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Instructional Elements Assessments of Entrepreneurship Education in a Technical University in Malaysia

Khairul Saidah Abas Azmi[1] & *Azzarina Zakaria[2]
[1]Department of Accounting and Information System, University of Canterbury, New Zealand
[2]Faculty of Business and Management, Universiti Teknologi MARA, Malaysia
khairul.abasazmi@canterbury.ac.nz, *azzarina@uitm.edu.my

Abstract: The technical and vocational education and training (TVET) program occupies the national education system to allow the students to learn practical, hands-on skills aligned with the industries' needs, ultimately preparing the students for the inexorable integration of technology brought about by the Fourth Industrial Revolution (IR 4.0). The rapid pace of change and broad impacts featuring IR 4.0 demand specific critical thinking skills, creativity, and readiness for risks, the qualities that are connected to entrepreneurship. Thus, it clarifies offering entrepreneurship education (EE) alongside a TVET program. There are arguments that EE is poorly embedded into the TVET program in Malaysia. The instructional elements concerned with the content, techniques, and activities through which students engage in creating entrepreneurial knowledge and value are considered essential for EE's success in a TVET program. This study assesses the state of instructional elements (i.e. content, teaching methods, infrastructure facilities, and learning assessments) of EE offered within a TVET program in Malaysia. Data were obtained from 37 students of a private technical university in Malaysia who enrolled for their entrepreneurship course through a series of group interviews. The study enlightens a few meaningful findings to propagate the entrepreneurial culture within a TVET program: (1) the content should be tailored to the readiness of the students, (2) action-based teaching methods should be engaged, (3) prior entrepreneurship experience should be specified for the entrepreneurship lecturer; (4) presence of ideal infrastructure facilities, and (5) learning assessments must be focusing in developing attributes of entrepreneurs.

Keywords: *Entrepreneurship Education (EE), Technical and Vocational Education and Training (TVET), Instructional Elements, Malaysia.*

1. Introduction and Background

The Fourth Industrial Revolution (IR 4.0) represents new ways in which technology has become embedded within societies. It marks a conspicuously unusual emerging technology breakthrough of The Internet of Things, robotics and artificial intelligence, transforming human and machine interactions to a new level. Many businesses have shifted their operations to automation, where computerized machines, robotics and artificial intelligence have displaced the traditional jobs manned by human labor. This circumstance has raised concerns worldwide about the great impact that IR 4.0 could have in disrupting the future employment landscape. Many jobs will no longer exist, leading to a possible increase in unemployment and the emergence of socioeconomic problems.

In response to IR 4.0 (strong demand for highly skilled workers), Malaysia has embarked on a comprehensive Technical and Vocational Education and Training (TVET) program in its education system. The TVET program emphasizes competent development, allowing the students to learn practical and hands-on skills aligned with industries' needs. The program is expected to lift future talents into new collective skills and consciousness parallel to IR 4.0.

Fueled by the velocity of surprises, IR 4.0 challenges the traditional assumptions of business operations which are very much linear and mechanistic. Businesses must relentlessly adapt to the fast-changing environment and reinvent themselves by embracing agility and innovation, typified by entrepreneurship (Lenita & Taina, 2015). In the realm of IR 4.0, the TVET program and entrepreneurship education (EE) are both seen as crucially significant. Many consider EE a platform for TVET students to learn the concept of 'survival' and 'competition', a situation that emulates IR 4.0 (Daniele & Annamaria, 2016; Othman & Nasrudin, 2016). The Malaysian government has been very forward in promoting EE into the TVET program. It includes policy changes, grant allocations, scholarships and industry collaborations (TheSunDaily, 2017).

In a recent movement, the government has stepped up its efforts to reform the TVET program and establish a TVET task force team, to streamline and re-organize TVET functions in the country (Surendran, 2018). The objectives of embedding EE successfully into the TVET program should be rendered; otherwise, the great efforts will be in peril, and future labor will be unable to endure IR 4.0, depriving nation-building. Nkirina (2010) highlights that EE has been poorly embedded into the TVET program with no meaningful impact despite the importance of EE for the economic survival of a country. The bottom line is that the holistic design of EE that is compatible with a TVET program must be put in place for tangible results.

