The venture creation approach: integrating entrepreneurial education and incubation at the university

Susanne Ollila and Karen Williams-Middleton*

Division for Management of Organizational Renewal and Entrepreneurship, Chalmers University of Technology, 41296, Gothenburg, Sweden
Fax: +46-(0)31-772 1917
E-mail: susanne.ollila@chalmers.se
E-mail: karen.williams@chalmers.se
*Corresponding author

Abstract: University entrepreneurial activity strives to deliver commercial value from university research. Entrepreneurial education, while having the same fundamental purpose, focuses on the stimulus of the individual. Recognising a gap in the literature between the fields of university entrepreneurship and entrepreneurial education, this paper proposes a venture creation approach to learning within an integrated environment. A study of Chalmers School of Entrepreneurship shows how university entrepreneurship, in the form of incubation, and entrepreneurial education, can be integrated. This integration provides both opportunities and challenges, both of which are addressed by utilising conventional problem-oriented and solution-focused learning philosophies in tandem. The venture creation approach builds upon combined learning philosophies in order to allow students to 'test the water' while reflecting upon real-life situations and explore entrepreneurial behaviours when creating new ventures. The paper concludes that actors engaged in combined entrepreneurial education and venture creation need to recognise, adapt to, and appreciate the tension and dynamics of the integrated environment.

Keywords: university entrepreneurship; entrepreneurial education; venture creation; incubation; entrepreneurial learning; problem-orientation; solutions-focus.

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Biographical notes: Susanne Ollila holds the positions of Assisting Professor at the Department of Technology Management and Economics at Chalmers University of Technology (Gothenburg, Sweden) and research leader at FENIX Centre for Innovations in Management. She is a Behavioural Scientist and her research is mainly focusing political leadership and entrepreneurial behaviour, knowledge sharing and learning in high-tech organisations. She is also current involved in a research project regarding open innovation.

Karen Williams-Middleton is a PhD candidate at the Management of Organizational Renewal and Entrepreneurship Division at Chalmers University of Technology. She is part of the educational staff at the Chalmers School of Entrepreneurship and Gothenburg International Bioscience Business School. She also is involved in innovation system projects at the regional and inter-regional (EU) levels. Her research is mainly in entrepreneurial behaviour development within institutional settings, with additional interest in societal entrepreneurship.

1 Introduction

Universities are gaining an increasingly important role towards innovation development, going beyond the core responsibilities of conducting research and teaching, to include a *third mission* of delivering, to society, economic development of research (Etkowitz, 2004; Etkowitz, et al., 2000; Mowery and Sampat, 2005; Tassey, 2005). The activities of the universities engaging in the third mission can include technology transfer, patenting, venture creation, regional development, incubation and science park development, among others. After a substantial review of literature, these are recognised as broadly defined under the term university entrepreneurship, structured into four sub-streams: entrepreneurial research-university, productivity of technology transfer offices, new firm creation, and environmental context including innovation (Rothaermel et al., 2007). Even with such a broad definition, there still exists a gap in the literature, where entrepreneurial education is not included as a contributing stream of research to the field of university entrepreneurship.

In parallel, the growth of entrepreneurial education programs at colleges and universities illustrates the increasing importance of educating and developing new entrepreneurs (Finkle and Deeds, 2002; Katz, 2003; McMullan and Long, 1987; Solomon, 2007). Menzies (2004) discusses a recent development in university-level entrepreneurial education as an emphasis towards venture creation. Thus, entrepreneurial education with a focus on venture creation has implicitly the same intent as the third mission of the university – to contribute to future economic development stemming from new innovations. What has not been explored in depth is the utilisation of entrepreneurial educational platforms as a mechanism for university entrepreneurship (Pittaway and Cope, 2007), particularly in the form of venture creation and incubation. However, this is perhaps due to the potential challenges encountered when combining academic and business perspectives and objectives.

In Sweden, university researchers hold, independently, the responsibility of commercialising their research, differing from the large majority of university regulation around the globe, particularly the conceptual models developed in the USA[1] and copied in other industrialised countries. However, regardless of who owns the responsibility for commercialising research, there is an additional challenge to overcome the situation that the majority of university researchers are not interested in championing their ideas in the market place, as the entrepreneur, because they already have a decided career path within academia (Bosma and Harding, 2007).

Drawing upon the case of Chalmers School of Entrepreneurship (CSE), a combined masters-degree entrepreneurial education and incubator at a technical university in Sweden, this paper will address the challenges mentioned. Since 1997, CSE has successfully educated more than 250 aspirant entrepreneurs and, since 2001, incorporated more than 25 companies with a current market value of approximately 66MEUR[2]. The case of CSE is used to illustrate how education can be incorporated into university entrepreneurship activity in the form of incubation. It also helps to explore how entrepreneurial education can, in turn, benefit from integration into real-life venture creation.

