



Success Through Failure: Towards a Problem-Based Approach to Entrepreneurship Education

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1 INTRODUCTION

There is an accepted understanding that increasing entrepreneurship will spur economic growth and employment within academic, business, and policymaking communities (Wu & Gu, 2017). Unfortunately, business dynamism has been declining in the US (Decker et al., 2018) and has fallen by nearly 50% since the 1970s (Hathaway & Litan, 2014). During the same time frame there has been a dramatic increase in Entrepreneurship Education (EE) programmes in the US (Morris & Liguori, 2016). Over 600 universities have launched entrepreneurship centres or institutes (Morris et al., 2014). However, recent government calculations found increasing levels of EE has not resulted in increased levels of new venture creation. In fact, the opposite is happening. The rate of new venture

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creation is at historic lows (Keating, 2016). Further, the survival rates of the businesses that were started have not improved (Bureau of Labour Statistics, 2016). Thus, growth in EE does not appear to have had a positive impact on the number of new ventures created nor on the survival rates of those that are started.

The lean start-up, business models, canvases, and writing business plans have become the default teaching methodology for EE across US. Unfortunately, this growth in programming has occurred without a universally accepted approach or pedagogy, leaving many gaps between research and practice of EE (Naia et al., 2015). More recently, researchers have been theorising about the impact of undergraduate EE on the development of student intention to become entrepreneurs.

The scope of the intention-impact gap is significant. Notably, today's students are much less entrepreneurial, measured through business creation and ownership, than Baby Boomers or Generation X were in their 20s (Campbell et al., 2017). This lack of entrepreneurial activity will have a long-term negative impact on economic growth, employment, and poverty reduction. Yet, many private sector organisations and public institutions continue to believe that EE is an effective tool in developing new entrepreneurs (Neck et al., 2014), with the goal of re-igniting entrepreneurial dynamism (Nabi et al., 2017).

Universities and colleges have made substantial efforts in the development of EE programming (Kamovich & Foss, 2017). There is significant momentum in higher education to create curricula on the belief that EE will create economic development and jobs (O'Connor, 2013). This has resulted in the development of curriculum in the form of minors, majors, master's, and PhD programmes in entrepreneurship. Additionally, co-curricular activities such as 'pitch nights', business model competitions, hack-a-thons, mentoring programmes, and internships have become the norm. The efforts to create an entrepreneurship workspace have included the establishment of maker spaces and collaborative spaces on campus. Despite these efforts, entrepreneurship continues to stagnate; a meta-analytic investigation reviewed 73 studies of 37,285 students and found no statistically significant impact of EE on entrepreneurial intention (Bae et al., 2014).

There continues to be disagreement about competencies and activities needed to build effective EE programming (Middleton & Donnellon, 2014). In the literature there is ontological confusion and methodological issues in how EE is taught (Wu & Gu, 2017). Further, minimal attention

is paid to the impact of teaching approaches and methods on the development of entrepreneurs (Kamovich & Foss, 2017). Suggesting that there is a large gap between the growing supply of EE and our understanding of how best to approach teaching and learning (Morris, 2014). Additionally, Fayolle (2013) suggested EE should be reinforced with robust intellectual and conceptual underpinnings as well as sound reflection on practice and applications, instead of simply relying on ‘taken for granted’ (p. 692) methods. Why is the growth of EE creating more entrepreneur graduates and not more entrepreneurs? This is the emerging question. We believe that the answer lies in the pedagogical approaches used by educators.

From a pedagogical view, entrepreneurship terms, methods, content, and context vary widely (Wu & Gu, 2017). As a point of clarity for this exploratory research chapter, we will use the Harvard Business School definition of entrepreneurship: *the pursuit of opportunity beyond resources controlled* (Stevenson, 1983). This definition clarifies the separation of entrepreneurship from the practice of small business management. Entrepreneurship involves the development of opportunities. Entrepreneurship is not small business management, nor is it the purchasing of a franchise, nor the opening of a new business as a similar or replica of another. Rather, entrepreneurs use their own knowledge, skills, and abilities in developing something new with the anticipation that this novel idea will create and capture value in unexpected ways.

