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## **ENTREPRENEURSHIP CAN BE TAUGHT: AN EXAMPLE OF A LEARNER-CENTERED APPROACH**

### **Abstract:**

In most European countries entrepreneurship is one of the top priorities on the national agenda, to stimulate individual and organizational innovativeness and (regional) economic growth. As a consequence, embedding entrepreneurship in education to achieve this goal has gained importance and momentum especially at universities of applied sciences. Two questions need answering when trying to embed entrepreneurship in a curriculum. First of all: can entrepreneurship be taught and second: how should entrepreneurship be taught. In this paper we focus on an educational programme based on a learner-centered, constructivist approach, which is offered in a multidisciplinary, inspiring and entrepreneurial setting. It is competency-based and is tailor-made to individual student demand and goes beyond the classic business school approach based on instruction. The programme caters for students from at least 40 different departments of the university. The starting point in this programme is the assumption that entrepreneurship can indeed be taught but that the pedagogical climate and approach is crucial and should contribute towards the development of entrepreneurial competencies and skills.

In this paper issues such as the dynamics of learning are dealt with as well as some a discussion on learning paradigms. We elaborate on the programme developed at The Hague University of Applied Sciences, The Hague in The Netherlands. So far, over 250 students have participated in the programme and since September 2007 longitudinal research has taken place to establish the effects of the programme and the pedagogical approach on the development of entrepreneurialism. We then describe the research design and draw preliminary conclusions about the relation between pedagogical climate and entrepreneurial behaviour, competencies and entrepreneurial behaviour and finally the relation between entrepreneurial behaviour and the choice to become an independent entrepreneur.

Our findings show that such competencies as self-discipline and vulnerability are positive influencers of entrepreneurial ambition. We also found negative influencers of entrepreneurial ambition in depression and inadequacy, yet interestingly also in sincerity.

The role of the business partners involved in the programme is discussed and an account is given of the experiences of a population of students over a period of three years on the basis of a number of issues: what works, what doesn't work and what needs to be improved. Interesting drivers for entrepreneurial behaviour are distilled from our research, on the basis of which recommendations are given on how to best implement these drivers into an educational programme. The paper finalizes with a concluding note in which some of the drawbacks of a learner-centred approach as opposed to an instruction-based approach are discussed and suggestions for future research are made.

**Key words:** entrepreneurship, innovation, constructivist, learner-centred, behavioural

### **1. Introduction**

In general, innovation and entrepreneurship are important in the realm of national economies because they hold the key to the continuity and growth of companies (*e.g.* Hage, 1999; Cooper,

1897; Van de Ven, 2007) and economic growth within a country. That innovation and entrepreneurship are vital for economic growth was already asserted by Schumpeter in 1934. It is therefore obvious that national governments are investing money and paying attention to the stimulation of entrepreneurial and innovative behaviour.

In a recent survey carried out by the Ministry of Economic Affairs in The Netherlands a picture emerges of The Netherlands as lagging behind when it comes to starting a company, whereby start-ups of students coming directly from an educational institution score even worse (Van der Sijde *et al*, 2008). The average age of start-up entrepreneurs in The Netherlands is around 38 (Thijssen, 2005). Against this background the Ministry of Education and the Ministry of Economic Affairs defined the stimulation of entrepreneurship and innovation education as a policy item in 2005. Entrepreneurship and innovation are closely linked, according to Schumpeter (1934) who regarded the entrepreneur as the driver of innovation. Through innovation a process of creative destruction is set in, which alters the institutional context and context of companies. In The Netherlands ambitions to improve entrepreneurialism and stimulate students at academic and vocational levels to become an entrepreneur are high.

Educational institutes can stimulate or constrain entrepreneurial and innovative behaviour. Given the importance of both phenomena, a lot of effort is geared towards implementing entrepreneurship and innovation in higher education. The objective is to stimulate students to start up their own business and develop knowledge and competencies about how to do that. In the Netherlands there are several initiatives that purposefully try to embed entrepreneurship as a subject within a diversity of professions varying from industrial management to behavioural science and business students. Despite all these efforts the number of students that decide to follow a career as an entrepreneur is low compared to other countries, especially to the United States. This partly has to do with aspects in our national culture, such as a risk avoiding attitude and uncertainty avoidance. In The Netherlands failure is not easily accepted. Yet, it is well-known that many endeavours of entrepreneurs end up in failure, before finally becoming a success. It is therefore a challenge to change the self-concept and self-esteem of students (Heikkilä, 2006) as well as their behaviour and give them enough tools to have a fair chance of becoming an entrepreneur or an intrapreneur at an existing firm.

Within The Hague University of Applied Sciences, the Centre for Innovation & Entrepreneurship has taken up this challenge. Key aspect is to stimulate entrepreneurial behaviour among students. Until recently, there was a notable lack of reliable data on the effects of entrepreneurial education on behaviour. On the assumption that entrepreneurship is not singularly an innate characteristic, but that it can be taught, the Centre for Innovation & Entrepreneurship has started research to elicit a set of indicators predicting innovative entrepreneurial behaviour.