Research regarding action-based entrepreneurial education at selected Swedish Universities, including Chalmers University and CSE, has been conducted in the past (Rasmussen and Sørheim, 2006; Jacob et al., 2003). However, as pointed out by scholars (Pettigrew et al., 2001) more longitudinal, in-depth research is needed. As actors involved in the daily operations of CSE, we both recognise the need of the external evaluation conducted by other researchers, but also recognise the lack of more in-depth outcomes and effects of the education, which could perhaps be difficult for an outside researcher to assess or even identify. Thus, this paper will investigate the case of CSE from an insider's perspective, using insider action research methodology (Coghlan and Brannick, 2005; Roth et al., 2007).

This paper has two aims. The first aim is empirical, showing an academic environment that incorporates the creation of new ventures into a masters-level entrepreneurial education. Given the challenge of integrating these two, we feel that the empirical material merits discussion. The second aim is to address the gap in literature between university entrepreneurship and entrepreneurial education. Drawing upon existing research into entrepreneurial education, and building upon various learning philosophies, we formulate the following research question: What approach is needed to facilitate learning that integrates entrepreneurial behaviour and venture creation? Thus, the theoretical contribution of this paper is to show how entrepreneurial education contributes to the field of university entrepreneurship.

In the paper, we first present teaching approaches and learning philosophies to be utilised in combination when integrating entrepreneurial education with venture creation. Next, the methodology of the study is explained, followed by the empirical material. Finally, we discuss an approach to venture creation, from which conclusions and implications are drawn.

2 Entrepreneurial education: philosophies and approaches

Many scholars agree that higher entrepreneurial education has to have an experiential learning perspective together with some kind of interactive pedagogy in order to enhance learning and innovative capacity (Barrett and Peterson, 2000; Collins et al., 2006; Honig, 2004; Johannisson et al., 1998; Lundström and Stevenson, 2002; Vinten and Alcock, 2004; Yballe and O'Connor, 2000). Heinonen and Poikkijoki (2006) explore an entrepreneurial-directed approach that seems to be well suited for teaching entrepreneurial behaviour in a university setting, as it encourages students to broaden their perspectives, and also develop the entrepreneurial skills and behaviour required for their studies. This approach represents an experiential learning challenge to teachers and

students in that it decreases the predictability and control of the teaching situation, while increasing the interest in learning and teaching.

Gibb (1996) proposes an enterprising teaching approach that he argues as being essential for connecting conceptual knowledge to a range of entrepreneurial behaviours. Some of the key elements Gibb proposes are: a focus on process delivery, ownership of learning by participants, learning from mistakes, negotiated learning objectives and session adjustment and flexibility. Gibb claims this approach is successful because it creates:

a a learning environment which provides ownership, control, autonomy and customer-led rewards

b a holistic management and multi-disciplinary approach to teaching which is project and process-based

c a teaching style employing a wide range of learning processes such as conventional lectures, seminars, and workshops, focus groups, teaching of peers etc.

Overall Gibb (1996) claims that the enterprising approach stresses the importance of a focus upon the 'internalisation' of knowledge and the adoption of a definition for real learning, as stated by Maples and Webster (1980).

We recognise that an experiential teaching approach is essential as it draws focus to the importance of learning the process of acting entrepreneurially. However, we think that more is needed in entrepreneurial education to prepare individuals to start up a business. Even enterprise simulation lacks the sense of urgency and pressure created by real-world business situations, such as having multiple priorities and stakeholders, thus, leaving the student without a true-to-life experience. Thus, experiential teaching, while simulating reality, is still contained within the academic arena. Bringing entrepreneurial education together with incubation at the university and letting students create a venture as a part of their entrepreneurial education is, in this paper, proposed to be a successful way to develop entrepreneurs as well as new companies, because it incorporates the context of the real business world.

However, as mentioned before, integrating entrepreneurial education with incubation creates challenges. Traditional academic learning is strongly related with the ability to rationally identify and analyse situations and problems in order to give a specific answer (Collins et al., 2006; Gibb, 1993). Students are repeatedly tested in noticing when there is a problem, what the problem entails, searching for causes and/or reasons for the problem, and then, based on analysis, proposing answers. Even though there are schools and centres within academe that build on the rationale of bridging theory and practice, the learning philosophy behind most academic educations seems to be problem-oriented. However, it is known that entrepreneurs are action-oriented and therefore many entrepreneurship educations are adapting experiential learning approaches (Barrett and Peterson, 2000; Collins et al., 2006; Gibb, 1996; Lundström and Stevenson, 2002; Vinten and Alcock, 2004; Yballe and O'Connor, 2000).

A challenge educators' encounter in combining entrepreneurial education and incubation could be described by using Glassman's et al. (2003) discussion of balancing the Acropolis and the Agora: the Acropolis being the temple of accepted approaches to university (structure) and scholarship and the Agora representing the market of materialistic pursuits led by ungodly commercial interests. Acropolis is comparable to a learning philosophy focusing on traditional academic learning, as strongly connected

with problem-oriented thinking processes. What is needed is a learning philosophy that stimulates entrepreneurial behaviour, described by Glassman et al. (2003) as the Agora. A solutions-focus philosophy is proposed to fulfil this need since it stimulates behaviour that is commercially oriented (Caird, 1993; Gibb, 1996).

