# Transformative and transactional mechanisms in action-based entrepreneurship education

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## Abstract

In this paper, we argue that transactional and transformative mechanisms can be mutually reinforcing in action-based entrepreneurship program. Transactional mechanisms are defined as predetermined objectified exchanges which students experience, exemplified by all types of formal course examination. Transformative mechanisms are the ways in which students are allowed to re-relate to their identity as entrepreneurs and re-relate to the identity of their venturing experience. The paper explores transactions and transformations and hypothesizes around their interrelation in educational and value creation aspects.

The conceptual model builds upon illustrations from a master-level venture creation program in which the authors have extensive day-to-day involvement to anchor generated hypotheses. Whether from an entrepreneurship policy or an educational point of view, the established conceptual framework holds promise to offer novel insights into how to structure programs aimed at both venture development as well as personal development. A main conclusion then is that the two mechanisms – transactional and transformative – can and should be considered in tandem to facilitate the spanning of educational and value creating worlds.

Using transactional and transformative mechanisms as boundary objects between education and value creation is novel and non-obvious, and leads to fruitful questions for further empirical testing. Sample questions include: when can transaction mechanisms operate both towards educational and value creation objectives, how do transactional and transformative mechanisms correlate (and when are they unrelated), and how are transformative mechanisms affected by time and teamwork, and type and frequency of related transaction mechanism.

**Keywords:** *entrepreneurship education, action-based, transformative*

## Introduction

Many, including educators, would agree that education should be a transformative experience for the learner whereby not only knowledge but also skills and attitudes are affected (Mezirow 1991). For entrepreneurship education, such a view probably is even more prevalent (Matlay 2006; Mwasalwiba 2010) as demands for entrepreneurial competency increase (Mitchelmore and Rowley 2010). Many, however, would also agree that most education, including entrepreneurship education, for cost- and/or institutional reasons is primarily transactional, primarily requiring students to demonstrate knowledge in a way that allows the exchange of credits (Pittaway and Edwards 2012). Instead of just pointing at this unfortunate inconsistency, this paper wishes to explore the potential interaction and mutual reinforcement of transactional and transformative mechanisms in action-based entrepreneurship education.

We argue that high occurrence of transformative mechanisms does not make transactional mechanisms obsolete. Rather, transactional mechanism can be put into use in new ways. Given that the experiential and transformative venture-specific learning of entrepreneurship students is rich (Chang and Rieple 2013; Pittaway and Cope 2007; Pittaway and Thorpe 2012), the requirement then placed on students can be to translate their specific learning into generalizable (and thus transactional) understandings. This arguably complements the transformative learning and better anchors entrepreneurial competencies towards a broader range of situations.

Whereas much traditional education might be expected to have mostly transactional mechanisms in place mostly in the form of written exams, an action-based entrepreneurship education might be expected to have the opposite, i.e. mostly transformative mechanisms. In some cases, however, this has manifested in entrepreneurship education which has had to delegate transformative mechanisms to extra-curricular activities, tangential or external to the educational framework, while relying on traditional assessment of knowledge examined through transactional mechanisms (Fayolle and Gailly 2008; Pittaway and Edwards 2012). But entrepreneurship education, when it takes the full step into being action-based holds the promise that genuine academic qualities (more similar to those appreciated around e.g. doctoral theses) actually can and should be transacted upon, while making effective use of learning achieved through transformative mechanisms.

Little is known about the blending of the two types of mechanisms as well as how and to what extent both types of mechanisms actually affects entrepreneurial competence development. The purpose of the paper is to explore this uncharted territory while generating propositions worthy of further study. We start by introducing concepts of transactional and transformative mechanisms, linking them to entrepreneurial learning. This conceptual framework is applied to a specific case of a venture creation program (Lackéus and Williams Middleton 2011) with a proven track record of venture and entrepreneurial competence delivery, building upon an insider action research methodology. We then discuss the mechanisms and argue for how they can contribute to our understanding of both the educational and value creating aspects of action-based entrepreneurship education.

