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SMG WP 14/2011

November, 2011

SMG Working Paper No. 14/2011
November, 2011
ISBN: 978-87-91815-76-8

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EVALUATING CONTENT DIMENSIONS IN ENTREPRENEURSHIP EDUCATION

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30 November, 2011

Prepared for Alain Fayolle, Paula Kyro, Francisco Liñán, ed. *ESU 2011 Conference: Entrepreneurship Research in Europe Series*. Edward Elgar Publishing, 2012.

JEL Code: A2, I21, I25, L26

Keywords: Entrepreneurship education, entrepreneurial self-efficacy, impact evaluation, curricular design, quasi-experimental design

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Abstract

Interest in entrepreneurship education is growing over the world, especially in innovation based economies, such as Denmark (GEM, 2010). However, we know rather little about the outcomes of entrepreneurship education, in particular with respect to which type of course content produces the best results (i.e. most high performing entrepreneurs) and how this affects different types of students. There is a great variety of different views in the field of research concerning the content and structure of entrepreneurship courses, but no comprehensive study has yet been done in which these competing views are clearly articulated as rivals and tested against each other. There is also a lack of programme evaluations that use control groups and have a longitudinal design (Gorman, Hanlon & King, 1997; Karlsson & Moberg, 2011; Matlay, 2008). Those that have this setup often experience methodological problems due to their conceptual framework (Krueger, 2009), or they have a view of entrepreneurship that does not take into account the advancements within research that have been made during the last decade (Sarasvathy, 2008). Thus, we clearly need to dig deeper into this field in order to create methods and models that allow us to evaluate the outcomes of different types of entrepreneurship courses.

In the beginning of 2011, the Danish Foundation for Entrepreneurship – Young Enterprise initiated a research project with the aim to further our understanding of the type of impact entrepreneurship education and different educational designs have on different types of students. Two longitudinal surveys, one with a focus on elementary- and secondary-level education and one with focus on tertiary-level education, will be performed and databases with students from all levels of the Danish educational system will be created. The surveys will use entrepreneurial self-efficacy (Mauer, Neergaard & Kirketerp, 2009) as a performance indicator, but in order to generate robust results the development of new measurement tools is needed. In this paper the initial phases of this project and the research design of these two surveys will be presented. The development of a new ESE scale and the results from the pilot surveys will also be presented.

Introduction and disposition of the text

Ever since education for entrepreneurship started during the 1940s, it has been questioned if it can be taught or not (Henry, Hill & Leitch, 2005). Nevertheless, policy makers all around the world have come to recognise it as an important tool for societies to adapt to the "new economy" (GEM, 2010). In Denmark, a major project was launched in 2010 in which a great number of entrepreneurship organisations were consolidated into one major organisation. This organisation, *The Danish Foundation for Entrepreneurship – Young Enterprise*, has the mission to support entrepreneurship education at all levels of the educational system. The organisation was also given the assignment to assess which impact entrepreneurship education has. This project will be described in this paper.

The article will begin with a short presentation of this organisation. Then, in order to identify the problem a discussion about the theoretical background of the field of entrepreneurship education and different types of outcome measurements will follow. This will be followed by a presentation of our work with the development of a new entrepreneurial self-efficacy scale. We will then describe the methodology of two longitudinal surveys. The article will end with a description of how we will develop new codification tools for educational programmes, and how these have the potential to further our understanding of which type of content in entrepreneurship education that fits different types of students.

The case of Denmark

In 2010, the Danish government brought together several organisations in order to create a new organisation, *The Danish Foundation for Entrepreneurship – Young Enterprise*, which should have the responsibility of developing entrepreneurship education holistically trough-out the whole educational system in Denmark – from ABC to PhD. The organisation shall function as a coordinating actor and connect education within the field so that the progression runs like a red thread through all levels. To accomplish this the organisation performs activities that both focus on the demand-side, such as information and inspiration campaigns, and on the supply-side, such as the development of new courses and further education for educators. It functions primarily as a fund for innovative initiatives, both curricular and extra-curricular, that are initiated by local actors within the educational system.

One important assignment for this organisation is to assess educational outcomes. Each year the organisation makes a survey of how the number of courses in entrepreneurship and

the students taking these courses has developed. A specific coding-scheme that identifies the focus of the course are used (see Moberg, Vintergaard and Vestergaard, 2008). However, this design reveals little regarding which types of impact these initiatives have. In order to assess the outcomes of entrepreneurship education the organisation has put together a research group whose work will be presented in this paper, but before we can find the cure to a problem we first need to identify the problem. This will be done in the following parts of the text.