2.1 Solutions-focus learning philosophy

The solutions-focus philosophy is starting to be widely used in different settings such as therapy, management and education. This philosophy values simplicity and practicality. The focus on solutions rather than on problems, the future instead of the past and what is going well rather than what is going wrong, leads to a positive and applicable way of learning how to act entrepreneurially. Thus, the commercial-oriented behaviour necessary for business creation is recognised.

The solutions-focused brief therapy (SFBT) approach was founded by Steve de Shazer (Trepper et al., 2006) and focuses on client strengths resiliencies. There has been an increased interest in applying this approach to school settings (Franklin et al., 2001). In most cases, solutions focused philosophies and skills are used to engage the students in taking responsibility for their own learning process.

David Cooperrider (1990) differentiates between problem solving (PS) and appreciative inquiry (AI). PS includes identification of the problem, analysis of the causes, analysis and possible solutions and action planning. AI includes appreciating and valuing the best of what is, envisioning what might be, and dialoguing around what should be. Cooperrider (1990) argues that positive images, e.g., ideals and visions have a 'heliotropic effect' that is they energise and orient human behaviour toward the realisation of the ideal. People seem to put more energy and action when directed towards exploring what works rather than what does not.

Yballe and O'Connor (2000) present a pedagogical adaptation of AI called appreciative pedagogy (AP) by transferring AI's basic values into the classroom, in organisational behaviour and management classes. When faculty stay focused on inquiring into the success stories of students, highlight factors that made things work, identify the skills and know-how needed to repeat successful episodes and encourage students to focus on developing a few skills and acquiring the knowledge critical to success, the 'heliotropic' power of positive imagery leads to positive action. Yballe and O'Connor (2000) believe that AP has generated a number of good results regarding student learning, i.e., they have observed more energised and sustained interactions between students, students have a fuller and more hopeful view of the future and images of what they (students) can be, and students gain a greater trust in self and heightened confidence in their experience.

Barrett and Peterson (2000) claim that in the post industrial era, it is critical to have an organisational culture that promotes learning, renewal and innovation. The challenge is to promote the capacity to learn while doing, to jump into action without a pre-scripted plan, and to improvise new solutions to ill-formed problems. Barrett and Peterson (2000) present generative learning as different from adaptive learning that relies on traditional skills of problem solving. Generative learning involves an appreciative approach, an ability to see radical possibilities beyond the boundaries of problems as they present themselves. Typically, high performing systems understand and value this capacity. They transcend the limitations of what looks like reasonable solutions and consider

possibilities that cannot be considered when using a conventional analysis as in a problem solving approach. Barrett and Peterson (2000) state that when living in an appreciative framework, human systems develop this capacity. It is the challenge of teachers to facilitate the creation of such a culture for learning.

Accordingly this paper argues that by adopting a solutions-focused philosophy, educators support the aspirant entrepreneur to develop behaviours associated with venture creation [as proposed by Caird (1993) and Gibb (1996)] such as opportunity seeking, taking independent initiatives, actively seeking to achieve goals, coping with and enjoying uncertainty, taking risky actions, solving problems creatively, commitment to making things happen, flexibly responding to challenges and persuading others. Thus, balancing the two learning philosophies – *problem-oriented and solutions-focused* – enables educators to integrate entrepreneurial education and incubation.

3 Methodology of the study

This study has been based on the principles of insider action research (IAR) described by Coghlan and Brannick (2005) and Roth et al., (2007) as the generation of new scientific knowledge through the utilisation of contextual-based insights while simultaneously enabling continual and additional organisational capabilities. IAR concerns taking action and studying that action as it takes place, while also being part of the organisational setting in which the action is taken (Coghlan and Brannick, 2005). It is not just one single methodology, but rather includes a wide range of methods (Reason and Bradbury, 2001).

IAR was chosen in order to capture the in-depth dynamic of the integration of entrepreneurial education and incubation, recognised as not yet observed by outside researchers. As insiders, we have access to the broad spectrum of information that due to sensitivity, degree of trust, articulation, and other contextually-based challenges, outsiders would not have access to, and as such, we are not reliant upon espoused-theories (Argyris, 1991).

Common critique of insider action researchers is that they are too close to the data which they utilise in their studies, and as such, are potentially incapable of objective evaluation the data. This kind of critique is based on a historical model of research, in which the experimenter completely controls the variables that affect experimental outcomes and thus, is irrelevant in research were the contextual basis is part of the design (Shani et al., 2008).

This paper is based on a study that may be characterised as a case study (Yin, 1994) due to the rich empirical descriptions provided through a variety of sources for collecting data. The case can act independently as an analytic unit (Eisenhardt, 1989), contributing to emergent theory through the patterns of relationships and underlying logical arguments it provides, thus, bridging from qualitative evidence to deductive research (Eisenhardt and Graebner, 2007). Case study research is applicable as the intention is not to test existing theory, but develop a new learning approach based on the specific relationships and logic of the CSE environment.

