

# **Transformative, Transactional and Transmissive Modes of Teaching in Action-based Entrepreneurial Education**

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## **Abstract**

This paper introduces the notion of holistic education into the context of action-based entrepreneurial education, in order to develop a framework for achieving and understanding whole person development. The aim of the framework is to connect with a wider set of teaching and learning paradigms as a basis for instructional design and assessment, to bridge some of the fragmentation apparent in conceptual frameworks for entrepreneurial education.

To facilitate this multi-faceted view on teaching and learning, we introduce a framework of transmissive, transactional and transformative teaching modes. In this framework, the transmissive mode relies upon traditional teaching methods; the transactional mode relies upon on self-directed problem-solving, collaboration and engagement in authentic learning environments; and, the transformative mode appreciates the whole learning person, how she connects with herself, others and the world. We argue that all modes are needed in order to achieve and understand whole person development, and that entrepreneurship teaching should be designed so that it offers a reservoir of rich and diverse experiences in an authentic learning environment.

The three teaching modes are analyzed and discussed in relation to a leadership course assignment and eight selected citations from student deliverables in 2007. The citations represent an extreme sampling as the students had been running a tech venture during almost a year as the major vehicle of learning in their program, they had no prior entrepreneurship experience, and all of the selected students became and have remained start-up entrepreneurs since their graduation.

The selected citations illustrate how transmissive, transactional and transformative teaching modes can be contextualized in action-based entrepreneurial education, and point towards that significant learning has emerged through the integration of different teaching modes. The richness of the citations indicate that action-based entrepreneurial education is a vehicle for a wide variety of learning outcomes. Accordingly, the introduced framework seems to hold promise as a basis for achieving and understanding whole person learning in this context. Practical teaching aspects are addressed, both around designing authentic learning environments as well as around designing and examining more tangible deliverables from students in such environments.

## Introduction

Entrepreneurial education has grown exponentially across the globe since the Seventies, not only at Business Schools but also in other higher-education disciplines, as well as in primary and secondary school. Despite this, there is little consensus regarding design and delivery of entrepreneurial education. Rather, research has emphasized the continued fragmentation and splintering of teaching entrepreneurship. One commonly referenced categorization is between learning about, learning for or learning through entrepreneurship (Neck and Greene, 2011). However, there might be important synergies to be achieved, even between these apparently disparate types of learning.

This paper attempts to bridge some of the diversity by proposing and applying a more integrative framework of teaching modes. The framework is based on a holistic education perspective and is applied into the context of an action-based entrepreneurial education – a technology-venture creating MSc program. By action-based, we mean that students to at least some extent are empowered to create something themselves that has some potential value for others. This assumption is becoming increasingly main-stream in a context where startup camps, accelerators and business plan competitions engage students. Although such activities often are not curricular, they are still clearly pointing at a more authentic real-life learning and attractive to many students (Pittaway et al., 2015). Hence, even curricular courses today often go beyond only writing make-believe business plans, which have questionable authenticity and experiential value.

Given that students have action-based authentic entrepreneurial experiences, how should teachers then educate? What is it they ask for and what is it they examine and ultimately grade? There is surprisingly little coherent received wisdom that helps to answer these central questions. The main purpose of this paper is therefore to introduce an analytical framework with connections to multiple teaching and learning paradigms, recognizing that action-based entrepreneurial education is a vehicle for a wide variety of learning outcomes. The approach introduced into the entrepreneurial context is grounded in the notion of holistic education with its appreciation of transmissive, transactional as well as transformative teaching.

The framework should make sense around how to achieve and how to understand holistic learning in the context of action-based entrepreneurial education. Accordingly, we investigate the following main questions:

RQ1: How can transmissive, transactional and transformative modes of teaching be interpreted and *contextualized* in action-based entrepreneurship education?

RQ2: Does transmissive, transactional and transformative modes of teaching together constitute a relevant framework to start from when evaluating the educational design of an action-based entrepreneurship course or program?

The subsequent paper is structured as followed. Key contributions and limitations of action-based entrepreneurial education are discussed and complemented with insights from holistic education research. The framework of teaching modes to be applied in this paper is then introduced, building from a conceptual basis grounded in holistic education. Since the focus is on how the framework of teaching modes can be utilized, the larger thrust of the paper is on method, findings, analysis and discussion – with a basis in carefully selected citations from student entrepreneurs in an action-based MSc program in entrepreneurship.

