The Impact of Entrepreneurship Education on Entrepreneurial Intentions Among University Students

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ABSTRACT

This study explored how different types of entrepreneurship education influence students' entrepreneurial intentions, using data from the GUESSS 2023 global student survey with over 200,000 respondents. The study further examines whether education shapes intention through elements in the theory of planned behaviour, such as entrepreneurial attitude, self-efficacy and subjective norms. A quantitative research design was used, using multiple linear regression to analyse the data. The findings indicate that students who participate in entrepreneurship education are significantly more likely to intend to start a business. Moreover, entrepreneurial education significantly improved both entrepreneurial attitude and self-efficacy, which were found to be strong predictors of intention. These findings emphasise the psychological mechanisms through which education enhances entrepreneurial ambition and offer actionable insights for curriculum development aimed at fostering student entrepreneurship.

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1. INTRODUCTION

Entrepreneurship has emerged as more than just a career choice; It is often regarded as a symbol of innovation, freedom, and social influence (Linan & Fayolle, 2015). By incorporating entrepreneurship education into their curriculum, universities adopt this change, providing students with the skills and resources they need to gain business expertise (Nabi et al., 2017; Loi & Fayolle, 2021). Educational institutions are shaping the next generation of entrepreneurs through entrepreneurship courses and startup incubators.

Nevertheless, a crucial question remains to be addressed: Does entrepreneurship education genuinely foster a growing intention among students to start their businesses? The transition from school to business is usually more challenging than anticipated, even though many students express a desire to start their own business. While some students find it difficult to apply theory, others excel after taking entrepreneurship classes. This raises questions about the actual practicality of entrepreneurial education (Uddin et al., 2022).

Using the Global University Entrepreneurial Spirit Students' Survey (GUESSS) 2023 dataset with over 200,000 responses, this study examines immediate problems and provides evidence-based insights that can help policymakers, teachers, and students determine the practicality of these courses. To determine if organised entrepreneurship programs effectively promote students' intentions to start a business. Students' decisions to engage in entrepreneurship education are often influenced by personal interest and intrinsic motivation, which in turn can shape the effectiveness of such programs (Primadona, 2019).

Furthermore, the belief that education can simulate entrepreneurial experiences that may strengthen a student's intention to pursue entrepreneurship has been reinforced by the increasing acceptance of experiential learning methods in such courses (Martin et al., 2013). For example, pitch competitions, business simulations, and accelerator programs. However, not all students may benefit from these methods equally. For instance, it is imperative to ascertain whether different types of courses, such as elective versus compulsory or theory-focused versus practical courses, have different impacts on entrepreneurship intention. In addition to examining the efficacy of entrepreneurship education, this study attempts to determine who benefits from it and which situations yield significant results.

As a potential catalyst for entrepreneurial behaviour, entrepreneurship education has increased interest from academic scholars and university administrators (Nabi et al., 2017). Its impact on entrepreneurial intentions, namely, the desire to start a business, has been the subject of many studies. Meanwhile, some studies have examined whether such instructions result in startup activity, especially for students (Souitaris et al., 2007).

1.1 Problem Statement

It is crucial to consider the rising costs of education and the increasing demand for colleges to produce measurable results (Fayolle & Gailly, 2015). In addition, a significant portion of current research is constrained by a qualitative approach or small local samples, which makes it more challenging to extract the results from other references (Walter & Block, 2016). However, currently, there are not enough large-scale comparative studies that examine the relationship between entrepreneurship education and intentions to engage in real entrepreneurship, such as starting a firm (Othman et al., 2022).

1.2 Research Question

The primary objective of this study is to investigate whether participation in entrepreneurship education influences students' intentions to start their businesses. The study provides empirical evidence on the practical consequences of entrepreneurship education by examining comprehensive data.

The primary research question is: To what extent does entrepreneurship education in universities affect students' startup intentions?

This research question examines whether students who have taken entrepreneurship courses report higher rates of startup intention than those who have not. Some relevant areas will also be considered in this study, for example, environmental and personal factors such as gender, educational fields, and age, which help to study the relationship between entrepreneurial intentions and entrepreneurship education.

1.3 Research Objectives

The purpose of this question is to gain a more comprehensive understanding of how entrepreneurship education is delivered to different student groups. For example, the effects of gender or the educational field can highlight significant insights about inclusion and programs. A more profound comprehension of these relationships can inform initiatives, mentorship programs, and academic content, as well as those represented by entrepreneurial university populations.

The absence of large-scale scientific, data-operated evidence has created a knowledge vacuum in this area. Despite the lack of solid data to serve as a disclaimer, universities continue to fund entrepreneurship programs, often under the assumption that they increase the intention to pursue entrepreneurship (Rae and Carswell, 2001). The purpose of this study is to fill the knowledge gap, using comprehensive data to determine the extent to which entrepreneurial education encourages students to start their own businesses.