We propose a new, radical, yet straightforward approach to current EE’s ineffectiveness. Namely, to abandon the current standards in favour of giving students autonomy in constructing their entrepreneurial knowledge. Our approach is based on learning theories of adult education that empower students to pursue their passions instead of hypothetically filling in boxes on canvases or non-sensical business plans.

This chapter is divided into four sections. After the introduction, section two will review the literature on EE. Section three will examine research on entrepreneurial learning by comparing process-based and problem-based approaches. In addition, we will present a novel learning approach for problem-based EE. Section four will be a discussion, followed by the conclusion.

2 LITERATURE REVIEW

We identified two primary approaches to EE: process-based and problem-based learning. Process-based learning is the most common approach to

EE; curriculum is focused on following a prescribed process of sequential steps in starting a business. It begins with developing an idea and ending with launching a business, in some cases selling that business, or a liquidation event. This approach is present in numerous leading textbooks (e.g. *Kuratko's Entrepreneurship Theory, Process, and Practice* [2005] or *Vesper & Gartner's New Venture Experience* [1997]). Learning outcomes in process-based courses focus on demonstrating knowledge of the various steps in the process, traits of entrepreneurs, understanding opportunity recognition, and knowledge of the various forms of venture funding, etc.

The second approach reviewed is problem-based learning (Svinicki & McKeachie, 2011), focused on identifying and solving real problems. This approach avoids pre-determined outcomes as well as best practices. This focus allows students to construct knowledge and, through experiential problem-based learning, develop and test novel solutions for real market problems.

After reviewing the literature, we argue that part of the failure of EE to develop entrepreneurs may be the reliance on pedagogical techniques focused on process-based learning approaches, which do not actually resemble how entrepreneurs learn to become entrepreneurs in real life. Further, these approaches do not resonate with today's students, who are different, in significant ways, than those of previous generations (Twenge, 2009). These differences have influenced higher education; the well-documented phenomenon of grade inflation is but one example. These students have a high sense of entitlement (Harvey & Martinko, 2009) and an inflated sense of efficacy, yet cannot cope with uncertainty or failure (Marston, 2010). Research found that they personally want to change the world (Johnson, 2015) but are paralysed by fear, they desire feedback, but more importantly peer feedback (Bye, 2018). Furthermore, their low levels of empathy (Grijalva & Zhang, 2016) and high levels of narcissism (Metz, 2014) helps explain their unwillingness to take ownership of the entrepreneurial process and why they are unwilling to actually spend the time in many of the menial tasks (Tulgan, 2009) required to become an entrepreneur.

This prior personality sketch suggests that today's students are incompatible with the required entrepreneurial *grit* that is necessary when facing adversity while working towards one's goals (Syed & Mueller, 2014). Moreover, a lack of empathy will make it difficult for students to understand their customers if they cannot connect with the experiences of others and with the broader community or world (Adler, 1927).

The entrepreneurial journey has so many ups and downs that *grit* appears to be a fundamental reason why some persist and others give up under the pressure of adversity and unpredictability (Syed & Mueller, 2014). Entrepreneurship Education should reflect mindfulness that today's student lacks grit, have an inflated sense of their abilities, are risk-averse, and are unable to cope with adversity. Critically, we believe that knowledge, skills, and abilities in the domains just listed are essential competencies of learning for success in entrepreneurship. Thus, if EE is to produce successful entrepreneurs, it may rest upon curricula that develop the abilities necessary to navigate the inherent ambiguity and uncertainty of the entrepreneurial marketplace.

Unfortunately, at a curricular level, EE is often taught through a process-based lens. In which students are exposed to and then tested on their ability to understand theory-laden curricula aligned with key elements of best practices (Morris, 2014). This approach presents entrepreneurship as a *linear* process and instructors are usually using discipline-specific models (Neck et al., 2014). Such activities include developing business plans, business models, reviewing case studies, creating five-year pro-forma income statements, developing marketing plans, operating within simulation systems with the intent on building the necessary management skills, and having students develop an understanding of the process needed to successfully launch and run a business.