## Theory

We will first review entrepreneurial education literature. Although entrepreneurial education ranges from more traditional lecturing forms to highly progressive expressions, there are few attempts in integrating between such different educational formats. Therefore, holistic education with its focus on transmissive, transactional and transformative modes is introduced.

### *Action-based entrepreneurial education*

Although the bulk of entrepreneurial education focuses on lectures or literature, (Mwasalwiba, 2010, Johannisson, 2016), much is also designed to prepare individuals for the practice of entrepreneurship. This requires that the educational approach is solution-oriented and centered on the learner (Binks et al., 2006, Ollila and Williams Middleton, 2011). It is process-driven, emphasizing development of 'know-how' through engagement, often in group work (Wing Yan Man and Farquharson, 2015). And, as engagement in entrepreneurship is often described as operating within a context which is marked by uncertainty, emotionality, intensity, and volatility, individuals endeavoring to take on the role of entrepreneur need to develop certain skills and competencies that prepare them for taking action in such an environment (Morris et al., 2013).

As stated in the introduction, we define action-based to mean that students to at least some extent are empowered to create something themselves that has some potential value for others. In entrepreneurship education literature, the term is most associated with the work of Rasmussen and Sørheim (2006), stating that action-based implies "involving the students in working on real business cases" (pg. 188), the most advanced being students involved in real start-ups which are based on either their own or others' ideas. Engagement in the 'real' means the range of work can span from more routine practice such as accounting, reporting, etc. to decision-making under uncertainty that can shape the future direction of the idea.

Action-orientation, allowing autonomy and interplay between risk and responsibility, challenges previous learning paradigms (Kyrö, 2015, Lackéus et al., 2016). Instead of a behavior or cognitive learning paradigm, in which the learner is either the object of indoctrination or learning is the result of memorization and reorganization of information presented back to the teacher, an action-based paradigm for entrepreneurial education emphasizes learning as complex and diverse processes, without any bounded conditions (Hannon, 2005). In this sense, an educational experience which is action-based is seen as authentic, where learning can and does take place everywhere (Kyrö, 2015). An emphasis on taking action places the learner centrally and, to a certain extent, autonomously in the learning process (Johannisson, 1991, Hägg and Kurczewska, 2016), where the learner can draw upon lived experience (Morris et al., 2012).

Harmeling (2011) argues that entrepreneurial education which engages the student not only in the development of knowledge, but also offers experience and social interaction, creates an environment which is an identity workspace. Here, individuals can potentially construct, revise, and reconstruct their entrepreneurial identity. Encouraging identity work requires facilitating holistic entrepreneurial experiences, performing to authentic audiences in the company of other 'real' entrepreneurs, such that the individual, during the educational process, sees herself as an entrepreneurial actor (Harmeling, 2011). Acting 'as if' (Gartner et al., 1992), as part of an educational process allows the individual to try on the entrepreneurial identity while still secure in the identity of student (Nielsen and Gartner, 2017, Williams Middleton and Donnellon, 2017).

Hence, many entrepreneurship educators would agree that education should be a transformative experience for the learner whereby not only knowledge but also skills, attitudes and identity are affected (Pittaway and Cope, 2007, Matlay, 2006b, Matlay, 2006a, Mwasalwiba, 2010). The notion of holistic education and the development of the whole person resonates with the intended outcomes of entrepreneurial education – e.g. ‘knowing why’ as well as knowing ‘what’ or ‘how’ (Williams Middleton and Donnellon, 2014, Nielsen and Gartner, 2017, Nabi et al., 2016). However, to a large extent, entrepreneurial education, in general, still mainly relies on knowledge acquisition, transmitted through lectures or literature, and application/transaction of demonstrable knowledge (Mwasalwiba, 2010, Johannisson, 2016, Byrne et al., 2014), as these are forms in which many educators feel secure when assessing and evaluating learning.

