

# The Effectiveness of Business Essentials through Action Module in Developing Entrepreneurial Thinking

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## ABSTRACT

It has been widely known that entrepreneurial education plays a critical role in propelling world economies forward, even in difficult times such as the Covid-19 pandemic that we are in. Cultivating entrepreneurial mindset, providing students with the necessary skills and content knowledge to collaboratively develop products and services in a rapidly changing technological and market environment, is therefore paramount. The paper aims to support the development of entrepreneurial competencies in tertiary education, particularly examining the effectiveness in promoting entrepreneurial thinking of the newly introduced modules, Business Essentials through Action 1 & 2 (BETA), which look beyond equipping students the concepts and skills in entrepreneurship, to having students engage in real experiences during which they practice entrepreneurial method.

**Keywords:** *Creative, Entrepreneurial competences, Self-Confidence, Self-directed Learning Opportunity Seeking, Initiative, Systematic Planning and Monitoring, Persuasion and Networking, Persistence*

## 1. INTRODUCTION

In recent years, there has been an increasing emphasis on entrepreneurial education [2]. This is evident with the many countries putting their resources and effort in promoting entrepreneurial education and training [16]. In the 2020 Speech by Mr Lawrence Wong, Singapore Minister for Education, at the NUS 115 Distinguished Speaker Series – Shaping the Future of Education [17], Minister Wong shared the importance of providing opportunities for students to engage in innovation and entrepreneurship projects in order to create the opportunity to imagine, work together and develop creative solutions.

“It is not just about doing a start-up, but because when you engaged in a project like this, you are approaching real world issues with a problem-solving mind set; you don’t just get overwhelmed, but you see how to actually tackle the problem and come up with a solution.”

An entrepreneurial mind set, particularly, entrepreneurial method, echoes Minister Lawrence’s sharing. According to Sarasvathy [14], entrepreneurial method refers to how entrepreneurs go about solving problems as they create new markets and opportunities. In order to develop entrepreneurial mindset in students, we need to move beyond teaching students’ concepts and skills to consider having students to engage in real experiences during which they practice entrepreneurial method. With that, BETA was conceived.

## 2. PURPOSE OF THE STUDY

The purpose of this study is therefore, to examine the effectiveness of BETA in promoting entrepreneurial thinking. We will be exploring the development of entrepreneurial competencies across BETA and Non-BETA students. With that, we hope to provide recommendations to promote specific entrepreneurial competencies that may be lacking in our students.

Specifically, this study aims to:

1. Explore the development of entrepreneurial competencies across BETA and Non-BETA students;
2. Determine the strong competencies as well as those that require more attention in both BETA and Non-BETA students;
3. Determine if the improvement in entrepreneurial competencies is significant for student taking BETA vs student who did not take BETA; and
4. Provide suggestions on how to improve students’ entrepreneurial competencies especially on the weak ones in both BETA and Non-BETA students.

## 3. LITERATURE REVIEW

### 3.1 Entrepreneurial Method

With the proliferation of courses around entrepreneurship, Florian et. al, [7] discovered that majority of such courses

focused on equipping potential entrepreneurs with the technical know-how to successfully start up a venture. Alongside these technical competencies, the current pedagogy also lends a strong emphasis on cultivating an entrepreneurial mindset, recognizing the importance and transferability of such mindset in different career aspirations among students.

This is especially important in a volatile, uncertain, complex and ambiguous (VUCA) world, serving as the backdrop of realism for our current education. In such an environment, career opportunities constantly evolve around the demands by companies who are desperately keeping pace with innovation and developments in this 21<sup>st</sup> Century.

Hence, an approach that enables individuals to create opportunities and value is called for. Neck & Greene [11] started the assumption that the nature of entrepreneurship is neither linear nor predictable and there is no single entrepreneurship process that will fit the requirements of this VUCA environment. In fact, entrepreneurship is a journey that requires entrepreneurs to navigate the uncertainties and make decisions by taking calculated risks based on incomplete information or resources. To meet such a requirement, the entrepreneurial method should be one that integrates two modes of logic to respond to both knowable and unknowable situations.