Teaching process-based courses appears at first glance, theoretically, to be an obvious approach for EE since students are taught all elements of launching and running a successful business. However, real entrepreneurship functions as a messy phenomenon with uncertain outcomes along a variety of economic, political, social, and cultural dimensions over time (Nabi et al., 2017; Pittaway & Thorpe, 2012). Entrepreneurs develop innovations prior to and in anticipation of market acceptance. This approach runs counter to process-based learning, which relies heavily on the assumption of market acceptance and pre-determined outcomes, resulting in courses focused on the basic functions of management that overlook critical unpredictable aspects of the entrepreneurial process. Entrepreneurship is a non-linear process, and as such none of the learning activities within the process-based approaches can specify, in advance how it will map onto the real marketplace.

Researchers have noted that educators who rely on process-based approaches to EE are likely to be ineffective in creating entrepreneurs because entrepreneurship is a discipline of action in a real-world

ecology of complex changes (Neck et al., 2014). Furthermore, these approaches, that focus on idealised hypothetical business plans and models, ignore constraints under which entrepreneurship functions. For instance, constraints such as resource scarcity, limited human capital, or missing technological know-how. Entrepreneurs must learn to overcome these constraints if they are to succeed.

Process-Based Learning

Consequently, process-based learning may inadvertently create distance between entrepreneurial students and their ideas, since it focuses attention on the things the entrepreneur lacks instead of the knowledge, skills, and abilities the entrepreneur brings to the idea. Moreover, an examination of the impact of EE indicates that in forming entrepreneurs there appears to be a lack of intended outcomes, instructional processes, and assessment criteria in process-based approaches (Nabi et al., 2017). These approaches, which focus on idealised hypothetical business plans and models, ignore constraints under which entrepreneurship functions, including resource scarcity, limited human capital, or missing technological know-how. Entrepreneurs must learn to overcome these constraints if they are to succeed.

Process-based courses focus teaching and learning on the steps of starting a new venture. A final deliverable of these courses is to submit a completed business plan. The process involves students forming a hypothetical founding team, conducting market analysis, outlining the operational plan, development of a marketing plan, creating pro-forma financial statements, and outlining the funding requirements for this venture. In summation, process-based courses use a teaching-centric perspective which relegates the student to passive learner (Morris, 2014; Nabi et al., 2017; Neck et al., 2014).

Problem-Based Learning

Conversely, problem-based learning focuses curricular attention on helping students learn how to solve real problems using a learner-centred approach. There are six generally accepted steps in problem-based learning (Svinicki & McKeachie, 2011). First, identify and analyse the problem. Second, determine prior knowledge of the underlying and

related concepts to solve the problem. Third, identify and address knowledge gaps related to solving the problem. Fourth, outline and evaluate possible solutions and fifth, attempt to solve the problem; and sixth, report the findings.

Within problem-based learning, incidental preparation is critical to understanding entrepreneurial success since the entrepreneur incorporates their specific context into developing potential solutions to market problems. Here, the EE student determines what prior knowledge they possess to solve the market problem, while experiencing and learning about personal exposure to social, emotional, and financial risk involved in developing their idea (Cope & Watts, 2000). Additionally, Middleton and Donnellon (2014) noted ‘few programs provide robust outcomes such as actual new ventures or entrepreneurial behavior in real contexts’ (p. 1). While Kassean et al. (2015) argue EE should be defined by reflection, real-world experience, and action.

Entrepreneurship Process

The opportunity recognition process integral to entrepreneurship (Stevenson, 1983) focuses on the identification of qualities that make a good opportunity (Timmons & Spinelli, 2007). However, Singh (2001) questions the value of focusing on the identifications of opportunity qualities since this approach permits post hoc validation, offering little understanding of which conditions or opportunities are developed by entrepreneurs in the beginning. Overcoming this limitation, Lumpkin and Lichtenstein (2005) identify the need for the entrepreneur to effectively pursue the opportunity. Additionally, Sarasvathy (2009) suggests effectual thinking is required to help overcome the uncertainty of opportunity identification.