A key challenge for action-based entrepreneurship education, then, is to decide not only what can and/or should be examined, but also what should be the responsibility of the learner herself to assess and manage. Research recognizes existing limitations of many forms of entrepreneurship education, stemming from the fragmented perspectives on what skills and competencies are to be achieved, how these align with educational design, including evaluation, and how to assess the effectiveness of the entrepreneurial education (Nabi et al., 2016, Fayolle et al., 2016). These challenges and limitations of our existing understanding of how entrepreneurship education is conducted and motivates the introduction of a holistic education framework.

### ***Holistic education***

We argue for the need of a multi-faceted and yet integrative pedagogical framework when working with instructional design, learning and assessment in action-based entrepreneurial education. Such a framework should draw from the potential richness in an authentic learning environment (Herrington and Oliver, 2000), making possible true transformation of learners’ competences and identities. We introduce and suggest the notion of *Holistic Education*, inspired mainly by the work of Miller (Miller, 2007). Holistic education is introduced with the aim of recognizing students as whole persons undergoing significant development (see for example whole person learning (Yorks and Kasl, 2002)).

In holistic education, learning could be considered being a complex system with emergent features – a system naturally diffuse, only lending incomplete manifestations of the development of a student. Such manifestations can be produced e.g. by students’ sense-making attempts and illustrated through assignments and assessment. To battle the inability to assess ‘actual’ learning, holistic education aims to be integrative and pluralistic, recognizing that teaching tools and designs based in different learning paradigms gives us access to different manifestations of learning. As such, this proposed framework has the ambition to not be reductionistic, and holds many similarities to theory of human learning, as put forth by Jarvis (2006). This is also in line with recent acknowledgement of the role of emotion in the learning process (see, for example, Fang He et al., 2017, Finch et al., 2015, Lackéus, 2014).

Accordingly, we argue that entrepreneurship teaching should be designed so that it offers a reservoir of rich and diverse experiences in an authentic learning environment. This means designing learning experiences in order to utilize many different catalysts for learning, and assessing in a manner which offers multiple ways to perceive different manifestations of emergent features of the complex system of learning. In this context, the framework of transmissive, transactional and transformative teaching modes, introduced below, will be applied empirically to help understand how it can help the design and assessment of such a

learning experiences. It facilitates a diverse view of learning and ways of knowing through connections to multiple teaching and learning paradigms.

### ***The framework***

At the center of the proposed framework is three modes of teaching: transmissive, transactional and transformative. Originally introduced as curriculum orientations in the context of pre-tertiary education (Miller, 2007), these modes include the following:

1. The transmissive mode relies on traditional pedagogical methods, and aims for the transmission and subsequent assimilation of pre-existing knowledge, theories, strategies and models (see for example acquisition metaphor for learning (Sfard, 1998)). The rationale for this mode is the need for introduction of methods and tools, common language, history and even “myths”.
2. The transactional mode aims at development of independent and self-directed problem-solving, inquiry and critical thinking skills through interaction, dialogue and collaboration between teacher, students and potentially practitioners (c.f. participation metaphor for learning (Sfard, 1998); knowledge creation metaphor for learning (Paavola and Hakkarainen, 2005).
3. The transformative mode appreciates the whole learning person and how she connects with herself, others and the world. Focus is on students finding purpose and identity while also striving for wisdom and compassion, through an ongoing re-relation between the self and external phenomenon (Mezirow, 2000, Mezirow, 1997).

Miller (Miller, 2010) argues that all three curriculum orientations are needed in order to achieve development of the whole person. Moreover, the three teaching modes are not seen as separate, but, rather, they are highly intertwined. Accordingly, they are not to be considered as clear separation of different ways to teach or learn, but rather as three lenses from which to start when analyzing a teaching/learning situation. An elaboration on archetypical teaching/learning events, theories and outcomes related to the three modes is given in Table 1.

