

Flatline: Evaluating the Effectiveness of Entrepreneurship Education to Increase Students' Entrepreneurial Intention

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Entrepreneurship is a fundamental driver of economic development, critical for poverty reduction and for sustainable development. However, entrepreneurship education (EE) growth has occurred without a corresponding increase in students engaging in entrepreneurship. This research contributes to the gap in the literature on understanding how to develop entrepreneurs by examining the impact of EE on students' entrepreneurial intention. Using the Theory of Planned Behavior, we evaluated changes in students' intentions to become entrepreneurs after taking a hypothetical-based course in five universities in five countries. We found a flatline of entrepreneurial intention across all schools. EE had no positive impact on student intention to become an entrepreneur after taking an entrepreneurship course. This research provides more effective options for EE. Problem-based approaches, relying on concrete experiences, better align how entrepreneurs learn to be entrepreneurs. This is the first study that analyzes the impact of EE on entrepreneurial intention comparing different countries using similar hypothetical-based assignments, identifying the misalignment of how entrepreneurs learn and how EE is commonly taught.

Keywords: entrepreneurship learning, entrepreneurial intention, theory of planned behavior

INTRODUCTION

Governments, business, academic institutions, think tanks, and the third sector around the world have rallied around the idea that, entrepreneurship can spur economic growth, reduce poverty, and increase employment (Kuratko, 2005; Weber, 2012; Neck, Green, & Brush, 2014; Solomon & Matthews, 2014; Piperopoulos & Dimov, 2015; Wu & Gu, 2017). In response, academic institutions around the world have focused on entrepreneurship education (EE) as a means to reignite entrepreneurial dynamism to develop more and more effective entrepreneurs (Kuratko, 2005; Greene & Saridakis, 2008; Thurik, Stam, & Audretsch, 2013; Nabi et al., 2017). Yet, fewer young people are becoming entrepreneurs (The Kauffman Index, 2017). These academic approaches have failed to ignite entrepreneurship (Lerner, 2012), so

researchers are struggling to find the correct educational approaches to develop entrepreneurs (Aly, Audretsch, & Grimm, 2021).

Entrepreneurship as an academic discipline began in 1947 when Harvard University offered the first course focused on developing an entrepreneurial spirit in returning veterans (Morris & Kuratko, 2019). By the early 80's, many other schools followed, and the growth of EE programs across the US accelerated. However, by the early 1990's there was a switch from teaching entrepreneurship to teaching about entrepreneurship within a small business management framework. By the 2000's, EE moved away from promoting entrepreneurship (Weber, 2012) and focused on developing creativity and innovation skills (Chamard, 1989; Plaschka & Welsh, 1990) with the goal of developing a student's corporate thinking and making them more employable (Kourilsky, 1995). More recently, the main focus has been helping students launch high-tech, high growth scalable innovative business ideas (Morris & Kuratko, 2019). Today, the lean start-up, development of business models, and business plans have become the default teaching methodology for EE across the US and around the world.

Over 3,000 universities in the US offer courses, minors, majors, masters, and PhDs in entrepreneurship (Morris & Liguori, 2016). Torrance (2013) estimated that there are over 5,000 courses that service upwards of 400,000 students annually. Consequently, other countries have followed suit and developed EE programming in the US. A meta-analytic investigation reviewed 73 studies of 37,285 students, found no statistically significant impact of EE on entrepreneurship activity (Bae et al., 2014). In addition, there is emerging dissonance between universities' stated goals of EE and the reality of what and how it is being taught; realizing that the growth in programming has outpaced our understanding of how to teach entrepreneurship (Morris & Liguori, 2016).

Despite increased levels of EE, the survival rates of businesses have not improved (Bureau of Labor Statistics, 2016; Decker et al., 2018). For example, a firm started in 1994 had a 35.7% chance of surviving 10 years, whereas a firm started in 2006 had a similar chance of surviving 10 years at 34.9%. Additionally, government calculations have found no acceleration of new venture creation. In fact, the opposite is happening. The rate of new venture creation is at a historic low. The U.S. census indicates that there are 4.8 million missing businesses (Keating, 2016). Unfortunately, the growth of EE programming has occurred without research to support its effectiveness, leaving many gaps between research and practice of EE (Naia et al., 2015). There continues to be disagreement about which activities and competencies are crucial to develop entrepreneurs (Edelman, Manolova, & Brush, 2008; Mwasalwiba, 2010; Donnellon, Ollila, & Middleton (2014). Moreover, there is ontological confusion and methodological issues in how EE is researched and taught (Wu & Gu, 2017). Furthermore, the development of extensive EE programming has revealed that minimal attention is paid to the impact of teaching approaches and methods (Kamovich & Foss, 2017) on the actual impact on entrepreneurial action by students. Inconsistencies exist between the growing supply of EE and understanding how best to approach entrepreneurial teaching and learning (Morris, 2014) to truly develop the next generation of entrepreneurs.

The scope of this research is important; as significant investment of time and resources in developing EE programs grows, it is paramount to ensure that programming is effective in developing entrepreneurs. How educators teach entrepreneurship is a crucial factor in the development of entrepreneurs. Research indicates that entrepreneurs are not born, and education plays a critical role in their development (Morris & Kuratko, 2019). Today's students have higher levels of desire to become entrepreneurs, but unfortunately are less likely to become entrepreneurs than previous generations. If the current low rates of entrepreneurial activity are not increased, a long-term negative impact on economic development, employment, and poverty reduction will result globally.

Our research is motivated by a desire to better understand the impact of EE on developing entrepreneurs. This research examined the impact of EE courses at five universities worldwide. The courses relied on theory-based approaches and required students to complete hypothetical entrepreneurship assignments. Using the Theory of Planned Behavior (TPB), we measured changes on a student's Personal Attitude (PA), Subjective Norms (SN), Perception of Behavioral Control (PBC), and Entrepreneurial Intention (EI) after taking an EE course.

This paper starts with an introduction; then section two presents a literature review. Section three outlines the theoretical framework. Section four explains the methodology used. Section five provides the results. Section six involves a discussion of the findings. Finally, section seven, has the conclusion, identifies the limitations, presents practical implications for EE, and provides suggestions for future research.

LITERATURE REVIEW

This literature review is focused on three distinct elements of EE. First, we examine the dominant pedagogy in EE today. Second, we review the literature of how entrepreneurs learn to become entrepreneurs. Third, we provide a personality profile of today's students. These three elements help identify the mismatch between how entrepreneurship is taught, how entrepreneurs learn, and the learning needs of today's students.

The term 'entrepreneurship' is used widely. Hence, for clarity in this paper we use the Harvard Business School working definition of entrepreneurship as "the pursuit of opportunity without regard to resources currently controlled" (Stevenson, 1983, p.2). This definition contains three key elements. First, it clarifies the separation of entrepreneurship from the practice of small business management. Entrepreneurship is not small business management, the purchasing of a franchise, or the opening of a new business as a similar or replica of another. Rather, entrepreneurs use their own knowledge, skills, and abilities in developing a novel idea in anticipation that this innovation will create and capture value in unexpected ways (Stevenson, 1983). Second, entrepreneurship involves the development of opportunities by entrepreneurs. Thus, there is a specific focus on personal agency of the entrepreneur as able to identify and pursue an opportunity that others do not see. Third, there is an element of uncertainty that the idea will be successful. Entrepreneurs function with resource scarcity and are not risk takers but risk mitigators. Hence, if there is an early failure they can learn, iterate, and continue developing their idea (Dobson & Dobson, 2022a).