## Conceptual framework

Throughout entrepreneurship education, mechanisms are in place which ask the students to accomplish certain tasks. Some of these are more transactional while others may be more transformative. Transactional mechanisms are here defined as predetermined exchanges which students take for granted, i.e. do not experience that they can or should affect the actual mechanism as such, or the way in which it is delivered. Examples of transactional mechanisms are mechanisms through which specific knowledge and to some extent skills and attitudes can be assessed in a manner which can be generalized across different individuals, in comparison to a pre-determined answer or result. A written examination, in which students relay information and knowledge stemming from an academic course, is a typical example of a transactional mechanism. Transformative mechanisms are slightly more complex to define, but can be understood as contributing to the personalized learning of the engaged student, impacting not only knowledge, but skill and attitude, and potentially affecting a change in the perception of the student (Hager 2005; Jeffrey and Woods 1998; Tynjälä 1999). Accomplishments which students can affect and change in turn often result in students re-relating not only to what is asked for, but also to persons related to the accomplishment (team-members, teachers, other persons in their role-set). Examples of transformative mechanisms may be oral counseling talks, presentation of a business idea, open-forum seminar discussions, carrying out project work, or activities which deliver some kind of result to third party actors (i.e. not the student and not the education).

In his review of entrepreneruship education, Mwasalwiba (2010) outlined mechanisms which potentially distinquish between entrepreneurship educations focused on learning *about* the phenomenon of entrepreneurship, and more action-based learning. The former could be positioned as more associated to transactional learning, while the latter as more transformative learning. In Mwasalwiba's study, more traditional and transactional teaching methods were found be more prevalent (based on literature studied), such as lectures and case studies, with real venture set-up, presentations and study visit as least common, as indicated in Figure 1.

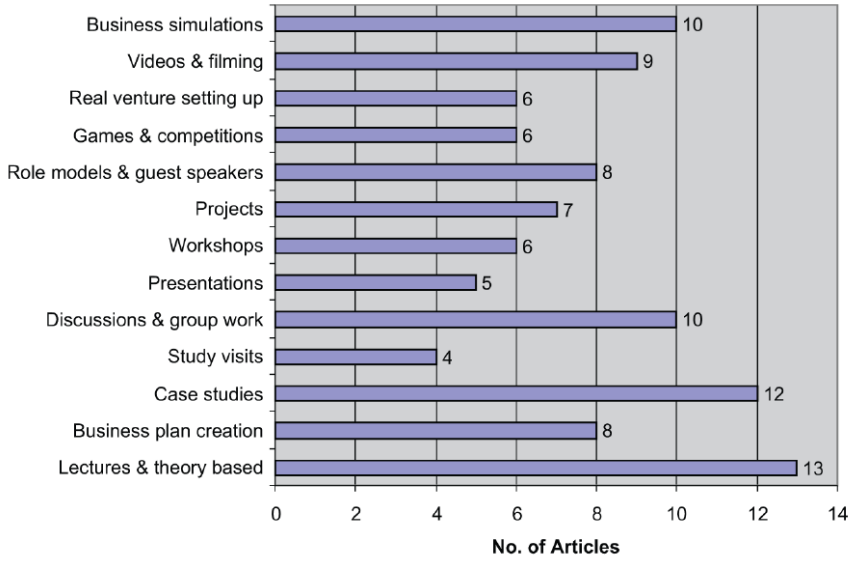


*Figure 1. Teaching methods (Source (Mwasalwiba 2010, p. 31)).*

Similarly, Neck and Greene (2011) outline different 'known worlds' of entrepreneurship education, presenting main focus, mechanisms use to facilitate learning, and pedagogic implications (see Table 1, adapted from Neck and Greene). The 'Entrepreneur' and 'Process' world can be argued as representative of learning *about* approaches; the 'Cognition' world can be argued as learning *for* or *in*, and the 'Method' world can be argued as illustrative of a learning *through* approach to entrepreneurship education.