3.1 Data collection and analysis

Data was collected over a period of time spanning from the Fall of 2005 through the Spring of 2007. During this period of time, three specific classes of students were present at CSE: CSE05, CSE06 and CSE07. Specific information about these classes is presented as follows (see Table 1). During this same period of time, faculty associated to CSE included two incubation staff, two education specific staff (for the marketing and finance courses), and five core staff (engaged in school management, education, incubation and research) and one administrative staff.

CSE has an average class size of 18, and essentially the same amount of staff, except for the inclusion of the incubation staff in 2001. As researchers, we have been engaged as core staff in CSE since 1997 and 2004.

The main means for collecting data have been *participative observations*, individual interviews – a combination recommended by scholars such as Atkinson and Coffrey (2003), and *written documentation*. The participative observations provided general contextual-based knowledge of CSE and the interviews and written documentation provided specific reflections from the staff and the student perspectives. Quotes 1, 3a, and 3b are written documentation representing reflections from students. Quotes 2 and 4 are interviews, providing reflections from staff. The data is illustrated through selected quotes.

Table 1 Subject-base for study

Year	*Number of students*	*Men*	*Women*	*Number of teams (projects)**
CSE 2005	20	15	5	7 (13)
CSE 2006	23	20	3	8 (10)
CSE 2007	21	20	1	7 (12)

Note: *Sometimes, the venture on which the teams are working is not commercially viable, and thus the venture is shut down, and the teams start a new venture.

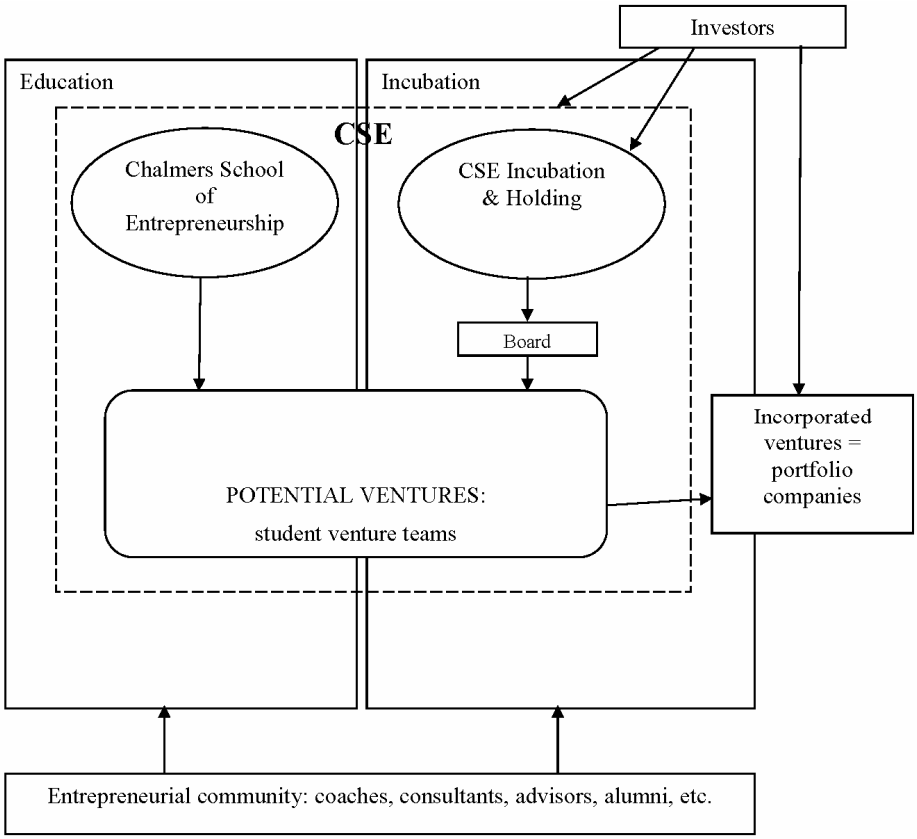
Participative observations are selected from multiple arenas, including but not limited to: staff meetings, school meetings, classroom activities (lectures, seminars and workshops), informal interactions within CSE, and specialised development conversations. Informal interviews have been conducted with staff members that have been engaged in coaching and debriefing meetings with students at CSE. Representative written documentation is taken from emails and assignments, which are part of a broader collection of documentation including written educational assignments, journals, newsletters, and emails (between both student and staff, and staff and staff).

Based on the method of insider action research, data is collected from the daily conduct of CSE, instead of being specifically designed. We analysed the data available to us and selected quotes from students and staff that illustrate and exemplify the dynamic and integration between incubation and entrepreneurial education. One perceived limitation could be that data is specific to the defined period of study: Fall 2005 to Spring 2007. However, as researchers acting also as core staff at CSE since 1997/2004, we are able to confirm that the period is representative of the entire historical period of CSE, particularly since 2001, when the specialised incubator was introduced.