Instructional elements that include content, teaching methods, infrastructure facilities, and learning assessments are asserted as quintessential to EE (Abdullah, 2020; Othman & Nasrudin, 2016; Shirandula, 2022). The elements should be captivating to enthuse TVET students' interest in EE. The entrepreneurship contents and modules must contain real-world entrepreneurial experiences and business practices (Samuel et al., 2013). Teaching delivery needs to engage in more practical-oriented activities with an emphasis on hands-on experience to make students more realistic and creative in developing their entrepreneurship skills (Nkirina, 2010). Furthermore, action-based teaching methods (instructor as a facilitator) that enable students' self-discovery should be conducted for entrepreneurship classes (Ernest, 2010). Adequate facilities must be presented for the effective teaching of an EE program that includes appropriate classrooms, computer laboratories, Internet access and a resource room, and these facilities should not only exist but must be the best in terms of quality (Ajigo et al., 2018). Learning assessments must be designed in such a way able to appropriately measure the acquisition of entrepreneurial skills (Mwasalwiba, 2010; Shirandula, 2022; Syed, 2015).

Research shows little effect of EE on TVET students in Malaysia. Ismail (2010) reported that TVET students (Polytechnic) did not have the minimum entrepreneurial skills and competencies. Mansor and Othman (2011) concurred the same, where they found the level of entrepreneurship knowledge among TVET students (Polytechnic) moderate and several elements involving entrepreneurship skills or knowledge have yet to be mastered by most students. Similar findings are disclosed by Othman and Nasrudin (2016), where most TVET students (Polytechnic) did not efficiently master basic entrepreneurship knowledge. These discoveries herald some forms of impotence in the current EE of the TVET program, and institutions' instructional elements are regarded as the underpinned cause (Ajigo et al., 2018; Ernest, 2010; Nkirina, 2010; Othman & Nasrudin, 2016; Samuel et al., 2013). This study, therefore, seeks to assess the extent of the four instructional elements, i.e. content, teaching methods, infrastructure facilities and learning assessments of EE in a TVET program of a private technical university in Malaysia. Research on EE and TVET in Malaysia is primarily found within Polytechnic institutions (Ismail, 2010; Mansor & Othman, 2011; Othman & Nasrudin, 2016). Little, however, are focused on other higher TVET institutions, i.e. technical universities. It is imperative to have investigations conducted into other higher TVET institutions for a greater picture of the state of EE when offering alongside a TVET program.

2. Literature Review

Entrepreneurship Education (EE): UNESCO/ILO Global (2006) refers to EE as a set of formalized teachings that informs, trains, and educates learners interested in contributing to socioeconomic development via a project that promotes entrepreneurship awareness, business creation or small business development. Wilson (2009) regards EE as the development of attitudes, behaviors and capacities that can be applied during an individual's career as an entrepreneur. Ndofirepi (2020) argues that the EE notion stretches beyond merely teaching students to start a new business to incorporate other rich learning experiences that are gained from an educational environment – EE is interventions that promote self-reliance, awareness of opportunity, adaptability to change, tolerance of risk and ambiguity, creation of something of value, and gain financial independence. A more recent perspective of EE is offered by Ratten and Usmanij (2021), who view EE as an experience-based learning approach characterized by interactive learning that is linked to business and community initiatives. According to Johannisson (1991), the objective of EE is to generate the right attitude and motivation toward entrepreneurship, reassure networking and contexts, awareness to act at the right time, gain knowledge and information about new business, and acquire technical and appropriate skills to develop a business.