## 2. Instruction-based learning versus a learner-centred approach

A teacher-centred approach is primarily concerned with the transmission of knowledge. It is an approach based on instruction and the transfer of knowledge. Essential in a learner-centred approach is that the diversity of learning characteristics of all learners are taken into account with specific emphasis on low-performing learners. According to McCombs (1997) the focus in a learner-centred approach is on individual learners' experiences, perspectives, backgrounds, talents, interests, capacities, and needs. She defines learner-centred, from a research-based perspective, as a foundation for clarifying what is needed to create positive learning contexts to increase the likelihood that more students will experience success. To create an effective learning situation, McCombs says that three conditions need to be met:

- The learning environment should facilitate the exploration of meaning. Learners must feel safe and accepted, and they must understand the risks and rewards of seeking knowledge and understanding. The environment must create a setting wherein involvement, interaction and socialization are combined with a business-like approach to accomplishing a certain task.
- Learners must be given frequent opportunities to confront new information and experiences in their search for meaning and understanding. Those opportunities should not be provided in a passive receptive form by merely giving information
- New meaning and understanding should be acquired through a process of personal discovery. These methods should be tuned to the individual and adapted to the learner's own style and pace of learning.

The issue whether entrepreneurship can be taught is highly relevant, since there are those that contend that being an entrepreneur is more a talent or an innate aspect rather than a competency that can be acquired. In our view entrepreneurship can certainly be taught, but it depends largely on the pedagogical approach.

When speaking of learning, a clear distinction is made between a cognitive approach and a more behaviourist oriented approach. The classical definition of learning is that it is a change in *behaviour* as a result of *experience* or *practice*. The emphasis lies on behaviour and not necessarily on the transfer of cognition.

A more recent definition is the one by Kim (1993) that says that learning is the acquisition of knowledge, whereby he makes a distinction between the (a) acquisition of know-how and (b) acquisition of know-why. The first refers to the physical ability of an individual to produce some action and the latter to the ability to articulate a conceptual understanding of an experience. Other

authors, for instance Argyris and Schön (1978), define learning as the development of knowledge. They distinguish three phases in the learning process, namely:

- *Single-loop learning* – Organizational learning takes place when errors are detected and corrected and firms carry on with their present policies and goals – they have merely been improved. According to Dodgson (1993) single-loop-learning can be compared with activities that add to the knowledge base, firm specific competencies or routines of an organization without altering the fundamental nature of the organization's activities. Senge (1990) speaks of adaptive learning in this context.
- *Double loop learning* occurs when in addition to detection and correction of errors, the organization questions and modifies existing norms, procedures, policies, and objectives. Double loop learning involves changing the organization's knowledge base, firm specific competencies or routines
- *Deutero learning* occurs when organizations learn how to carry out single-loop and double-loop learning. This awareness makes the organization recognize that learning needs to occur and tells us something about how organizations learn to learn. It takes place at the highest aggregate level, where the way of learning is questioned and adapted.

Fiol & Lyles (1985) define learning as the process of improving actions through better understanding and knowledge. Baets & Van der Linden (2000) define learning as the process whereby knowledge is created by the transformation of experience. Learning is not seen as an abstract process but it is contextual: it occurs while the experience is taking place, so that it can be applied immediately. This is an interesting point of view when it comes to teaching students a topic such as entrepreneurship, especially against the background of the question raised whether entrepreneurship *cán* be taught. We observe that it depends on *hów* it is taught. We will elaborate on this line of thinking later.

Definitions of learning largely depend on the perspective from which the phenomenon is regarded and the level of its analysis. These two are connected. There are two distinct learning paradigms on which teaching and learning are based. In general two strands of thought are defined in literature: a behaviourist one and a cognitive one.

The emphasis of behaviourism lies on observable indicators that learning has actually taken place. The father of behaviourism is J.B. Watson (1878-1958), who defines learning as a sequence of stimulus response actions in observable cause and effect relationships. The best-known example of behaviourism is Pavlov's experiment. Skinner developed Watson's ideas further. According to Skinner voluntary or automatic behaviour is strengthened or weakened by the immediate presence

of reward or punishment. Whereby the assumption is that new learning occurs as a result of positive reinforcement and old patterns are abandoned as a result of negative reinforcement. At the individual level learning is regarded as a change of individual behaviour resulting from changing stimulus-response mechanisms (see *e.g.* Kolb, 1984).

Contrary to this view cognitivism places the emphasis on mental processes of the mind. Behaviourists do not deny the existence of these processes; they simply regard them as an unobservable indicator of learning, which cannot be established empirically. Cognition is seen as an important driving and explanatory force for understanding behaviour. Jean Piaget (1896-1980) for instance regarded human development in terms of progressive stages of cognitive development. These four stages – sensorimotor, preoperational, concrete operational and formal operations stage – characterize the cognitive abilities necessary at each stage to construct meaning.