Sarasvathy's [15] seminal work on entrepreneurial method proposed two distinct logic forms - causation and effectuation. Consistent to a planned strategy, causation assumes that goals or outcomes are defined and the focus in such a logic is placed on finding the means to achieve those goals or outcomes. On the other hand, effectuation is consistent with that of an emergent strategy. Instead of focusing on the end goal (which in many instances may be ambiguous), the focus is placed on the resources available, and the possible outcomes that can be created. In such instances when goals and outcomes are difficult to predict and therefore no feasible way can be used to compute the distribution of expected returns, experimentations, managing affordable losses and getting pre-commitments of stakeholders according to are alternatives to devising a comprehensive plan [10].

Our conceptual understanding around causation and effectuation logic is further expanded by Chandler, Detienne, and Mumford [5], where measurements were studied in correspondence to the two logics. Their studies revealed that causation takes on a unidimensional construct, comprising of how an individual define the final objectives upfront, conduct competitive analyses to predict the market and exploit pre-existing capabilities and resources to maximize expected returns. Effectuation, on the other hand, takes a multidimensional construct, comprising of the four dimensions, "experimentation," "affordable loss," "flexibility" and "pre-commitments" [5].

In view of the above, Neck et al., [12] propose a pedagogical shift in teaching entrepreneurship as a method in order to enable the integration of theory and practice. As such entrepreneurial method is established from the practice of real entrepreneurs, teaching entrepreneurship as a method therefore requires students to engage in real experiences where they get to practice the method. Aside to the

experience, Neck et al., [12] asserted that helping students reflect on this experience is equally important for them to successfully learn the core principles behind such entrepreneurial method.

While entrepreneurial experience is important the theory behind the entrepreneurial method is equally important in providing students a clear framework which guides their practice. Based on scientific methods, causation logic introduces a range of useful analytical concepts and tools that can be taught to students. Complementary to the causation logic, effectuation focuses on a set of teachable and learning techniques that are empirically evident among those who pursue new opportunities [15]. Therefore, the entrepreneurship approach should be one that allows students to learn the principles underlying effectuation while they apply effectuation logic.

Neck et al., [12] suggests the design of a curriculum that connects the entrepreneurial method to the theory so that students can acquire both knowledge and skills. This presents the need of shifting the existing pedagogical construct from one that chooses between theory or practice to one that supports theory and practice. A curriculum that combines both theory and practice allow students to shuffle between theory and practice as they explore the problem at hand and evaluate the merits and limitations of each logic. The focus on teaching the entrepreneurial method as theory and practice shifts the learning objectives of entrepreneurship education to better align with the growing, and diverse interests in entrepreneurship. By teaching students the entrepreneurship method, this pedagogy provides students with entrepreneurial knowledge, skills, logics and a mindset that can be applied across diverse settings including public services, established corporations, non-profits, social ventures, and of course traditional start-ups.

### ***3.2. Business Essentials Through Action Module (BETA)***

In 2018, a year-long module, BETA, is conceived to equip students with business fundamentals through the context of venture creation. This module is designed according to the entrepreneurial method highlighted by the literature. Reference was made to a first-year undergraduate programme offered by Babson College, Foundations of Management and Entrepreneurship (FME) where all first-year undergraduate students at Babson participates in the course, which includes an ideation and design thinking phase to develop an idea or initiative, followed by formation into companies, which develop, launch and manage a venture with real products and services [4].

After 2 years of preparation, Singapore Polytechnic School of Business piloted its first run of BETA in 2020, with 2 classes of students from the Diploma in Common Business Programme (DCBP). BETA is designed to help students experience the nature of business as an integrated enterprise where they learn Fundamentals of Marketing, Business Negotiation Studies and Management and Human Resource Practices.

Aligned with the institution’s review and development of graduate attributes, BETA not only seeks to deepen domain competencies, but also to cultivate important qualities in students as they develop greater awareness around self, team and at organisational level. Through a practice-based approach, we hope to also cultivate leadership skills and personal effectiveness in the students where they practice, demonstrate, and acquire the skills of being a self-directed learner.