Theoretical background

Although the interest in entrepreneurship education has grown explosively in the recent years, the field still lags behind advances made within entrepreneurship research (Honig, 2004; Rasmussen & Sørheim, 2006). Much curricular design is based on atheoretical asumptions, and entrepreneurship viewed as an activity is often divided into two fields, the *science of entrepreneurship* and the *art of entrepreneurship* (Henry et al., 2005). The science part, which is often being viewed as more or less being the same as business management skills, is percieved as being teachable, whereas the art part is being mystified as something that individuals learn by practice, experience and reflection (Timmons & Stevenson, 1985).

As the field can be said to have its roots within American business schools and the field of strategic managment (Katz, 2003, 2008), planning, management and business skills have traditionally been the main focus for educational programmes. This traditional perspective has been challenged primarily by British researchers who argue that the focus should not be on how to perform a business start-up but on how to act and live as an entrepreneur (e.g. Gibb, 2002; Gibb & Hannon 2006). This research tradition argues that entrepreneurship cannot be viewed as a discipline, that thus should be targeting a small and specific group (Gibb, 2002). Entrepreneurship education should instead focus on providing students with enterprising skills, which are useful to all students (Gibb, 2002). An assessment of the impact of learning in the field should be broad and include all positive outcomes, such as increased motivation and intresest in learning, resulting in better educational results and higher work satisfaction later on.

Another perspective that lately has influenced actors within the field is Sarasvathy's concept of effectuation. By studying how expert entrepreneurs reasoned about how to make decisions under true uncertainty (Knight, 1921), she found that they used a different logic that was based on effectuation rather than causation. The expert entrepreneurs tended to ignore

predictive methods which focus on future goals such as market research, competitive analysis and calculation of future gains, and instead relied on means-based, non-predictive control methods such as partnerships, affordable loss and leverage of contingencies. Instead of relying on the traditional notion that "to the extent that we can predict the future, we can control it", which is typical of management methods (e.g. Kotler, 1991), the effectual logic postulates that "to the extent that we can control the future, we do not need to predict it" (Sarasvathy, 2001). In this sense, the "art" part of entrepreneurship is demystified and understood as something that can be investigated and codified and, thus, taught. These new perspectives have rapidly gained ground within the field and many educators have moved away from a strict focus on start-up activities and altered their learning goals to a more skills-based approach of their educational programmes. Little is known, though, about which effects and outcomes this has (Baron, 2009).

Another debate within the field revolves around the level of focus that should be given to either theory or practice (Fiet, 2001a; 2001b). Knowledge lacks, about how learning methods should be combined in a progressive manner through-out the whole educational system or in an extensive entrepreneurship programme. Many researchers within the field acknowledge that entrepreneurship educators need to apply a different type of didactics (Gorman et al., 1997; Hannon, 2006). Entrepreneurship in this perspective is viewed as a practical activity that requires doing, and educational programmes in the subjects should thus be based on action-based didactics with a *functioning* focus such as those advocated by the educational researchers Biggs and Tang (2007), with classical *declarative* learning as solely a complement (Johannisson, 1991; Politis, 2005). Still, much curricular design within the field relies first and foremost on classic declarative teaching methods, often being the result of institutional pressure from study boards (Honig, 2004).

This short review of the theoretical background of the field clearly shows that both the disciplinary content and didactical methods are heavily debated and no clear consensus can be found regarding which approach to entrepreneurship education should be applied to what type of students. There is a lack of studies that dig deeper into this problem. The studies that have been performed mainly focus on whether entrepreneurship education has a positive impact or not, and do not problematize the lack of consensus. In the next part of the text, different ways that researchers within the field have used to measure the outcomes of entrepreneurship education will be discussed.