Generally speaking a clear line separates the behaviourists from the cognitivists. There are however alternative views on learning, which also try to link individual cognition with organisational behaviour. Leroy and Ramantsoa for instance argue (1997) that a strict separation between behaviour and cognition is constructed and also Nicolini and Mezner (1995; p. 738) argue that the distinction between behaviour and cognition is inadequate to serve especially as a basis for defining organisational learning.

Furthermore, Baets (1998) defends the situational character of learning. In this view the emphasis is changed from learning as a transfer mechanism, to learning as a construction mechanism that starts at the individual level. This idea that learning is a construction process is laid down in ideas on constructivism. Constructivism is an example of a learning theory that focuses on the mental processes that construct meaning, whereby cognition is regarded as situated. According to Walker (2003) the constructivist approach assumes that individuals impose meaning on the world, rather than it existing in the world independent of us. Constructivists believe that all humans have the ability to construct knowledge in their own minds through a process of discovery and problem-solving. Constructivists focus on the learner as the one responsible for learning, and they assume learning takes place via a process of learning-by-doing or experimentation and practice (McDermott, 1981; Baets & Van der Linden, 2000). The main consequence of a constructivist paradigm is that knowledge and learning cannot be isolated from practice and situation (Seely, Brown & Duguid, 1991). Whereas transfer models isolate knowledge from practice, constructivism primarily sees learning as a process of social construction. From this perspective learners can only develop understanding of a wide range of aspects through interaction.

Reflecting on the practice of teaching and education at knowledge institutes, one cannot but conclude that the instruction-based approach of learning prevails. In a learner-centred approach,

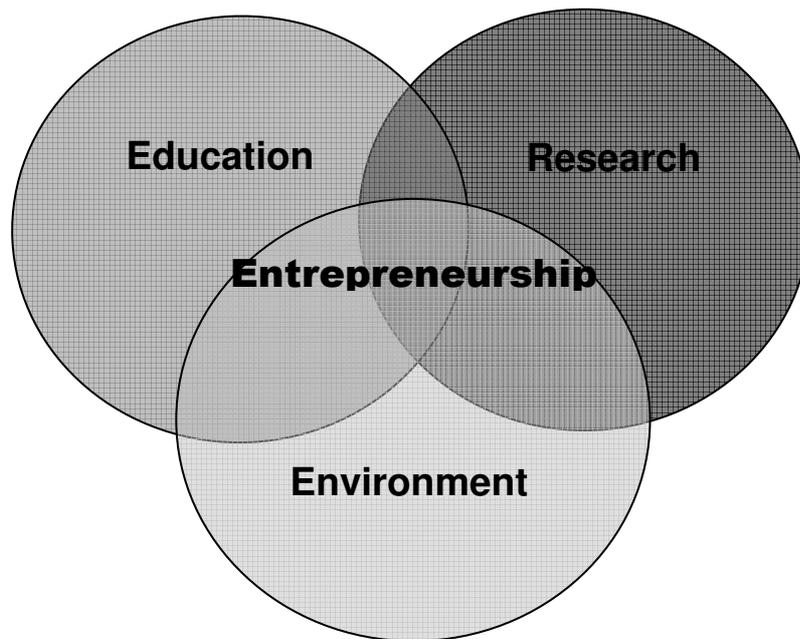
learning cannot be isolated from practice, which implies that learning in a classroom setting when it comes to entrepreneurship is far from ideal. The programme developed at The Hague University is based on ideas of constructivism and the premises upon which it rests. Competency-based thinking likewise fits within a constructivist paradigm, which places the individual at the centre of the learning process. Competency based thinking works on the assumption (Van der Sijde *et al*, 2006) that the individual, as a holistically functioning and learning being, employs his or her knowledge, skills and attitude situationally successfully in an integral way, while reflecting on the process and the results, subsequently translating these reflections into continuously changing and improving competences. The consequences for the design of a curriculum are far-reaching. The design of the curriculum, traditionally the school's prerogative, is transferred to the owner of the learning process, the student. In an authentic work field situation, in a rich learning environment, the student learns to match his personal curriculum and the corporate curriculum. Upon this view rests the programme developed in The Hague.

Taking these considerations into account, a series of elective courses in "Innovation & Entrepreneurship" were developed at The Hague University of Applied Sciences consisting of three 10 week periods of full-time work for students throughout the university's forty departments. Against the background of growing concerns that the number of students that make a choice to become an entrepreneur should increase, a setting was created in which it is expected that students perform better, are stimulated to search for knowledge and understanding in order to be able to take the step to become an entrepreneur or agent of change in an existing organization. In the next section this elective programme is discussed.

### 3. An educational programme in innovation & entrepreneurship

We mentioned earlier that educational institutes can promote or constrain entrepreneurship education and entrepreneurial behaviour. In the Netherlands the education environment is in turmoil. New learning methods, distance learning technologies, changes to students' demands and fierce competition are putting pressure on traditional learning paradigms and management of education. Policymakers have put entrepreneurship as a top priority on the national agenda and regard entrepreneurship education as an important vehicle to stimulate economic growth and create new jobs. Within this context The Hague University of Applied Sciences established the Centre for Innovation & Entrepreneurship where education, research and collaboration with local SME's merge and where entrepreneurship programmes are developed.