Entrepreneurial Education Pedagogy

Despite a succinct definition of entrepreneurship, most courses are not taught using these defining elements. Instead, faculty lecture students on the key elements in a business plan, business model canvas, simulations, or case studies. Liñán (2004) reviewed EE teaching approaches and found four dominant curricula objectives for entrepreneurship education. First, *continuing education for entrepreneurs* is focused on helping existing entrepreneurs in need of specialized adult learning, and thus not situated in traditional undergraduate education. Second, *education for entrepreneurial dynamism*; is focused on helping existing businesses become more entrepreneurial and thus not suitable for EE. Third, *entrepreneurship awareness*: conducts teaching perspectives to promote general knowledge about small business management and the benefits of entrepreneurship. This approach aligns with a theory-based approach to EE. The fourth, is *education for start-ups*; providing students with practical information about starting a business, legal entities, financing options, building a founding team, etc. using a process-based approach to EE. Notably, approaches three and four focus on hypothetical-based methodologies and don't align with Stevenson's (1983) definition.

Course types noted, rely on a teaching-centered perspective and relegate student to passive consumers (Morris, 2014; Nabi, et al., 2017) as opposed to active creators of their entrepreneurial idea. In addition, these approaches present entrepreneurship as a linear process. Remaining focused on theoretical constructs aligned with key elements of best practices (Morris, 2014; Goldsby, et al., 2017), but never moving beyond hypothetical concepts. Students are assessed on their ability to understand how to start a business or the process to come up with a viable business idea. Dobson, Jacobs, Dobson (2017) combined the two approaches within the term *hypothetical-based*, which is juxtaposed against problem-based approaches that focus on students having concrete entrepreneurial experiences.

At first glance, it appears theoretically obvious to use hypothetical-based methodologies in EE, since students are taught all elements of launching and running a successful business. However, a common saying in business is that 'the business plan does not survive the first contact with a real customer'.

Entrepreneurship functions as a messy phenomenon with uncertain outcomes along a variety of economic, political, social, and cultural dimensions over time (Cope & Watts, 2000; Morris, 2014; Syed & Mueller, 2014; Neck et al., 2014; Nabi et al., 2017; Pittaway & Thorpe, 2017). The entrepreneur functions in a realm of Knightian ‘uncertainty’ (Knight, 1921) in that they develop innovations before and in anticipation of market acceptance. Hypothetical-based courses focus on business management’s basic functions, which overlook critical unpredictable aspects of the entrepreneurial process. More critically, none of the activities and learning outcomes within the hypothetical-based approaches can specify, in advance, how various ideas map onto the real marketplace.

Prominently, EE has been reduced to filling in nine boxes of a business model canvas and completing a business plan. Consequently, deliverables are evaluated against a ‘pre-determined’ correct answer with assumptions made by faculty that these are the only answers or outcomes. Courses might also involve developing a hypothetical business and conceptual business plan with a target profitability with three-years, or a million dollars in revenue with-in five-years. such courses focus on total market size, market growth, and potential market penetration resulting in students imagining successful business launches. However, research on motivation finds that people that imagine becoming successful are less likely to find success. To be successful, future goals must be built on previous concrete experiences (Oettingen, 2015).

Entrepreneurship rarely goes according to plan, as a result, entrepreneurs have learned to engage in very little formal planning as they launch their businesses (Kisfalvi, 2002). The rationale for having students write a hypothetical business plan or model is that it is required for entrepreneurs to get external investment (Gumpert, 2002). However, this approach does not align with how entrepreneurs fund their businesses. Evidenced by the fact that 95% entrepreneurs self-fund, (Daniels, Herrington, and Kew, 2017), 4% get it informal funding from friends and family, and fewer than 1% get formal external funding (Felan et al., 2021). Additionally, students are spending time and energy preparing business plans and to pitch their ideas to panel ‘experts’, when the reality is that only .016% of entrepreneurs ever get venture funding (Daniels, et al., 2016). A business plan outlines how things ought to be done; it does not map on to the reality of how entrepreneurship is done. Hypothetical courses leave students with a *misunderstanding* of the entrepreneurial learning process and creates a *fixed mindset* that leaves them unable to cope when things don’t go according to the plan or model.

Educators who rely on hypothetical-based approaches are likely to be ineffective in creating entrepreneurs because entrepreneurship is a discipline of action in a real-world ecology of complex changes (Rae & Carswell, 2000; Corbett & Katz, 2012; Pittaway & Thorpe, 2012; Neck et al., 2014; White & D’Souza, 2014). Thus, time and effort focused in developing plans without factoring in real constraints creates barriers between students and their idea (Dobson & Dobson, 2022a). They write business plans too soon, and it is done at the expense of real experiences (Neck, Green & Brush, 2014). Consequently, students’ attention is focused on what the entrepreneur lacks and thus lowers self-efficacy, which makes starting a venture seem too risky. Hypothetical coursework diminishes the value of their context, the actual knowledge, skills, and abilities the entrepreneur/student brings to their idea.

Moreover, an examination of the impact of EE indicates that there appears to be a lack of intended outcomes, instructional processes, and assessment criteria for hypothetical-based approaches to EE (Kamovich & Foss, 2017; Nabi et al., 2017). The formative and summative activities in hypothetical-based learning are based on preconceived learning outcomes, and do not resemble how most entrepreneurs launch their business idea; in their unique individual learning context drawn from real experiences (Fenwick & Hutton, 2000; Cope, 2005) and action-learning. The culmination of repeated actions (Gartner, 1985; Cope, 2003) curated by an iterative process of learning by doing, and from successes and failures is how ideas are validated. Entrepreneurship is a non-linear journey (Dobson & Dobson, 2022b), as such the linear process-based methodology may not help increase student intention to pursue their entrepreneurial ideas. Hindle (2007) briefly critiqued EE, noting that there are two different approaches: Those that “*teach about it*” and those that “*teach it*” (p. 107). So, while there is a growing consensus of the lack of utility of current hypothetical-based approaches, moving away from these failed approaches is proving extremely difficult.

Entrepreneurial Learning

The field of EE grounded in research on action and experiences, and notably towards learning by doing (Rae & Carswell, 2000; Ronstad, 1985; Fenwick & Hutton, 2000; Cope, 2003; Pittaway & Thorpe, 2012) has never fully embraced such experiential learning. It appears universities have accepted teaching ‘*about*’ experiential learning and have moved away from actual experiential learning as core to learning entrepreneurship (Cope & Watts, 2000; Cope, 2005; Politis, 2005). This move has taken place knowing that, in real life, entrepreneurs do not learn in a vacuum (Gartner, 1985), they learn by doing, from each other, and by working together (Smilor, 1997). For this reason, if teaching faculty understand how entrepreneurs learn it may support greater performance and practice in EE curricula.