Different measurements

To understand what type of content that works best we need to be able to assess the outcomes of entrepreneurship education (Gartner & Vesper, 1994; Gorman et al., 1997). A common way to measure the outcome of entrepreneurship education is to assess the impact it has on students' behaviours, intentions and skills (Krueger & Brazeal, 1994; Kolvereid & Isaksen, 2006). Behaviour is hard to assess because there is often a significant time-lag between graduation and start-up activity (Bird, 1988; Lent, Brown & Hackett, 1994). Most surveys therefore focus on either nascent behaviour (e.g. Reynolds et al., 2004), intentions (e.g. Krueger & Brazeal, 1994) or skills (e.g. Chen, Greene & Crick 1998). Especially entrepreneurial intentions have gained a growing interest in the last decade and many rigorous studies have been performed in which social psychological theories have been applied, foremost Ajzen's (1991) *Theory of Planned Behaviour* (e.g. Tkachev and Kolvereid, 1999; Peterman and Kennedy, 2003; Fayolle, Gailly & Lassas-Clerc, 2006; Souitaris, Zerbinati & Al-Laham, 2007; Graevenitz, Harhoff & Weber, 2010). From the viewpoint of a policy maker, the measurement of entrepreneurial intentions and entrepreneurial behaviour is of special interest (European Commission, 2008). However, it is hard to argue from a normative point of view that the learning goals of a university course should concern these outcomes (Karlsson & Moberg, 2011). An enhancement of entrepreneurial skills should, though, fit learning goals well, because the enhancement of knowledge and skills is education's raison d'être (Biggs & Tang, 2007), and thus, a model that allows us to measure this should be preferred.

The Self-Efficacy model, developed by Bandura (1977; 1997), has been widely used within many fields to assess the impact of different programmes, and it has been applied extensively by researchers within the field of entrepreneurship education (Mauer et al., 2009). It is a model that allows us to measure "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances to the extent that their level of motivation, affective states and actions are based more on what they believe than on what is objectively true" (Bandura, 1986, p. 391). It thus fits the field of entrepreneurship education well; because it to some extent has been established that individuals' *perception of their abilities* have a greater impact on their behaviour than *actual abilities* do (Krueger & Dickson, 1994). To get precise measurements, we need to develop context specific scales (Bandura 1977; 1997). Researchers within the field of entrepreneurship

education have mainly used scales developed by Chen et al. (1998) and De Noble, Jung & Ehrlich (1999) (Mauer et al. 2009). Cox, Mueller & Moss (2002) and Mueller & Goic (2003) have taken the development a step further and anchored their entrepreneurial self-efficacy scale to Stevenson, Roberts & Grousbeck's (1985) entrepreneurial stage model. This model was later refined by McGee et al. (2009). At Cambridge, UK, researchers at the faculty of education have for many years used entrepreneurial self-efficacy scales developed by EHGI project[1] (Cooper & Lucas, 2006a; 2006b; Mclellan, Barakat & Winfield, 2010). The scales mentioned above are fairly biased towards a traditional view of entrepreneurial activity, though, and little of the latest advancements within the field have been included, with perhaps Mclellan et al. (2010) as an exception. As a model, it thus remains empirically underdeveloped (Kolvereid & Isaksen, 2006), and little is known about which ESE construct that relates to entrepreneurial intentions, behaviour and performance (Kickul, et al., 2009).

All of the six ESE scales mentioned above use a phrasing that is very biased towards entrepreneurship and business startup, which makes them unsuitable to use with non-entrepreneurship oriented control groups. Consequently, they need to be refined in order to generate reliable data to a quasi-experimental comparative change survey (Mohr, 1995). The challenge for a researcher who wishes to assess the impact of educational programmes will therefore be to develop non-biased but still context specific measurement variables. In the next part of the text we will present how we developed and tested a neutral entrepreneurial self-efficacy scale, based on the scales presented above.

A neutral entrepreneurial self-efficacy scale

There are, as mentioned above, two dominating scales within the field of entrepreneurial self-efficacy. These are the Chen et al. (1998) scale (here forth the Chen-scale) and the De Noble et al. (1999) scale (here forth the DeNoble-scale) (Mauer et al, 2009). These two scales have been widely applied with good results (e.g. in Hmieleski & Baron, 2008 and Hmieleski and Corbett, 2008). They are, though, fairly different in their focus. The most recent published addition to research about entrepreneurial self-efficacy is a scale by McGee et al. (2009) (here forth the McGee-scale). This scale has although not, to our knowledge, been

[1] The Education for High Growth Industries Enterprise Project. See http://www.cmi.cam.ac.uk/ for further details.

applied in any other survey, except by Karlsson & Moberg (2011). All of these scales use a very entrepreneurship biased language, with questions such as: *How much confidence do you have in your ability to establish position in product markets* (Chen et al., 1998); *I can develop contingency plans to backfill key technical staff* (De Noble et al., 1999); *How much confidence do you have in your ability to determine a competitive price for a new product or service* (McGee et al., 2009). This bias leads to validity issues to research design which includes non-entrepreneurship students as a control group. This would indicate that the existing scale experience common method bias issues regarding technical jargon and colloquialism (discussed e.g. by Spector, 1992) or the use of unfamiliar and infrequently used words (discussed e.g. by Peterson, 2000).