Opportunity recognition, sometimes called the ‘Eureka’ or ‘Aha!’ moment, often happens as individual are working or going about their daily lives (Rogers, 2014). This moment arises when the subconscious connects the dots to solve wicked problems. Once the novel patterns have been discerned, entrepreneurs successfully pursue these opportunities, relying on their personal and professional experiences, or incidental preparation (Wallas, 1926), distinct from formal deliberate learning (Singh et al., 1999). Therefore, incidental experiences form the bases of essential problem-solving skills in entrepreneurship.

We theorise that using a problem-based approach to EE, that eschews the creation of hypothetical businesses, plans, simulations, and case studies are more effective in developing entrepreneurs because the course is grounded in the learner's context and not hypotheticals. Faculty essentially meet students where they are and not where we want them to be and build entrepreneurial knowledge from there. Problem-based learning is student-centred, designed and structured with curriculum and co-curricular activities, that ensure students' gain concrete entrepreneurial experiences. The active nature of the experiential learning process provides an experience from which the learner can reflect and learn (Argyris & Schon, 1996). The reflective process allows students to interpret and understand their experiences so that new learning can occur (Moon, 2004). The problem-based course switched from focusing on 'what to learn' and instead taught students 'how to learn', building on self-directed, and ultimately creating self-determined learners (Hase & Kenyon, 2013).

The problem-based course follow Piaget's (1973) constructivist approach to teaching and learning in which entrepreneurial knowledge is actively constructed by the individual in a process of building on prior knowledge through concrete experiences. The learning environment is focused on creating opportunities for students to test their ideas in the real world outside the classroom and learn informally (Rogers, 2014). This intentional approach allows for collaboration among students as they develop solutions based on their current knowledge. It involves weekly student presentations on the current state of their ventures, which included student dialogue, interpretation, reflection, and collaboration. This process facilitated the development of an effective transactive memory system (Huang, 2009), which enables the entrepreneur to recognise their own missing expertise and identify people who can help them. Sharing their personal experiences with others in their network serves to increase knowledge sharing, empathy, and seeking member participation to help solve problems (Cope, 2005). The transactive memory system relies on learning by doing, learning from others, and working together, all key elements to the problem-based learning course. This approach aligns with Smilor's (1997) assessment of how entrepreneurs are exceptional learners from experiences with other entrepreneurs, customers, associates, employees, suppliers, and competitors. Finally, entrepreneurs learn from what worked and what did not work.

As the course progresses students rely on their previous experiences and those of their cohort to learn how to better evaluate various options. The students test their ideas, make lots of mistakes, but learn to overcome these failures with personal reflection, learning from other students, and working together as a cohort to help each other solve problems. This process is repeated throughout the semester. Students make iterations based on market feedback, peer input, and their reflective learning. Using a non-linear approach throughout the semester, the students purposefully build their entrepreneurial knowledge through learning from doing, from others, and from working together. This is similar to how Rae & Rae and Carswell (2000), Cope and Watts (2000), and Pittaway and Thorpe (2012) associate entrepreneurship as a learning journey.

3 ENTREPRENEURIAL LEARNING

Entrepreneurial opportunities are not identified nor pursued in an experiential vacuum, but rather are developed through action-learning from a culmination of an iterative process through real-life experiences (Gartner, 1985). Solomon and Matthews (2014) added that entrepreneurs pursue opportunities in their environment and context. We argue that an iterative non-linear problem-based methodology for EE is a direct mechanism by which students develop into entrepreneurs and actively engage with the world (Pittaway & Thorpe, 2012). A particularly well-stated critique by Hindle (2007) noted that in higher education, EE includes two different approaches: those that ‘teach about it’ and those that ‘teach it’ (p. 107). There is a growing consensus of the utility of a problem-based approach, and the need to develop more self-directed and self-determined students (QAA, 2018) through the exposure to concrete experiences.

Problem-based EE learning focuses on active student-centred learning requiring students to assume responsibility for exploring, adapting, and transitioning ideas with unknown outcomes (Kolb & Kolb, 2008). Entrepreneurship comes from finding practical solutions to problems based on what does and does not work (Cope, 2005; Smilor, 1997) and becomes a personal journey over time (McMullen & Dimov, 2013). This teaching approach relies on self-directed learning elements (Hartree, 1984; Merriam & Bierema, 2013) allowing for student autonomy. Students assume personal responsibility to become self-directed. Thus, they are no longer a passive recipient of knowledge. Once self-directed learning is practiced over time, entrepreneurs build agency, noted as critical in becoming a self-determined learner (Blaschke et al., 2016) (Table 1).