1.4 Educational Relevance

In the domain of management, education, and entrepreneurship, scholars are interested in understanding the relationship between startup intention and entrepreneurship education. Earlier studies have shown a positive relationship between entrepreneurial intentions and entrepreneurship education (e.g., Nabi et al., 2017; Fayolle & Gailly, 2015). However, there is very little information about how these studies translate into tangible results, including the intention of starting a business.

Additionally, this study addresses increasing demand from researchers and teachers for more results in entrepreneurship research (Lackéus, 2015). There is a lack of consensus on what entrepreneurship or enterprise education is when implemented in

practice. (Pittaway, 2007). Therefore, this study aims to bridge the gap between current knowledge on the usefulness of academic theory and the real-world needs of entrepreneurs. The results of this study can be used to support quality assurance procedures or benchmarking efforts that evaluate the efficacy of entrepreneurship education.

1.5 PRACTICAL RELEVANCE

Understanding whether these efforts provide value outside the classroom is becoming increasingly important as universities continue to engage in entrepreneurship education through new courses, incubators, and startup support programmes. The programmes and university administrators are responsible for defending this expenditure and enhancing the efficacy of entrepreneurship programmes.

This study will provide concrete evidence in favour of ongoing or increased investment in entrepreneurship education programmes if it is discovered that entrepreneurship education and students' entrepreneurship intentions (Martin et al., 2013; Nabi et al., 2017) have a significant positive relationship. Additionally, it can help deliver entrepreneurship courses and improve the material to better align with practical outcomes, such as an increase in success rates among new entrepreneurs due to increased confidence from abilities refined through various teaching methods.

The results have implications for policymakers and funders who shape national innovation and entrepreneurship policies, as well as academics. (Uddin et al., 2022). Evidence-based policy decisions can be better informed by analysing the effectiveness of entrepreneurship education. (Vardana et al., 2020).

Last but not least, the study has practical applications for students, assisting them in determining if entrepreneurship education is a wise investment in their professional development. Students can make better decisions when selecting minors, electives, or specialisation tracks within their degree programs if they have a greater understanding of the results of these programs.

2. LITERATURE REVIEW

The study employs the theories of planned behaviour (TPB) (Ajzen, 1991), human capital theory (Becker, 1964), and entrepreneurial self-efficacy (Zhao et al., 2005) as a framework to examine how entrepreneurial education influences students' intentions to start their own businesses. Its objective is to determine the relationship between these principles, educational experiences, and students' entrepreneurial intentions. Moreover, findings are expected to make a meaningful contribution by providing a more intention-focused understanding in the literature of how entrepreneurship education can potentially affect students' entrepreneurial intentions.

This study draws on several related concepts that inform the development of hypotheses and clarify the mechanisms by which entrepreneurship education may affect intentions.

According to the Human Capital Theory (Becker, 1964), individuals invest more in education to enhance their knowledge, skills, and abilities. This theory can serve as a lens to argue that entrepreneurship education can enhance relevant skills, thereby increasing students' intentions to become entrepreneurs. Also, according to other empirical studies (Martin et al., 2013; Nabi et al., 2017), entrepreneurship education enhances practical preparation in entrepreneurial abilities. These principles enable the development of a hypothesis that entrepreneurship education can positively influence the intentions of students to engage in entrepreneurship.

One of the most widely recognised frameworks is the Theory of Planned Behaviour. It explains how three important factors—self-efficacy, subjective norms, and attitude regarding the planned behaviour affect the intention to engage in that specific behaviour as presented in Figure 1. In this example, when starting a company, it is believed that entrepreneurship education has a positive effect on all three aspects, which enhances the possibility of taking entrepreneurial action. (Ajzen, 1991).

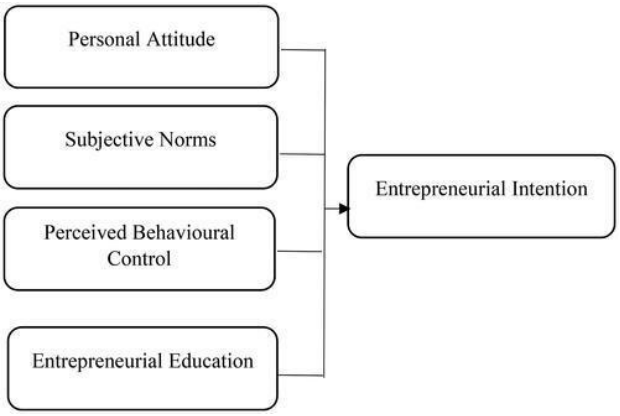

Figure 1: Conceptual Model of Theory of Planned Behaviour Variables and Education's Impact on Intention

According to Zhao et al. (2005), Entrepreneurial Self-Efficacy (ESE) is an individual's confidence in their ability to successfully perform entrepreneurial roles and tasks. This study states that high entrepreneurial self-efficacy has been linked to both entrepreneurial ambitions and real startup behaviour. It has been demonstrated that education in entrepreneurship significantly enhances self-efficacy by providing a hands-on learning experience, increasing students' knowledge and skills. In this study, entrepreneurial self-efficacy is considered an important theoretical factor between business intentions and education, as it presents students' perceived self-belief in starting a business.