**Table 1:** *The three different teaching modes coupled with archetypical teaching/learning events, learning metaphors, theories and outcomes*

<b>Teaching modes</b>	<b>Archetypical teaching/learning events</b>	<b>Related learning metaphor(s)</b>	<b>Learning theories (example)</b>	<b>Primary outcomes/ways of knowing</b>
Transmissive	Lectures, readings, guided problem-solving.	Learning as acquisition; Learning as guided construction.	Cognitive apprenticeship (Collins et al., 1988)	Tools, models, strategies, methods.
Transactional	Student-directed problem solving, collaboration, teamwork	Learning as participation; Learning as knowledge creation	Situated learning (Lave and Wenger, 1991); Expansive learning (Engeström, 2001)	Skills, abilities
Transformative	Uncertain and emotional events, reflection	Learning as transformation	Transformative learning (Mezirow, 2000)	Identities, purposes, meanings, aims, goals

## **Methodology**

The main empirical aim is to evaluate the relevance the introduced framework for action-based entrepreneurial education. In order to investigate this, we focus on an entrepreneurial leadership course assignment from 2007 in an action-based entrepreneurial education MSc program. Using the framework, data is independently coded by each of the three authors and then compared for inter-rater reliability, resulting in representative citations. The citations demonstrate both how different modes of teaching integrate and why the framework holds promise as a basis for achieving and understanding whole person learning in action-based entrepreneurial education.

### ***Empirical case***

Chalmers School of Entrepreneurship has offered action-based entrepreneurial education since 1997. Approximately 30% of the students attending the program continue as tech venture entrepreneurs after the program – a work identity almost none of the admitted students had prior to attending the program. In 2007, the program was a 1,5 year MSc for primarily engineers while including also students with other background (business, design, law). That year, one of the authors held a 7,5 leadership course spread out over the second and third semester, and heavily drawing from the real-life team-based tech-venture environment that all the students operated in. In this environment the students in teams were connected with inventions disclosures from the university and beyond and asked to be in the driver's seat to form a venture around the technical invention behind the disclosure. If a venture was incorporated after the education, the student would even be offered equity stakes.

In order to find rich accounts of student learning, a reflection report assignment in an entrepreneurial leadership course was chosen as a starting point. In the assignment, students were asked to reflect upon the experience of working with venture creation (offered as a major part of their education) in relation to both theoretical models introduced during the course and to their own development and identity.

Seven students from the class of 2007 were selected based upon them continuing as start-up entrepreneur after the education. Some continued with the venture idea offered in the education. Other have taken on new ventures. Some, by 2017, have even been serial entrepreneurs. In 2007 when performing the assignment in the entrepreneurial leadership course, these future careers were only emerging as potential choices. The citations from the assignment they submitted should thus be read with the background that 1) none of the students prior to their education were start-up entrepreneurs, 2) they had almost a year experience of running an early stage (not yet incorporated) tech venture within the education, and 3) all the citations were picked from students actually having become start-up entrepreneurs persistently for ten years after the education.

The three authors of this paper, independently marked citations that they perceived as transmissive, transactional and/or transformative and analyzed the assignment in itself in relation to the three teaching modes. Citations that were chosen by at least two authors were then selected. Out of these citations, the authors picked examples of citations representing all three teaching modes as well as hybrids, based upon their stand-alone communicative clarity (i.e. how much the citations were expected to be comprehensible for readers).

## Findings

The results of the study will be presented in two sections, relating to the analysis of the assignment in itself and the chosen student citations. Some interpretation and structuring will be introduced in this section, however, and a more over-arching analysis in relation to the research question is featured in the discussion section.

### *The assignment*

First the assignment was analyzed to identify how the assignment requested or intended to assess for the three modes of teaching outlined in the framework presented in Table 1.

Citation from the first part of instruction given to students:

“In the beginning of the fall, you had a two part lecture with [the teacher] discussing transactional and transformational leadership, in which you also discussed inquiry and advocacy. Discuss how you have utilized both inquiry and advocacy through the Innovation Project year – this can be relative to your core team, or also including your idea provider(s) and board members, or even in relation to external actors with whom you have had to develop critical relationships. Give at least one concrete example, describing the situation and context and then discussing your actions and reflections. Then discuss how this has been applicable towards other situations.”

Students are asked to utilize conceptual understanding they have developed, initiated mainly by the lectures given in the course. Accordingly, this part of the assignment has a clear potential to give access to manifestations of a *transmission* having taken place, to assess whether students have successfully acquired theoretical knowledge conveyed by a teacher in the course.

Moreover, the concepts of inquiry and advocacy are clearly relating to interaction and group dynamic, and students are asked to relate this conceptual understanding to their own experience of working with the core team and other stakeholders. Accordingly, the assignment could give access to manifestations of students having learned from *transaction*.