Table 1 Comparison between process-based and problem-based EE

	<i>Process-based</i>	<i>Problem-based</i>
Assumptions	Entrepreneurs start new ventures Courses teach the process of starting a new venture	Entrepreneurs solve (market) problems Learners should learn to solve real problems
Teaching methodology	Teacher-centred Theoretical lecturing Pre-determined exercises	Student-centred Concrete experiential learning No pre-determined outcomes
Role of student	Passive learner Follows a linear process to start a business or develop a business model Learns pre-determined deliverables	Active learner Self-directed learner constructs their non-linear journey of entrepreneurship and becomes self-determined in their learning Learns to be autonomous and develop agency through practicing creativity and innovation
Activities	Write a hypothetical Business Plan, conduct marketing analysis, assess financial feasibility, read case studies, and use simulations Taught aspects of management and leadership from theory	First, identify and analyse a real problem; second, determine prior knowledge of the underlying and related concepts to solve the problem; third, identify and address knowledge gaps related to solving the problem; fourth, outline and evaluate possible solutions; fifth, attempt to solve the problem; and sixth, report the findings Develop entrepreneurship tools and leadership skills in real time and practice
Learning outcomes	Learn about Entrepreneurship	Learn how to be an entrepreneur in practice
Assessments	Summative and formative assessments based on pre-determined best practices	Time spent working on and performance in their venture, self-reflection, journaling, incorporating feedback to improve their idea, iterating business idea, and demonstrating learning Building soft skills and hard skills

4 DISCUSSION

Why isn't the growth of EE creating more entrepreneur graduates and not more entrepreneurs? This question emerged from a literature review that EE has had no positive impact on the development of entrepreneurs

(Bae et al., 2014). In the light of the significant financial and academic focus devoted to these programmes we believe that it is vitally important researchers understand why these programmes are not effective. This chapter identified how experiential learning and corresponding *success through failure* are key components of EE. Learning practices include: concrete experiences, experiencing failure, and developing grit and resilience by working through this failure. Relying on our experiences in teaching entrepreneurship through the process-based learning approach, on intuition from the researchers' own entrepreneurial experiences, and evidence from our previous research (Dobson et al., 2017, 2021), demonstrate that process-based approaches are not suitable for learning entrepreneurship in the real world (White & D'Souza, 2014).

This chapter connected research showing that today's students are risk-averse, avoid uncertainty, have high levels of self-efficacy, and are unable to cope with failure (Campbell et al., 2017). These traits are contrary to the inherent uncertainty embedded in entrepreneurial action. The specific tasks embedded in problem-based learning, namely related to the requirement of having students identify a real market problem and encouraging their attempts to solve it through concrete activities (Svinicki & McKeachie, 2011), expose students to personal and business failure as they attempt to figure out actual market need (Pittaway & Thorpe, 2012).

At the beginning of the problem-based course students experienced concrete actions that challenge the student's sense of self when faced with failure which initially caused attitudes towards entrepreneurship to decline (Dobson et al., 2017, 2021). However, throughout the semester the students worked through these failures in their cohort and began to develop grit and resilience, an important factor in entrepreneurial learning (Syed & Mueller, 2014), and they became more aware and self-directed in their learning (Hase & Kenyon, 2013). Over time, students experience successes in their ventures that served as catalysts to rebound, stimulate, and encourage entrepreneurial learning, attitudes, subjective norms, perceived behavioural control (PBC), and intention to be an entrepreneur.

In addition, as successes emerged, such as, a product or service modification to fit with the customer's need, this allowed students to overcome their fear of failure, notably prevalent in today's students (Twenge, 2009). Furthermore, developing real solutions often required that students work on menial tasks, which they are not predisposed to do (Tulgan, 2009), but

which are essential to starting a business. Finally, to successfully develop solutions, students need to develop empathy (Grijalva & Zhang, 2016) for their customers. The literature noted that students of today are weak in these three areas. The problem-based class focused on solving real problems ensures learners encounter and strengthen skills in these areas.