**3.3. Personal Entrepreneurial Competencies**

In evaluating the effectiveness of the BETA programme, reference is made to the Personal Entrepreneurial Competencies (PEC) questionnaire. PEC is a set of qualities, which outlines the attitude and behaviour of entrepreneurs [2].

In 1989, MSI (Management Systems International) in partnership with McBer & Company, conducted research and identified ten personal entrepreneurial competencies (PECs). These are opportunity seeking, risk taking, persistence, demand for efficiency and quality, commitment to work a contract, information seeking, systematic planning and monitoring, persuasion and networking, goal setting, and self-confidence. From the research, MSI also came out with a self-rating questionnaire which can be used to assess an individual’s likelihood of succeeding in the field of entrepreneurship. Since then, this questionnaire has been used by other researchers to determine the relationship of the personal entrepreneurial competencies.

Extending from the earlier study, Driessen and Zwart [6] organised these personal entrepreneurial competencies to reflect need for achievement, internal locus of control, risk-taking propensity, need for autonomy, need for power, tolerance of ambiguity, need for affiliation and endurance. To explore the competencies in another dimension, Penchev and Salopaju [13] proposed a two-side entrepreneurial competencies model. They proposed that besides the core entrepreneurial competencies such as proactiveness, change risk taking, seeing opportunities, soft networking, decision-making, creativity, and innovativeness, the other competencies running the company are also equally important. These competencies include leadership, communication, specialist and problem-solving. Lackeus [9] recommended a three-theme action-based framework. This framework with the three themes; knowledge, skills and attitudes focused on developing the entrepreneurial competencies.

Cited by Azarcon and Roy [1], the PEC questionnaire, adapted from the original work of Management Systems International and McBer and Company, is being used as the first exercise in an introductory entrepreneurship course in a Philippine state university. The intention of using the PEC questionnaire is (1) to find out the entrepreneurial competencies that students possessed, and (2) to identify which of the competencies do students not inherit before they are exposed to entrepreneurship education. The PEC questionnaire hence provides a very good indication of a student’s personal entrepreneurial competencies.

**4. METHODOLOGY OF THE RESEARCH**

In our attempt to measure the effectiveness of BETA on developing entrepreneurial competencies in students, student-respondents were requested to complete the PEC questionnaires before admitting to Singapore Polytechnic Business Course (Pre-Y1) and one year into the course (Post-Y1). Student-respondents’ scores per entrepreneurial competency and the overall PEC scores were then computed. A correction factor is administered as an adjustment to the scores for respondents who presented very favourable image of himself or herself.

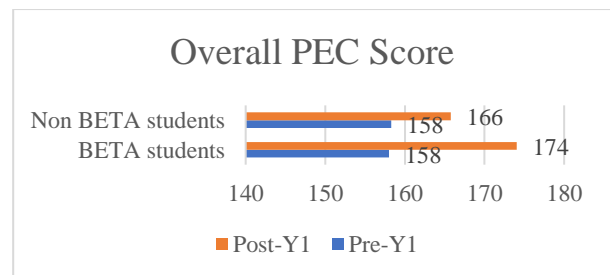
**4.1. Description of the Respondents**

Two groups of students-respondents are involved in this study. The first group consists of 32 first year DCBP students who were involved in the pilot-run, taking BETA in AY2020/2021. The second group, serving as the control group, comprises of 36 first year Diploma in DCBP students randomly selected who undergo the usual teaching method. We will refer to the former group as BETA and the latter group as Non-BETA respectively for the purpose of this research.

PEC scores were analysed using Microsoft Excel 2017 while non-parametric t-test was used for analysis between groups via statistical software, Minitab. With our sample sizes (N) greater than 30, according to the central limit theorem, it holds true that our sampling distribution of the sample means approaches a normal distribution.