Subjective norms refer to the perceived social pressure to perform a given behaviour (Ajzen, 1991). In this study, however, subjective norms are proxied by parental self-employment status. This approach builds on prior research that suggests students with self-employed parents are more likely to internalise pro-entrepreneurial values through role modelling and early exposure to entrepreneurial ventures.

2.1 HYPOTHESIS

H1: Students who have participated in entrepreneurship education will report higher entrepreneurial intention than students who do not.

H2: Students who have participated in entrepreneurship education will report higher entrepreneurial attitudes and self-efficacy.

H3: Entrepreneurial attitude and self-efficacy are positively associated with entrepreneurial intention.

H4: Subjective norms, proxied by parental self-employment, are positively associated with entrepreneurial intentions.

The model suggests that entrepreneurial education not only enhances a person's intention to start a business but also affects their intention to pursue entrepreneurship by increasing their self-efficacy and entrepreneurial attitude, which in turn affects their perceived ability to start and run a business. Entrepreneurial self-efficacy, or perceived behavioural control, is a crucial factor that can impact the relationship between various variables in an entrepreneurial context. Identifying opportunities, managing risks, and launching new enterprises. This confidence can significantly affect the overall success of their decision-making processes and entrepreneurial efforts.

3. METHODOLOGY

3.1 DATA AND SAMPLE

The study adopts a quantitative cross-sectional research design using secondary data from the GUESSS 2023 dataset. The data from this study was sourced from one of the largest research projects on student entrepreneurship in the world, the Global University Entrepreneurial Spirit Students' Survey (GUESSS) 2023. The University of St. Gallen in Switzerland coordinates with a number of academic and institutional partners. A rich and varied dataset for cross-national entrepreneurial research, the 2023 collection wave gathered more than 226,000 university students in 57 countries. Examining students' entrepreneurial intentions and activities, their academic environment, and influencing contextual and psychological factors is the main objective of GUESSS. It offers insightful information about how global university ecosystems influence entrepreneurial mindsets. This study presents a unique opportunity to examine these links on this scale and enhances the knowledge of entrepreneurship education by helping students relate theoretical understanding to real-world applications.

This data enables generalisable insights into how entrepreneurship education influences student startup intention, including several other variables as presented in Figure 1. The analysis focuses on students who have completed entrepreneurship courses or similar, comparing them with students who did not participate in entrepreneurship courses.

The sample includes students who were enrolled in 2023 for bachelor's or master's programs and who have completed questions related to entrepreneurship education and business activity. Non-student participants or responses from surveys that are not complete are not included. Based on reported involvement in entrepreneurship courses, the two main comparative groups are those who have not attended any courses and those who have attended at least one course. The quantitative analysis has been conducted using the program R.

3.2 ANALYTICAL APPROACH

This thesis investigates the direct effects of entrepreneurship education on entrepreneurial intention using multiple linear regression. This approach is appropriate because the dependent variable, entrepreneurial intention, is measured on a continuous 7-point Likert scale, which can be treated as approximately interval-level data. Linear regression enables the estimation of how different types of entrepreneurship education (e.g., elective courses, compulsory, and program-based) influence students' intention to start a business while simultaneously controlling for individual-level factors such as gender, age and parental self-employment.

In addition to evaluating the impact of education directly, this method allows for the integration of psychological predictors derived from the Theory of Planned Behaviour. By modelling these factors as parallel predictors, the regression analysis helps to assess their independent contributions to entrepreneurial intention and explores their potential role in explaining how education exerts its influence on entrepreneurial intentions, although mediation is not formally tested. However, entrepreneurial motivations can mediate the effect of entrepreneurship education on intention, acting alongside constructs like attitude and self-efficacy (Hassan et al., 2021).

The GUESSS 2023 dataset, with over 150,000 valid responses used in this study, provides sufficient statistical power for this approach. Linear regression is particularly well suited to the large, cross-sectional dataset, where key assumptions such as linearity, homoscedasticity, and normal distribution of residuals are reasonably met. Alternative techniques, such as logistic regression, were not suitable due to the non-binary nature of the dependent variable. Furthermore, structural equation modelling (SEM) was also deemed unnecessary given the single-item measures used for key psychological constructs and the absence of latent variable structures.

3.3 VARIABLES

Independent variable: Participation in entrepreneurship education. This is captured through a categorical measurement that represents whether they attended either no entrepreneurial course at all, an elective course, a compulsory course, or a program-specific course. These categories allow for a differentiated analysis of course intensity and structure.

Dependent variable: Students' entrepreneurial intention. This has been measured using the question "I have the strong intention to start a business someday" on a 1-7 Likert scale found in the survey. This single-item measure of entrepreneurial intention aligns with those used in prior studies assessing students' entrepreneurial intentions (Yeboah et al., 2013). This variable provides a clear indicator of the level of entrepreneurial intention that the student has. This is an important measurement, as not all students will have the ability to start a business right away due to multiple factors such as limited start-up capital, knowledge, and external pressures leading them to take on more stable career choices. The reason for this is to gain a comprehensive understanding and capture a more nuanced view of students' entrepreneurial intentions. It allows for a deeper analysis of the factors influencing their decision, and it also strengthens the validity and reliability of the analysis.