The idea is for this Centre to act as an important change agent for the university by linking internal and external stakeholders through entrepreneurship around three central themes: education, research and environment (see Figure 1).



**Figure 1:** Overview of the three themes for The Hague Centre for Innovation & Entrepreneurship

The Centre is located close to, yet outside the main university building. This was decided upon to create an environment in which students learn and work and are directly confronted with the external world instead of working within the safe haven of a university setting.

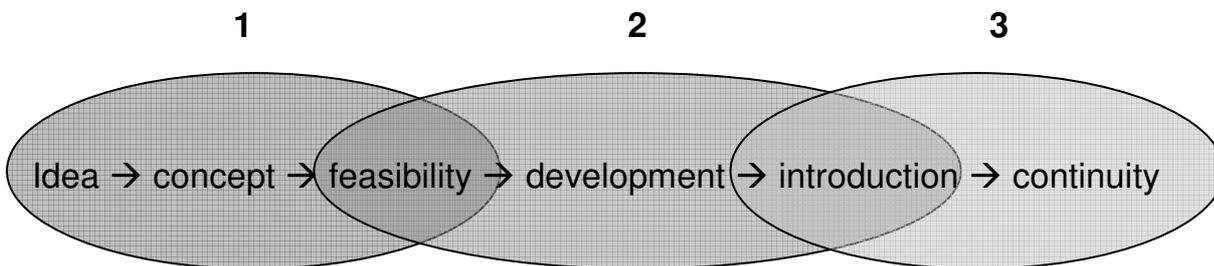
Another important decision was related to the *content* of the programme: the integration of innovation and entrepreneurship in the curriculum since practice shows that these domains are not separated as was already asserted by Schumpeter (1934). In our view the need for continuous change and renewal (innovation) as the central issue in entrepreneurship does not only relate to timely deployment of new technological applications, it also requires rethinking and reworking internal processes – the innovation of strategy, policy, marketing and distribution, the organisation and its management. Consequently, entrepreneurship and innovation are not regarded as the exclusive responsibility of the independent entrepreneur. Equal demands need to be met by individual employees in larger organisations. As a consequence the technical aspects of entrepreneurship and innovation are not exclusively taken into account, but also the non-technical aspects of innovation: creating an entrepreneurial climate and an entrepreneurial mentality, facilitating experiments and learning, enhancing an organisation's adaptive abilities and ability to learn, searching new ways of organising the innovation process, balancing the need for individual autonomy with corporate strategy and finding the right mix between exploiting and exploring.

The programme is aimed at developing entrepreneurial and innovative competencies. Competencies are defined as a combination of knowledge, problem solving skills and individual attributes deployed in a situational context. The attributes and skills refer to the capability to deal

with problems and solve them and in the process find solutions to achieve the defined objectives. Success in this sense is the ability to meet one's own objectives.

As to the students also a number of steps were taken. Participating in the programme requires motivation on behalf of the student to become active as an innovative entrepreneur. The decision to enrol in these electives has to fit with the student's personal development plan and be complementary to his major programme. To this end a specially devised psychological test and an intake interview are held to identify problem areas and help set targets. The test was developed in collaboration with a locally based psychological consultant, Kuiper and Partners, and focuses on a number of personal characteristics such as: thinking capacity, personal qualities and dedication. The intake interview also deals with students' personal ambition and commitment to create added value. From the start of the programme the student works on his own idea in a dedicated area of the Centre, following one of three optional routes (see Figure 2):

- feasibility study of an innovative concept or idea
- business plan for his own start-up of an innovative business
- innovative contingency plan for an existing organisation



**Figure 2:** Overview of the 3 optional routes within the entrepreneurship programme

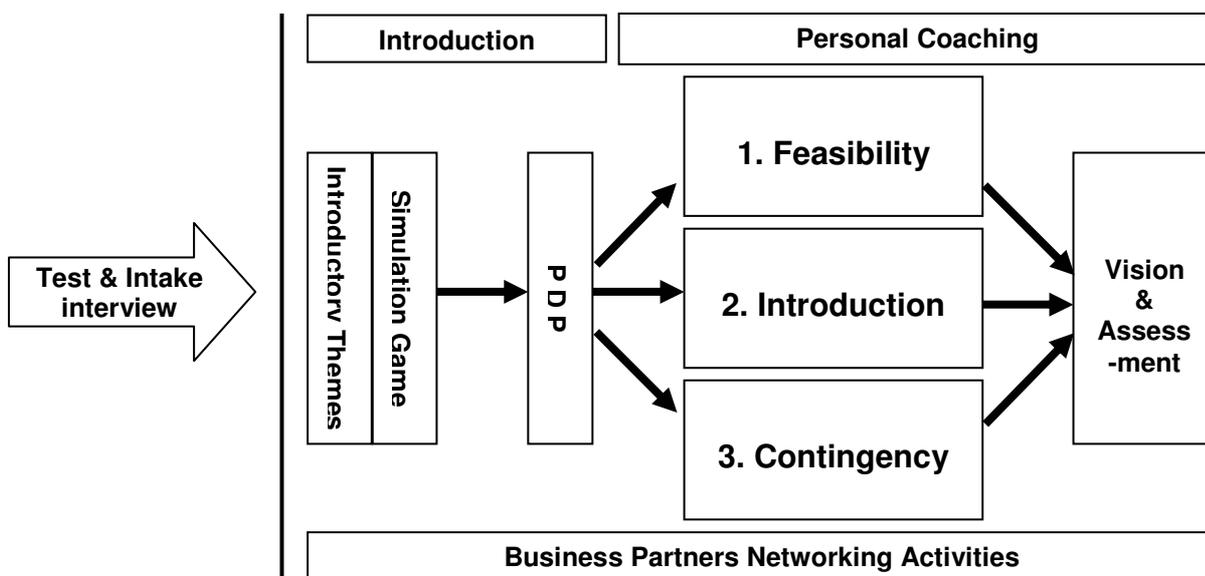
Each of these routes is supported by a competency profile:

- for the feasibility route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by recognizing or developing a breakthrough idea by making innovative suggestions and translating these into technological, commercial and organizational specifications.
- for the business plan route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by methodically analyzing a business process or a product-market combination in order to implement innovations leading to organizational results and customer satisfaction
- for the contingency route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by anticipating

developments and analyzing risks influencing the position and opportunities of his organization and by making innovative suggestions and translating these into technological, commercial and organizational specifications leading to improved organizational results and augmented customer satisfaction

This competency-based programme is tailor-made to individual student demand. The programme follows two routes: one aimed at developing knowledge and skills, and another at developing a view on personal strengths and weaknesses and defining requirements how to overcome them in the process. Students' individual experience is taken as a starting point and used to develop a vision of the concepts of innovation and entrepreneurship. Students report on the route they have taken towards their personal goal through a so-called *innovation-experience report* they have to write during each of the 10 week courses. Student output is thus twofold. On the one hand they have to write a report in which they demonstrate that they have been able to carry their idea forward and write a feasibility plan, or a business-plan. On the other hand they have to write an innovation experience report in which they report on their own individual learning process and the pitfalls and problems they have encountered along the road.

The 10 week entrepreneurship programme (15 European Credit Points) starts with a two week introduction period during which some basic themes are discussed, after which the student develops his own individual route (see Figure 3).



**Figure 3:** Overview of the Elective programme

Personal coaching throughout the programme is provided by an experienced member of the Centre as well as a representative of one of the business partners with hands-on entrepreneurial experience,

or someone from the Chamber of Commerce, branch organisations or the Dutch CBI. The introductory period leads to a personal development plan (PDP), including the student's personal aims, targets, planning and deliverables. An important aspect of this PDP for the student is to indicate his individual demands and requirements for training and schooling. The idea is that the student will acquire the knowledge necessary to fulfil the programme and that in the process he will gain the necessary knowledge required for the further activist approach. Various specialists and experts are called in to support the process. Because of the multi-disciplinarity of the group, student demands are diverse, ranging from business organisational problems, via marketing aspects through to financial queries or questions on industrial property rights. Students with a major in Commercial Economics have previously developed rather different competencies than students with a background in any of the Accounting, Social Sciences, Health Care or Engineering majors. Within this set-up this is not a problem but forms the added value of the programme.

Monitoring and tracking of activities is supported by a digital portfolio, similar to the Blackboard environment, but specially developed by the start-up company of an alumnus from the programme. Personal coaching is supported by peer review sessions and networking activities with members of the business partners. Assessment of activities is based on the student's final product in any one of the three optional routes, on his personal portfolio and on the innovation experience report, supported by a body of knowledge. Assessment criteria to ensure the appropriate level of higher education and to ascertain national accreditation have been devised in collaboration with the University's department of Educational Development.

#### 4. Evaluation: pitfalls and potentials of a constructivist approach

The programme is evaluated at the end of each 10 week run. In September 2007 research was started to study the effects of the programme on the development of individual entrepreneurial characteristics. The evaluation procedure consists of an evaluative meeting of half a day with all the lecturers involved in supervising the students, an evaluative meeting with coaches that had been appointed to the students in the course of the programme, and analysis of the innovation experience reports of the students. The evaluation is based on a number of aspects:

- format of the programme
- content of the programme
- individual student outcome of the programme

On the basis of an evaluation of the electives run so far, we were able to identify some pitfalls and potentials. The evaluations have led to various adaptations and improvements and also some

interesting insights on the role of competencies, the pedagogical approach and the learning environment. The pedagogical approach is the most fundamental aspect of the programme. We mentioned in earlier sections the programme was developed on the basis of ideas of constructivism and learner-centred theories. This implies that besides some lectures at the start of the programme, each individual student defines his or her own trajectory on the basis of the problems encountered along the road. The learning process is a process of personal discovery. The idea is that an entrepreneur works in this way and that the ability of an entrepreneur to deal with problems is one of the important competencies of an entrepreneur. On the basis of the evaluation one of the most important things that came to light is that some students have great difficulty in dealing with what they perceive as lack of direction in comparison to a traditional classroom setting. As a consequence, coaching the student – instead of teaching him – is one of the most important aspects of the programme. It is a mechanism which is crucial in the learning process and which invites the students to search for solutions to tackle a problem. Within the programme, coaches support students in achieving their learning objectives. The coach hails from a company, has an entrepreneurial background and has the role of confronting students with real-life situations and they guide the learning process of the student. All in all the student is the director of his or her own learning trajectory.