EE should be based on a robust intellectual and conceptual underpinning and sound reflection on practice and applications instead of simply relying on “*taken for granted*” approaches (Fayolle, 2013 pg. 692). The literature on learning is clear, you don’t learn simply by doing, yes, concrete experiences are necessary but not sufficient. Entrepreneurs learn by doing and by reflecting on those experiences (Dewey, 1938; Knowles, Holton, & Swanson, 2014; Rogers, 2014). Entrepreneurial learning involves a willingness to learn amidst failures and setbacks. Entrepreneurs are more successful when they reflect on concrete experiences (Cacciotti, et al., 2020). In addition, reflective learning is unique to individuals who conceptualize for themselves and creates new meaning from past experiences and beliefs (Cope, 2003; Moon, 2004; Kolb & Kolb, 2008). Thus, entrepreneurship is a deeply personal journey. The learning process develops from the connectedness of *purposeful* experiences that leads to the creation of new knowledge (Moon, 2004). This reflective learning is necessary for the logical process of inquiry, as a way of testing ideas through experiences (Dewey, 1938). Allowing the student to move past their assumptions (Marshick & Watkins, 2001; Cross, 2007; Rogers, 2014), to change one’s own meaning (Mezirow, 1990), to gain confidence, and build self-efficacy (Cope, 2005; Schmitt et al., 2018) as they build successful businesses.

The focus on action-learning allows knowledge to be constructed, eventually leading to the “*aha*” moments of clarity and meaningfulness (Kolb, 1984; Argyris & Schön, 1996; Cope, 2003; Moon, 2004). Students gain deeper knowledge from the interplay of the experimentation and a slower incubation process. Overtime becoming more successful as they improve product/market fit. The experiential learning process requires a student-centred approach; and to teach student ‘*how to learn*’ instead of focusing on ‘*what to learn*’. This approach permits self-directed actions by students from reflection and feedback; allowing them to move past their assumptions (Garrison, 1997; Hase & Kenyon, 2013; Merriam & Bierema, 2013). Hypothetical EE approaches using plans and models, do not accomplish this deeper self-directed learning (Cope, 2005; Kolb & Kolb, 2008; Fayolle, 2013).

Entrepreneurs spend time and exert efforts to successfully develop their ideas (Pittaway & Thorpe, 2012; McMullen & Dimov, 2013). This informal and incidental learning should not be discarded as subsidiary, but in fact central to the learning journey, which requires student autonomy and personal responsibility for one’s learning (Hase & Kenyon, 2013). A positive consequence of practice from experience is tacit learning; where context, experience, and personal values meet, and an individual learning path evolves (Rogers, 2014). Entrepreneurial learning in action, is often non-deliberate and impulse-driven behavior (Lerner, Hunt, & Dimov, 2018) suggesting entrepreneurs have a ‘gut feeling’ that their idea would work, that is built on personal experiences and understanding of a given context.

Research suggests successful entrepreneurs use inductive reasoning based on context and being focused on an individual’s agency in the quest for knowledge to solve a market problem (Cope & Watts, 2000; Fenwick & Hutton, 2000). Entrepreneurs follow inquiry-based learning approaches to become self-directed problem-solvers (Kolb & Kolb, 1980; Knowles et al., 2014; Rogers, 2014). This learning approach is counter to deductive reasoning that uses theories requiring students to complete assignments with pre-determined correct answers. Also notable is that the learner’s quest for knowledge pushes against institutional norms and accepted behavior, requiring the entrepreneur to rebel against accepted behavior to actively problem solve (Walter & Block, 2016). The underlying reflective process for self-directed learners can be facilitated by the professor, whose goal is to help the students interpret, question, and understand their experiences so that learning can occur (Finger & Asun, 2001; Moon, 2004).

A lack of *grit* also seems to be a fundamental reason why nascent entrepreneurs give up, and few persist to become successful entrepreneurs (Baron & Shane, 2004; Cardon, et al., 2009; Syed & Mueller, 2014). Grit, defined as pursuing long-term challenges with perseverance and passion (Von Cullin, Tsukayama, & Duckworth, 2014), allows entrepreneurs to learn how to overcome challenges from experiences. Consequently, hypothetical-based courses assume ideas are developed in a predictable process and do not expose students to real failures from concrete experiences, which are imperative for the development of grit (Pittaway & Thorpe, 2012). The uncertainty of success and the missteps along the way form the basis of critical incidents, that through reflection lead to higher learning and more effective entrepreneurs (Cope & Watts, 2000).

The deficit of theoretical and philosophical underpinnings for student learning must be addressed if EE is to reap the benefits of increasing entrepreneurship as a way to spur economic growth, reduce poverty, and increase employment (Kuratko, 2005; Neck, Green, & Brush, 2014; Solomon & Matthews, 2014; Piperopoulos & Dimov, 2015; Wu & Gu, 2017). Entrepreneurship research has continued to help educators needing guidance for course development (Gibb, 1987; Cope & Watts, 2000; Bechard & Gregoire, 2005; Politis, 2005; Neck, Green & Brush, 2014). More recently attention has focused on creating a student-centered classroom (Brown, 2008). Researchers have long noted the utility of problem-based approaches focusing on performance and practice to deepen student learning (Biggs & Tang, 2011). Unfortunately, even with the theoretical underpinnings of experiential learning (Pittaway & Cope, 2007a, 2007b; Kolb, 1984; Katz et al., 1994; Nabi et. al, 2017; Hägg & Gabrielsson, 2019), student-centered approaches are still missing in EE curricula. Today's students are tomorrow's entrepreneurs, so addressing teaching deficits is essential to realizing the promise of EE.

Today's Students

Today's students view entrepreneurship positively and want to change the world (Johnson, 2015) but have difficulties starting their entrepreneurial journey. Many want to pursue careers in entrepreneurship and are not as interested in joining the ranks of the corporate world (Campbell, Twenge, & Campbell, 2017). Much has been written about grade inflation, resulting in an 'A' now standing for average. Grade inflation gives students mixed messages about their potential and reality. Leaving them with a high sense of entitlement (Harvey & Martinko, 2009), an inflated sense of ability, and high level of self-esteem. They lack grit and cannot deal with uncertainty or failure (Twenge, 2009; Marston, 2010). In addition, they have low levels of empathy (Grijalva & Zhang, 2016) and high levels of narcissism (Metz, 2014), which helps explain their unwillingness to take ownership of the entrepreneurial process and why they are unwilling to spend the time in many of the menial tasks (Tulgan, 2009) required to become an entrepreneur.

The above personality sketch of the millennial suggested by these researchers appears incompatible with the required entrepreneurial grit (Syed & Mueller, 2014) needed to succeed. Entrepreneurs must maintain desire and drive while facing adversity. Moreover, a lack of empathy will make it difficult to understand customers' needs, if they cannot connect with the experiences of others, broader community, or world (Adler, 1927). It is also important to consider generational changes (Twenge, 2009) in teaching and learning, since those attending entrepreneurship training nowadays are completely different from the previous generations (Dobson, et al., 2021). Understanding the next generations and their needs will help find spaces where professors/facilitators can promote knowledge in business sciences based on innovation, and the new needs that must be met in the market today; and potentiate all those entrepreneurial skills necessary for action on ideas. It is in this realm where problem-based learning is essential.

