Evaluating the Effectiveness of Entrepreneurship Education on Students' Entrepreneurial Intention: Case Study From Malaysia

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Entrepreneurship education (EE) has been identified as a strategic priority of the US and countries globally. Universities have developed EE to facilitate entrepreneurship. This is occurring without a corresponding increase in students engaging in entrepreneurship. There is an emerging body of research identifying problems residing in teaching methodologies relying on 'best practices' such as business plans, models, and canvases. Using the Theory of Planned Behavior, we evaluated changes in students' intentions to become an entrepreneur after taking such a course. This research found no statistical change, no impact on student attitude, PBC, subjective norms, and intention to become an entrepreneur. Future research is required to determine what types of EE courses could have a positive impact on student intention to become entrepreneurs.

Keywords: entrepreneurship education, theory of planned behavior, theory-based, problem-based

INTRODUCTION

There is a consensus within academic, business, and policy making communities around the world of the benefits of increasing entrepreneurship to spur economic growth, reduce poverty, and increase employment (Kuratko, 2005; World Economic Forum, 2009; Weber, 2012; Neck, Green, & Brush, 2014; Piperopoulos & Dimov, 2015; Solomon & Matthews, 2014; Wu & Gu, 2017). In response, academic institutions around the world focused on developing entrepreneurship education (EE) programming to reignite entrepreneurial dynamism to create effective entrepreneurs (Kuratko, 2005; Greene & Saridakis, 2008; Thurik, Stam, & Audretsch, 2013; Nabi, Linan, Fayolle, Kruger, & Walmsley, 2017) and building sustainable economic development. Globally EE is viewed as a key policy initiative to lift emerging economies out of poverty. The World Economic Forum (2016) names EE as the main foundation for economic and social development and Weber (2012) identifies EE as the catalyst. Since then, EE is viewed as an obvious tool to develop entrepreneurs, courses are designed to promote the necessary skills and aptitudes of students interested in pursuing entrepreneurship. The purpose of such programming is to increase entrepreneurship amongst students who will then start businesses, employ others, reduce poverty, and drive national economic development. Thus, EE is designed to provide a holistic journey of transformational personal growth that help students develop an entrepreneurial philosophy, growth mindset, and problem-solving skills (Liñán, 2004). It is anticipated that students will apply these skills and attitudes

to develop new ventures to tackle 'sticky' problems they face in their lives and communities (Gedeon, 2014; McGuigan, 2016).

Harvard University started the first EE courses in 1947 focused on developing the entrepreneurial spirit in students (Kuratko & Morris, 2019). However, widespread academic and policy development took some time, it wasn't until the mid 1970's other schools to developed EE programs. The University of Southern California and Babson College were the next to introduce EE within their MBA and undergraduate programs. By the late 1980's more schools followed suit and programming grew across the US. However, the focus of EE began to switch to not "on teaching students to how become entrepreneurs," but "on teaching about entrepreneurship". Now EE, by using the lens of small business management, hoped to enable students to understand the process of launching and running a successful business. By the late 1990's, EE moved away from promoting entrepreneurship and small business management (Weber, 2012). Schools started to emphasize the development of creativity and innovation skills (Chamard, 1989; Plaschka & Welsh, 1990) and application of such, within corporate settings. The purpose of the pivot was to make students more employable (Kourilsky, 1995) and the goal of making them entrepreneurs was even less prominent. More recently, with the emergence of high-tech companies the focus of EE has moved towards aspirational goals of having students launch high-tech and high growth scalable innovative business ideas (Kuratko & Morris, 2019).

Today, over 2,000 universities in the US and many more across the globe offer majors or minors in entrepreneurship (Kauffman, 2013). Around the world schools are offering tens of thousands of entrepreneurship courses to millions of students annually. Yet, despite these efforts, new venture creation continues to stagnate. Moreover, a recent meta-analytic investigation reviewed 73 studies covering 37,285 students and found no statistically significant impact of EE on entrepreneurship activity (Bae, Qian, Miao, & Fiet, 2014). The dissonance between stated goals of EE, the reality of what is being taught, and the actual student learning outcomes requires more examination.