On the basis of the evaluations the following aspects came to light:

- Within this approach students do not work in a classroom setting but are stimulated to work together in an open space to take advantage of the multidisciplinary character of the group in which they work. Students show difficulty in taking the initiative to work together and express that this is due to the fact that they are not used to working in this way. In order to overcome this problem in the subsequent programmes students were given a group assignment to stimulate group dynamics and make them responsible for a group project.
- Students showed a lack of experience with project management, which is a skill that in this setting is a very important success factor for their own project. In a traditional classroom setting students know beforehand what is expected of them, while in this setting they have to manage their own project as would be the case in a real-life situation.
- The elective is open to students of a broad range of bachelor programmes, which means that the students have a wide diversity in backgrounds. Participants of the elective had to adapt to this situation and had to learn that instead of reverting to the teacher for knowledge they could also revert to fellow students. An engineering student could thus profit from a marketing student and vice versa.

- One of the problems with the pedagogical approach and challenges of this programme is that the quality of the programme has to be managed. Giving students a lot of room to design their own programme and learning process, harbours the danger that the knowledge and skills are not benchmarked against a set of quality parameters. These parameters are defined by the students themselves in their personal development plan and the action plan they have to write. It is one of the major tasks of the coaches to ensure that quality standards are met.
- An e-learning environment is an important supportive tool within this pedagogical approach, since it allows for monitoring the progress a student is making and it creates the opportunity for students to gain insight in each others' processes. Students showed great problems and reluctance in working within this environment, again because it required a lot of discipline and ability to reflect on one's own progress.
- An important element within the pedagogical concept was that each student had a personal coach from a business network which was set up with companies in the region. This worked very well, though from the perspective of the educational institute we were confronted with the fact that quality criteria have to be designed for these coaches. Within The Netherlands there is now a trend – against the background of stimulating entrepreneurship in education - to ask entrepreneurs to give lectures and get involved in educational programmes. The idea is that best practices may have a stimulating and motivating effect on students. The aspect of quality is however a real concern because specific skills are required to teach students.

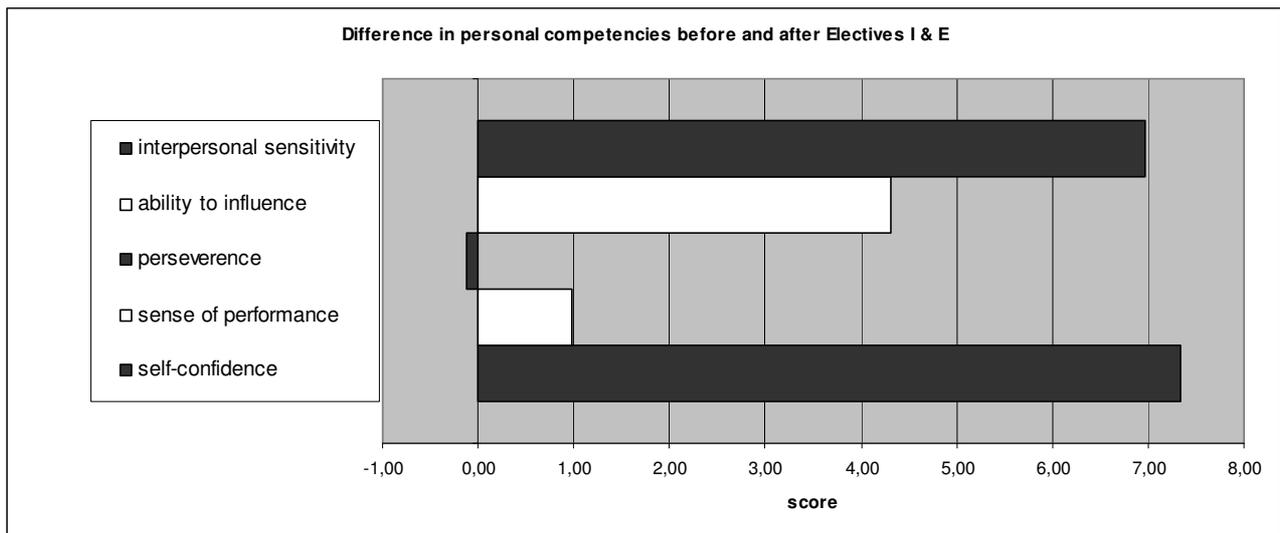
## 5. Research design

The longitudinal research started in September 2007 was set up in order to assess more precisely whether effects can be measured on the development of individual entrepreneurial competencies that can be attributed to the pedagogical approach or other aspects related to the programme.