4 Integrated entrepreneurship education and venture creation – the case of CSE

In the mid-1990's, individuals at Chalmers University of Technology[3] recognised the need for stimulating entrepreneurial activity and bridging the gap between inventors with ideas and the marketplace. It became apparent that most existing entrepreneurship programs were focused on teaching about entrepreneurship, rather than actually developing entrepreneurs. The result, in 1997, was the creation of CSE: a combined masters-level education and incubator, added in 2001, environment developing both entrepreneurs and ventures. The core design at the inception of CSE was aligning a team of students, specifically admitted due to an expressed predisposition and/or interest towards entrepreneurial activity, with technology-based ideas, recruited to and contractually conjoined with CSE with the purpose of being developed into ventures. The education is based on action-based learning, where students are given a foundation in theoretical and practical knowledge which they utilise while creating their real-life ventures, in which they have an ownership stake[4]. The student teams are supported by educators, practitioners, coaches, investors and business advisors, collaborating to fill the needs of both student and venture.

Figure 1 CSE organisational structure



Due to legal requirements, there is a need for certain structural designs that establish some boundaries between academic and business organisations, in this case, Chalmers University of Technology and the business organisation that owns the portfolio of CSE companies (presented as the education and incubation 'boxes' in Figure 1). However, actors associated to these organisations are co-located in a single working and teaching environment, co-contribute, and have a shared responsibility for CSE (presented as the dashed line 'box' in Figure 1). The student team ventures have incubation office space located next to the CSE working and teaching environment, thus, allowing for education to be conducted simultaneous to the incubating of the ventures. The masters-level degree education, delivered over 1½ years[5] utilises the venture as a core stimulus for learning. Common entrepreneurial education and incubation practices are utilised as a foundation for integration activities, and then adapted due to their specialised needs.

The introductory year is preparatory, mixing theory with simulation exercises, under the pretext that the students build a basic entrepreneurial skill set prior to the action-based learning within the ventures and the venture teams. The mixture of theory and application, particularly during the first one-half year, mirrors more traditional and 'accepted' approaches to teaching entrepreneurship. Grading is based on a combination of individual and group assignments, tests, and presentations. However, even at this early stage of the education, there is an attempt to integrate real-world aspects through role play exercises, lectures and cases based on companies previously incubated through CSE, and writing a business plan on a former CSE venture idea.

At the same time that the students are in the introductory year period, incubator focused staff of CSE have the main responsibility of recruiting and screening ideas that could be formed into ventures during the project year. There are multiple criteria used to assess the potential ventures, most of which are to ensure fit with the holistic design of CSE, including the joining of student teams to the ventures to enable learning about technology-based entrepreneurship and business creation, ensuring ownership potential, and commercialising research. This makes the screening critical for the integration of entrepreneurial education and incubation.

In the beginning of the project year, the first critical integration activity takes place, when the students, as a class, select their venture ideas and are formed into venture teams of two to three students. The team formation process is conducted over a two week period. During this period, the students are presented the finalised group of ventures that have been screened by the incubator staff. Knowing that the class will be divided into teams of two to three persons, the class as a whole selects a certain number of ventures to be incubated. The students then, individually, communicate their three preferred ventures, and the individuals within the class with whom they would like to work with for each venture. Based on this, the staff forms venture teams, taking into account both the communicated interest of the students, but also, equally as important, the needs of the venture. Team formations are final. Once teams are formed, contractual agreements are set in place.

There are multiple agreements necessary to enable incubation integrated with education, including agreements regarding intellectual property, disclosure and ownership. One of the critical agreements is a contractual trilateral agreement binding the researcher providing the idea to the venture, both as a means to ensure engagement to the learning process for the venture team and continued contribution to development of the venture idea, such a board meeting participation, and to define ownership, both of the

venture and the background intellectual property. Each venture/student team is provided with a business developer from the incubator, representing the ownership share of the incubator. The students, researcher(s), incubator, and sometimes chairman of the board all own shares in the venture, should it be incorporated after 'graduating' from CSE, with no single party owning greater than a 49% share of the venture, and with a certain percentage of shares allocated for future engagement of professionals. The structure of the agreements ensures both professional handling of the information and to ensure the learning position for the students. Should a venture be terminated, the idea is returned to the idea provider, and the student team is provided with a short-list of new potential ventures from which to select their next venture to incubate during the project year.

The incubator provides certain support and services to the ventures. First the venture teams are provided with seed-financing to facilitate initial start-up activities, such as verification of the idea's technology, prototype development and/or patent application. The students are given an initial amount of capital at the beginning of the project year, with the potential to apply for additional seed-capital, should they be able to attract matching funds to the venture. Office space and services are provided for by the incubator and located adjacent to the education and staff environment. Space and services include printing, copying, fax, telephone, utilities, computer support, working and meeting space, etc. The student venture teams are responsible for the office space and facilitates allocated to them.