Table 1. Variable Overview			
Variables	**Types**	**Measurement**	**Description / Source**
Dependent Variables:	Entrepreneurial Intention	1(Strongly Disagree) - 7(Strongly Agree)	"I have the strong intention to start a business someday."
Main Independent Variable:	Entrepreneurial Education	Categorical	None, Elective, Compulsory, Program-specific
Independent Variables (TPB)	Subjective norms	Categorical	Parental self-employment
	Personal Attitude	1(Strongly Disagree) - 7(Strongly Agree)	"I am ready to do anything to be an entrepreneur."
	Self-efficacy	1(Strongly Disagree) - 7(Strongly Agree)	"I can successfully discover new business opportunities"
Control Variables:	Gender	Male/Female	0 = Male 1 = Female
	Age	Numeric	2023 – Year of Birth
	Parental Self-employment	Categorical	Is either parent self-employed? 0 = No 1 = Yes

In addition, three psychological predictors for the Theory of Planned Behaviour are included as presented in Table 1. Firstly, entrepreneurial attitude is captured using the item: "I am ready to do anything to be an entrepreneur." This has also been rated on a 1-7 Likert scale. This reflects an individual's affective and motivational orientation towards entrepreneurship. Entrepreneurial self-efficacy is the second TPB variable measured through the item "I can successfully discover new business opportunities." This is also on a 1-7 Likert scale, and it indicates a student's confidence level in their entrepreneurial capabilities. Subjective norms are indirectly measured through parental self-employment status, which has been operationalised as a binary variable (0 = No, 1 = Yes). Having self-employed parents can significantly influence perceived social support for entrepreneurial pursuits, which is why this variable has been used as a proxy for subjective norms.

Control variables are primarily gender (0 = male, 1 = female), age (calculated as 2023 minus year of birth), and whether students' parents are self-employed. This allows the regression model to adjust for demographic factors that are known to influence entrepreneurial intentions. These measures provide a robust foundation for testing the direct and psychological effects of entrepreneurship education on students' intentions to start a business. Keeping these variables controlled will enable a better understanding of the various impacts that entrepreneurial courses have on entrepreneurial intention. It will reduce the effects of any confounding variables that might be indirectly influencing the results. By including these individual-level variables, the study aims to provide a more comprehensive and contextual understanding of the antecedents of entrepreneurial intentions. This enables the research to yield helpful insights relevant to the impact of entrepreneurship education on entrepreneurial intentions among university students.

4. RESULTS

4.1 DESCRIPTIVE STATISTICS

The dataset includes responses of students from the 2023 GUESSS surveys, with variables on entrepreneurial education, career intentions, gender, field of study, and many other variables. The sample consists only of students who have complete data on the relevant variables, namely, type of entrepreneurial course and entrepreneurial intention, gender, parental self-employment and age.

Out of a total of 226,719 students, 133,206 had reported not attending any entrepreneurship-related course; however, 93,512 had participated in at least one course. However, the final sample consists of 150,128 university students who provided valid responses for all variables used in the TPB model.

The average age of respondents was 23.4 years with an SD = 6.8. In terms of gender, 38.7% identified as male and 61.3% as female. Additionally, 31% of the students reported having at least one entrepreneurially self-employed parent.

4.2 Hypothesis Testing

4.2.1 Hypothesis 1

To evaluate whether the type of entrepreneurship course participants participated in affected the cases, another regression model compared elective, compulsory, and program-based courses with those of students who did not take any classes. The program-specific participants had demonstrated the highest intention toward entrepreneurship, followed closely by elective and compulsory courses. This suggests that comprehensive programs, such as those with a deep, more immersive format, have the most substantial impact on inspiring entrepreneurship.

Figure 2 displays the average intention score for entrepreneurship in each course type (on a 1–7 scale). Students who did not participate in any entrepreneurship course reported the lowest average intention (M = 3.6), while those in a dedicated entrepreneurship program had the highest (M = 4.9) among those nominated for the entrepreneurship program. Both elective and compulsory course participants reported high intentions (M = 4.3 and M = 4.2, respectively) compared to those who did not take any entrepreneurship course.

Testing for hypothesis 1, Figure 2 visualises the estimated coefficients from a linear regression model, which shows entrepreneurial intention based on entrepreneurial course types. The model includes a reference group categorised with no course taken. The model also includes control variables to reduce the effects of potential confounding variables. These variables are gender, age and parental business background. Overall, all course types were significantly associated with higher entrepreneurial intention compared to students with no course experience. Notably, participation in a program-based entrepreneurship course increased intention by 1.26 points on the Likert 1-7 scale. Male students and those with entrepreneurial parents also showed significantly higher entrepreneurial intentions. However, age was not a highly significant predictor of entrepreneurial intention and made almost no difference. The plot clearly shows both the direction and magnitude of each predictor variable's effect, along with a 95% confidence interval, which supports the robustness of the regression model.