Table 1. Types and framework of entrepreneurship educations

| | Entrepreneur World | Process World | Cognition World | Method World |
|---|---|---|---|---|
| Main focus | Traits Nature vs. nurture | Planning and prediction for new venture creation | Decision-making for engagement in entrepreneurial activity | Portfolio of techniques to practice entrepreneurship |
| Mechanisms for learning | Knowledge about business through lectures, exams, and general assessment | Cases, business plans, business modeling | Case, simulations, scripting | Serious games, observation, practice, reflection, co-curricular, design |
| Pedagogic implications | Description | Prediction | Decision | Action |
| Associated education type | *about* | *about* | *for/in* | *through* |

There is increasing consensus among entrepreneurship education scholars that if the objective is to generate individuals capable of practicing entrepreneurship, then a preferred entrepreneurial pedagogy ought to be learner-centric, interdisciplinary, action-based, co-creation oriented, experiential, and socially situated (Cotton 1991; Gibb 2011; Kyro 2008; Mwasalwiba 2010; Ollila and Williams Middleton 2011). This description strongly resembles progressive pedagogy which emphasizes social interaction, co-construction of knowledge, social immersion, and collaborative learning (Jonassen 1999; Pittaway and Edwards 2012; Tynjälä 1999; Woods 1993). Progressive concepts of 'effective' education have had substantial difficulty gaining adoption in educational practice, including within entrepreneurship education (Labaree 2005; Mwasalwiba 2010; Neergaard et al. 2012). The higher cost of active approaches and their misalignment to the conventional educational systems and paradigms (Ardalan 2008; Mwasalwiba 2010) are reasons for lack of adoption. In entrepreneurship education, a dominant practice is to train students in writing business plans rather than implementing conditions for experiential learning, a practice increasingly receiving criticism (Karlsson and Honig 2009).

Frequently mentioned underlying theoretical concepts for this kind of pedagogy are social learning (Bandura, 1997), situated learning (Lave and Wenger, 1991), experiential learning (Kolb, 1984), action learning (Revans, 1971) and emotional

intelligence (Goleman, 1995). At the core of such learning is what can be called a "bottom-up" dealing with contradictions causing frustrations or "disjunctures" (Jarvis 2012). In this regard, Engeström (2009) helps explain a fundamental aspect of expansive learning in activity systems that help explain how action-based entrepreneurship in particular can be at the center of a more progressive pedagogy.

> "Contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems. The primary contradiction of activities in capitalism is between the use value and exchange value of commodities. This primary contradiction pervades all elements of our activity systems. Activities are open systems. When an activity system adopts a new element from the outside (for example, a new technology or a new object), it often leads to an aggravated secondary contradiction where some old element (for example, the rules or the division of labor) collides with the new one. Such contradictions generate disturbances and conflicts, but also innovative attempts to change the activity." (Engeström 2009)

There is promise in further integrating between a field of entrepreneurship and more progressive pedagogical thinking such as expansive learning (Engeström 2009) and its foundation in cultural-historical activity theory (Vygotsky 1978).

However, a main question asked in this paper remains unanswered: can and should transactional mechinsm complement the transformative mechanisms found in more progressive education? Are there ways to to integrate between these two learning principles? One way to argue is that students affected by transformative mechanisms should be asked to "relate back" into established theories and categories (a transactional demand). They then not only add insider insights into venture creation, they also anchor their unique experiences into a more translational and thus general understanding. In other words, having to translate to others the transformative process that the students are experiencing is both a process of legitimization of action and a critical means for reflection anchoring experiences into more general understandings. These hypotheses will be explored through insights into an action-based entrepreneurshp education.

## Method

This paper is an explorative study, stemming from the authors combined 23 years designing, deliverying and evolving an action-based entrepreneurship education employing a venture creation aprpaoch (Lundqvist and Williams-Middleton 2008; Ollila and Williams Middleton 2011). Insider action research (IAR) principles are applied, utilizing contextually-based observations and experiences to develop to develop new scientific knowledge (Coghlan & Brannick, 2001; Roth, Shani, & Myleen, 2007).