During the project year, education is delivered mainly through four courses, focused on strategy, finance, marketing and leadership. The grading differs slightly from course to course, but again is mainly based on individual and group assignments and presentations. The finance course may also include testing. The main shift from the introductory year education is that deliverables are based, as much as possible, upon the current or future requirements of the real-life venture – i.e., deliverables are for both educational and venture creation purposes. Using the ventures as the core learning object is one of the key integration activities, because it integrates the incubation of the venture with learning about the entrepreneurial process of developing the venture. Integration also takes place through the delivery of a Master thesis. The Master thesis is broken into three main sections – a technology study, a market study and a business plan.

5 Challenges for students and educators

Creating new ventures extends beyond the conventional activities often presented in entrepreneurial educations. Integrating education and incubation presents challenges for both students and educators, such as determining which activities should take precedence, designing classroom lectures that balance academic requirements with commercial needs, or balancing stakeholder needs, among others. Periodically this means that students have both academic and business deliverables during the same period. In the following excerpt from a student diary the student reflects upon an assignment:

> "I do think that (assignment X) would have done more good if the feedback got back before the (Business Plan) hand-in ... For me, however, (assignment X) was a hand in that forced me to focus on important stuff that I wouldn't have prioritised since we have a lot of other things to do. When I think of it in that way the feedback is of less importance because the important part, forcing me,

> is already done and a lot of the thoughts ended up in the (Business Plan) anyway." (Quote 1)

The educator requires the student to perform an assignment about the venture that the student felt 'forced' to do and otherwise 'wouldn't have prioritised'. The educator's objective is to *facilitate a learning process* where the academic assignment aligns with the business plan, and in turn, the student comes to appreciate the value of the assignment as contributing towards the business plan. Thus, instead of being perceived as achieving separate goals, the assignment and the business plan are seen as integrated and supporting one another.

Integrating education and incubation means that one can have *multiple stimulators of learning* besides the educator and the student. The following quote from a teacher describing a discussion with a venture team regarding the technology section of their Master thesis:

> "Students from project alpha came to me to discuss a strategic decision they wanted to make for their company. The technological functionality, upon which the innovation was based, while critical to the product outcome, was not the core customer value to be communicated. The way in which the team felt they needed to conduct their business was based upon an approach towards customers that did not necessarily care about how the product was actually created (and thus the technology behind that creation), instead of an approach that directly communicated the value of the project's IP and technology. This essentially changed the strategic direction of the business model for the company from the educational norm, which meant that many of the academic as well as real-world exercises had to take a dramatic shift. The student team communicated that they felt this was critical to the success of their project, though they wanted to find some security in going forward with a plan of action that would deviate from much of the advice they received from various stakeholders, though aligning with advice from other stakeholders. I sensed I had to, in a way; give them the push on the shoulder that they needed to proceed." (Quote 2)

The above quote shows how the student team had already recognised the need to change the business strategy based on interaction with their stakeholders before coming to talk to the educator. While the students take the initiative to request changing the direction of the Master thesis, they are not comfortable taking the risk to enact the change independently. The educator recognises the need to give the students more confidence in taking risks, thus, supporting behaviour associated with business creation. The students are *seeking and co-creating knowledge* together with the educator.

Sometimes activities related to the venture clash with lectures or other classes. The next excerpt is from a student that missed a negotiations lecture in order to attend a venture related meeting, and instead was required to submit a two-page assignment of descriptions and reflections based upon the real sales 'negotiation' conducted with the company in the meeting.

> "During the start of the meeting, we did our 15 minute presentation and got some questions during the time but mainly the people from Company X sat quiet. After the presentation the first reflection we got was that we need to rearrange our presentation in order to get a sell on something. There should be a focus on the things we actually came down to discuss, not on our education as such and the project we are running. When they mentioned this it felt more or less obvious still before the negotiation we thought it would be best to give a thorough background description about why we where there but apparently this

> is not as valuable as one would think. … Here it is easy to reflect upon that we as a team from CSE might have been a bit naïve about how we interpreted Company X. …We should of course have thought about different turns that the negotiation could take and discussed how we should act during the different circumstances." (Quote 3a)

Because the activities of the venture creation are organic and linked to the realistic development of a commercial-able idea, *learning outcomes can emerge from real experiences* encountered by the students in the context of the ventures, thus, *creating new learning opportunities*. It is in these situations that the teacher needs to support learning from the emerging situation and re-define a pre-defined exercise.

The next situation shows another specialisation of the integration of education and incubation. Not only is the value experience from the education integrated into a real-world situational learning, but the experiential learning from the student provides an educational opportunity for the educator. The real time application made the learning process more contextual for the student, as seen in a written assignment:

> "The (educational) exercise took its start from our (venture) project and the contact we have taken with Company X ... The class was divided into two teams, us and Company X, and the arguments and goals for the role play negotiations was decided individually by the two teams. The exercise showed in a powerful way the meaning of thinking in the ways of the opponent and try to see what they are aiming at and the values they have. We will for sure use this in upcoming situations, where much is at stake. Just knowing about it is a start." (Quote 3b)

The quotes regarding the negotiation with Company X illustrate a series of learning processes, where a student applies classroom learning to a real experience in order to fulfil missing a classroom lecture. The supplementary assignment becomes a relevant item for a future teaching tool, and is incorporated into a negotiation role play exercise. The ability to relate to the role play situation and test multiple situations through the exercise leads to an appreciated learning and reflection.