The problem-based course allows exposure to mitigate personal risks, unpredictability, and especially to failures in the development of one's own idea; these are all aspects of entrepreneurship learning (Nabi et al., 2017). Part of the strategy in problem-based learning should be to remove the objective threat, i.e. the potential to 'fail' the course from experience of subjective failure, or if a student venture 'fails'. In other words, a failed business venture will not equate to a failed grade, provided the student reflectively learns from their experiences. This approach may increase students' intrinsic motivation to try novel solutions to market problems and to be more self-directed in their learning (Merriam & Bierema, 2013).

Students should be offered a safe environment to be challenged, strengthen awareness of agency to navigate concrete experiences, and view failure as an opportunity to learn. This is of interest, since peer recognition from feedback is something, younger generations crave (Bye, 2018). The class emphasised the students' ability to develop their business idea in search of gaining some level of market acceptance rather than the worry of a failed grade based on a successful first venture. Student progress and assessment is not based on a competition between students to see who can develop the best business, but rather each student is on a personal learning journey and supports each other.

The problem-based approach is in stark contrast to process-based learning in which students rely on 'best practices', theoretical assumptions, preconceived correct answers and methods to develop hypothetical business plans, business models, or complete coursework. Process-based approaches are contradictory to how entrepreneurs actually learn and behave (Pittaway & Thorpe, 2012). Inadvertently, by creating an idealised business plan and hypothetical business model, it focuses attention on what students lack and away from what they have, or the 'bird in hand' concept (Saravathy, 2009).

There is utility in problem-based teaching and learning methods for EE. Until students experience entrepreneurship, its value and application are abstract. After the struggle involved with initial entrepreneurial experiences, one may feel more equipped to approach entrepreneurial

behaviour. This was evident by increases in perceived behavioural control in research in the US (Dobson et al., 2017) and internationally (Dobson et al., 2021).

Indeed, entrepreneurship is certainly not for everyone, and we believe that a problem-based approach in early levels of entrepreneurship curricula may be critical in helping students realise that they do not, in fact, want to pursue entrepreneurship as a career or at this time. However, our research demonstrates that problem-based EE increases PBC and intention of students compared to process-based courses. Thus, the concrete experiences in a problem-based course are critical to the developing of the necessary *grit* and resilience that will foster the next generation of entrepreneurs.

Here we reflect on our own implementation of a problem-based class. We have developed a number of problem-based courses with great utility. It is important to intentionally separate the grade from the success or failure of the business, allowing students to reconcile the time and effort expended with the importance of building a venture. Further, this approach allows students to take risks in testing ideas without worrying about how a mistake will impact their grade. Entrepreneurship is a messy process in which students make many incorrect assumptions about market demand. A challenge becomes how to assess student learning (Lackeus & Middleton, 2018). Students are assessed on their effort and time spent working on their venture, tactics and how they incorporated feedback (customer and peer) into improving their venture, and progress they have made in their learning journey. This includes reflection, journaling, iterating, and demonstrating both self-directed and self-determined learning. Creating this environment allows students to take bigger risks and effectively go through a process that we are calling ‘success through failure’.

5 CONCLUSION

This paper explored the impact of problem-based and process-based learning on EE. The literature review offered both educational and entrepreneurial underpinnings for concrete problem-based learning in EE.

The process of becoming an entrepreneur is built on previous failures or what we are calling ‘success through failure’ since we argue that failure is an integral part of entrepreneurial development and thus, should

be a part of EE. The entrepreneurship classroom followed Svinicki and McKeachie's (2011) six steps for problem-based learning that align with Kolb's (1984) concept of experiential learning through concrete experiences. Students are required to execute a business venture by developing and engaging their ideas into opportunities.

The growing body of literature suggests the moving away from a pedagogical approach to EE, and towards treating them like adults holds the most promise in actually developing entrepreneurs. Adult-learning requires that faculty abandon some control over the learning process embedded in pre-determined outcomes and 'best practice' in favour of allowing students to construct their own entrepreneurial knowledge. Thus, faculty must become comfortable with learner-centred or entrepreneurship-centred learning in order to create more entrepreneurs.

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