Our research is motivated by the desire to understand the impact of current EE, on the often-stated goals of developing entrepreneurs and to help develop teaching methodologies that promote entrepreneurship. How teaching entrepreneurship is done is a crucial factor in the development of entrepreneurs; especially since recent research indicated that an entrepreneur is not born and that education plays a critical role (Kuratko & Morris, 2019).

This paper is structured as follows: After the introduction in section one, section two explains the theoretical framework used in this case study and related literature review. Section three reviews design and analysis methods used. Section four provides the results, and section five discusses practical and theoretical contributions. Finally, the paper describes the limitations and identifies areas of future research.

THEORETICAL FRAMEWORK

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is widely used in social sciences to predict human behavior (Ajzen, 1985). If you want to increase a specific action, in this case entrepreneurial action, it is critical to increase a student's intention to become an entrepreneur. Increasing intention is understood in the research as an antecedent to action. The three factors; attitudes, subjective norms, and perceived behavioral control (PBC) all interact with each other and influence intention to act (Ajzen, 1991). Thus, if EE is successful, it will increase these three factors. It will increase entrepreneurial intention and ultimately lead the desired entrepreneurial action of students launching ventures.

Attitudes are important beliefs that a person has in thinking, it influences intention and action. One's attitude is the result of an evaluation of previous experience and anticipation of potential outcomes (Ajzen, 1985). A student's attitude about entrepreneurship is an assessment of the suitability of entrepreneurship as a career option. Furthermore, one's beliefs are based on the feedback loop of prior experiences, and personal reflection on that experience and projecting the possible benefits of engaging in future action (Kolb 1980).

Subjective norms are also a function of beliefs, but this factor focuses on the beliefs of family, friends, and the person's peer network. The person considers what others might think if they became entrepreneurs.

The person considers potential or actual positive and negative reactions from their social network. As such there is a reference group that provides feedback on whether becoming an entrepreneur is socially desirable within the peer group. This external pressure influences the person's attitude about and intention to become an entrepreneur.

PBC is a factor that involves a person's perception that a specific action is under their control. The person reflects on previous experiences and assess the ability to successfully navigate a specific action. In other words, it is a personal assessment that if they chose to be an entrepreneur, they could do it successfully. Within TPB research, researchers have found that, increasing levels of PBC have been found to have the strongest influence over increasing intention and ultimately action (Fishbein, 2007). Figure 1. illustrates how the factors of attitudes, subjective norms, PBC influence intention, and ultimately lead to a specific action.

FIGURE 1
THEORY OF PLANNED BEHAVIOR
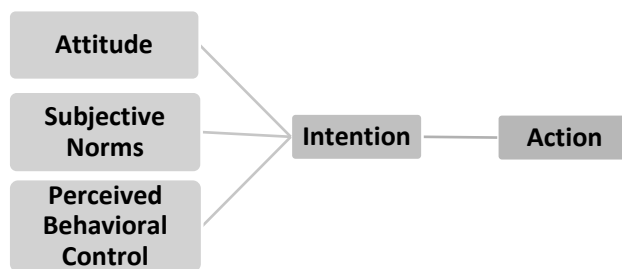
Adapted from: Theory of Planned Behavior Ajzen,1985