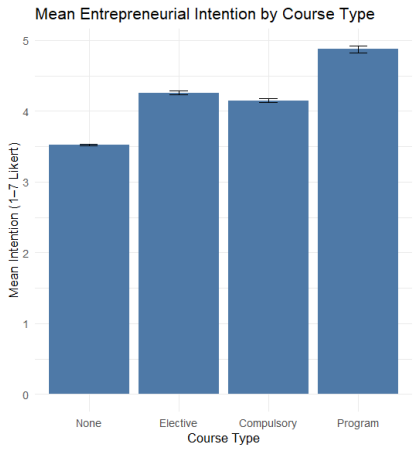

Figure 2. Average Entrepreneurial Intention by Course Type (1-7 scale)

Figure 3 presents a linear regression result which relates to Table 2. It presents the effects of course type while controlling for gender, age and whether students' parents had a business on entrepreneurial intentions, with a p-value of <0.001. Data analysis suggests that, controlling for gender and age, all types of entrepreneurship education are linked to higher intention scores for entrepreneurship. Participation in a dedicated entrepreneurship program has the most significant impact, associated with a 1.30-point increase in intentions, while elective and compulsory courses are related to increases of 0.73 and 0.60 points, respectively. Women students report, on average, that their intention to pursue entrepreneurship is 0.53 points lower than that of male students, and this intention decreases slightly with age.

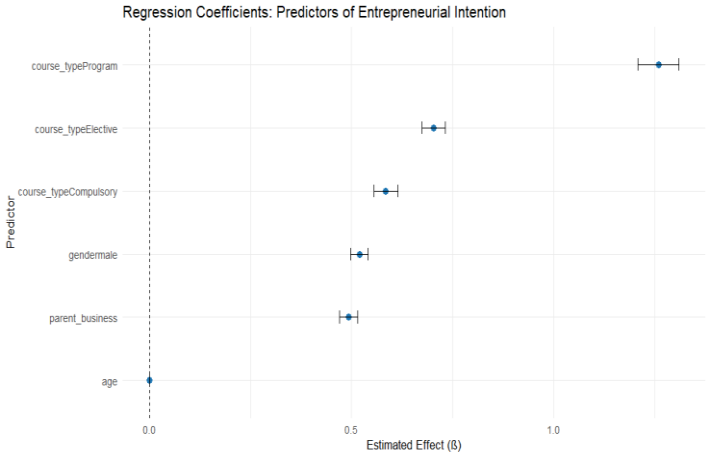

Figure 3. Comparison of Entrepreneurial Course Types and Entrepreneurial Intent

Table 2. Effect of Entrepreneurship Education on Intention (1-7)				
Predictor	**Coefficient (β)**	**Standard Error**	**95% CI (Lower, Upper)**	**Significance Level (p-value)**
Intercept (baseline)	3.16	0.008	[3.15, 3.18]	< .001
Elective Course	+0.703	0.015	[0.674, 0.732]	< .001
Compulsory Course	+0.585	0.015	[0.555, 0.614]	< .001
Program-Based Course	+1.26	0.026	[1.21, 1.31]	< .001
Male (vs. Female)	+0.519	0.011	[0.498, 0.540]	< .001
Parental Business = Yes	+0.492	0.011	[0.470, 0.515]	< .001
Age (in years)	+0.00018	0.00001	[0.00015, 0.00020]	< .001

4.2.2 Hypothesis 2

To test hypothesis 2, Figure 4 and Table 3 illustrate the effect of different types of entrepreneurship education on two key psychological predictors of entrepreneurial intention. Attitude and self-efficacy. Across all of the course types, participation was associated with significantly higher scores in both outcomes in comparison to students with no course experience, who were used as a reference group (baseline).

Program-based courses showed the strongest effects, increasing entrepreneurial attitude by 1.04 and self-efficacy by 0.755. Both elective and compulsory courses also had statistically significant, positive effects, although of a smaller magnitude. Elective courses had a $\beta = 0.582$ on entrepreneurial attitude and a $\beta = 0.502$ on self-efficacy, which still shows a strong correlation. Compulsory courses scored lowest with a $\beta = 0.428$ on attitude and a $\beta = 0.424$ on self-efficacy.

Notably, the impact of attitude consistently exceeded its effect on self-efficacy across all course types, which suggests that entrepreneurship education may be especially influential in shaping students' motivational and emotional alignment with entrepreneurship, rather than purely boosting their confidence in capabilities.