Our empirical research is both quantitative and qualitative. Students take a psychological test at the start of their first elective programme (feasibility study) and one on completion of the second (business plan). These tests are specially developed for our Centre for Entrepreneurship and Innovation in collaboration with locally based psychological consultant Kuiper & Partners. The tests focus on five personal characteristics:

- self-confidence
- sense of performance
- perseverance
- ability to influence
- interpersonal sensitivity

These full-day tests measure a vast amount of individual character traits such as self-esteem, sincerity, dominance, vulnerability and fear. In addition to these tests, semi-structured interviews are held to elicit student perceptions on the educational method and pedagogical approach and perceptions on their own development in personal ambition and commitment to create added value. Four small groups of students were included in the research (n=51) and took the psychological tests before and after their elective programme. We measured the difference of the individual scores on the five personal characteristics (see Figure 4).

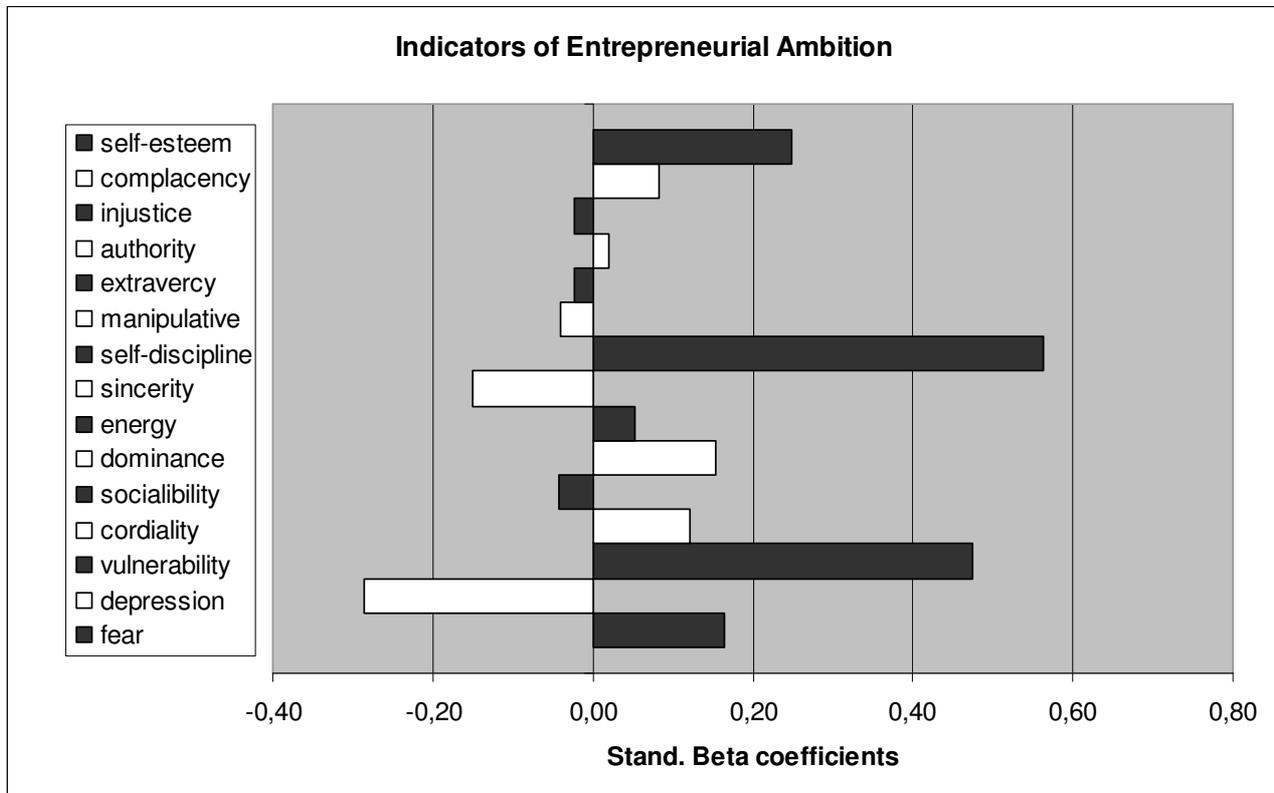


**Figure 4:** Difference in Personal Competencies before and after two electives Innovation & Entrepreneurship

Four out of five characteristics show an increase in scores. Self-confidence and interpersonal sensitivity show a significant improvement as does the ability to influence. It is noteworthy that students show a slight decrease in perseverance. Self-confidence is perceived as the most important characteristic by 42% of the students in the research, whereas 30% of the respondents indicate that perseverance is most important. Students perceive the characteristic ability to influence as least important. Furthermore, the student interviews indicate that from the means of support they get personal coaching is appreciated most at 83% and that results are successful at 72%. Overall student satisfaction with this elective programme is high at 96,3%. In order to improve our pedagogical model of student-centred learning using a constructivist approach, we analysed the psychological test scores trying to elicit indicators of entrepreneurship ambition.