### *Contextual Background*

The paper builds upon the case of a venture creation program in Gothenburg, Sweden: Chalmers School of Entrepreneurship. Chalmers School of Entrepreneurship (CSE), a combined masters-degree entrepreneurial education and incubation process at a technical university in Sweden. Since 1997, the School has educated more than 300

nascent entrepreneurs and, since 2001, incorporated more than 54 companies. Ideas, stemming from university or industry-based research in the fields of technology and bioscience, are explored through a combination of venture development and entrepreneurial training, in order to commercialize/utilize. Idea exploration builds upon a venture creation approach (Ollila and Williams Middleton 2011), where students learn *through* entrepreneurial engagement.

The school delivers education, guidance, and an incubation mechanism over two years, facilitating student engagement in real-life venture creation during the second year. The first year basically comprices two stages. The first semester introducing simulated (real but shelved) innovation projects upon which students do assignment, as if they were into the project. The second semester includes student teams doing idea evaluations on real invention disclosures from the university and beyond. The whole second year, the students are put in the driver's seat for early-stage but promining venture projects. Should the venture prove to be viable (to the 'market') it is incorporated upon completion of the masters program. Incubation is delivered through a partnering early-stage business incubator responsible for recruiting and contractually securing venture ideas to the school. The incubator provides initial seed-financing (dependent upon delivered milestones) and management support. The school facilitates a framework for establishing entrepreneurial role-sets including mentors, researchers, advisors, etc., as the ventures are required to establish a board and hold regular board meetings to monitor the progress of the venture. The board is initially made of a representative(s) from the research or industry group supplying the inidial idea and a representative from the incubator, with students selecting a chairperson as soon as possible after initiation of the venture. Students are allocated an equity option, which is realized should the student(s) [graduate(s)] continue with the incorporated venture.

Since the inventions attracted to the school require complementary driving force, students a) are given a mechanism to develop psychological ownership and b) can be motivated by all the feedback given from real-world customers, collaborating partners, etc. In essence, this is what today is often called an entrepreneurial learning pedagogy – or "learning through value-creation" (Lackeus et al. 2013). Value creation is a very strong motivator for learning due to the direct feedback coming from others around something more or less unique, real and valuable. Such a practice is now recognized as a leading example of entrepreneurial learning (Rae 2012).

As educators at the school, we have access to this empirical context, considered to be viable for investigating mechanisms for entrepreneurial competency development and entrepreneurial learning.

***Data collection and organization***

We reviewed the portfolio of educational mechanisms utilized in the studied action-based education in order to attempt to allocate mechanisms as being transactional or transformative based upon the the conceptual understanding present in the theory section. Data is compiled from design and delivery components of the education, including both written (documented) and experienced work from admissions processes, examinations, assignments, presentations, and other 'educational delvierables', as well as observation and insight from daily practice and specific group and individual

dialogues with students in the eduction. Allocation of mechanisms as transactional or transformative is partially based upon the ways in which competence, in the form of knowledge, skill or attitude are both delivered by the faculty, but also the environmental context, as well as the way in which learning is received illustrated, and hopefully internalized by the learner. For example, information and perhaps even skills can be more transacted, while learning, personalized knowledge, development of self-efficacy, perspective, etc. is more transformative.

## Findings

In Tables 2 and 3, transactional and transformative mechanisms of an action-based entrepreneurship education are described.

Table 2. Transactional mechanisms used in action-based entrepreneurship education

| **Transactional mechanism** | **Description** |
|---|---|
| Admissions process | Student answers five questions (2-3 paragraphs) describing him/herself and own competencies and ambitions. Oral interviews are conducted with a selected subset of applicants to determine admission. |
| Written course exams | First year written course exams typically ask students to relate assignment-work (with more or less real innovation cases) to relevant literature and lecture discussions. |
| Assignments | Student teams do different assignment related to courses and finally as part of their thesis work. Assignment are normally graded with feedback and feedback sessions based upon predetermined criteria. |