LITERATURE REVIEW

Social psychology theories allow researchers to understand entrepreneurs and their development within academic settings (Weber, 2012). In addition, in the field of entrepreneurship research, the TPB has been used to measure students' attitudes towards entrepreneurship within the focus of self-employment (Luthje & Franke, 2003) and intention to become entrepreneurs (Dobson & Dobson, 2022). The TPB allow researchers to explore the various factors to better understand a nascent entrepreneurs decision to launch a business. For instance, Peterman and Kennedy (2003) using a pre and post-test control group study design, analyzed changes of student's attitudes about entrepreneurship after taking an EE course, finding a short-term increase in attitudes after taking a course, but no long-term impact on entrepreneurial action. In addition, Souitaris, Zerbinati, and Al-Laham, (2007) looked at the impact of EE on science and engineering students. They found a positive change in entrepreneurial emotion, around the idea of becoming an entrepreneur but they were unable to find any change in student's intention to become entrepreneurs. Indicating that the course increased the emotional excitement and self-esteem around the idea of being an entrepreneur but not on becoming an entrepreneur. Further, other researchers found that EE does not motivate entrepreneurial action, and actually has a negative impact on entrepreneurial intention (Oosterbeek, Van Praag, & Ijsselstein, 2010; Dobson, Castro, Dobson, & Moros, 2019).

Recently, journals have focused on understanding entrepreneurial dialectics better in the development of entrepreneurs. This included an analysis of the university eco-systems (Fernández-Nogueira, Arruti, Markuerkiaga, & Saenz, 2018). Avila-Merino (2019) focused on the impact of co-curricular activities, such as hackathons, on students. While others focused on the impact of EE programs developed as part of vocational training (Eryanto, Swaramarinda, & Nurmalasari, 2019) and the role of entrepreneurial orientation on intention (Olutuase, Brijlal, Yan, & Ologundudu, 2018). These approaches examined a myriad of activities and settings that reflect EE today: From business plans, models, lectures, entrepreneur case studies, simulations, games, and other active approaches. Unfortunately, none of this research has been

able to identify how to increase student intention to become entrepreneurs. Dobson et al., (2019) argue that these efforts have of yet, failed to develop academic programs in entrepreneurship that positively promote entrepreneurial development in todays' university students. They further contend that the problem lies in the pedagogical framework used in EE, which focuses teaching students about entrepreneurship through hypothetical business plans, models, and canvas instead of helping students to become entrepreneurs.

Unpacking EE, we focus on Liñán's (2004) proposed entrepreneurship taxonomy based on his review of training programs related to EE. Finding that there are two dominant approaches to EE: theory-based and process-based. The most common programs rely on theory-based approaches. They are focused on raising student awareness of entrepreneurship within the realm of small business management. The second approach is process-based; focused on educating students on the steps of starting a business, covering topics related to legal business structures, sources of financing, and other issues at start-up. Both approaches rely in one form or another on having students develop business plans, models, canvas, and pitch decks. Table 1 summarizes Liñan's (2014) EE taxonomy.

TABLE 1
ENTREPRENEURSHIP EDUCATION TAXONOMY IN UNIVERSITIES

Type	Methodology	Contents and characteristics
Education for entrepreneurial awareness	Theory-Based Learning	This type of program focuses on teaching general knowledge about entrepreneurship, which is very common in university academic programs, where the courses that students take are not compulsory. The objective is to promote general knowledge about small businesses, self-employment and entrepreneurship.
Education for Start-Up	Process-Based Learning	The objective is to promote the legalization of business models that people have been evaluating for a while. The objective of this programing is somewhat practical and promotes the formalization of the business plan (financing, legal regulations, formalization of the Start-Up, among others) and the development of entrepreneurial skills, as a fundamental part of the understanding, development and start-up of the studied enterprise.

Liñan, 2014

These linear approaches are present in numerous prominent teaching entrepreneurship textbooks e.g., Theory, Process and Practice of Entrepreneurship (Kuratko, 2005), or New Venture Experience (Vesper & Gartner, 1997). These approaches are focus on increasing student knowledge of the different steps in the process of starting a business. Ultimately, they present the entrepreneurial process as boxes to be filled in or a list of pre-determined steps to be completed and do not get students any closer to the realization of their entrepreneurial ideas. Moreover, it is noteworthy to acknowledge the course approaches just mentioned are all teacher-centered and take students through a linear learning process whereby students are passive recipients of knowledge transfer from the faculty to the student.