Discussion

The three distinct elements of EE reviewed from the literature: Dominant pedagogy of EE today; how entrepreneurs learn to become entrepreneurs; and a profile of today's students, draws attention to the mismatch between how entrepreneurship is taught, how entrepreneurs learn, and the learning needs of today's students. The dissonance between how EE is taught and how entrepreneurs learn to become entrepreneurs is becoming known and studied. Yet, change is slow to move away from pedagogies that do not appear to create new entrepreneurs.

Hypothetical coursework cannot incorporate concrete experiences required for the development of reflection, grit and resilience. Notably, further inflating today's student's self-esteem; making them more risk-averse; less able to cope with struggle; and have insufficient appreciation for the value of struggle on the road to entrepreneurship success or start a business, will not lead to creating more entrepreneurs. Knowledge, skills, and abilities are part of the core learning competencies for success in entrepreneurship and should be integrated into the curriculum to develop self-directed problem-solvers of today's problems. This way students learn to act from everyday interactions with the business eco-system, whether that be their course cohort, campus, or greater community.

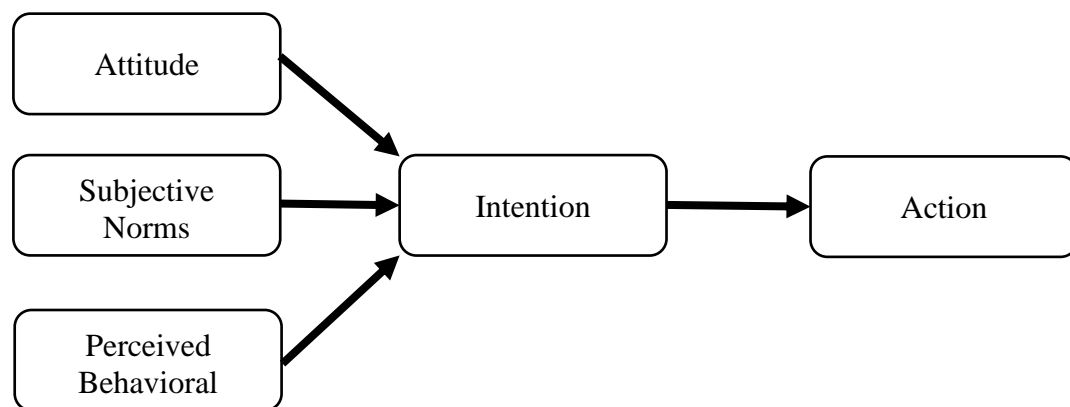
Finally, if EE is to produce successful entrepreneurs, it may rest upon curricula designed to expose students to the inherent ambiguity and uncertainty of the entrepreneurial marketplace. Placing students in a real-life learning environment that forces them to struggle, learn, and iterate should become embedded in curriculum as they attempt to get product/market fit. Unfortunately, at a curricular level, EE continues to be taught through a hypothetical-based focus in which students are assessed on their ability to regurgitate pre-determined correct outcomes. Moving to problem-based curriculum methodology with reflective learning should be a key component for improving the effectiveness of EE.

THEORETICAL FRAMEWORK

To measure the impact of EE on students' intention we used the Theory of Planned Behavior (TPB) to measure changes in students' intention to become entrepreneurs after taking an entrepreneurship course. TPB is a well-known tool to measure human behavior. This theory was developed by Ajzen (1985) and has been used across multiple disciplines including entrepreneurship. It is one of the most well-known and widely used survey instruments to predict action.

According to Ajzen (2006) TPB is designed to predict the likelihood of a person doing an *Action*. Our interest relates to students becoming entrepreneurs. Engaging in a specific action is influenced by four factors: Attitudes about the activity; subjective norms; perceived behavioral control, and intention as graphed in Figure 1.

FIGURE 1
ADAPTED FROM: THEORY OF PLANNED BEHAVIOR AJZEN, 1985



TPB indicates that increasing *intention* is essential to a person engaging in a specific task (Ajzen, 1991). Our interest is the impact of EE on creating entrepreneurs. There are three interrelated factors that influence an entrepreneur's decision to act and studied for this research.

Firstly, the *Personal Attitude (PA)* relates to one's beliefs about an activity; and if it positively identifies and links to positive behavior. The *PA* is a person's summation of important beliefs, plus their previous evaluation, reflection and potential of results.

Secondly, *Subjective Norms (SN)* are also a function of beliefs, but for this study, it's what the person thinks that their peers, friends, family, and acquaintances will think of them if they become an entrepreneur. This variable influences social pressure/peer pressure. To increase intention requires a perception that one's peers would look favorably if a person chose entrepreneurship.

Thirdly, *Perceived Behavioral Control (PBC)*, focuses on whether the person believes that they can successfully complete an action, the more likely they are to engage in that action. When a person believes that the action is within their ability, then intention should increase. Thus, PBC is the most important mediator in increasing intention. If a person doesn't have a high level of PBC, the influence of the other two variables is significantly lowered (Ajzen & Fishbein, 2005).

Participants and Design

Using a quantitative research design to examine the impact of EE on student intention to become an entrepreneur we examined impact of hypothetical-based EE courses on the students' intention. The data was collected in two waves for each course: At the semester's beginning (T1) and end (T2). We measured the changes in PA, SN, PBC, and entrepreneurial intention (EI) at the two data collection points to track the impact of EE on students' intention to pursue entrepreneurship after taking the entrepreneurship course.

The survey instrument was developed following Ajzen's (2006) TPB framework. We used Liñán & Chen (2009) modifications, which focused the questions on entrepreneurship. Each factor had five to seven questions with salient outcomes, referents, attitudes, and control factors of entrepreneurship. The survey used a 7-point Likert scale (1 = completely disagree and 7 = completely agree). Data was collected through an online survey using Qualtrics. After participants provided general demographic information, they responded to a series of questions assessing the variables of interest for the study. The data was collected at five universities, one in: Colombia, Malaysia, Mexico, Spain and United States. The schools varied in size from small liberal arts schools in the US, to top tier private schools in Colombia and Spain, and public universities in Mexico and Malaysia. All the courses selected were introductory to entrepreneurship courses at each school. The sample size varied from one class with 27 students in the US, to multiple sections of a course with 300 students in Malaysia participating in the data collection.

Hypotheses

H1 After the Hypothetical-based class there will be no change in Personal Attitude to become an entrepreneur.

H2 After the Hypothetical-based class there will be no change in Subjective Norms to become an entrepreneur.

H3 After the Hypothetical-based class there will be no change in Perception of Behavioral Control to become an entrepreneur.

H4 After the Hypothetical-based class there will be no change in Entrepreneurial Intention to become an entrepreneur.

While these hypotheses may appear counter intuitive, our literature review identified a mismatch between entrepreneurial learning theories and current EE programming.

KEY FINDINGS

We conducted a variety of tests. To ensure internal consistency of the data we ran Cronbach Alpha. The sample sizes varied from 27 to over 300, so we had to do different analysis to test the null hypothesis. We ran Kolmogorov-Smirnov as the normality test for samples larger than 50 and Shapiro-Wilk for samples under 50.