EE cultivates innovative talents, an essential driving force for future development (Wei et al., 2019). As such, it is unsurprising to observe EE's blooming in many countries' education systems, particularly at the tertiary level. Grecu and Denes (2017) regard EE as a useful, applied approach to creating links between the academic and business communities. They believe EE equips students with abilities that increase their employment potential, abilities to solve problems, critical thinking, risk-taking and also to develop social interaction – abilities that are indispensable in navigating through the dynamic market economies given the intensified technological change and global competition brought about by globalization and economic liberalization. EE has advanced as a means to educate the new twenty-first-century workforce by giving students the skills to take any area of study or discipline and be creative, innovative, and entrepreneurial to succeed as the workforce demands change over time (Welsh et al., 2016). In their study, Rae and Woodier-Harris (2013) revealed that EE was found to influence personal growth, confidence and identity development, new career intentions and learning applications (Welsh et al., 2016). Shirandula (2022) offers interesting remarks about the benefits of EE:

"The benefits of EE are not limited to start-ups, innovative ventures, and new jobs' but rather to 'an individual's ability to turn ideas into action, and it is, therefore, a key competence for all, helping young people to be more creative and self-confident in whatever they undertake".

Entrepreneurship Education and TVET: The advent of the Fourth Industrial Revolution (IR 4.0) transformed the integration between human and machine relations. Given this and to ensure that Malaysia is not left behind in adapting to IR 4.0, the government is now placing more emphasis on technical and TVET and the strong commitment to the TVET revolution is reflected in its yearly budget – a total of RM6.6 billion (the largest allocation) has been set aside to empower TVET sector (Malaysian Investment Development Authority, 2022). The TVET prepares the students for the inexorable integration of technology brought by IR 4.0 by allowing the students to learn practical, hands-on skills that align with the needs of the industries. The rapid pace of change and broad impacts brought by IR 4.0 have challenged the labor market to an unprecedented degree, demanding specific knowledge and skills of critical thinking, creativity, and readiness for risks, all qualities connected to entrepreneurship. Consequently, through many initiatives, the Malaysian government demonstrates its compelling commitment to strengthening the EE in Malaysia within a TVET program, foreseeing the entrepreneurship potential of the TVET program.

Ibrahim et al. (2015) argue the plentiful benefits of EE to TVET students. These include increased understanding and awareness of opportunities and responsibilities to the economy and providing a solid understanding of business fundamentals. In support of innovation and employability, UNESCO-UNEVOC (2019) emphasizes the importance of EE and TVET, where EE is recognized to foster capabilities vital for work and life that may be obtained through the TVET program (Shirandula, 2022). Abdullah (2020) aptly notes that EE could open up the scope for employment for TVET graduates, and enterprising skills acquired through EE would help integrate TVET into general education and workplace learning. Most importantly, EE and TVET provide a solution to unemployment problems and a means to eradicate poverty.

Moreover, the volatile changes in the economy call for the diversification of portfolios, which necessitates technical students to have some basic managerial knowledge that will assist them in navigating the economic challenges – thus, EE is seen as beneficial to technical students (Adelaja, 2021). Byers et al. (2013) confirm that engineering students need technical knowledge and a combination of technical and managerial knowledge to survive in the dynamic market. A study by Militaru et al. (2015) revealed that EE offered to technology students enhances their creativity, innovativeness, risk-taking and intention to launch new ventures, implying the great potential of EE for the TVET program.

Despite emphasis and positive claims about the EE within a TVET program in Malaysia, findings on the research of Malaysian polytechnics, however, show that EE has little or no impact in promoting entrepreneurial behavior among the students of Malaysian polytechnics (Harun & Karim, 2004 as cited in Ismail, n.d.). Furthermore, these students are reported not to have the confidence to engage in business ventures because of inadequate entrepreneurship skills, creativity, innovation and abilities. Ismail and Ahmad (2013) describe the attributing causes as follows:

"the teaching method is not fully utilized, and the concept of entrepreneurship has been explained in a manner that is too vague, abstract and therefore is difficult to understand. Only entrepreneurship theory is taught, but no practical training and implications are discussed in lectures series".