Entrepreneurs learn to be entrepreneurs through agency, self-directed, and autonomous behavior (Cope, 2005). The process requires the faculty to allow students to follow hunches and to get off the pre-determined track of how one 'ought' to start a business. Allowing students to focus on their context and their knowledge, skills, and abilities to determine the best course of action to develop their idea (Dobson, 2019). This is not possible with a teacher-centric approach to EE. Entrepreneurship is full of ups and down or success through failure (Dobson, Jacobs, & Dobson, 2017), from which the entrepreneur reflects on the outcomes and develop a new approach to overcome the current failure.

METHODS

Participants and Design

The student samples were from an introduction to entrepreneurship course offered across the university. As part of the mandate to increase entrepreneurship, the course was recently made a requirement for all incoming freshman students at the university. Allowing us to measure the impact of EE on the general student population. The data was collected in three waves during the course: pre-test (T1), mid-semester (T2), post-test (T3). The sample size consisted of 783 (T1), 854 (T2), and 739 (T3) students completing each wave.

The purpose of the mid-term point of data collection was to help unpack the student's learning journey as they progress through the course. This approach follows a critical incident theory (Tripp, 2012), which is designed to capture changes in scores during the learning process, such as after a specific incident or important assignment during the course. In our research, we used it to unpack what is happening during the course to student's entrepreneurial attitude, PBC, subjective norms, and intention.

Students in the class followed a typical entrepreneurship curriculum following elements of theory-based and process-bases curriculum. The assignments involved developing a hypothetical business plan. The students went through a prescribed series of steps, from ideation, market analysis, product development, product launch, marketing plan, and the development of pro-forma financial statements. Using a strategy canvas to develop an understanding of their 'competitive advantage', which was presented at a final 'pitch' competition.

Hypotheses

H1: Prior to the class, student's attitudes, PBC, and subjective norms will be positively correlated to intention.

H2: At mid-semester, student's attitudes, PBC, and subjective norms will be positively correlated to intention.

H3: At the end of the class, student's attitudes, PBC, and subjective norms will be positively correlated to intention.

H4: After the class there will be no statistical improvement in student's attitudes, subjective norms, perception of behavioral control and intention to become an entrepreneur.

Measures

Attitudes Toward Entrepreneurship

Students responded to five questions that measured their personal attitudes toward entrepreneurship; specifically, participants were asked: *Being an entrepreneur implies more advantages than disadvantages to me; a career as an entrepreneur was attractive; If I have the opportunity and resources, I'd like to start a business; Being an entrepreneur would entail great satisfactions for me; Among various options, I would rather be an entrepreneur.* They were asked to indicate on 7-point scales (1 = *completely disagree* and 7 = *completely agree*).

Perceived Behavioral Control

Students responded to three questions that PBC. Participants were asked to indicate on 7-point scales (1 = *completely disagree* and 7 = *completely agree*) these questions: *I can control the creation process of a new business; to start a business would be easy for me; and I am prepared to start a viable business.*

Subjective Norms

Students indicated on 7-point scales (1 = *completely disagree* and 7 = *completely agree*) the extent to which their family and friends would be happy and proud they were to start their own business.

Entrepreneurial Intention

Students responded to five questions that assessed their entrepreneurial intentions. They indicated on 7-point scales (1 = *completely disagree* and 7 = *completely agree*), *I am ready to do anything to be an entrepreneur; My professional goal is to become an entrepreneur; I will make every effort to start and run my own business; I have very seriously thought of starting a business; I have a strong intention to start a business someday.*

Results

To test our hypotheses, we begin with a Cronbach's Reliability test at T1 to measure internal consistency of the questions related to each factor. Table 2., indicates that the questions have a relatively high internal consistency.