The Cronbach's alpha (α) measures internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability or the reliability of a psychometric instrument. A higher α (close to 1) indicates that the items have relatively high internal consistency. For the within-group comparison, responses were averaged into indices of each variable towards entrepreneurship in each country at times one and two.

Table 1 summarizes the reliability of survey measures related to entrepreneurship across five countries at two different times. The Cronbach's alpha values are consistently high, indicating reliable measurement scales. Notably, subjective norms in Colombia significantly increase from time one to time two, suggesting a potential shift in the social factors influencing entrepreneurship. This comparative presentation allows for quick insights into the reliability of the data in different cultures towards entrepreneurship.

TABLE 1
CRONBACH'S ALPHA (α)

| | Cronbach's alpha (α) | Countries | | | | |
|-------------------------------------|-------------------------------|-----------|----------|--------|---------------|-------|
| | | Malaysia | Colombia | Mexico | United States | Spain |
| <i>Personal attitude</i> | <i>T1</i> | .86 | .88 | .84 | .93 | .86 |
| | <i>T2</i> | .93 | .92 | .91 | .95 | .91 |
| <i>Subjective norms</i> | <i>T1</i> | .83 | .79 | .94 | .95 | .94 |
| | <i>T2</i> | .81 | .96 | .87 | .99 | .98 |
| <i>Perceived behavioral control</i> | <i>T1</i> | .92 | .89 | .91 | .94 | .94 |
| | <i>T2</i> | .95 | .96 | .95 | .96 | .95 |
| <i>Intention</i> | <i>T1</i> | .94 | .92 | .94 | .95 | .94 |
| | <i>T2</i> | .95 | .94 | .92 | .96 | .96 |

To provide a comprehensive overview of the entrepreneurial landscape, table 2 presents a detailed descriptive statistical analysis. The table encompasses data from Malaysia, Colombia, Mexico, the United States, and Spain, offering insights into several key aspects of entrepreneurship. It includes the number of respondents (N), along with the average, standard deviation (SD), and mean values for personal attitude, subjective norms, perceived behavioral control, and entrepreneurial intention at two different times (T1 and T2). This statistical summary is a foundational reference for understanding the variances and central tendencies in attitudes and perceptions related to entrepreneurship within these diverse cultural and economic contexts.

TABLE 2
DESCRIPTIVE STATISTIC

| | | | Countries | | | | |
|-----------|-------------------------------------|-------------------|------------------|-----------------|---------------|----------------------|--------------|
| | | | Malaysia | Colombia | Mexico | United States | Spain |
| | | N | 300 | 54 | 39 | 24 | 23 |
| | | Statistics | | | | | |
| T1 | Personal Attitude | <i>Average</i> | 5.72 | 5.60 | 5.54 | 5.32 | 4.62 |
| | | <i>SD</i> | 1.173 | 1.360 | 1.486 | 1.243 | 1.618 |
| | | <i>Mean</i> | 5.56 | 5.35 | 5.24 | 5.16 | 4.23 |
| | Subjective Norms | <i>Average</i> | 5.81 | 5.75 | 6.11 | 5.83 | 5.52 |
| | | <i>SD</i> | 1.069 | 1.208 | 1.114 | 1.209 | 1.670 |
| | | <i>Mean</i> | 5.70 | 5.61 | 5.99 | 5.70 | 5.13 |
| | Perceived Behavioral Control | <i>Average</i> | 4.80 | 4.38 | 4.74 | 3.77 | 3.35 |
| | | <i>SD</i> | 1.323 | 1.470 | 1.408 | 1.585 | 1.563 |
| | | <i>Mean</i> | 4.56 | 4.09 | 4.45 | 3.41 | 2.94 |
| | Entrepreneurial Intention | <i>Average</i> | 5.56 | 4.99 | 5.40 | 4.61 | 3.97 |
| | | <i>SD</i> | 1.269 | 1.690 | 1.575 | 1.497 | 1.799 |
| | | <i>Mean</i> | 5.35 | 4.57 | 5.07 | 4.34 | 3.47 |
| T2 | Personal Attitude | <i>Average</i> | 5.76 | 4.54 | 5.43 | 5.22 | 4.27 |
| | | <i>SD</i> | 1.096 | 1.497 | 1.612 | 1.373 | 1.744 |
| | | <i>Mean</i> | 5.67 | 4.19 | 5.10 | 5.02 | 3.81 |
| | Subjective Norms | <i>Average</i> | 5.89 | 4.80 | 6.05 | 5.98 | 5.85 |
| | | <i>SD</i> | 0.999 | 1.551 | 1.115 | 1.101 | 1.299 |
| | | <i>Mean</i> | 5.78 | 4.47 | 5.93 | 5.87 | 5.65 |
| | Perceived Behavioral Control | <i>Average</i> | 5.30 | 4.48 | 4.96 | 4.38 | 4.00 |
| | | <i>SD</i> | 1.301 | 1.375 | 1.467 | 1.442 | 1.440 |
| | | <i>Mean</i> | 5.01 | 4.20 | 4.69 | 4.07 | 3.64 |
| | Entrepreneurial Intention | <i>Average</i> | 5.62 | 4.58 | 5.38 | 4.50 | 3.23 |
| | | <i>SD</i> | 1.205 | 1.387 | 1.616 | 1.619 | 1.667 |
| | | <i>Mean</i> | 5.43 | 4.30 | 5.10 | 4.12 | 2.74 |

We selected Kolmogorov-Smirnov as the normality test, used when the sample size is greater than 50, which included the samples from Malaysia and Colombia. We used the Shapiro-Wilk test when samples were under 50, including those from classes in the USA, Mexico and Spain. The entrepreneurial intention for Malaysia, based on the table above, was not a normal variable at T1 and T2. Requiring us to run a correlation for non-parametric; The data from the USA was normal variable at T1 and T2, so we ran a correlation for a parametric test. Colombia is not a normal variable at T1 and T2, so we ran a correlation for a non-parametric test. Mexico is not a normal variable at T1, so we ran a correlation for a non-parametric test. Spain is a normal variable at T1 and T2, so we ran a correlation for a parametric test.

We now focus on the results from Rho Spearman correlation for the non-parametric sample and Pearson correlation for the parametric sample. The purpose is to measure the strength and direction of a linear association between two variables, in this case it is the same variable measured at two times, at the beginning of the semester (T1) and at the end of the semester (T2).