**5. RESULTS AND DISCUSSIONS**

Figure 1 shows the overall PEC scores for BETA and Non-BETA group at both instances, Pre-Y1 and Post-Y1. Both groups have the similar initial PEC scores prior to entering SP. It can be noted that there is a greater improvement in the overall PEC scores for BETA, with an improvement of 10%, compared to Non-BETA group with an improvement of 5%.



**Figure 1** Overall PEC scores for BETA & Non-BETA groups Pre-Y1 and Post-Y1

Table 1 summaries the t-Test Paired Two Sample for Means within two groups: BETA and Non-BETA. Using a 95% confidence interval, it is noted that BETA could potentially

improve 9 out of 10 PECs in students, namely, Opportunity Seeking and Initiative, Demand for Excellence and Quality, Persistence, Commitment to the Work Contract, Information seeking, Goal setting, Systematic Planning and Monitoring, Persuasion and Networking and Independence & Self Confidence, while the Non-BETA group shown potential improvements in 7 out of 10 PECs, namely Opportunity Seeking and Initiative, Demand for Excellence and Quality, Persistence, Information seeking, Goal setting, Systematic Planning and Monitoring and Persuasion and Networking. It would mean that the key difference between BETA and Non-BETA is that BETA promotes persistence, commitment to the work contract and independence and self-confidence.

In general, the majority of the PEC scores improve for both groups, except for risk taking competency in the Non-BETA group where the Post-Y1 is lower than the Pre-Y1. This could potentially mean that the current curriculum does not assist in improving the risk-taking competency in students.

The above correlates with findings by Kyguolienė and Švipas [8], which could be attributed to the nature of the

BETA module. In the context of venture creation, BETA students are required to pitch their ideas in convincing a panel of assessors on the desirability, viability, and feasibility of their business propositions. Students are required to actively find means on improving their businesses – from securing partnerships or improving operations, to optimising marketing efforts and establishing new profit models. The need to find customers and establish a stable customer base is essential in the context of a start-up. Given that actual money is involved, students feel an obligation to ensure that they can (at the very least) breakeven. As such, it calls a great amount of persistence, hard work and even persuasion and networking in launching a venture.

Our findings showed that risk-taking competency was also noted to be the least improved competencies in both groups. In the research done by Bautista, Barlis and Nazario [3], it was found that Risk-taking competencies among students were also the weakest. This could potentially mean that risk-taking competency may not be an easy competency to develop among students.

**Table 1** t-Test Paired Two Sample for Means within two groups: BETA and Non-BETA

Personal Entrepreneurial Competencies	t-test for BETA students			t-test for Non-BETA students		
	t-statistic	Degree of freedom	p-value (one tail)	t-statistic	Degree of freedom	p-value (one tail)
Opportunity Seeking and Initiative	5.6621	31	1.61E-06	3.2297	35	0.0013
Risk taking	0.8005	31	0.2148	-0.1012	35	0.4600
Demand for Excellence & Quality	3.6091	31	0.0005	3.6138	35	0.0005
Persistence	4.5328	31	4.08E-05	1.7707	35	0.0427
Commitment to the Work Contract	1.7439	31	0.0455	1.1562	35	0.1277
Information seeking	3.6458	31	0.0005	3.0359	35	0.0023
Goal setting	2.7089	31	0.0054	3.0829	35	0.0020
Systematic Planning & Monitoring	3.6711	31	0.0005	3.4542	35	0.0007
Persuasion and Networking	3.9903	31	0.0002	2.7047	35	0.0052
Independence & Self Confidence	3.1083	31	0.0020	1.5404	35	0.0662

Table 2 presents the t-test results using Welch t-test to identify if there is any significant improvement in PEC comparing the two groups: BETA and Non-BETA. Using a 95% confidence interval, it can be noted that BETA is more effective in promoting entrepreneurial thinking, compared to Non-BETA, with the p-value for overall PEC score being less than our alpha, 0.05. BETA, in comparison to Non-BETA, could potentially improve the following 5

competencies, namely, Opportunity Seeking and Initiative, Systematic Planning and Monitoring, Persuasion and Networking, Persistence and, especially for Independence & Self Confidence.