The McGee-scale does, though, have some advantage over the other two scales in connection with our survey design. Out of the three scales it has the least amount of questions with strong technical jargon; it is set up as a stage model; it is the latest addition to the field, and they use structural equation modeling techniques. We thus started out with testing the applicability of the McGee-scale on a sample of entrepreneurship students and a control group composed by marketing students (presented in Karlsson & Moberg, 2011). We were mostly interested in testing the construct validity of the scale, which are presented in table 1. Even though our sample size was fairly small, the results were clear. The Cronbach alpha values were consistently low for all groups, but they were unacceptably low for the students in the control group.

Insert table 1 here

The results were discussed with the educators of the potential entrepreneurship programmes for our future large-scale survey. They were concerned over the phrasing of the questions and thought that the items were very biased towards business students and the total lack of how to manage uncertainty, an ability that many agree is central to the entrepreneur (e.g. Cantillion 1755/1931; Say, 1803; Knight 1921, Mises, 1949; Sarasvathy, 2001, Foss & Klein, 2011, to name a few). The McGee-scale also experiences important validity issues in the original test in which three of the constructs experience a co-variance over 92%, which indicates a lack of discriminatory validity. This, in combination with the poor results in our test, and the views of the educators, made us decide that the McGee-scale was not adequate as

a measurement tool for our research design. It was instead decided that a new ESE scale, that builds on the three scales described above, but with a more neutral wording, should be developed.

A structured comparison of these three dominating ESE scales was performed. We used the constructs of the McGee-scale as the base units for comparison. Two constructs: *ambiguity* and *marketing*, were added in addition to the five in the McGee-scale and we added *management* to the *planning* construct and *creativity* to the *search* construct. We thus used seven constructs to compare the three scales as presented in table 2 below.

Insert table 2 here

It is clear that all of the three scales have a strong focus on search/creativity and planning/management. They do, though, all go separate ways after this. What clearly separates the McGee-scale is the lack of ambiguity. In the Chen-scale there is a strong focus on marketing, but in contrast to the other two there is no focus on marshalling and only weak focus (one item) on human resource management. The DeNoble-scale has a strong focus on marshalling and investor-relationship, but is the lacking items measuring financial knowledge.

Based on this comparison, a new scale should include six constructs: *search/creativity*, *planning/management*, *marshalling*, *ambiguity*, *human resource management* and *financial knowledge*. Given the feedback of the educators, we decided to drop the human resource management construct and construct our scale with the six other constructs, based on 29 items. The phrasing of these items was revised in order to address the common method bias issues of technical jargon. In table 4 the items are presented, as well as from which of the three scales they are derived. Eight items were picked from the McGee-scale, six from the Chen-scale, five from the DeNoble-Scale and four that were found both in the Chen-scale and in the DeNoble-scale. Four new items were added.

Pilot test

In order to test the validity of the scale we proceeded to construct a questionnaire for a pilot test. We included a 19 item entrepreneurial nascency construct developed by Reynolds, but first published (known to us) by Alsos & Kolvereid (1998). We wanted to test if there were significant differences between students that have experienced entrepreneurship education and "ordinary" business students. We chose three different programmes to test this: bachelor level accountant students, master level management students and master level entrepreneurship students. The questionnaires were distributed in hard copies during the spring of 2011. We retrieved 60 responses from the accountant students, 78 from the management students, and 24 from the entrepreneurship students.

We tested the construct validity by performing a Cronbach Alpha test. The results are presented in table 3 below. The scores were sufficient for the entrepreneurship students, but two of the constructs (planning/marshalling and Ambiguity) scored on a value lower than 0.60 for the control group. This indicates that we will have to adjust some of the items.

To test if there were significant difference between the groups we performed two sided t-test, for each of our five ESE constructs.