Table 3. Transformative mechnisms used in action-based entrepreneurship education

| **Transformative mechanism** | **Description** |
|---|---|
| Business reviews | Throughout the program, students are asked to present and to pitch their real business case. This can be done in teams or individually. However, all business cases are team-based. |
| Team development talks | Second-year students have four scheduled team development talks where they can bring up all kinds of issues concerning team dynamics etc to a facilitating teacher. |
| Proof of principle or concept study | During the last semester teams conduct these studies to substantiate aspects of their business idea or model. They can verify technological aspects, explore market potential, determine user needs, etc. |
| Social entrepreneurship | During the program, students are encouraged to engage into social entrepreneurship activities. These can range from marketing the program to doing CSR with Swedish firms in order to implement sustainable solutions (such as solar powered water cleaning) together with Red Cross in African villages. |

Examples of transactional mechanisms are the admissions process, course examinations, different applications for grants students write for financing (for themselves and their ventures), etc. Examples of transformative mechanisms are business reviews (where students present their ventures), scheduled team development talks with a teacher, conducting proof of principle or concept studies, or doing social entrepreneurship activities. In order to examine interplay between transactional and transformative mechanisms, we present examples from the three basic learning stages of the education: the similated first semester, the idea evaluating second semester, and the venture creating second year.

***First semester mechanisms related to simulated "as if" innovation cases***

One of the three mandatory courses in the first-year, first semester introduces management, strategy, and financial thinking and methods through lectures and case-work (normally shelved venture cases from previous years). Use of 'shelved' innovation cases gives students with very different backgrounds (technology, science, business, law, etc.) an introduction to the core subject areas of innovation management.

One written team assignment is the TEVA – Techno-Economic Value Analysis. In this assignment, teams are required to analyze the technology in their innovation case, identify its key functionalities, and determine which functionalities translate into quantifiable performance indicators. Teams are then required to determine relevant customer utilities for a chosen market segment and connect between the utilities and functionalities. Examination of TEVA aims at having the student not only illustrate general knowledge about the tool, but also the learning developed through applying the tool to the innovation case. A typical exam question is structured as follows:

> TEVA (Techno-economic value analysis) is a valuable tool to e.g. help prioritize R&D investments.
> 1. Outline the major analytical steps in TEVA with the aim to determine what technologies to invest into, referring to either the Spectro or Yeast projects (this starting question allows you to recapitulate around your TEVA assignment). (5p)
> 2. Discuss how you would adapt TEVA if the purpose instead was to choose between different applications. (3p)
> 3. Explain S-curves and why they are (often) important for TEVA. Exemplify! (5p)

***Second semester mechanisms related real idea evaluations***

The first-year, second semester idea evaluation course acts as a bridge between the simulated environment of the first-year, first semester (as captured through the innovation cases) and the real-life venture project-based pedagogy of the second year. The course introduces and applies a method for evaluating real invention disclosures under secrecy. Students work in teams and deliver evaluation rerpots, first based on a common "shelved" case, followed by two evaluation reports based on two real cases. The reports are graded. Teams need to include a logbook accounting for each individual student's contribution to the evaluation.

The learning outcomes of the course are evaluated through a written exam which

requires students to relate to their project experience as well as to theory. An example of an exam question evaluating the learning outcome to "Develop demonstrated skills in analyzing an idea as regards e.g. freedom to operate and novelty, through the use of patent databases and other means" is structured as follows:

> A seven-step general framework for freedom to operate (FTO) and patentability analysis is described in the course literature.
>
> a) Please describe the main steps of this proposed process. Provide one good example per step using your experience from either the "fish-case" or any of the real cases. Pinpoint any challenges that you have experienced at different steps and discuss how you dealt with them. (6p)
> b) The process is intended to be useful for both FTO and patentability searches. However, what are the main differences between FTO and patentability to consider when utilizing the proposed model? What conclusions could you draw about these two concerns in your case? (4p)

The idea evaluation course also has learning outcomes relating to knowledge integration as well as reasoning around ethics and sustainability. One such learning outcome is to "Demonstrate ability to elaborate upon ethical as well as sustainable development aspects of idea evaluations, including how to relate professionally to different stakeholders in the idea evaluation process, such as idea providers, in the role of consultant/analyst". An exam question that evaluates such a learning outcome is the following:

> Use one of your idea evaluations to discuss how you can claim your idea from a) a societal and b) customer and c) business utility perspective.
>
> a) Bring up at least two alternative ways of claiming the idea (one probably being your final choice). Relating to the three types of utilities and to your two alternatives, please reason why you made the choice you did in your final claims. (4p)
> b) Discuss (relating to workshops/literature) and reflect upon how much you can capture the different types of utilities in the same claims and to what extent they should "have their own language". (6p)"

***Second year mechanism related to real venture creation***

In the second year, the created venture is used as the core learning vessel, to which all theoretical and practical content is to be applied. Written assignments are used to have students reflect upon how theories, methods and skills have been applicable (or not) to the context of their developing venture. In the following quote from a reflection assignment, a student makes connection between his experience in his venture and the concept of effectuation. Reflection assignment excerpt:

> *"I remember the last board meeting we had with [our venture]. Our idea provider, who is also in the board, said "You know nothing before you have done the first sale". In that we all agree. The first and best parameter of the success of the project is "how much closer have we got to the first sale?" Our actions should be prioritized accordingly. A*

*parallel could be drawn to Shultz and Starbucks; speculating about macro trends could take a lot of time and lead to hesitation, but starting to work from your circle of influence, you can actually try out what works, and improve it so that the customers loves it. The concept of isotropy suggests that we might not even know which information that is worth paying attention to (Sarasvathy, p 69). Instead of sitting and speculating about that, we should simply go out and test the product on the market, and we will know much better."*

A substantial assignment of the second year, is a 60 credit masters thesis, made of an individual cover paper, and two appended pieces (delivered by the team); a business plan and technology-market study. In the individual cover paper, students address a research question building upon empirical data collected from the venture creation environment: their own venture, comparative studies of their venture cases with other cases in the environment, their venture cases in comparison to past venture cases, etc. A student explains the learning developed through the education, her own and those she observed and gathered from her interviews with other students, as part of her masters thesis work:

*"…just tell you some of the ways that I and others I've spoken with have described their 'growth'*

*-Better able to cope with uncertainty*
*-Less concerned with being "right", more concerned with exploring a problem or idea and seeing what others have to say/contribute*
*-A much more nuanced understanding of what leadership really means and how complex effective leadership can be*
*-Identifying and managing complexity (trying not to be paralyzed by it although with the complexity in my team I was paralyzed a lot)*
*-Know my own strengths and weaknesses better, and just how I am as a person, the kind of work I like and don't like,*
*-I don't know much about effectual thinking, but I feel like I think in a different way, instead of always trying to predict and plan I think I live more in the "now" and adapt to changing circumstances: less idealistic in a way and more like "ok what do I have now to work with, what can I do with this, now, and what do I need to get?"*
*-More flexible and better handling change*
*-Better handling situation with no guidelines or situations where there is no authority or reference point*
*-I definitely judge less, instead of categorizing everything and putting it into a box I just try to see it and not try to put a name or a judgment on it*
*-How to create something out of nothing, managing people in the process*

*I can't say that this is all because of the education, a lot could be due to the fact that I've been living in a new country, learnt a new language, turned 30 this year, etc. so there are a lot of things catalyzing growth*

*for me, but I definitely think the education had a lot to do with it! I also think that I have grown this much because I have put a lot of effort into the education and into my own experience and I have opened myself up a lot, I think this kind of growth can only happen if the individual instigates it - I guess it's like you get out what you put in...I guess it would be possible to go through the education and not experience as much growth if you didn't dive in to it."*

## Discussion

Most would agree that both transformative and transactional mechanisms have an important role to play in the execution of action-based entrepreneurship in a higher education. However, little is known about the blending of the two types of mechanisms as well as how and to what extent both types of mechanisms actually affects entrepreneurial competence development. The purpose of this paper has been to explore this uncharted territory while generating propositions worthy of further study.

The case study offered examples of mechanisms related to three stages of action-based education: from simuluated "as if" cases, through idea evaluations to involvement in venture creation. Every stages can be seen as an escalation from traditional education both in how much reality and responsibility-taking students take on (degree of trasnformativity) and how much students are asked to translate back and sense-make around their experiences (degree of transactionability). Subsequently, each stage will be analyzed as regards how the two types of mechanisms interplay. Thereafter some propositions are made.

