellect, Western culture, traditions, Greco-Roman humanism, classical works, essentialism, liberal arts, critical spirit, basics, general education, critical thinking</td>
<td>Classical literature, classical realism, philosophy, general education, culture, liberal arts, humanities, critical thinking</td>
<td>➣ What content matter and disciplines should be taught?&lt;br&gt; ➣ Should there be some formal training regarding logical reasoning and critical thinking?</td>
<td></td>
</tr>
<tr>
<td>Society</td>
<td>Social theories</td>
<td>Social classes, social determinisms of human nature, environmental and social problems, power, liberation, social changes, empowering education, liberatory education, critical teaching, multicultural democracy, progressive education</td>
<td>Sociology, Marxism, political science, critical theory, ecology, feminist studies, environmental sciences</td>
<td>➣ What are the roles and responsibilities that Business Schools may have in the development of society in general, and in the development of entrepreneurship in particular?&lt;br&gt; ➣ Symmetrically, what are the roles and responsibilities that society in general, and entrepreneurs in particular, may have with respect to Business schools?</td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>Metaphysical theories</td>
<td>Spiritual values inscribed in the individual, metaphysics, intuition, perennial philosophy</td>
<td>Religions, metaphysics, Eastern philosophies, mysticism, perennial philosophy, cosmic consciousness</td>
<td>➣ How can the needs and expectations of entrepreneurship students be met?&lt;br&gt; ➣ How can entrepreneurship students be supported and accompanied in their personal development?</td>
<td></td>
</tr>
<tr>
<td>Humanistic theories</td>
<td></td>
<td>Growth of the individual, unconscious, affectivity, desires, impulses, interests, the ego</td>
<td>Humanistic psychology, personalism, hermeneutics, psychoanalysis, open education, romantic humanism, naturalism, non-deterministic free school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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<table>
<thead>
<tr>
<th>Focus on teaching and learning phenomena per se (micro-pedagogical regard)</th>
<th>Interactions</th>
<th>Psychocognitive theories</th>
<th>Learning process, prior knowledge, spontaneous representations, cognitive conflicts, pedagogical profiles, prescientific culture</th>
<th>Piagetian psychology, cognitive psychology, constructivist epistemology, developmental psychology, cognitive development</th>
<th>What are the main parameters and mechanisms underpinning entrepreneurship students’ cognitive processes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Socio-cognitive theories</td>
<td>Culture, social environment, milieu, social determinants of knowledge, social interactions, cooperative learning, cooperative teaching</td>
<td>Sociology, anthropology, social-psychology</td>
<td>What is the impact of prior knowledge, experience, motivation and/or cognitive abilities on entrepreneurship learning?</td>
<td></td>
</tr>
<tr>
<td>Theories on the “technology” of education</td>
<td>Interaction</td>
<td>Information, communication technologies, computer science, computer-assisted instruction, artificial intelligence, instructional design, media, hypercourseware, intelligent learning environment, systemic approach to teaching, construction of knowledge, minimal training, competency training</td>
<td>Cybernetics, systemics, communication theory, behaviorism, cognitive psychology, systems theory, artificial intelligence</td>
<td>How can entrepreneurship programs and courses be constructed, implemented, and evaluated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>How can multimedia environments conducive to entrepreneurship learning be designed, implemented, and evaluated?</td>
<td></td>
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</tbody>
</table>