Insert table 3 here

As table 3 clearly shows, the entrepreneurship students had considerably higher values in all constructs than the other student groups. A significant difference, on a 1% level, between the entrepreneurship students and the two other groups, were observed on all constructs except financial knowledge and planning/management. Given the characteristics of the sample, this does not come as a surprise as it should be expected that both accountant students and management students have high levels of self-efficacy in this. The management students also had higher levels in all constructs, except for financial knowledge, than the accountant students. These differences were not statistically significant, however, except for financial knowledge which was significantly lower.

In order to strengthen the validity of our scale we divided our sample into two groups. All students who had responded positively to the question "Are you trying to start a business for

real as opposed to just evaluating an idea out of interest or as part of an academic exercise?", and had checked two or more of the 19 entrepreneurial nascency items, were coded as nascent entrepreneurs. We named this group "Nascent Entrepreneurs" which included 35 students, and used two sided t-tests to test if their ESE values were significantly higher than the other group, which included 127 students. The results are presented in table 4.

Insert table 4 here

The group Nascent Entrepreneurs had significantly higher values in 23 out of the 29 items. In the management construct, three out of five items failed to show a statistical significance, and in the financial knowledge construct, one out of four failed the test. This could be expected given that the sample. It is somewhat more puzzling that two out of seven marshalling items failed to show a statistical difference.

All in all, the pilot studies demonstrated promising results for the validity of our new scale, even though the alpha values indicates that some items have to be revised . The sample size is too small to generate trustworthy results, though, but the indication is that the scale is worth testing in a large scale survey. It should be noticed that our model is likely to experience the same problems as the McGee-scale regarding discriminatory validity, because we have been careful in deriving our items from existing scales. In the next section we will describe how our large scale surveys have been designed.

Two longitudinal surveys

There are quite a lot of challenges posed to an evaluation of entrepreneurship programmes. The time-lag issue is one, the role of education another. In this final part of our article we will describe how we have chosen to handle these problems, and why we have chosen this particular research design.

Two longitudinal surveys will be performed. One that focuses on elementary and secondary level and one that focuses on tertiary level. At tertiary level, the educational programmes are structured in a way that makes them suitable for a classical impact analysis, such as advocated by for example Campbell and Stanley (1966) and Mohr (1995). At

elementary and secondary level this is not the case, and we will therefore use different research designs in the surveys. The goal for both of the surveys is to build databases which allows for accurate analysis and rigorous research. We will begin with describing the tertiary-level survey.

Tertiary level

We are foremost interested in understanding *why*, not just *if* entrepreneurship education works or not. A formative impact analysis will thus be performed in which we will pay significant attention to each sub-objective. The programme evaluation is designed in accordance to Mohr's (1995) impact analysis and we apply the quasi-experimental design that was pioneered by Campbell and Stanley (1966) and later refined by Cook and Campbell (1979) and Cook, Campbell & Peracchio (1990). The activity of interest in our impact analysis is various methods of teaching entrepreneurship education to master level students. The outcome of this activity will be assessed by measuring what effect the education programmes has on the students' level of entrepreneurial self-efficacy. This indicator is presumed to have a positive effect on entrepreneurial intentions, nascency, start-up activity and performance, but this relationship still needs further empirical evidence. We are also interested in finding out which other different effects entrepreneurship education have on students' career choices. We will therefore measure variables such as work satisfaction, employment position, salary and wealth, in later stages. Primary data on approximately 500 master level students of six entrepreneurship programmes (experiment group) and six non-entrepreneurship programmes (control group) at three Danish universities and business schools will be collected. These students will be followed for seven years (at the least).

A classic comparative change design in a quasi-experiment is structured as follows (Mohr, 1995):

$$\begin{array}{l} A/C: X_{1e} \quad T \quad Y_e \\ \hline A/C: X_{1c} \qquad Y_c \end{array}$$

A longitudinal design is subjected to various threats to internal validity, such as *selection*, *history*, *spuriousness* and *contamination* (Mohr, 1995). The threat of *history*, that something else besides the treatment (T) accounts for all or part of the change over time (Mohr, 1995;