Juhari et al. (2023) highlight that Malaysia's technical-vocational colleges have not fully acknowledged the importance of EE. According to a study by the Institute of Labour Market Information and Analysis (an independent, national center of excellence under the direct purview of the Ministry of Human Resources, Malaysia) in 2018, TVET graduates had reported low adaptability and critical thinking skills (Halik Bassah & Mohd Noor, 2023), the two essential employability skills that highly connected to entrepreneurship. These shed grave concerns about the successful embedding of EE within a TVET program in Malaysia, thus warranting more evidence of research to clarify the issues.

Entrepreneurship Education and Instructional Elements: A central element of facilitating sustainable and effective EE, including content, teaching methods, resources (i.e. infrastructure facilities) and assessments (Jones & English, 2004; Taatila, 2010). Shirandula (2022) believes that the success of EE subject is contingent not only on selecting an appropriate model but also on the instructional elements, namely the content, teaching techniques, learning resources and evaluation methods. Abdullah (2020) highlights the four main components of the implementation model within a TVET program: content, teaching methods, resources and assessment. In a similar view, Othman and Nasrudin (2016) claim that instructional elements such as contents, methods of program delivery and infrastructure facilities in any entrepreneurship program are essential in supporting EE. Sequel to these assertions, this study will focus on the four essential instructional elements of EE, i.e. (1) content, (2) teaching methods, (3) infrastructure facilities, and (4) learning assessments. The following section offers a description of these four elements.

The Instructional Elements-Content: Abdullah (2020) defines content as the knowledge, skills, attitudes, and values to be learned and describes the content of EE in the TVET environment can be categorized into three: (1) the personal development (delves into the concepts entrepreneurship), (2) skills development (highlights characteristics of an entrepreneur) and (3) enterprise development (initiation and management of business venture). Syed (2015) asserts that the content of EE subjects has been identified as a crucial factor in EE fostering entrepreneurial abilities. Fayolle and Gailly (2008) offer specific design criteria that should be embedded in the EE content – the contents should cover skills and knowledge related to four domains:

- Know-what: aspects that clarify the what of being an entrepreneur;
- Know-how: the ability to handle diverse situations;
- Know-who: the capacity to network;
- Know-why: the ability to contextualize the psychology and behavior of entrepreneurs; and
- Know-when: the intuition to know when to seize entrepreneurial opportunities.

It is believed that the contents of EE should offer a real-world entrepreneurial experience, thereby increasing students' interest in deepening their knowledge and entrepreneurial skills (Othman & Nasrudin, 2016).

The Instructional Elements–Teaching Method: Teaching methods have long been acknowledged as critical instructional elements of methodologies that support educational ideals (Shirandula, 2022). Johnson et al. (2015) argue that the best way to develop entrepreneurial skills is to expose students to real work environments where they can practice what they have learned in class to allow them to embrace a culture of flexibility and experimentation. Abdullah (2020) highlights some of the teaching methods of EE that are appropriate within a TVET program, among others, are apprenticeship, case-based, field studies, boot camp, and make a pitch. Mansor and Othman (2011) found that teaching methods based on consulting could positively affect EE from the perspective of providing awareness and guidance to students to run real businesses.

According to Othman & Nasrudin (2016), practical education through experience is as important as the theoretical and cognitive factors that should be emphasized in the EE programs. Hägg and Kurazewska (2020) highlight the importance of the suitability of EE teaching methods to correspond to learners' abilities. Three aspects of entrepreneurship teaching methods are highlighted by Esmi et al. (2015):

- **Direct:** methods that promote direct exposure, which includes mentorship, guest entrepreneurs, video shooting and shows;
- **Interactive:** includes methods such as networking and group discussions; and
- **Practical-operational:** includes methods of site visits, internships, research projects, business planning, investment projects, starting a business, and role-playing.