Citation from the second part of instruction given to students:

“You have spent nearly one year acting within one (or more) entrepreneurial projects, speaking with potential customers, negotiating with your board and each other, etc. How have your entrepreneurial skills and identity developed? In what ways do you associate with the entrepreneurs you have met (alumni coaches, lecturers, guests, etc.); in what way do you differ? Give examples of how you have developed and then write a short plan for how you plan to continue further in your entrepreneurial development, whether within a start-up firm, or simply on a personal basis. Or, if instead you do not plan to further your entrepreneurial development, communicate your reasoning for your decision and your action plan going forward.”

This part of the assignment is less dependent on specific theoretical concepts and more focused on the student’s own perceived personal development and entrepreneurial identity. As such, this part of the assignment has clear potential to uncover manifestations of a *transformation* having taken place in the way the student relates to entrepreneurship or to oneself. Moreover, as the focus in the assignment overall is to reflect upon the experience of working in teams, and since this part of the assignment also emphasizes an analysis of association with people students have interacted with, there is also a potential for giving access to manifestations of students being impacted by *transactions* between them and others.

### *Student citations*

In this section, the selected student citations from their submitted written assignments will be introduced. First, citations judged as either clearly transmissive, transactional or transformative are introduced. Then, selected citations that combine two or more of the three teaching modes are offered. These citations are highlights intended to exemplify and thus not representative of the full extent of text in the analyzed assignments.

#### *Transmissive example*

The following citation was selected due to its clear referencing not only to a lecture but also has an easy to appreciate theoretical (and not experiential) valuation of the introduced main concepts. Hence, it can be seen as an example of a pure transmissive account dealing with the first half of the teacher's assignment (see previous section).

C1: “[In the teacher’s] lecture about communication methods (Inquiry and Advocacy) he had three variables: inquiry, advocacy and the ladder of inference.

I see inquiry and advocacy as two variables on the same level so to speak, while the third one – the ladder of inference – (even though it is an algorithm describing starting points, boundaries and the following more or less subconscious communication process) is an indirect variable lying under the first two that has the property of accentuating or diminishing them through the resulting group mood and comfort.”

#### *Transactional example*

The following citation was selected due to its clear referencing primarily to the student's immediate “role set” of actors around his project and how he struggles dealing with them. The focus is on transactional aspects as ground for learning.

C2: “I have even more realized during the year that it is extremely important to share goals for executing a start-up development especially if you have a long time to market. New to me for this year is the dependence on others. Throughout the previous school years most of the work has been individual but even though we have done quite a lot of casework there is always a chance to have a finger in all parts of the delivering process.[...] Moreover, the development of our project is extremely dependent on the work pursued by our research team.[...] The thing that bothers me is that I have lack of control over the situation and have little means to impact the development”

#### *Transformative examples*

The two following citations are the most illustrative as regards pinpointing purely transformative aspects. The first citation (C3) emphasizes how the students familiarizes with a small firm “faster action” environment, as compared to his perception of operating in large firm environments.

C3: “I really do not know if I would be a good leader of a very big company. I doubt it. My skills are connected with fast actions, with emphasis on the word action. Actions will become slower and slower (but more important) the bigger the company is. And they will be less radical (over a longer time period). I want the company to grow fast and not be the same as it was two weeks back. I would rather want to see big changes than a slow but steady growth.”



In contrast to the above account where identity is related to contexts, the following is looking inwards, reflecting upon certain personal characteristics – how to become more aware of them, accept them and make them into a strength.

C4: “Yes I have control issues! I would not have agreed on this half a year ago, even though it was worse back then. It is like being an alcoholic; you cannot deal with your issues unless you realize you have a problem. A big part of why I have become aware of this is due to the individual development talks. [...] I have to utilize my need of control instead of denying it. I have to look for jobs and assignment where I am in such position where it becomes my strength”

### *Hybrid examples*

Although they were rare, citations judged as combining two or more modes should be particularly interesting to analyze. The first citation (C5) is mainly transactional. However, it pulls a variety of such transactional experiences into a more transformative albeit unspecified “feeling” of significant personal development.