67), is eliminated with the use of control groups (c). Eventually significant events will have the same impact on both of the groups (e and c). In our survey we are dealing with self-selecting groups. This is in conflict with the use of quasi-experimental design, because it generates *selection bias*. Our experiment group (e) and the control group (c) can be expected to differ significantly regarding levels of initial entrepreneurial self-efficacy (X_1), the so called *P-selection variables* in programme assessment (Mohr, 1995), but also on other variables which are not expected to be affected by entrepreneurship education (T), the so called *Q-selection variables*. By the use of pre-test (X_1) and post-test (Y) we can measure the change in our two groups (e and c), and thus, the impact of the treatment (T). The problem is to control for the other variables that might affect the outcome (Y). These *Q-selection variables* can also be expected to differ significantly between the two groups due to the self-selection. In entrepreneurship research these variables are fairly known, though, and we will control for variables such as *parents' occupational status, entrepreneurial intentions, entrepreneurial experience, work experience, age, gender,* and *educational background*. *Selection biases* will thus be turned into *selection effects*. The *contamination problem* that is a threat in all quasi-experimental designs (Mohr, 1995), will in our survey be controlled for simply by asking if the students have experienced any event that has had a significant impact on their entrepreneurial attitudes which cannot be related to their educational activities.

How the treatment affects the students can also be expected to vary depending on initial characteristics. As illustrated in the equation below, we suspect that the level of *initial entrepreneurial self-efficacy* (X_1i), will affect how the educational process (Ti) affects them.

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_T T_i + \beta_2 X_{1i} T_i + u_i$$

The outcome (Yi) is thus not only dependent on the effect (β_1) of the treatment (Ti). A high initial level of entrepreneurial self-efficacy (X_1i) will probably lessen the effect of the treatment and thus render β_2 negative. ui is the disturbance term and α is the Y intercept.

Out of the twelve programmes, six will target business students, four will target engineering students and two will target humanities students. During the first two years, when the students attend their programmes, they will be asked to fill in a questionnaire three times: before they start the programme, after the first year and after graduation. They will then be

asked to fill in the questionnaire three more times: one year after graduation where the focus will be on nascent entrepreneurial behaviour; three years after graduation where focus will be on actual behaviour, and then, finally, five years after graduation where the focus will be on performance.

Elementary and secondary level

To assess the impact of entrepreneurship education on elementary students, in detail, we would have to follow them from the first day of school, which would be a very time consuming and impractical project. We have therefore decided to select students that are to begin their second year at lower secondary level. Students at this level have their elementary schooling fresh in mind and are just one year from a very important decision: *are they going to continue to upper secondary level or not?* In collaboration with Statistics Denmark, we will perform a random sample survey on 2 000 ninth grader. A pre-test that measures their initial attitudes and intentions towards entrepreneurship, and their entrepreneurial behaviour, but also their aspirations and sense of connectedness to their education, will allow us to analyse the effects of entrepreneurship education during their last years at elementary level. The students will be asked to fill in the questionnaire annually, which allows for an analysis of their experience with the field, their entrepreneurial progression and their decisions. Special attention will be paid to their choice of education. In Denmark a political goal is that 95% of students at lower-secondary level should continue on to upper-secondary level. It is therefore of interest to analyse if entrepreneurship education at elementary and on lower-secondary level increases the students' propensity to continue on to upper-secondary level, and whether entrepreneurship education at this level increases their propensity to finish their degree and continue to tertiary level.

Measurement Scales

In order to understand what type of entrepreneurship education that builds entrepreneurial self-efficacy, we need to develop a categorization model. On the content level we will divide the educational substance into two groups: *creation approach* or *discovery approach* (Alvarez and Barney, 2007). We will apply these on different entrepreneurship education perspectives in order to relate and separate the different views.

The model will also include which type of didactical methods that is being used in the programmes. Here we will base the codification on Biggs and Tang (2007), and their duality

model of *declarative* and *functioning* learning methods. This will allow for an assessment of which type of learning methods that dominate the programme. See figure 4 for a presentation of the model.

Insert figure 1 here

This models that focus on educational content allows for an analysis that is both specific, yet inclusive. The curricular design of the programmes, which often are very context specific and complex, can thus be compared on an aggregated level, and the outcomes of the design can be related to theory. The design will hence be externally valid and the results will thus be generalizable and of importance for curricular development within the field.