The Instructional Elements–Infrastructure Facilities: According to Luthjie and Franke (2003), education institutions must offer entrepreneur initiatives by creating physical convenience facilities to facilitate entrepreneurship training programs. In his research, Kamarudin (2010) demonstrated the importance of ideal infrastructure facilities for enhancing student achievement in a community college in Malaysia. These emphasized the essential ambiance in developing entrepreneurship infrastructure facilities to accommodate students' entrepreneurship work. It can be safely deduced that infrastructure facilities provide opportunities for students to attain an ideal entrepreneurship experience (Idogho & Omozuawo, 2011; Kamarudin, 2010; Othman & Nasrudin, 2016).

Much literature identifies infrastructure facilities as imperative to the effective implementation of EE. Othman (2002) found that infrastructure facilities and resources available in polytechnics were less conducive toward entrepreneurship when the administrative departments provided less focus on the aforementioned facilities, thus hindering EE implementation's optimization. According to Abdullah (2020), some resources that need to be carefully planned and managed to facilitate EE implementation are the library, lecturers, finances, workshops and equipment. Bwisa (2017) suggested that institutions provide information resource centers to expose students to start-up businesses, such as business incubators, which can help them acquire and develop entrepreneurial skills (Shirandula, 2022). Othman and Nasrudin (2016) confirm that entrepreneurship incubators provide opportunities for students to acquire hands-on entrepreneurship experience.

Lack of adequate resources limits teaching effectiveness, lowering students' self-efficacy (Mkala & Wanjau, 2013). Institutions, therefore, must recognize that adequate and high-quality resources are crucial to providing quality EE (Wibowo et al., 2018), mainly when offered alongside a TVET program, and institutions should prioritize investing in high-quality resources (Shirandula, 2022).

The Instructional Elements–Learning Assessments: Written exams are frequently used to assess EE courses (Shirandula, 2022). Nevertheless, written tests have been criticized for their failure to accurately and efficiently measure the learning of entrepreneurial skills in EE (Mwasalwiba, 2010). Given the constraints of written exams, business plans or projects are regarded as a more realistic and successful alternative to evaluate the acquisition of entrepreneurial abilities (Syed, 2015).

Pittaway and Edwards (2012) indicate that the conceptualization of evaluation methods should be based on three key entrepreneurship learning outcomes: (1) learning about, (2) learning in, and (3) learning for. Shirandula (2022) explains the first outcome as assessments, including tests, examinations, class participation, and writing essays/term papers on entrepreneurship. The second outcome is measured through group/individual presentations, case studies and interpretation of financial statements, whilst the third outcome consists of assessments such as business plans, business reports, entrepreneurship projects, and entrepreneurship attachment field reports.

3. Research Methodology

This study is based on an interpretive approach, employing a qualitative method of group interviews. The interview is aimed at obtaining students' impressions and opinions about the four instructional elements of EE, i.e. content, teaching methods, infrastructure facilities, and learning assessments following the prevailing themes as suggested by Abdullah (2020), Othman and Nasrudin (2016), and Shirandula (2022). The method was deemed to be appropriate for the study as it allows the students to be spontaneous and, therefore, would reflect their genuine opinions and feelings about the topic under discussion, apart from the fact that it provides reasonably dependable data within a short time frame.

The purposive sample was drawn from a group of students from a private technical university in Kuala Lumpur, Malaysia, who were enrolled in an entrepreneurship course alongside TVET courses. The private technical university is one of the leading universities in engineering technology, established in the last two decades in Malaysia. The university molds its graduates with strong technological knowledge and astute entrepreneurial skills to fulfill the demands of the industries. By specializing in engineering technology, the technical university aims to provide entrepreneurial technopreneurs and technologists in the electrical, electronics, medical electronics and telecommunications sectors. With the vision to be the leading entrepreneurial technical university, this university aims to produce more global technopreneurs with an advantage of its technical and vocational knowledge. The university offers various foundation, diploma, undergraduate and postgraduate programs. A total of four group interviews were conducted during the period of two tutorial classes. Each group comprises six to ten students, totaling 37 TVET students, with 20 males and 17 females. These students were in their year three and attended an entrepreneurship course, technopreneurship of two credit values. Every interview session was tape-recorded and took approximately one hour to complete. Written consent was obtained from each student, including the lecturer, prior to the interview.