C5: “The development during the year has been so significant that I can really “feel” the difference. It is difficult to point out situations where it is easy to compare before and after. In general, I have learned how to act in all the different situations, how to talk to the board, how to talk to potential customers and partners and how to communicate about the projects in general.”

The following citation emphasizes situations and specific actions rather than interactions (as in C5 above). It is mainly transactional, however with a clear synthesizing reflection of growth and who the student has become, even doing counterfactual reasoning that such learning and growth would not be obtained in any other context. Hence, the student identifies and familiarizes with the context (as opposed to others) – something that can be seen more as a transformative, identity-affecting, account.

C6: “One of the most important things I have learned throughout the project year is to get an overview of how businesses really work. Instead of seeing R&D, production, distribution, sales, marketing etc. as isolated parts of a company I can now see them in its entirety. I can understand the importance of every area in a company and how they must work together in order to create value. This knowledge comes from my experience from actually working hands on with all of these areas, a knowledge I would not have gained in any other education [...] or at few other jobs.”

Although not explicit, the following citation is basically relating to the transmitted theory around how to deal with inquiry and advocacy. The student emphasizes a shift from having been more inquiring into becoming more advocating and also aware of a more formal side of leadership. She also implicitly points at how these transactional experiences affect her identity as a leader. Hence, the citation, at least implicitly, captures transmissive, transactional and transformative aspects.

C7: “I have many times tried to ask a lot of questions and suggested different opportunities and tried not to take a standpoint in the questions in advance for getting individual response. In the beginning this didn’t work at all. The response from the group was silence and I didn’t understand why. Later on during May we had a feedback session, where it was very clear that the other group members asked for delegation and directions. My initial standpoint was the opposite, that everyone

should have their own personal drive to take on actions and provide solutions. What I now realized was that this was not the case and that I had to take on a more formal leadership.”

The following citation is primarily focusing on a truly transformative change of identity and behavior. However, it also related to transmissive aspects (the unspecified book) as well as anchors a transformative change through referencing transactions with both a coach, friends and family.

C8: “My last conversation with [my personal development coach] ended in finding a quite big gap between my self-esteem and self-confidence and going to the bottom with why I am getting so angry when I get critics. I have read a book discussing these kinds of problems and I have, believe it or not, started a new way of living and treating people. I now use to think and act in a way that I always can stand for and am proud [...] I feel more confident and harmonic nowadays! My relation towards friends, family and [partner] feels much better now and I have actually got comments from some friends that I act much nicer now and I do not feel so bitter all the time!”

## **Analysis**

The analysis focuses on the two research questions of 1) contextualizing the notion of holistic education and the framework of teaching modes into the current setting of action-based entrepreneurial education and 2) evaluating its relevance. The latter question will not just be addressed from the perspective of the learner but also the teacher: how can teachers educate? What can they ask for and what is it they can examine and ultimately grade?

In order to contextualize holistic education into entrepreneurial education, the current study has selected illustrative citations from students having a full year tech venture experience as part of their MSc program. None of the students were start-up entrepreneurs prior to the program but all became and have remained start-up entrepreneurs for ten years since graduation. This is admittedly an extreme sampling – having only selected citations from students actually becoming entrepreneurs attending a relatively advanced action-based program. However, selection based on what they had become gave us expectation that we would find elements connected to authenticity and identity, which was important to the purpose of the paper. All the citations (except C1 – the pure transmissive), reflect the importance of the authentic action-based learning environment.

The citations reflect a variety of components that teachers have introduced into the overall action-based learning environment. It is virtually impossible to trace exactly which components generate which learning among the students. Learning citations can stem from how the students were selected to the education, how projects were formed and students empowered, how lectures, assignments of presentations were structured, etc. Probably all these aspects and others affect students and likely in quite different ways, depending upon the students’ actions and sensitivities.

Nevertheless, the citations also give concrete traces to specific teaching measures. Clearly, the transmission of theories of advocacy, inquiry and latter of inference were successfully referred to more or less explicitly. Not just from a pure theoretical point of view (C1), but also more in relation to how transactional and transformative citations were framed (C7). Conceptual reasoning, which might be supported by transmissive mechanisms, seem to also have an impact

on how students perceive their future professional roles (C3). Apart from the transmission of theory, all students in their assignments also clearly reference learning from hearing the stories of entrepreneurs who have been invited to the education – gaining vivid insight into the decision models and personal choices of an entrepreneur. Hence, transmissive modes of teaching are relevant in the current context. They enable learning from more transactional (C7) and transformative (C3, C8) experiences and can thus give preconditions for the development of knowledge, skills *and* attitudinal learning outcomes.