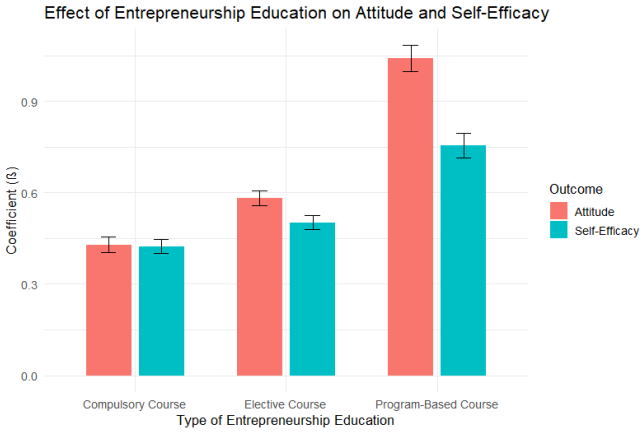

Figure 4. Effect of Education on Attitude and Self-Efficacy

Table 3. Entrepreneurial Courses Effect on Attitude and Self-Efficacy					
Predictor	**Attitude (β)**	**Standard Error (Attitude)**	**Self-Efficacy (β)**	**Standard Error (Self-efficacy)**	**Significance Level (p-value)**
Intercept	3.17	0.007	4.14	0.007	< .001
Elective Course	0.582	0.013	0.502	0.012	< .001
Compulsory Course	0.428	0.013	0.424	0.012	< .001
Program-Based Course	1.04	0.022	0.755	0.021	< .001
Male (vs. Female)	0.309	0.009	0.172	0.009	< .001
Age	0.00015	0.00001	0.000008	0.00001	< .001
Parental Business (Yes)	0.406	0.010	0.272	0.009	< .001

4.2.3 Hypothesis 3 and 4

To test hypotheses 3 and 4, another linear regression model was conducted to examine how components of the Theory of Planned Behaviour predict entrepreneurial intention. When the main variables included in the theory of planned behaviour were added to the model, as seen in Figure 5, entrepreneurial attitude ($\beta = 0.748$, $p < .001$) again emerged as the strongest predictor of entrepreneurial intentions. Secondly, the variable parental self-employment, which acted as a proxy for subjective norms, appeared to also be significant ($\beta = 0.153$, $p < .001$). Self-efficacy was also statistically significant; however, it was not a strong predictor ($\beta = 0.139$, $p < .001$). Despite the inclusion of these psychological factors, course types remained significant, which suggests that formal entrepreneurship education independently contributes to students' entrepreneurial intentions.

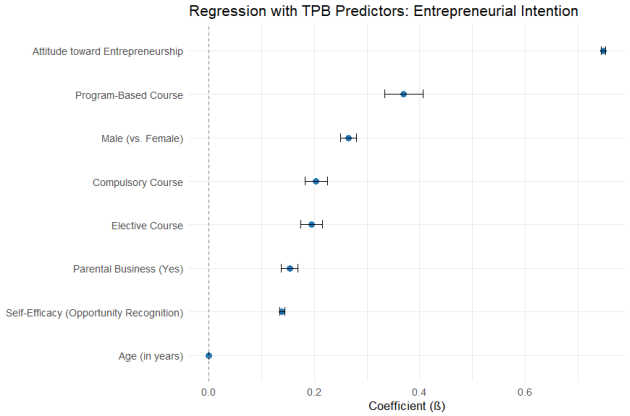

Figure 5. TPB Predictors and Course Types on Intention

There is a drop in the coefficients in Table 4 compared to Table 5 in the appendix, which signifies that part of education's impact on intention is dampened after including attitude and self-efficacy as variables, which are not being directly measured. The model explained 53% of the variance in intention (adjusted $R^2 = 0.5292$), indicating a strong explanatory power. Among the TPB variables, entrepreneurial attitude emerged as the strongest predictor ($\beta = 0.755$, $p < .001$), followed by parental business ownership ($\beta = 0.158$) and self-efficacy ($\beta = 0.147$). All variables

in the TPB were statistically significant, which supports the TPB framework and suggests that psychological readiness and social background are key drivers of entrepreneurial intention.

Table 4. TPB Variables and Education's Effect on Intention				
Predictor	**Coefficient (β)**	**Standard Error**	**95% CI**	**Significance Level (p-value)**
Intercept	0.214	0.012	[0.191, 0.237]	< .001
Elective Course	0.195	0.011	[0.175, 0.215]	< .001
Compulsory Course	0.203	0.011	[0.182, 0.224]	< .001
Program-Based Course	0.369	0.019	[0.333, 0.405]	< .001
Male (vs. Female)	0.264	0.008	[0.249, 0.279]	< .001
Age (in years)	0.000057	0.000008	[0.000041, 0.000074]	< .001
Parental Business (Yes)	0.153	0.008	[0.137, 0.169]	< .001
Attitude toward Entrepreneurship	0.748	0.002	[0.744, 0.752]	< .001
Self-Efficacy (Opportunity Rec.)	0.139	0.002	[0.134, 0.144]	< .001

5. DISCUSSION

The overarching concept of this study is to investigate the relationship between entrepreneurship education and entrepreneurial intention among university students. The reason for analysing this specific concept is that many students attend these courses in the hope of learning practical information about the process of starting and running a successful business efficiently.