**Table 2** t-test results using Welch t test to compare the PEC between the two groups: BETA and Non-BETA

Personal Entrepreneurial Competencies	t-test		
	t-score	Degree of freedom	p-value (one tail)
Opportunity Seeking &	2.35	61	0.011
Risk taking	0.69	60	0.245
Demand for Excellence &	0.75	58	0.227
Persistence	2.87	53	0.003
Commitment to the Work	0.77	56	0.222
Information seeking	0.80	63	0.213
Goal setting	0.81	50	0.212
Systematic Planning &	1.75	45	0.043
Persuasion and Networking	2.41	45	0.01
Independence & Self	1.70	55	0.048
Overall PEC score	1.99	51	0.026

As we noted that there is no significant improvement in this one competency, Independence & Self Confidence, for Non-BETA group as shown in Table 1, there is significant improvement in this competency for BETA students when we compared across the two groups in Table 2. This could be attributed to the autonomy given to the students as they run their own businesses. Through the design of BETA, students exhibited a greater sense of ownership and belonging when they conceived, implemented, and managed their businesses. Such autonomy to run a business, be it from operations to marketing (where students put up content and generate sales) or to human resource management, (where students conduct peer learning and performance appraisals in class) provides students the opportunity to develop independence and self-confidence.

### 5.1 Summary of Findings

This research comparing developments of entrepreneurial competencies across BETA and non-BETA students is an important affirmation to the pedagogical developments at Singapore Polytechnic School of Business towards an entrepreneurial method combining both causation and effectuation logics.

Our study of the developments of personal entrepreneurship competencies from student-respondents, henceforth concludes the following:

1. BETA has a greater improvement in all the 10 competencies as compared to Non-BETA group.

2. Risk taking competency did not improve in the Non-BETA group. This could potentially mean that the current curriculum does not assist in developing risk-taking competency in students.
3. BETA could potentially improve 9 out of 10 PECs in students as compared to Non-BETA where the improvement is 7 out of 10 PECs; Commitment to the Work Contract and Independence & Self Confidence did not have any significant improvement in Non-BETA students.
4. BETA is more effective in promoting the entrepreneurial thinking, compared to Non-BETA, especially in the following competencies, Opportunity Seeking and Initiative, Systematic Planning and Monitoring, Persuasion and Networking, Persistence and Independence & Self Confidence.
5. Independence & Self Confidence is the one competency that stands out for BETA group, compared to Non-BETA group.

## 6. RECOMMENDATIONS

Based on the results of our study, the following are recommended:

1. To consider having BETA as a compulsory module for all Year 1 Business students.
2. In the event where having BETA as a compulsory module is not feasible, to consider having an elective where students can embark on a mini business venture or a challenge where students get to conceive and pitch their business ideas, and subsequently launching and managing a business.
3. More risk-taking activities could be encouraged through BETA complemented with topics and case studies on teaching students how they could take calculated risk.
4. Review the existing year one programs to explore opportunities to promoting Risk-taking, Commitment to the Work Contract and Independence & Self Confidence in students.

## 7. LIMITATION AND DIRECTIONS FOR FUTURE RESEARCH

Our research is subjected to limitations on generalizability as it was conducted for the first time with a limited number of students. While the study focused on outcomes of entrepreneurial competencies, there are opportunities to explore students' experiences on the module. Variables such as learning styles, and personality types may be considered, and the use of in-depth interviews or other qualitative methods may possibly point us towards a pool of richer insights and feedback on fostering a richer module and student learning experience.

A correlation study can further investigate and draw conclusions over the relationship between students' overall grades (or academic achievements) and their performance in the module. Future studies may focus on the causality of

PEC variables. Other statistical methods that could establish causation can be deployed to help with the identification of any causal relationship across personal entrepreneurial competencies.

## ACKNOWLEDGMENT

We are grateful for the support rendered by the management and the many colleagues from Singapore Polytechnic School of Business during the implementation of BETA.

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