The interview was structured into two parts. The first part aims for the ice-breaking session and generally seeks demographic information about the students and their previous ENT exposure (if any). The second covered questions on the four instructional elements. The content includes questions on the compatibility of the course contents with the program objectives and the sufficiency of entrepreneurship skills exposure. Teaching methods deal with questions on teaching delivery and the student's learning experiences. Infrastructure facilities questions delve into the availability and adequacy of resource support for the EE. Whilst learning assessment questions concern the existing assessments of the entrepreneurship course.

To ensure the reliability and validity of the findings, each step of the data-gathering process was documented, all transcripts were transcribed and codified as soon as possible, and the transcriptions were checked by the interviewers by iterative listening to the audio recordings. The data were analysed to the thematic approach uses six steps of data analysis (Braun et al., 2019):

Step 1: Familiarising with the data.
The output from the group interviews was analyzed by reading and re-reading the data to gain a sense of its content. This first step has familiarised and identified sections discussing EE's instructional elements.
Step 2: Generating initial codes.
The second step allowed the process of coding the data. We extracted quotes or sections relevant to EE's instructional elements by generating initial codes.
Step 3: Searching for themes and collating codes.
This step showed a diversity of themes, including references to specific contents and teaching methods, infrastructure facilities, learning assessments, challenges, feedback, and recommendations. We searched for themes by looking at the relevant patterns, repetitions and similarities as our collating coded data.
Step 4: Scrutinising themes and subthemes.
Within the identified themes, we reviewed and refined our emerged themes against our coded data. This step includes closely scrutinizing themes and subthemes and ensuring that each theme captures a coherent and meaningful aspect of instructional elements of EE.
Step 5: Clarifying themes.
The evaluation and clarification of themes allowed our team to define each theme based on the repetitive patterns of our data. For example, the identified themes could encompass codes for how students appreciate the contents and teaching methods that accommodate diverse student backgrounds and learning styles. We gave each theme a clear and relevant name that directly reflects its content.
Step 6: Reporting the analysis.
We structured our report around each emerging theme from our collected data. For each theme, we provided an introduction, showed linkages, and explained its relevance to our research context. To add credibility and rigor to our data analysis, we supported our findings and reported the analysis with suitable and relevant quotes or excerpts from the data in the voices and experiences of our participants, which illustrate the clarifying themes. We presented the evidence from our data (quotes, excerpts, descriptions) that support the existence and importance of each theme. The following section will present and discuss the empirical findings

and discussions.

4. Results and Discussion

The group interviews resulted in meaningful contributions to exploring the state of the four instructional elements of EE in a TVET program. Following are the results and discussion presented in the respective instructional elements section.

The Contents: Contents refer to the suitability, exposure, development, theories, practical aspects and cultivation of entrepreneurship (Othman & Nasrudin, 2016). The content for EE should equip students with the knowledge and skills to start a business or change how they think and behave to be an entrepreneur (Rakesh et al., 2015). Specifically, content for EE explores whether sufficient exposure to entrepreneurship skills and concepts is imparted.

Some students described how EE has helped them change their thinking and mindset as TVET students toward entrepreneurship. A student has clearly explained how one of the contents helped with entrepreneurship knowledge by preparing and presenting a poster. S/He explained,

"We must create one project like our Final Year Project (FYP). In my project, we want to introduce travel bags for travellers. We need to think about the benefits of having travel bags that are different from other travel bags. The subject makes us think about the future: what is the prospect of that travel bag".

Thinking for the future shows the entrepreneur learning process as an entrepreneurial way of acting (Lenita & Taina, 2015). Hunter and Lean (2018) acknowledge EE learning process delves deeper towards entrepreneur skills for self-reliance and success in business. As a result, contextual learning in EE is a method of thinking and acting where students can reflect on their abilities to practice entrepreneurial activities.