Sometimes the students take on the entrepreneurial challenge themselves, reaching out to industry partners and contacts to help develop the venture, the challenge sometimes then is to balance the venture focused activity of the students with a re-anchoring to the educational foundation, providing some time and space for analysis and reflection. As one teacher expressed this regarding a male student:

> "John was the core driving force behind project delta – there was no question of his entrepreneurial drive and vigour for the progression of the project. He was quite talented in networking and bringing together key personnel and really understanding the needs of making the business grow. However, he was so caught up in driving the project that it was consuming him. He became increasing reliant on his team-mates, Mary and Steve, to anchor his activities, help him capture and organize in written and illustrative form the critical needs, next steps, and longer term objectives of the project. We had countless talks through the course of the education, both one-on-one and in a group about how to attempt to balance activities, allow time for reflection and summarization while at the same time increasing efficiency and effectiveness of the project and educational activities. All the educators had to find ways to help project delta, with John in particular, align their daily deliverables to educational assignments, sometimes in specialized formats, with the hope that this allowed for some reflection and longer-term thinking without killing the entrepreneurial drive." (Quote 4)

The environment is designed to allow students to take the *chance to make mistakes, and even encourages mistake to be made*, in order to push boundaries, and otherwise test set limitations of current thought, while supported by a network of classmates, alumni, staff and external partners. As illustrated by the case of John, the *educator needs to increase the tension*, restraining the student from focusing too much on the entrepreneurial opportunity, to the detriment of developing the venture, through adapting more traditional academic learning and illustrating the value of theoretical knowledge. At the same time, the educator has to determine how to align the education deliverables to John's heightened focus on the venture to ensure that he completes the education. The risk the educator takes is that the student does not in fact gain enough academic-based learning, such as the application of particular known and proven business theories, as is required in order to receive a degree. This requires recognising when flexible mechanisms for learning assessment can be utilised and adapted to situations, and when the more established methods of assessment, such as exams, are still to be enforced.

6 The venture creation approach to facilitating learning

A perspective on facilitating entrepreneurial behaviour through academic education is highly relevant. Existing literature on entrepreneurial education suggests that teaching entrepreneurs requires an enterprising approach (Gibb, 1996). However, we argue that in order to go beyond stimulating entrepreneurial behaviour to also include venture creation, and thus, support sustainable entrepreneurial behaviour, a real-life oriented teaching approach is needed. Building on Gibb's (1996) ideas, we propose a venture creation approach, based on empirical material from the study of the CSE case.

The quotes and reflections presented above can be interpreted in multiple ways, offering several possibilities. First, the quotes and reflections illustrate the opportunities and challenges that emerge when integrating university entrepreneurship and entrepreneurial education. The core opportunity provided is the use of educational platforms to stimulate university entrepreneurship activities, such as the development of new ventures from university research, with the core challenge being to ensure that tangible results are produced and sustainable. Next, the quotes illustrate how academic and business perspectives are utilised to support learning. Educators are using the traditional academic problem-oriented learning philosophy (Collins et al., 2006; Gibb, 1993) to promote reflection, analysis and understanding, as well as the creative solutions-focused learning philosophy (Barrett and Peterson, 2000; Cooperrider, 1990; Yballe and O'Connor, 2000) to promote students to seek opportunities, take initiatives, take risks, and flexibly respond to challenges. These promoted actions support behaviour associated with business creation, as described by Caird (1993) and Gibb (1996). The study suggests that through a balance of these two learning philosophies, both educational and incubation activities can be supported, allowing for integrated development of entrepreneurs and new ventures.

Our analysis of the data has led us to key elements, formulated into a venture creation approach (Table 2). This approach is allowing the entrepreneurial student the opportunity to 'test the water' – to go through real-life entrepreneurial and business activities in order to learn by doing, reflect upon actions taken, develop decision-making processes and prioritise activities, all with the intent of successfully creating new ventures. At the same

time, students are constantly directed and coached towards reflecting upon their real-life incubation experiences by means of theoretical concepts that they have learnt, hence considering both problems to avoid and opportunities to create in social situations (Barrett and Peterson, 2000). By improving their ability to use theory to reflect while being in situations, i.e., *reflection-in-action*, the students are becoming reflective practitioners (Schön, 1983) utilising reflective leadership (Ollila, 2000). It could also be argued that a venture creation approach is enabling 'internalisation' of knowledge (Maples and Webster, 1980).

A venture creation approach demands a learning environment that is 'reality', but, that reality must still allow room for reflection. Allowing too much flexibility in the education, i.e., letting the student too loose in Glassman's et al. (2003) Agora, takes away from the credibility of the education system accrediting the educational degree. Too much flexibility could also limit the availability of future entrepreneurial opportunity because of the need to attract additional ventures to the educational environment, hold credibility among the stakeholders supplying the ideas, and provide guidance to the venture. If the venture only operates towards business objectives, not allowing for 'academic' reflection and problem analysis, there may be missed learning and development opportunities. As a result, the venture could fail in the long-term.