In a single stepwise regression analysis (PIN=.05, POUT=.10, Sig.= .095, Adj. R<sup>2</sup>= .587) we found that self-discipline, vulnerability, self-esteem and fear are the most significant positive predictors of entrepreneurial ambition. On the other hand a sense of depression appears to be the most negative

indicators of entrepreneurial ambition. Striking as a second negative indicator is a sense of sincerity (see Fig. 5).



**Figure 5:** Indicators of Entrepreneurial Ambition

Based on the outcome of our research, we suggest that coaching students in the development of these positive indicators of entrepreneurship ambition and in helping them try to overcome the negative predictors will noticeably improve their success in entrepreneurship.

## 6. Individual competencies

One of the main issues in teaching entrepreneurship is the question what competencies students need to acquire. There are those that contend that entrepreneurship cannot be taught, but is mostly inherited. We regard competencies as a mixture of skills, attitude and knowledge and especially focus on the problem-solving abilities of students: how do they deal with a problem they encounter? As to the *individual competencies*, students are tested on personal qualities, intellectual capabilities and working skills before starting the programme in order to assess their aptitude to becoming an entrepreneur. The test is not used as a selection mechanism, but as an instrument to establish individual strengths and weaknesses. Especially the weaknesses are aspects to take into account and to work on during each 10 week elective.

- During the introductory period most students indicate they are ill-at-ease with their newly found freedom of self-centred learning activities. They struggle with what they view as lack in direction and as a consequence they have the feeling they lose momentum in developing their dream. Some are insecure about what criteria are set to assess their deliverables. This shows how students are conditioned to work in an instruction-based environment and their struggle to deal with problems they encounter on the road to increase their own understanding and gain the necessary knowledge. As a result personal coaching in this period is intensified and assessment is centred on PIMS: Passion, Investment opportunity, Market value and Service orientation.
- Many students showed a lack in discipline in producing progress and status reports. This has to do with the fact that in a learner-centred approach students are responsible for their own learning trajectory. Consequently, deadlines for milestones in their project were introduced in a subsequent programme. This showed improved results, as students now had their own clear goals to work toward.

The emphasis in the programme lies on developing a personal vision on entrepreneurship and innovation. The purpose is for students to learn to reflect on their own role and take their own strengths and weaknesses as a starting point in their learning trajectory.

## 7. Concluding remarks and practical implications

From the above theoretical background and the discussion of the practical implementations we can conclude that constructivist student-centred learning implies that students are stimulated to set their own goals, formulate their own targets, collect their own luggage and select their personal mode of transport (or build their own) for their journey towards innovative entrepreneurship. It also implies that students formulate needs and demands in the course of their learning process. However, at the start of that process the student is unaware of his needs, so that personal stimuli from real-life experiences are required. Keywords in this process are ownership, partnership, diversity and ability to learn. These do not only apply to students, they apply to educational institutes in general. The question whether management and faculty embrace entrepreneurship is a prerequisite for a successful programme. Management commitment to whatever is necessary to set up a successful entrepreneurship programme is vital. As long as entrepreneurship is not widely accepted by members of the faculty as being part of academia, it requires a few champions within the institute to embrace the subject. Yet, entrepreneurship is not just the responsibility of economic departments of business schools. Successful implementation of entrepreneurship education should take place cross campus and multidisciplinary. The Hague University of Applied Sciences has recognized this and stimulated the Centre of Excellence for Innovation and Entrepreneurship.

To this end the Centre developed its elective programme within the University's profile without clashing with departmental curricula. Furthermore, the Centre has started a research programme to obtain further insight into the influence of individual competencies in innovation on the success of the innovation process. This should enable us to eventually improve a professional's preparedness for future innovation processes. In line with the Dutch innovation agenda the Centre aims at stimulating a percentage of the student population of The Hague University of Applied Sciences towards innovative entrepreneurship that is equal to the national average of people who are entrepreneurs. Currently; this national average hovers around 10%.

Innovative entrepreneurship can be a powerful instrument towards business excellence. It should be the hub of activities, bringing together and matching various disciplines in every combination possible. Innovative entrepreneurship is not about solely following the cognitive route; it is about using competencies, about experience in practical situations. Our research seems to indicate that the effects of entrepreneurial education can be positively influenced by the pedagogical climate we have created. Furthermore, there are indications that entrepreneurship in education is worth investing in. Innovative entrepreneurship comes in many shapes and sizes. In the United States a number of important output indicators are used to measure the success rate of entrepreneurial education: the number of start-ups, contribution to regional development in terms of employment and economic growth, the number of students with entrepreneurial elements in their curriculum, or the number of entrepreneurs in front of a class. Further research into these indicators may prove the assumption on which the Centre for Innovation and Entrepreneurship is founded: *teaching innovative entrepreneurship pays*. Research carried out within the Centre into the effects of the pedagogical approach on the development of entrepreneurialism among students will continue.

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