**TABLE 3
TEST OF NORMALITY FOR COLOMBIA**

| | | Normality Test Colombia | | | |
|---------------------------|-------------|------------------------------|--|---------------------------|-------------|
| T1 | | | | T2 | |
| Kolmogorov-Smirnov | | | | Kolmogorov-Smirnov | |
| Statistic | Sig. | | | Statistic | Sig. |
| .112 | .091 | Personal Attitude | | .162 | .002 |
| .101 | .200* | Subjective Norms | | .145 | .009 |
| .139 | .011 | Perceived Behavioral Control | | .131 | .030 |
| .201 | <.001 | Entrepreneurial Intention | | .160 | .002 |

**TABLE 4
TEST OF NORMALITY FOR MALAYSIA**

| | | Normality Test Malaysia | | | |
|---------------------------|-------------|------------------------------|--|---------------------------|-------------|
| T1 | | | | T2 | |
| Kolmogorov-Smirnov | | | | Kolmogorov-Smirnov | |
| Statistic | Sig. | | | Statistic | Sig. |
| .142 | <.001 | Personal Attitude | | .216 | <.001 |
| .213 | <.001 | Subjective Norms | | .244 | <.001 |
| .060 | .011 | Perceived Behavioral Control | | .117 | <.001 |
| .143 | <.001 | Entrepreneurial Intention | | .205 | <.001 |

**TABLE 5
TEST OF NORMALITY FOR MEXICO**

| | | Normality Test Mexico | | | |
|---------------------|-------------|------------------------------|--|---------------------|-------------|
| T1 | | | | T2 | |
| Shapiro-Wilk | | | | Shapiro-Wilk | |
| Statistic | Sig. | | | Statistic | Sig. |
| .885 | .001 | Personal Attitude | | .903 | .004 |
| .770 | <.001 | Subjective Norms | | .850 | <.001 |
| .922 | .013 | Perceived Behavioral Control | | .974 | .540 |
| .892 | .002 | Entrepreneurial Intention | | .928 | .022 |

TABLE 6
TEST OF NORMALITY FOR THE UNITED STATES

| | | Normality Test United States | | |
|--------------|-------|------------------------------|-----------|-------|
| T1 | | T2 | | |
| Shapiro-Wilk | | Shapiro-Wilk | | |
| Statistic | Sig. | | Statistic | Sig. |
| .967 | .583 | Personal Attitude | .929 | .095 |
| .816 | <.001 | Subjective Norms | .806 | <.001 |
| .949 | .256 | Perceived Behavioral Control | .942 | .178 |
| .960 | .446 | Entrepreneurial Intention | .953 | .314 |

TABLE 7
TEST OF NORMALITY FOR SPAIN

| | | Normality Test Spain | | |
|--------------|------|------------------------------|-----------|-------|
| T1 | | T2 | | |
| Shapiro-Wilk | | Shapiro-Wilk | | |
| Statistic | Sig. | | Statistic | Sig. |
| .903 | .035 | Personal Attitude | .875 | .008 |
| .841 | .002 | Subjective Norms | .812 | <.001 |
| .959 | .465 | Perceived Behavioral Control | .936 | .151 |
| .975 | .817 | Entrepreneurial Intention | .923 | .076 |

The findings indicated a negative coefficient or downward slope on entrepreneurial intention, meaning that the student's interest in being entrepreneurs decreases after taking the hypothetical-based entrepreneurship courses. The Malaysia case is the only one that is positive, but the coefficient is not statistically significant. We concluded that the learning objectives specifically related to developing the next generation of entrepreneurs is not being met.

We used the Friedman test which is an extension of the Wilcoxon test to include data recorded in more than two time periods or groups of three or more matched subjects. From the data we evaluated each of the five groups at two intervals (T1 and T2). The test examines the ranges of the data generated in each time period to determine if the variables shared the same continuous distribution of their origin using the Friedman-test. Table 8 shows that the Colombian case is the only one that has a statistically significant drop in entrepreneurial intention based on the Friedman calculation.

TABLE 8
FRIEDMAN CALCULATION OF PERSONAL ATTITUDE AT T1 AND T2

| | T1 – T2 | |
|-----------------|------------------|---------------|
| Attitude | X ² r | p-value |
| Malaysia | 0.0833 | .7728 |
| Colombia | 8.963 | .00276 |
| Mexico | 0.0256 | .8727 |
| USA | 0.375 | .5409 |
| Spain | 0.0435 | .83483 |

TABLE 9
FRIEDMAN CALCULATION OF SUBJECTIVE NORMS AT T1 AND T2

| | T1 – T2 | |
|-------------------------|---------------|----------------|
| Subjective norms | X2r | p-value |
| Malaysia | 0.0033 | .95396 |
| Colombia | 5.3519 | .0207 |
| Mexico | 0.2308 | .63095 |
| USA | 0 | 1 |
| Spain | 0.6957 | .40425 |

TABLE 10
FRIEDMAN CALCULATION OF PERCEIVED BEHAVIORAL CONTROL AT T1 AND T2

| | T1 – T2 | |
|-------------------------------------|---------------|-------------------|
| Perceived Behavioral Control | X2r | p-value |
| Malaysia | 85.333 | <.00001 |
| Colombia | 0.2963 | .58621 |
| Mexico | 1.2564 | .2623 |
| USA | 4.166 | .0412 |
| Spain | 1.5652 | .2109 |

TABLE 11
FRIEDMAN CALCULATION OF ENTREPRENEURIAL INTENTION AT T1 AND T2

| | T1 – T2 | |
|----------------------------------|-------------|----------------|
| Entrepreneurial intention | X2r | p-value |
| Malaysia | 1.20333 | .27266 |
| Colombia | 6.68 | .0097 |
| Mexico | 0.41 | .5218 |
| USA | 0 | 1 |
| Spain | 0.3913 | .5316 |

TABLE 12
COMBINED PRE AND POST SCORES ON CHANGES IN EACH VARIABLE

| | | Malaysia | Colombia | Mexico | United States | Spain |
|-----------|-------------------------------------|-----------------|-----------------|---------------|----------------------|--------------|
| T1 | Personal Attitude | 5.74 | 5.60 | 5.54 | 5.32 | 4.62 |
| | Subjective Norms | 5.92 | 5.75 | 6.11 | 5.83 | 5.52 |
| | Perceived Behavioral Control | 4.78 | 4.38 | 4.74 | 3.77 | 3.35 |
| | Entrepreneurial Intention | 5.57 | 4.99 | 5.40 | 4.61 | 3.97 |
| T2 | Personal Attitude | 5.76 | 4.54 | 5.43 | 5.22 | 4.27 |
| | Subjective Norms | 5.89 | 4.80 | 6.05 | 5.98 | 5.85 |
| | Perceived Behavioral Control | 5.30 | 4.48 | 4.96 | 4.38 | 4.00 |
| | Entrepreneurial Intention | 5.62 | 4.58 | 5.38 | 4.50 | 3.23 |

DISCUSSION AND CONCLUSION

Our research was motivated by the concern reflected in the emerging literature that identified the lack of desired behavioral outcomes related to EE; mainly, there is no increase in entrepreneurial activity from current approaches of EE (Bae, et al., 2014). Notably, EE that uses a hypothetical-based curriculum was studied in this research. This is critically important considering the vast sums of time, effort, and resources devoted to EE. As well as the often-stated efforts of developing the next generation of entrepreneurs to drive sustainable development (Liñán, Rodríguez-Cohard & Rueda, 2011) and lift developing economies out of poverty is misaligned with the reality of the behavior.