Summary

Impact evaluation and programme assessment is of major importance to the field of entrepreneurship education, but it is accompanied by a great deal of problems. Because there is a lack of consensus regarding teaching methods within the field, we cannot simply perform an impact analysis that gives us the answer if it works or not. Of greater interest is to find out what methods that works with which students. In order to do this we need to articulate different theoretical perspectives as rivals and test their effects on entrepreneurial outcomes. In our surveys we will use entrepreneurial self-efficacy as an outcome measurement. The challenge here is to develop scales which also work with control groups. The biggest problem in performing an impact analysis of entrepreneurship programmes has to do with self-selection. In our research design we use pre-tests and post-tests and follow our subjects longitudinally, in order to handle these threats to internal validity. Our project is both of theoretical interest for researchers and of practical interest for educators and policy makers. Ideally, we will advance the field with new measurements and insights on the effects of different theoretical perspectives within entrepreneurship education. In terms of implications for practice, we will further understanding regarding which outcomes different educational methods have, to different types of students and at different levels of the educational system.

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	Treatment 2009/2010		Treatment 2010/2011		Control 2011	
Cronbach Alpha	**Intitial**	**Final**	**Initial**	**Final**	**Initial**	**Final**
Search	0,651	0,745	0,753	0,754	0,611	0,755
Planning	0,754	0,579	0,807	0,570	0,600	0,443
Marshalling	0,594	0,574	0,799	0,726	0,674	0,584
Impl. people	0,748	0,804	0,843	0,792	0,765	0,755
Impl. finance	0,855	0,859	0,904	0,883	0,890	0,827
N	26	26	27	24	21	21

Table 1: The construct validity of the McGee et al. (2009) scale in Karlsson & Moberg (2011)

Focus:	**Chen et al. (1998)**	**De Noble et al. (1999)**	**McGee et al. (2009)**
Search/Creativity	Strong	Strong	Strong
Planning/Management	Strong	Strong	Strong
Marshalling	No	Strong	Strong
Human resources	Weak	Strong	Strong
Finance	Strong	Weak	Strong
Marketing	Strong	No	Weak
Ambiguity	Strong	Strong	No

Table 2: A comparison of the focus in three ESE-scales

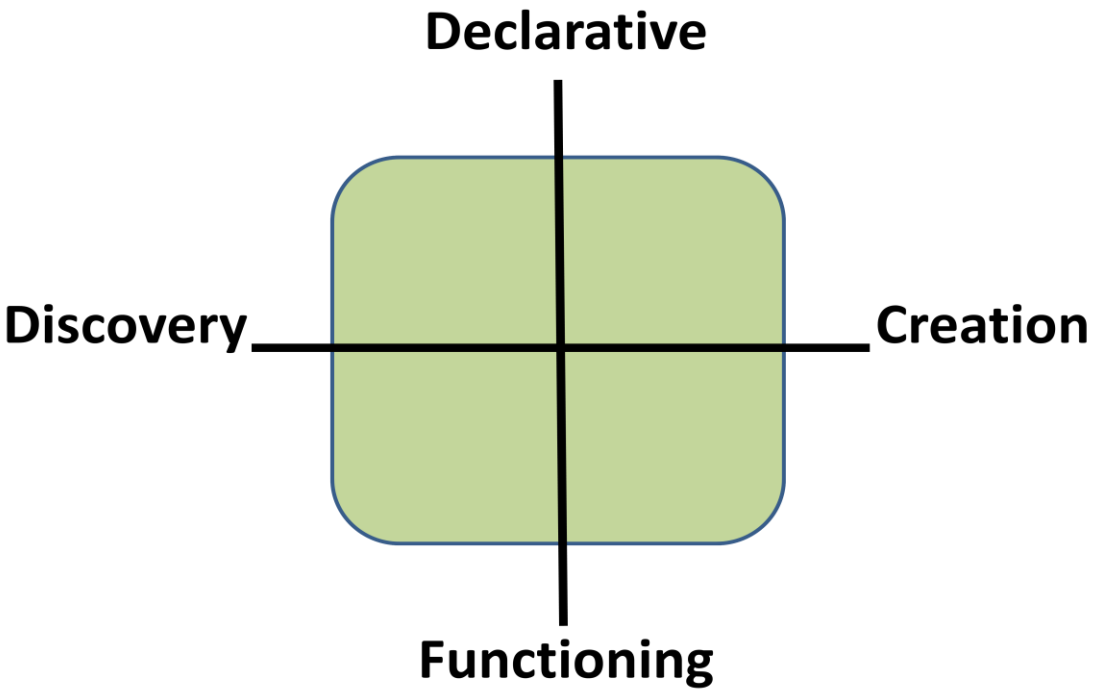
	Entrepreneurship			Management			Accounting		
Constructs	**Cronbach Alpha**	**Mean**	**Mean difference**	**Cronbach Alpha**	**Mean**	**Mean difference**	**Cronbach Alpha**	**Mean**	**Mean difference[1]**
Search/ Creativity	0,737	20,17	3,57**	0,760	16,60	0,93	0,634	15,67	4,5**
Planning/ Management	0,735	19,00	1,69^{T}	0,580	17,31	0,61^{T}	0,636	16,70	2,30**
Marshalling	0,823	27,46	3,46**	0,689	24,00	1,03	0,456	22,97	4,49**
Ambiguity	0,782	31,83	4,07**	0,745	27,76	1,63	0,556	26,13	5,7**
Financial knowledge	0,892	13,46	1,47^{T}	0,767	11,99	-1,16*	0,712	13,15	0,31
N									