In the first year innovation cases, literature, lectures, and classroom case discussions are used to build a basic theoretical understanding, addressing a core learning outcome: "Demonstrate understanding of innovation management in technology-based business". Written and classroom feedback on assignments link the student teamwork with their innovation project in order to develop a general understanding of the subject area.

For example, through the TEVA assignment, the student teams learn to bridge between a technical description and a more market-need oriented understanding and can determine what technological functionalities in which they should invest development efforts. They also add dynamics into the analysis by comparing the performance (and performance development) of their technology with potential competing technologies through S-curve analyses. The TEVA assignment allows the teams to build their innovation case while learning key innovation management theory. This learning outcome is examined through questions in the written exam which requires the student to relate both to literature, class room discussions and to their project assignment.

Although highly embedded in a more traditional course setting, the first year innovation cases (and associated courses) introduce the students to transformative assignments. Not only do they have to produce assignments, such as the TEVA, within a heterogeneous team. They also need to deal with the uncertainty stemming from the cases being real and thus require external inquiry as well as making reasonable assumptions. Different teams thus deliver substantially different TEVA analysis upon the same shelved cases. However, as indicated in the (transactional) exam question, they are also forced to

translate their specific TEVA experience back to reinforce and reflect upon the more general tool. If you take away the real-life (although shelved) case and rely upon a more traditional Harvard-type of case, then the student most likely the transformative aspects would be weaker. Likewise, if the transactional exam was omitted, then the student might not be as reflective upon how the tool has been used what theories that lie behind the tool, making the transformative learning experience more contextual and less easy to generalize.

The idea evaluation stage in the entrepreneurship education, arguably adds new levels of transformative mechanism. In the course, the students need to deliver real-time value to idea providers, while also taking responsibility for assuring that an idea can contribute to sustainable development. This kind of a 'strategic counseling' role towards idea providers is an ability obtained through active evaluation of real-life ideas. Students face the challenge of balancing between offering what the idea provider wishes while also providing 'strategic counseling', in line with theory and skill developed stemming from course content and sustainability requirements. Hence, students get sensitized in not only being creative and visualizing the most sustainable areas of use for a specific idea. They also need to think about the pragmatic packaging of the ideas in a way that will allow it to gain momentum: for example, idea providers should be challenged by what is presented in the evaluation report, but in way that helps them to appreciate the value of information and recommendations provided, and not feel alienated or dismissed by the report.

Similar to the first-year, first semester course, the transactional mechanism illustrated through two exam questions forces the student to translate between theory and their specific experiential learning. Once again the argument can be made that the combination of transformative and transactional mechanism allows for improved competence development than having only one or the other type.

In the second year, the two types of mechanisms are combined for an enlarged competence development. Through different assignments, students are asked to reflect upon how introduced theories, methods and skills have been applicable (or not) to the context of their developing venture. This requires students to translate their experience into the 'academic' terminology.

For example, in the reflection assignment excerpt, the student is comparing the theory stemming from Sarasvathy with experienced actions from the venture's board meetings. In this way, the student is translating learning gained through transformative mechanisms to a transactional mechanism required of the education, and integrating a theoretical understanding with a contextual experience.

In the second student quote, the student summarizes learning acquired by students through the education, as captured through her own masters thesis work. This illustrates iteration between theories applied to capture empirical data about the transformative activities of teams throughout the course of the education. These are then refined and translated into appreciated learning. Furthermore, the student then reflects upon her own journey in order to make sense of the learning achieved, stating which she felt associated to other factors not necessarily 'educational, but somehow integrated with the

educational process. This illustrates the potential impact transformative mechanisms have on identity construction and development, but also that these are perhaps more readily captured through required reflection and translation into academic assignments, such as a masters thesis.