TABLE 2
RELIABILITY STATISTICS

	Cronbach's Alpha	N of Items
Attitudes	.875	5
PBC	.914	9
Subjective Norms	.843	2
Intention	.940	5

We then employed a Pearson Correlation, to measure the relationship between attitudes, PBC, subjective norms, and intention to become an entrepreneur at three times during the course T1, T2 and T3. These correlation matrices, along with statistical test of significance, are detailed below.

TABLE 3
PEARSON'S CORRELATIONS AT T1

		Attitudes	PBC	Subjective Norms	Intention
Attitude2	Pearson Correlation	1	.566**	.498**	.719**
	Sig. (2-tailed)		.000	.000	.000
	N	783	783	783	783
PBC	Pearson Correlation	.566**	1	.456**	.690**
	Sig. (2-tailed)	.000		.000	.000
	N	783	783	783	783
Subjective Norms	Pearson Correlation	.498**	.456**	1	.548**
	Sig. (2-tailed)	.000	.000		.000
	N	783	783	783	783
Intention	Pearson Correlation	.719**	.690**	.548**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	783	783	783	783

**. Correlation is significant at the 0.01 level (2-tailed).
**$p < .01$

TABLE 4
PEARSON'S CORRELATIONS AT T2

		Attitude	PBC	Subjective Norms	Intention
Attitude	Pearson Correlation	1	.627**	.595**	.762**
	Sig. (2-tailed)		.000	.000	.000
	N	854	854	854	854
PBC	Pearson Correlation	.627**	1	.448**	.696**
	Sig. (2-tailed)	.000		.000	.000
	N	854	854	854	854
Subjective Norms	Pearson Correlation	.595**	.448**	1	.627**
	Sig. (2-tailed)	.000	.000		.000
	N	854	854	854	854
Intention	Pearson Correlation	.762**	.696**	.627**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	854	854	854	854

**. Correlation is significant at the 0.01 level (2-tailed).
**$p < .01$

TABLE 5
PEARSON'S CORRELATIONS AT T3

		Attitude	PBC	Subjective Norms	Intention
Attitude	Pearson Correlation	1	.678**	.808**	.678**
	Sig. (2-tailed)		.000	.000	.000
	N	739	739	739	739
PBC	Pearson Correlation	.710**	.576**	.750**	.576**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	739	739	739	739
Intention	Pearson Correlation	.808**	.727**	1	.727**
	Sig. (2-tailed)	.000	.000		.000
	N	739	739	739	739
Subjective Norms	Pearson Correlation	.678**	1	.727**	1
	Sig. (2-tailed)	.000		.000	
	N	739	739	739	739

**. Correlation is significant at the 0.01 level (2-tailed).
**$p < .01$

Finally, we tracked changes in students' scores related to each factor across the semester and found no statistically significant impact in student scores. In Figure 2, we plotted the results to illustrate the flatline of impact of EE on any of the factors over the entire course. Table 6 summarizes the results of the four variables at each data collection point.

TABLE 6
SURVEY DATA COLLECTED PRE, MID-TERM, & POST

	Attitudes	PBC	Subjective Norms	Intention
T1	5.39	3.62	5.91	4.72
T2	5.29	4.01	5.97	4.72
T3	5.39	3.91	5.93	4.57

Figure 2 provides a visual representation of the student scores for each variable at the beginning of the semester, at mid-semester, and at the end of the semester.