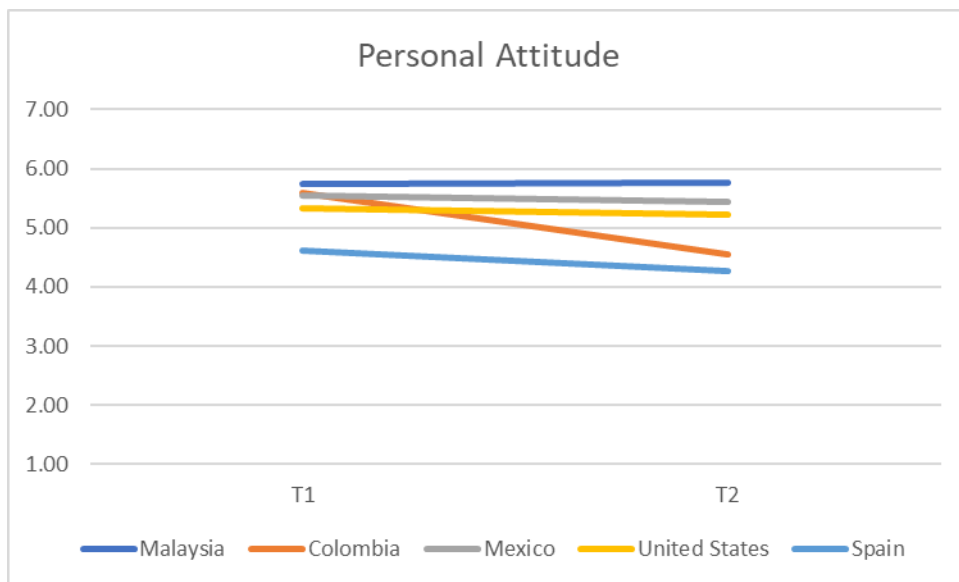
To help unpack why this is occurring, our research focused on changes in students' entrepreneurial intention. We selected the TPB (Ajzen & Fishbein, 1980) to assess the impact of EE courses on student entrepreneurial intention. In line with the general idea that behavioral intentions change in response to experiences over time (Ajzen & Fishbein, 1980, 2005; Fishbein et al., 2007), our data was collected pre, and post course to measure changes related to EI after taking hypothetical-based entrepreneurial courses.

Turning to our hypotheses, participating in a Hypothetical-based entrepreneurship course will not positively impact student's PA, SN, PBC, and EI. We found that most of the results studied supported our hypotheses of a flatline. There were some exceptions to the results. There were five outliers, three of the measures showed statistically significant drop and two had a statistically significant increase after taking the courses.

H1 *After the Hypothetical-based class there will be no change in Personal Attitude to become an entrepreneur.*

There was no statistically significant change in PA after taking the course in four of the five countries. The findings support our hypothesis, that taking an entrepreneurship course will not have an impact on PA. The only exception was Colombia, where there was a statistically significant drop in PA. Taking an entrepreneurship class had no impact or a negative impact on PA.

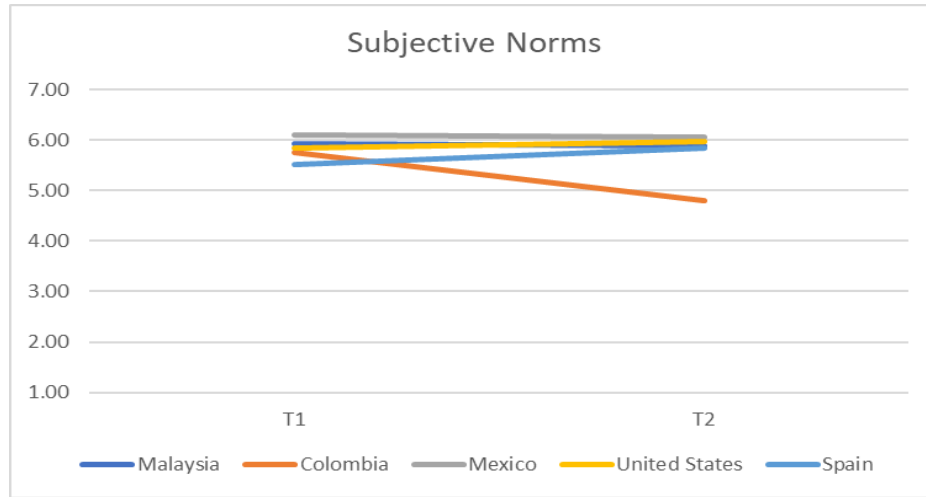
FIGURE 2
PRE AND POST-CHANGES IN PERSONAL ATTITUDE



H2 *After the Hypothetical-based class there will be no change in Subjective Norms to become an entrepreneur.*

There was no statistically significant change in SN after taking the course in four of the five countries. The findings support our hypothesis, with the only exception of Colombia where there was a statistically significant drop in SN. Taking an entrepreneurship class had no impact or a negative impact on SN.

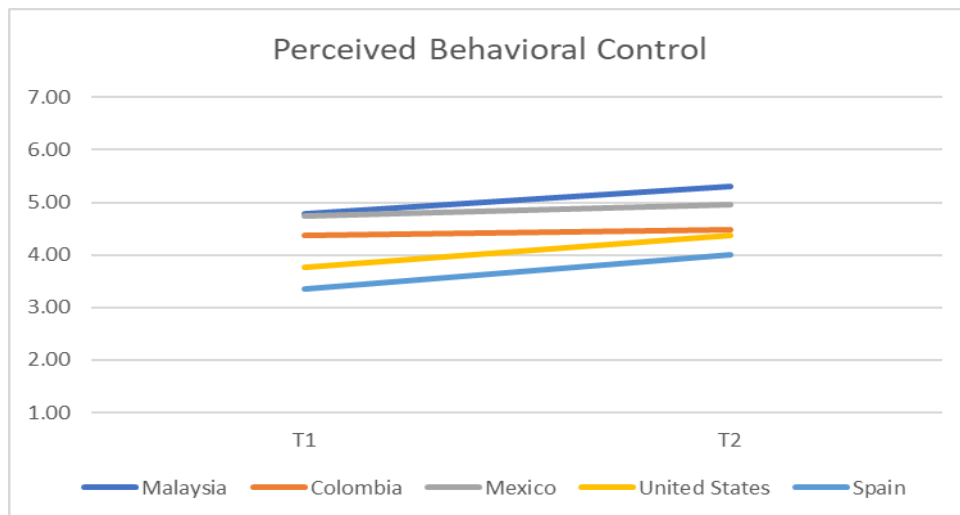
FIGURE 3
PRE AND POST-CHANGES IN SUBJECTIVE NORMS



H3 After the Hypothetical-based class there will be no change in Perception of Behavioral Control to become an entrepreneur.

While the data from all countries saw an upward trend, there was no statistically significant change in PBC after taking the course in three of the five countries. The findings support our hypothesis, with the only exception were Malaysia and the US which both saw a statistically significant increase in PBC. Meaning students in Malaysia and the US significantly improved their PBC after taking the course. The results for PBC all trended upward which run counter to the all the other results and counter to the assumptions embedded in TPB.