Several propositions can be made based upon the current case analysis. Firstly, the occurence of more or less advanced transformative mechanisms seem to be a necessity to allow tranactional mechnism that aske for translation back of experiences and relating these experience to theory. Without any genuine translational mechanism in place, only traditional examination of "what is in the literature" or "what is in the given case" will be asked for and thus transacted upon. However, the case analysis shows that even more simulated but yet openended "as if" cases offer relatively large opportunity for establising transactional mechanism in which not only "top down" but also "bottom up" (or rather "from within) knowledge is scrutinized and reflected upon.

Secondly, assuming that many entrepreneurship educations keep their transformative mechanism extra-curricular, a second proposition would be that such exclusion transformative experiences from what is transacted upon through the curriculum results in a suboptimal learning. This suboptimality can be expressed as missed opportunity to achor tranformative experiences with theory and thus such experiences might be less easy to translate into other contexts. Furthermore, the knowledge transacted upon will remain more cognitive and thus less affecting skills or attitudes of the students.

Thirdly, when tranformative and transactional mechanism interplay as in the offered case, they seem to me mutually reinforcing rather than mutually exclusive. Hence, the more transformative an experience is, such as a full fledge venture creation experience, the more there is to transact upon and the more the student can be asked to do the translation and packaging necessary to have such a transaction. Hence, teachers do not necessarily have to be very close to the situations and contexts where students experiencde transformative learning, if only they have ways to ask the students package and translage back into more generalizable language.

Finally, the three stage model currently investigated indicates that students coming from more traditional transactional "top down" environments, might need to be acquanted to combined transformative and transactional mechanisms in sequential steps. Hence, if stage three type of mechanisms were introduced up front in the current education, then it can be hypothesized that there would be too much of a gap between gaining bottom-up experiences and anchoring such experiences towards relevant theories. This hypothesis perhaps even more than the first three require further empirical testing. It also has to be noted that students before attending an entrepreneurshp education like the studied one, might have very different degrees of transformative educational experiences as well as experience from translation and packaging into understandable language.

## Conclusion

Entrepreneurial learning is determined to be best achieved through direct engagement in the process of entrepreneurship (Rae 2004; Rae and Carswell 2001), specifically venture creation (Mwasalwiba 2010), when the objective is to facilitate learning for the practice

of entrepreneurship. Learning *through,* or 'learning by doing' (Cope and Watts 2000) is seen as critical for developing entrepreneurial competency because it involves the contextual uncertainty of the real-life process. An action-based approach to entrepreneurship education (Bennett 2006; Jones and Iredale 2006; Leitch and Harrison 1999; Rasmussen and Sørheim 2006) allows the learner to gain knowledge and understanding of what and who is important when attempting to act entrepreneurially (Read and Sarasvathy 2005; Sarasvathy and Dew 2005), but adds to this, personal reflection on one's own informing how to achieve the desired effect (Rae 2005). Educators intending to facilitate entrepreneurial learning need to employ a perspective the supports personalized learning and construction of entrepreneurial identity, behaviour and legitimacy (Donnellon and Williams-Middleton 2012; Ollila et al. 2012; Scherer et al. 1989; Williams Middleton 2010), beyond the generic skills and tools needed for entrepreneurial action.

The current explorative study of transformative and transactional mechanisms in action-basead entrepreneurshp education indicated high relevance around the two concepts as well as their interplay. Four propositions worthy of further study were generated basad upon a case analysis of a specific educational environment.

The studied case has arguably offered state of the art insights into how transactional and transformative mechanisms to facilitate entrepreneurial learning. A mutual reinforcement of such mechanisms is strongly indicated. This also holds promis around future contributions around how this blending can lead to the integration of progressive and traditional pedagogy (Lackeus et al. 2013). It is confirmed that the main challenge entrepreneurship educations face is "to create an enterprising environment" (Gibb 1993) which implies that without relevant transformative mechanism in place, much of the rest falls short. Nevertheless, if students "only" gain personal (transformative) experiences but fail to build up general understandings of how key phenomena (such as idea generation and verification, team dynamics, etc.) work then they might be successful in the current business context but are not guaranteed an ability to be competent in other types of situations. Future research will hopefully further study issues explored here.

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