FIGURE 2
ENTREPRENEURSHIP EDUCATION PROGRAM
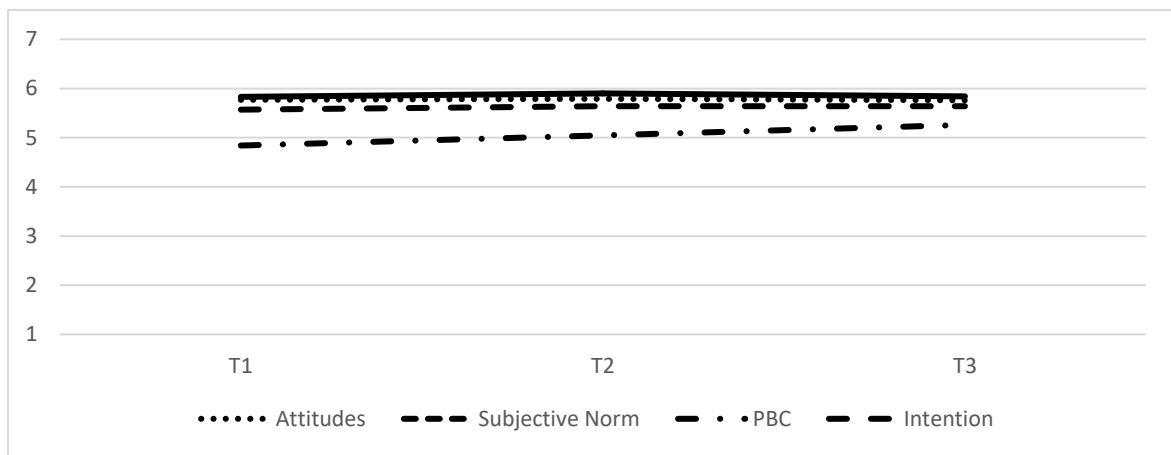
CONCLUSION

We posed the following research question: What is the impact of EE on student's attitudes, PBC, subjective norms and intentions to become an entrepreneur? The research found no statistically significant change in any of the scores at mid-term or at the end of the semester.

Most EE research focuses on students opting into an entrepreneurship program or taking a course as an elective. The novelty of this research is that it explored the impact on EE on mandatory courses across the university. The university administration had decided to require all students to take an entrepreneurship course in the hopes that exposing students to EE would increase entrepreneurship and help drive economic growth for Malaysia.

We believe that EE programing will not have a positive impact on student's intention to become an entrepreneur, H4. To test this, start with H2, that the factors of attitudes, PBC, subjective norms, and intention are positively correlated at T1. Our analysis found that these factors are still correlated at T1. Turning to H3, we believe that these factors will continue to be positively correlated at mid-term. Our analysis found that these factors are still correlated at T2. H3, tests our assumption that the factors will be correlated at the end of the semester (T3). Our analysis found that these factors are still correlated at T3.

Turning to H4, to test the impact of EE on these measures? What measures we collected data at three points, at pre course, mid-semester, and post course. The results showed that EE had no statistical positive impact on any of the factors across the semester. The insignificant results highlight that EE does not meet the learning objectives set. If the students had experienced critical incidents related to entrepreneurship

during the course, we would have expected to find changed scores related to attitudes, PBC, subjective norms, and intentions at T2 or T3.

A possible explanation for no change in measures, is that hypothetical courses focus on how entrepreneurship 'ought' to happen, but not how it occurs. In entrepreneurship things rarely go as planned, so having student develop complete business plans, models, or canvases based on hypothetical assumptions overly structures the entrepreneurial process. Further, it maps out a hypothetical plan that will not actually map on the reality entrepreneurs will experience if they ever actually start a business. More troubling, it focuses attention on what learners lack instead of what they have. working in a hypothetical sphere, students miss the concrete experiences that required to build self-efficacy by learning through the ups and downs of entrepreneurship. They must be given the opportunity to develop and test their assumptions with real customers. Mapping onto the marketplace in real the product/market fit of their idea. Allowing students to make iterations and pivots in real time and prior to investing extensive time and energy on non-viable hypothetical outcomes. We must re-think how we teach entrepreneurship, if the current EE approaches leave students, no more enthusiastic about the possibility of becoming an entrepreneur after taking the course.