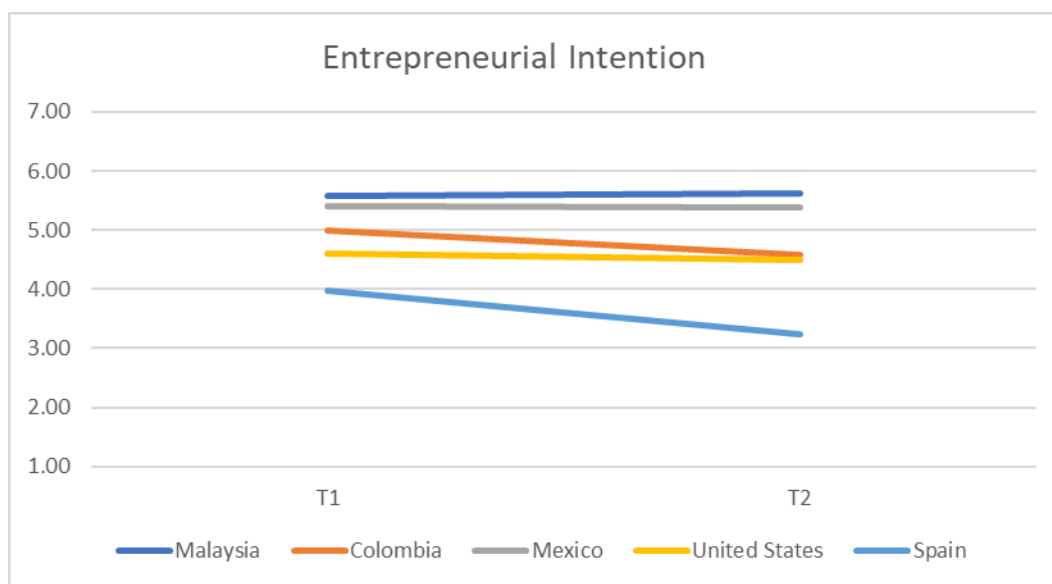
FIGURE 4
PRE AND POST CHANGES IN PERCEIVED BEHAVIORAL CONTROL



H4 After the Hypothetical-based class there will be no change in Entrepreneurial Intention to become an entrepreneur.

The results show that there is a flatline in entrepreneurial intention. There was no statistically significant change in EI after taking the course in four of the five countries. The findings support our hypothesis that there was no change in entrepreneurial intention. The only exception of Colombia where there was a statistically significant drop. Taking an entrepreneurship class had no impact or a negative impact on intention.

FIGURE 5
PRE AND POST CHANGES IN ENTREPRENEURIAL INTENTION



We believe that it is critical to investigate why these EE hypothetical-based programs are not working. We began with a hunch, shared by some colleagues around the world that these EE hypothetical-based programs relying on traditional pedagogical paradigms of business plans and models are ill-suited for both today’s students (Twenge, 2009), not aligned with how entrepreneurs actually learn, nor the nature of entrepreneurial practice (Rae & Carswell, 2000; Corbett & Katz, 2012; White & D’Souza, 2014). Ultimately, these approaches are a significant reason why EE is not producing entrepreneurs. Unfortunately, these hypothetical courses focus on how entrepreneurship ought to be done and not how it actually happens. Thus, after reviewing the literature on experiential learning theory, adult learning concepts, and research on entrepreneurial behavior we found a misalignment between EE and actual entrepreneurship.

We argue that students build entrepreneurial competencies in the real-life practice of entrepreneurship, which cannot be done using hypothetical-based curricula. The curricula should be structured around concrete experiences and reflection on those experiences (Kolb & Kolb, 2008). As such, these courses should foster self-directed and inquiry-based learning, where faculty become facilitators of student learning focusing on building student agency and autonomy. Students build necessary entrepreneurial skills through a Virtuous Cycle of Entrepreneurship (Dobson & Dobson, 2022b), developing their ideas through an iterative learning process (Dobson, 2020).

Indeed, entrepreneurship is certainly not for everyone, however, it appears current hypothetical-based approaches inadvertently are discouraging many students from attempting it. Hypothetical coursework creates a fixed mindset and paralyzes students with fear as they are overwhelmed by the theories and ideal ways entrepreneurship ought to be done. We propose moving away from pedagogical approaches that focus teaching about entrepreneurship, instead of developing student entrepreneurs. Despite the world-wide

proliferation of curricula, this research shows and that of others, indicate that EE has not been effective in developing entrepreneurs. We have identified that current hypothetical approaches that rely on business plans, models, and canvases do not increase student intention to become entrepreneurs.

The current and next generation of entrepreneurs have the ability to start new businesses that will lift people out of poverty. What is missing is EE programming that actually helps develop the next generation of entrepreneurs? The answer may lie in problem-based teaching approaches that allow students to actually engage in entrepreneurship within the structure of curricula.

Practical Implications

This research is addressed to EE educators and policymakers who view EE as the catalyst to spur economic growth, reduce poverty, and increase employment. Current hypothetical course work with a focus on business plans, models, and canvases appears unable to create entrepreneurs. Entrepreneurial learning requires that students have concrete experiences attempting to solve real problems. Allowing them to test their assumptions and learn from their successes and failures, to focus on improving product/market fit of their idea. Focusing on a problem-based approach should increase their entrepreneurial intention. Policy makers and academics should align EE, with how entrepreneurs actually learn. This change in approach is a practical and effective remedy for the ineffectiveness of current programming.

Originality and Value

Around the world, academic institutions with government support, are adopting EE programming from the US, without the academic research to support its effectiveness. Researchers have noted a conundrum between theory and practice (Neck, Green, & Brush, 2014), which poses critical questions regarding EE's effectiveness (Naia et al., 2015).

Our research builds on prior research that showed the problems of current approaches of EE in developing entrepreneurs (Bae, et al., 2014). We did so by unpacking what happened to students' PA, SN, PBC, and EI during the courses. We focused on introduction to entrepreneurship courses that used similar hypothetical-based EE assignments of developing business models and plans.

The novelty of our research is that it has collected data from five countries around the world: Colombia, Malaysia, Mexico, Spain, and the US. The schools varied from small liberal arts schools to large comprehensive schools. Some schools were private while others were public. All schools have embarked on embedding EE into the curriculum to create entrepreneurs. All students surveyed were taking an introduction to entrepreneurship course at their universities and show no change in students' intention or a statistically significant decline to become an entrepreneur after taking a hypothetical-based EE course. Further, this research identifies alternative approaches to EE.

Limitations

All research has limitations. The TPB is focused on actual action, with the belief that PA, SN and PBC influence EI and that EI is the best predictor of action (Fishbein et al., 2007). This study, because it was situated within a class, was only focused on measuring changes in PA, SN, PBC, and EI. A longitudinal study is required to determine if the changes observed in this class result in long-term entrepreneurial behavior changes. This study did not account for the impact different faculty may have on the course. We did note that Colombia had the worst results, which might be cultural, faculty-based, or some other factor. We encourage others to continue this research to better understand why these teaching EE methodologies are not developing entrepreneurs.

Future Research

More research is required to examine and explore the effectiveness of different EE approaches, including experiential courses. Another area of interest is the dissonance between PBC and EI. This research identified a 'downward trend in or statistically significant drop in EI as well as in PA and SN. We did note that there was an opposite upward trend in PBC. At the same time, most of it was not statistically significant. Two countries, Malaysia and the US, did experience a statistically significant increase in PBC. Further

research is required to understand better why PBC was moving in the opposite direction, as these results appear to run counter to assumptions embedded in TPB. Perhaps there is an underlying change in today's students and their high levels of narcissism might be a cause of the rise in PBC, while at the same time, all other measures are going down.

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