However, suppose every student who participated in these entrepreneurship courses had no intention of starting a business. In that case, a significant portion of the funding that universities invest in them is likely going to waste. Even if students don't intend to start their own business, skill development is essential for them, including problem-solving skills, innovation, and risk management skills. All these skills are valuable not only for starting a business but also for enhancing employability in various sectors. A positive increase in entrepreneurial intention would lead to increased resilience and adaptability, contributing to economic growth in society.

5.1 Summary of Key Findings

5.1.1 Hypothesis 1

The main findings indicate that students participating in any form of entrepreneurial education are significantly more likely to express an intention to become entrepreneurs. This tested

hypothesis 1; however, results discovered that within the course types, entrepreneurial courses that were program-based have the highest intention and the most positive impact out of all course types. This is most likely due to the fact that program-specific courses are designed to go into far more detail in comparison to elective and compulsory courses. This higher level of immersion into the theory essentially provides a stronger foundation for students to understand concepts better and allows them to link them to real-world applications more strongly.

Elective courses also showed significant signs of increasing entrepreneurial intention among students, which is because they are courses that students would have elected themselves. These courses are most likely to be picked by students who already have an interest in entrepreneurship, which aligns with the results. The lowest-scoring course type was compulsory, although it still has an impact on entrepreneurial intention; the idea is that entrepreneurship courses that are mandatory for students to take may cause a loss of interest in the subject. Another alternative reason would be that far more students would be in these courses in general, many of whom have no real interest in the subject and are simply doing it because they have to, which aligns with human capital theory (Becker, 1964).

5.1.2 Hypothesis 2

The results of hypothesis 2 support that students who participated in entrepreneurship education, particularly those enrolled in program-specific courses, reported significantly higher levels of both entrepreneurial attitude and self-efficacy in comparison to those with no exposure to entrepreneurship courses. This aligns with the prior research suggesting that entrepreneurship education not only transfers knowledge but also shapes students' psychological readiness for entrepreneurial activity (Martin et al., 2013; Fayolle & Gailly, 2015). The stronger effect on attitude implies that developing a sense of capability may require more experiential or personalised learning. These findings reinforce the notion that education plays a formative role in strengthening two core components of the theory of planned behaviour, thereby indirectly influencing entrepreneurial intention.

5.1.3 Hypothesis 3

The findings for hypothesis 3 were consistent with the theory of planned behaviour (Ajzen, 1991), as both entrepreneurial attitude and self-efficacy were positively associated with entrepreneurial intention. Entrepreneurial attitude emerged as the most influential predictor of intention, even more than education itself. Self-efficacy, while also significant, had a comparatively smaller impact, suggesting that confidence in opportunity recognition may not fully translate into action unless paired with strong intrinsic motivation. This highlights the importance of fostering not just skill-based learning but also motivational and affective components of entrepreneurship education.

5.1.4 Hypothesis 4

The results also supported hypothesis 4, revealing a statistically significant, though comparatively smaller, positive association between subjective norms and students' entrepreneurial intention. This suggests that having self-employed parents does influence students' intention through role modelling, early exposure to business environments or the internalisation of entrepreneurial norms. While this variable served as a proxy for subjective norms within the theory of planned behaviour, its effect indicates that familial influence positively influences intention.

Gender-related conclusions highlight that systemic differences persist in the intention to start a business. However, it is promising to reduce this difference within the program-based education. This suggests that the immersive learning environment can foster self-efficacy, confidence, and entrepreneurship. While controlling for gender, the various analyses revealed that male students typically reported higher intentions of entrepreneurship than women. This aligns with world statistics that present men as the dominating gender within entrepreneurial circles (Strawser et al., 2021). This links back to subjective norms, as gender may influence a person's societal expectations, and role models around entrepreneurship often differ for men and women, potentially shaping the perceived social pressure to pursue entrepreneurial careers. Global data consistently show that women face greater systemic challenges in entrepreneurship, justifying the need for inclusive education strategies (World Bank, 2025).

5.2 THEORETICAL INTEGRATION

This thesis contributes to the existing literature by confirming and extending the theories of planned behaviour (Ajzen, 1991), which suggest that intention is stimulated through attitude, self-efficacy, and subjective norms. Specifically, program-based courses had the strongest positive effects on both entrepreneurial attitude and self-efficacy. This suggests that the more in-depth and immersive educational courses may strengthen students' motivational readiness (attitude) and belief in their capabilities to discover opportunities (self-efficacy). These findings also align with previous studies (Wardana et al., 2020; Zhao et al., 2025), which argue that these psychological mechanisms mediate the pathway between education and intention.

5.3 LIMITATIONS

This analysis is based entirely on cross-sectional, self-reported data, which may also introduce biases, such as social desirability or recall errors. The use of intention as a variable for measuring entrepreneurship is likewise a limitation, as intentions do not usually translate into motion. Additionally, even as course sorts have been categorised, the actual content and quality of the courses aren't recognised, which can affect outcomes. For example, program-specific entrepreneurship courses always scored the highest in terms of entrepreneurial intention among students; however, the content of these courses is unknown.