Implications for Practice

The implications for the practice of EE are potentially significant. Our findings augment the growing body of research that indicates that the ever-increasing supply of EE programming is not developing students that become entrepreneurs (Peterman & Kennedy, 2003; Souitaris, Zerbinati, & Al-Laham, 2007; Oosterbeek, Van Praag, & Ijsselstein, 2010; Soria-Barreto, Zuniga-Jara & Ruiz-Campo, 2016). New approaches need to be considered when designing EE, instead of simply accepting current 'best-practices' as the only way to teach. The practice should move away from hypothetical and begin to develop problem-based courses (Dobson, et al, 2021) that allow students to map onto the real market their business ideas. The entrepreneurial learning journey process is messy and filled with successes and failures as the entrepreneur attempts to successfully develop a viable business idea. As such, EE may want to use real life experiences to help students navigate the uncertainty (Knight, 1921) embedded in the entrepreneurial process which are iterative and not linear. Moreover, moving EE away from teacher-centered approaches to student active learning courses that revolve around problem solving. We have modified the Liñan (2014) framework to introduce a problem-based methodologies.

TABLE 7
COMPARISON OF APPROACHES TO ENTREPRENEURSHIP EDUCATION

	Theory-based	Process-based	Problem-based
Assumptions	Entrepreneurs learn general knowledge about the entrepreneurial theoretical framework	Entrepreneurs start a new venture. Courses teach the process of starting a new venture	Entrepreneurs solve (market) problems. Learners should learn to solve real problems.
Teaching Methods	Theoretical lecturing	Theoretical lecturing.	Concrete experiential learning.
Role of Student	Passive learner who identifies theoretical models of entrepreneurship which are used to develop hypothetical assumptions of how ideas are developed	Passive learner who is taken through a linear process of how to start a hypothetical business or develop a hypothetical business model	Self-directed learner who constructs their nonlinear journey of entrepreneurship and becomes self-determined in their learning.

Activities	Presentations about theoretical concepts, readings and research about entrepreneurship and entrepreneurs.	Write a hypothetical business plan, conduct marketing analysis, assess financial feasibility, read case studies, and use of simulations.	First, identify and analyze 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.
Learning outcomes	Education for entrepreneurial awareness	Learning about entrepreneurship	How to learn to be an entrepreneur
Assessments	Summative and formative assessments based on a students' ability to memorize theories of entrepreneurship	Summative and formative assessments based on predetermined best practices of how to start a business.	Time spent working on their venture, self-reflection, journaling, incorporating feedback to improve their idea, iterating business idea, and demonstrating learning.
Papers	Oosterbeek, Van Praag, & Ijsselstein (2010); Olutuase, Brijlal, Yan & Ologundudu, (2018),	Petermand & Kennedy, (2003) Souitaris, Zerbinati, & Al-Laham, (2007); Eryanto, Swaramarinda & Nurmalasari (2019); Fernández-Nogueira, Arruti, Markuerkiaga & Saenz (2018)	Dobson, Castro et al., (2019); (Dobson, Jacobs & Dobson, 2017)

Limitations

This research focused on how EE impacted students' attitudes, PBC, subjective norms, and intention to become entrepreneurs and not on actual entrepreneurial action. There are external factors outside of the university environment impacting student's entrepreneurial behavior. While the sample size was large, the course is required across the university undergraduate program so many students taking the course may not have any interest in pursuing entrepreneurship, so the value to them of learning about entrepreneurship may be limited. Finally, entrepreneurial intention might actually take longer to incubate and it may be unreasonable to expect changes in scores over the course of a semester.

Implications for Future Research

Universities that want to develop entrepreneurs should revisit research on how entrepreneurs learn. With the goal of developing programming that mirrors how entrepreneurs actually learn to become entrepreneurs. It may be in moving away from current theory and process-based approaches that universities will actually be able to achieve the goal of increasing entrepreneurship as a way to spur economic growth, reduce poverty, and increase employment. Finally, a not so novel approach that is not practiced widely is to promote entrepreneurial intentions through the development of reality-based approaches that expose students to the uncertainty of real-life engagement in the entrepreneurial process.

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