Table 2 Combining and building upon conventional and enterprising approaches to develop a venture creation approach to learning

*Conventional approach**	*Enterprising approach**	*Venture creation approach*
Major focus on content	Major focus on process delivery	Major focus on reflection-in-action
Led and dominated by teacher	Ownership of learning by participant	Learning facilitated by integrated environment
Expert hands-down knowledge	Teacher as fellow learner/facilitator	Multiple learning stimulators
Participants passively receiving knowledge	Participants generating knowledge	Participants seeking and co-creating knowledge
Sessions heavily programmed	Sessions flexible and responsive to needs	Sessions emerging from venture related activities
Learning objectives imposed	Learning objectives negotiated	Learning objectives emerging through reflection
Mistakes looked down upon	Mistakes to be learned from	Mistakes encouraged
Emphasis upon theory	Emphasis on practice	Emphasis on creation
Subject/functional focus	Problem/multidisciplinary focus	Combination of problem-oriented and solutions-focused

Source: *First two columns from Gibb (1996)

The study also shows that to apply the learning approach needed for integration, educators must understand how the tension exists in reality. This means that educators facilitate and/or partake in real-world activities while also *bringing in complementary actors*, such as different academics, investors, idea providers, practitioners, etc. from other arenas other than merely differentiated educational disciplines. The same holds true for the incubators – that they must understand and continually take into account the

learning requirements to fulfil not just the development of the venture, but of the individuals that will drive the venture forward.

Barrett and Peterson (2000) also discuss that humans create an ability to see radical possibilities beyond the boundaries of problems when an appreciative framework is established. As the empirical material illustrates, learning gained from creating a venture involves not always knowing from the start what the learning objectives of a certain activity are to be. Rather the *learning objectives emerge* from the reflections that the students have themselves and discuss with educators. The ability to gain from emerging situations requires that both students and educators recognise, believe in, and appreciate knowledge, sometimes developed outside of pre-determined structures. The venture's need to gain commercial credibility through market interaction facilitates the environment in which these situations can emerge.

A venture creation approach is just one potential for integration of university entrepreneurship and entrepreneurial education activities. Certainly, other forms of integration are possible, such as innovation system environments and understanding financial valuation or technology transfer activities and developing licensing models. Regardless of the integrating elements (incubation, licensing, etc.), all actors involved must take an active role in developing and upholding the integration, in order to ensure that the approach utilised reinforces the activities they are attempting to achieve. Also, it is important to align the entrepreneurial education focus with the intended outcome of the university entrepreneurship activity. In the case of CSE, venture creation was the common objective.

The way in which the integration is viewed is highly dependent upon the position from which the perspective is taken (i.e., recognising integration will be different for a regional development officer, compared to a faculty member). Thus, it is important for further research to address the potential integration of university entrepreneurship and entrepreneurial education from multiple stakeholder perspectives, such as the university innovation system, university management, regional development agencies, and investors, in order to create more knowledge about how the venture creation approach is contributing to closing the gap between the two.

Our findings build from the case of CSE, created in one particular context. However, we assume that this approach could be applied in other educational settings were the objective is to both develop theoretical knowledge as well as drive change. Future research could focus on other examples of integration to further develop the ideas of this paper.

7 Conclusions

This paper contributes both independently to theory within entrepreneurial education, but also reduces the gap between university entrepreneurship and entrepreneurial education. Reporting from a study of a Swedish master-degree entrepreneurial education, the paper suggests that integrating university entrepreneurship and entrepreneurial education contributes to economic development by creating both ventures and stimulating entrepreneurial behaviour. The challenges encountered when combining academic and business perspectives need to be carefully handled by the actors facilitating learning in such an integrated environment. The paper argues that the existing approaches, focusing

on traditional lectures or simulating enterprising, are not sufficient for this matter. The study suggests that a venture creation approach, adding reality as well as reflection-in-action to the education, is essential when having the objective of creating both entrepreneurs and ventures. In addition, the findings show that the venture creation approach manages this because it supports both conventional problem-oriented academic thinking and commercially oriented solutions-focused thinking.

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Notes:

1 See the US enacted the Bayh-Dole act (PL 96-517: The Patent and Trademark Act of 1980, with additional amendments PL 98-620 in 1984). There has been substantial discussion in the *Journal of Technology Transfer* and others.

2 To see a digital version of the report, go to www.entrepreneur.chalmers.se.

3 Chalmers University of Technology was founded in 1857 and houses 16 institutes. Chalmers provides education at the undergraduate, graduate and doctoral levels and has approx. 10,000 students (December 2007), 1,433 faculty and 704 administration.

4 Ownership, in the form of equity, is not enacted until the venture is incorporated, which can take place, at the earliest, after the educational degree is granted. The ownership structure is contractually stipulated in a collaboration agreement at the initiation of the venture (in project form), during the education.

5 In September of 2007, the education was expanded to 2-years, in accordance with the Bologna process.