Subjective norms were approximated through parental self-employment status, under the assumption that having entrepreneurially active parents may shape social expectations and role modelling. The modest yet significant association with intention supports this, although it is acknowledged that this is a limited proxy and does not capture broader peer or institutional influences.

When all TPB variables were added to the regression model, the effect size of entrepreneurship education decreased, suggesting overlapping variance. This indicates that part of education's impact on intention is channelled through these psychological mechanisms, even though mediation was not formally tested. However, a significant limitation of the TPB variables was that they consisted of one singular item that was found within the survey. These items were not exact measures for variables such

as attitude and self-efficacy, but they were the closest pieces of data within the dataset.

5.4 RECOMMENDATIONS

5.4.1 For Universities and Teachers

Universities should expand access to entrepreneurship programs that offer immersive, experience-based learning opportunities. Courses that incorporate program-based components, internships, and real-world simulations significantly promote entrepreneurial intentions among students. Teachers should be trained to create an inclusive and supportive environment that encourages all students, regardless of gender or educational background, to consider entrepreneurship as a viable career path. Showing a variety of role models and success stories can help challenge general stereotypes about entrepreneurs and promote widespread participation.

5.4.2 For Policymakers

Government agencies and educational policymakers should encourage the development and recognition of entrepreneurship education programs, especially those that promote innovation and inclusion. Funding support can be allocated for initiatives that cooperate with the industry, supporting students in the initial stage or at least providing scholarships to enrol in entrepreneurship tracks. Policymakers may also consider supporting admissions to entrepreneurship education programs to track actual startup formation and success over time, allowing data-driven impact assessment to refine policy.

5.4.3 For Future Researchers

Future studies should investigate the quality and content of entrepreneurship education to determine which educational methods are most effective in cultivating intent and follow-through. Additionally, qualitative research can provide insight into the motivations and perceived obstacles of students who pursue entrepreneurship after being exposed to relevant coursework. To design more targeted and equitable interventions in entrepreneurship education, it is also recommended that the interaction of personal factors, such as gender, culture, and socio-economic status, be studied.

Additionally, future research could focus on encouraging students to investigate whether entrepreneurial intentions lead to venture creation. It would also be valuable to explore how course designs, content, and teaching methods affect different student groups.

Although attitude and self-efficacy were shown to partially reduce the direct effect of course types on intention, future studies should apply structural equation modelling or mediation analysis to test this pathway rigorously.

6. CONCLUSION

This study provides evidence that entrepreneurship education is positively associated with students' intentions to pursue entrepreneurial careers. The results shown in this study show that students who participated in entrepreneurship courses were more likely to express an intention to become entrepreneurs than those who did not. Among various course types, the program-specific entrepreneurship courses consistently stood out as the most effective in promoting an intention to pursue entrepreneurship. These findings underscore the importance of course design, not only in delivering entrepreneurial content but also in being able to shape students' mindsets and confidence within themselves.

The Theory of Planned Behaviour in combination with Human Capital Theory served as a robust theoretical foundation for the structuring of this analysis. TPB helped explain how entrepreneurship education influences students' entrepreneurial intention, and human capital theory provided a foundation for understanding how educational experiences serve as investments that enhance entrepreneurial capacity and perceived competence. The results confirmed these theories' central claims, as the psychological mechanisms found in TPB, such as attitude, self-efficacy and subjective norms, were found to be positively associated with entrepreneurial intent among students. By combining both frameworks, this study not only validates their relevance in the entrepreneurial education context but also further shows how psychological and educational factors interact to shape students' career trajectories.

The observed gender differences were evident, as males were much more likely to participate in entrepreneurial courses, but in the context of entrepreneurship education, they highlighted the importance of inclusive course design in addressing systemic inequalities. It outlines the value of targeted, well-structured programs that not only inspire future entrepreneurs but also promote inclusion in diverse student populations. Universities and policymakers must ensure that entrepreneurship education not only develops skills but also fosters access, equity and long-term entrepreneurial outcomes across diverse student populations.

Looking ahead, the findings of this study highlight the growing importance of strategically designed entrepreneurship education in shaping future economic contributors. Universities play a critical role in providing students with the business knowledge, as well as the mindset and confidence to act on entrepreneurial intentions, as entrepreneurial activity becomes more and more central to innovation, employment and societal development. Future studies should keep looking into how these goals turn into real endeavours and how educational initiatives can be improved over time to have the greatest possible long-term effects.

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8. APPENDIX

Table 5. Impact of Only TPB Variables on Entrepreneurial Intention				
Predictor	**Coefficient (β)**	**Standard Error**	**95% CI**	**Significance Level (p-value)**
Intercept	0.234	0.011	[0.212, 0.256]	< .001
Attitude (Q71_1)	0.755	0.002	[0.750, 0.760]	< .001
Self-Efficacy (Q42_1)	0.147	0.002	[0.143, 0.152]	< .001
Parental Business (Yes)	0.158	0.008	[0.142, 0.174]	< .001
Male (vs. Female)	0.269	0.008	[0.253, 0.285]	< .001
Age	0.00006	0.000008	[0.000045, 0.000075]	< .001