Perhaps not surprisingly, the current action-based entrepreneurial education environment offers a lot of relevant transactional citations. Basically all the citations except C1 are illustrative of more or less explicit transactional modes. Transactions with team members (C2, C7), teachers/coaches (C4, C8), idea providers/research team (C2), board members, customers and partners (C5) are all referenced as starting points for certain learnings. Even the purer transformational citations (C3 and 4) would not have been possible hadn't the students acted in and experienced the authentic environment. Transformative citations can stem from the venture creation experience in its entirety (C5, C6), or sometimes from more from specified experiences, such as team interaction (C7). The individual development talks are specifically mentioned as having transformative effects (C4, C8).

The hybrid citations – citations which were seen to capture two or all modes – are perhaps the most important to analyze and appreciate. Not only are there clear connections between transactional and transformative accounts (as shown in the five citations C4 – C8). There are also clear references made to concrete teaching efforts, such as the personal development talks (C4 and C8) and books (C8). There is a clear appreciation of the overall authentic learning environment set-up, allowing students to concretely experience and integrate learning experiences from different tasks (C6) and interactions with a role-set of persons (C5) that they have been provided as well as asked to attract to their projects.

## **Discussion and Implications**

To help fulfil the main purpose of qualifying transmissive, transactional and transformative teaching modes into action-based entrepreneurial education, the discussion here draws from the analysis of citations and focus on the importance of all three modes. The relevance of the three modes is discussed from two intertwined starting points: the importance of each teaching mode to *achieve* whole person development in action-based entrepreneurial education, and the importance of each teaching mode to *understand* the holistic learning of students. The main question is: Are any of the teaching modes less important than the others and, if not, how do they interrelate and draw from each other in the current context? Additionally, more practical teaching aspects are addressed, both around designing authentic learning environments as well as around designing and examining more tangible deliverables from students in such environments.

Is the transmissive teaching mode necessary to achieve and understand development of students in action-based entrepreneurial education? Such teaching was clearly traceable in the citations. It was both offered in terms of lectures and literature, as well as asked for in the assignment. The chosen citations account for transmissive teaching being integrated with transactional and transformational teaching. So, there seem to be relevance to this teaching mode, although the often extracurricular nature of more action-based entrepreneurial programs (camps, accelerators and competitions) could suggest otherwise.

So what type and amount of transmissive teaching is relevant? The theoretical content of entrepreneurship education has been studied at length in the discourse around the ‘about’-approach to teaching entrepreneurship, but in the context of a more contemporary action-based approach, there is less guidance (Johannisson, 2016, Lackéus et al., 2016). Readings oriented towards action-oriented concepts (such as advocacy and inquiry in the current assignment) can be assumed to be more relevant and appreciated than theoretical readings without such link to practice. Also, literature offering citations and reflections around entrepreneurial experiences probably also integrate more with other modes of teaching, than citations with little or no such opportunity for students to identify and relate. At the very least, such readings proved helpful for the sense-making of the students examined in this study. Moreover, transmissive teaching with its strong traditions of forcing students into class-room and formalized tests, most likely can become suboptimal for the learner, if the time and opportunity for more self-directed authentic learning is marginalized. So, teachers need to be aware of their power to determine how much teaching is self-directed vs. imposed, and perhaps always look for ways to offer more pull than push when it comes to how the actual transmission occurs (e.g. using web-based teaching material when relevant).