Table 3: The cronbach alpha values and the mean differences between students in the three university programmes. Significance levles: ^{T} 10% level, * 5% level ** 1% level

[1]Mean difference between the entrepreneurship students and the accounting students is given in this colum

Search/Creativity	t-value	p-value	Mean difference	Scale(s)
2. Identify ways to combine resources in new ways to achieve goals	5,925	0,000	0,83	The Chen
4. Brainstorm (come up with) new ideas	4,982	0,000	1,00	The McGee-scale
26. Think outside the box	6,419	0,000	1,04	Own
29. Identify opportunities for new ways to conduct activities	3,954	0,000	0,64	The Chen-scale/The DeNoble-Scale
31. Identify creative ways to get things done with limited resources	4,73	0,000	0,72	The DeNoble-scale
Planning/Management				
1. Manage time by setting goals	1,925	0,056	0,28	The Chen-scale
4. Reduce risk and uncertainty in projects	1,488	0,145	0,28	The Chen-scale/The DeNoble-Scale
8. Conduct analysis	2,784	0,008	0,46	The Chen-scale
17. Deal effectively with day-to-day problems	1,33	0,203	0,21	The McGee-scale
22. Design an effective project plan to achieve goals	2,403	0,021	0,44	The McGee-scale
Marshalling				
7. Put together the right group/team in order to solve a specific problem	2,710	0,010	0,45	The DeNoble-scale
10. Form partnerships in order to achieve goals	1,641	0,109	0,29	The DeNoble-scale
15. Identify potential sources of resources	5,528	0,000	0,85	The DeNoble-scale
16. Network (i.e. make contact with and exchange information with others)	1,640	0,109	0,34	The McGee-scale
20. Get others to identify with and believe in my visions and plans	2,130	0,038	0,32	The McGee-scale
24. Clearly and concisely explain verbally/in writing my ideas in everyday terms	3,790	0,000	0,74	The McGee-scale
32. Proactively take action and practically apply your knowledge	5,135	0,000	0,82	Own
Ambiguity				
3. Imropvise when I do not know what the right action/decision might be in a problematic situation	5,351	0,000	0,93	Own
5. Tolerate unexpected change	3,762	0,000	0,65	The DeNoble-scale
14. Persist in face of setbacks	4,448	0,000	0,78	The DeNoble-scale
19. Learn from failure	2,592	0,013	0,41	Own
21. Manage uncertainty in projects and processes	3,115	0,003	0,49	The Chen-scale/The DeNoble-scale
23. Exercise flexibility in complicated situations when both means and goals are hard to establish	3,93	0,000	0,57	The DeNoble-scale
25. Work productively under continuous stress, pressure and conflict	2,194	0,033	0,38	The Chen-scale/The DeNoble-scale
28. Make decisions in uncertain situations when the outcomes are hard to predict	3,719	0,001	0,62	The Chen-scale
Financial knowledge				
9. Read and interpret financial statements	2,417	0,017	0,49	The McGee-scale
18. Perform financial analysis	2,540	0,015	0,56	The Chen-scale
27. Control costs for projects	3,212	0,003	0,67	The Chen-scale
30. Estimate a budget for a new project	1,342	0,187	0,28	The McGee-scale

Table 4: Mean differences between nascent entrepreneurs and non-nascent entrepreneurs



Figuer 1: The different focus in content and didactical methods in entrepreneurship education

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