Is the transactional teaching mode necessary to achieve and understand development of students in action-based entrepreneurial education? As already argued above, the perhaps most intuitively relevant teaching mode in action-based entrepreneurial education is the transactional. It comes with the context being action-based, per definition. Also, transactional teaching was present in all but one of the citations shown above. So, given the extreme sampling behind this study, the question perhaps is not if transactional teaching is relevant but rather what and how much is required for it to produce some of the learning accounted for here. Should all entrepreneurial educations focus on all aspects of entrepreneurship – customers, technology, products, finance, organization, team-work, etc. – and over longer periods of time (months and years rather than days or weeks)? For practical reasons the answer must be no. However, what could be a minimal critical specification of transactional teaching? Previous research has emphasized at least three key aspects: teamwork, iteration and the creation of some value for others (Lundqvist and Williams Middleton, 2016). However, the type and amount of transactional teaching required for different learning outcomes is not well-researched. An important factor here is most likely how much the student aspires (or not) to a specific transactional teaching program. So, imposing mandatory transactional teaching on students who are uninterested probably has much less effect than admitting only highly committed students. This may have implications for the increasing amount of entrepreneurial education on all levels of education.

Is the transformative teaching mode necessary to achieve and understand development of students in action-based entrepreneurial education? There seems to be few if any ethical ways to really force students to actually change their identity in some pre-specified direction. However, the reflection and re-relation between the self and one’s experience was, of course, crucial to give access to the manifestations of learning investigated in this study, some of which show signs of true transformation of students. So, perhaps transformative teaching design is primarily about increasing the likelihoods of such reflections and change to occur. However, if it does not occur this should probably not then result in a failed examination.

Judging from the citations, there seem to be quite a few ways to increase likelihood of transformative outcomes. Students aspiring (self-selecting) to the program and then being asked to work in teams and with different stakeholders under uncertainty, seem to underpin many of the transformative examples. Also, theories and other transmitted knowledge seem to help some students in their more transformative reflections given that they fit with transactional

experiences. So, high levels of transactional teaching in combination with at least some level of transmissive teaching seem to increase the occurrence of transformative reflective outcomes. Also noteworthy is that the actual assignment specifically asked questions around entrepreneurial identity and it was mostly in this part that transformative citations were identifiable. So, teachers might have to ask around e.g. identity in order to actually get these type of examples.

Transformative teaching also relates directly to the nature of entrepreneurship, how it is perceived in society, what it means to individuals and towards different ideals. There can be a challenge with students becoming captivated in society's ideals around entrepreneurship. Hence, there is strong ground for a view of transformative teaching really offering students help in finding their personal identity, their own "know-why" (and not just "know how") (Williams Middleton and Donnellon, 2014, Nielsen and Gartner, 2017) and also tools and support to take on a profession that perhaps more than most professions becomes a life-style and exposes you to tough uncertain encounters. There is then reason for concern about the current hype around camps, accelerators and competitions, who most would have little if any of transformative teaching mechanisms – such as de-bunking of myths and clearly asking students to sense-make their own identity in relation to theory and experience of entrepreneurship.

### **Future research**

We have argued that action-based entrepreneurial education is a vehicle for a wide variety of learning outcomes. Building on this base argument, and through implementation of the framework, we propose that: *The more action-based and entrepreneurial the education is, the more relevant transactional and transformational modes of teaching will be.* We have been able to show distinct and, more often, integrated modes of transmissive, transactional and transformative teaching received within an education assignment, contributing to authentic and whole person learning. However, we recognize both the limitations of the select group as well as the limitations of the complex narrative nature of the student citations used in this paper.

In reviewing data for this paper, we also reviewed assignments of classmates to the selected seven students who continued as start-up entrepreneurs. There is value in investigating the impact of transformative modes of teaching that facilitate rejection of a presented identity, to perhaps reify that 'this is not the identity for me', but rather that the attempt at transformation can affirm that a particular identity does not align with the existing whole person. This calls attention to a research focus which appreciates addressing all three modes of teaching perhaps without a particular role or identity objective.

There is also need to explore options for further traceability of different factors contributing to learning outcomes from distinct and integrated modes of teaching. This places emphasis back to the importance of clarity of what skills and competences are intended in the educational design, and how these are assessed, as addressed by others (Fayolle et al., 2016). As educators, we may have expectations or desires regarding what individuals can or should learn during action-based, authentic, and experiential entrepreneurial education that fall outside what is qualified through assessment. Because the whole person is learning within this context, the responsibility of learning, and also makings sense and evaluating that learning, falls not only to the educator, but to the learner herself. There is a need to explore what can and should be done to prepare the individual for a learning process which is self-directed, integrated into the entrepreneurial experience.

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