Holcomb et al. (2009) identify the entrepreneurial learning process, which emphasizes exploring opportunities, reflection, managing new information and organizing knowledge to support decisions and actions. EE maintains an integral basis for expanding and acquiring new knowledge on entrepreneurship. This is supported by many students who focus on the relevance of EE. S/he said,

"By having entrepreneurship knowledge, who knows, one day, we will become an entrepreneur and have our own company. As my other friend said, we might just hire other professionals to do accounting jobs. However, as the company's owner, we need to know at least the basic information about accounting. Not so in-depth, but you must have the knowledge and awareness".

Previous research has highlighted that EE helps to facilitate economic growth and development (Gorman et al., 1997; Milius & Sarkiene, 2008). Promoting EE among students has helped foster entrepreneurial attributes, behaviors and attitudes, and the entrepreneurial process could bring several economic benefits in return. Several students acknowledged the importance of learning EE together with their technical studies. One student indicated,

"This subject is closely related to business. We can benefit from the subject if we cannot get any technical jobs in the future. At least, it serves as a backup plan for us if we cannot get any engineering job".

This supports the suggestion that EE could bring several economic benefits in return when the technical students are willing to enter the job market with some business-oriented ideas in their minds. Indeed, some students acknowledge the economic benefits in return as they specify the entrepreneurship mindset upon graduation. Thus, the students are open to any job opportunities, including business, not only focusing on technical or engineering jobs.

In one area, students compare EE with another non-TVET subject. The non-TVET subject includes the Essential Management Principle (EMP), as many students feel it helps them to initiate engagement for ENT learning. One student clarified,

"So, it starts with the EMP subject, then technopreneurship and after this innovation. Nevertheless, based on our previous syllabus, we have less exposure to financial management. As for this semester, we learn more detail about financial management in technopreneurship. We link directly to entrepreneurship and becoming more efficient towards it".

The content, in particular, indulges the students with various entrepreneurship skills and traits, i.e., critical thinking, willingness to take risks, and business thinking patterns (Daniele, 2017; Hunter & Lean, 2018). A student admits that,

"TVET students benefit so much in learning entrepreneurship subjects. As technical students, we learn everything about technical things. Having knowledge of entrepreneurship and how to do business aids our curiosity about whether the product that we are going to produce is worth selling. We can be an entrepreneur engineer".

Some students, however, expressed different views about the content. They felt that the content was inadequate to equip them with entrepreneurship skills due to other subjects' commitment,

"There are many unfamiliar entrepreneurship areas which we found difficult to comprehend. We have to accommodate plenty of assignments and projects that ran simultaneously".

Several others pointed out that the entrepreneurship subjects are not appealing to them,

"The content is pretty boring. But it depends on the individual lecturer…their teaching delivery. Few are good…they managed to make the subject more interesting".

"I will have no intention of attending the entrepreneurship class if the attendance is made voluntarily. I feel the focus should be given to the core subjects (i.e. TVET subjects)".

Some students even expressed less enthusiasm for the subject when comparing it with their other technical subjects as having more priority,

"I must attend the class for my technical subjects because we need to do the practical subjects in class. Or else we do now know how to do it. However, for entrepreneurship subject, although I do not come to class, I can just read it from books".

The findings on the content confirm a mixture of views from the students. Some were fascinated by entrepreneurship, whilst others were not. Within the study context, the findings provide evidence that the program content should be redesigned to cultivate passion among TVET students to pursue entrepreneurship. Suitable entrepreneurship content geared toward the non-business (TVET) background can change the perception and enhance the student's interest in entrepreneurship (Othman & Nasrudin, 2016).

Teaching Methods: EE teaching methods generally include lecture tutorials and class discussions. It also refers to the student-centered learning strategy: learning based on experience, visits, training, simulations and projects (Othman & Nasrudin, 2016).

One area that is pertinent to highlight indicates the importance of prior entrepreneurship experiences and relevant education of the entrepreneurship lecturer. In this study, the entrepreneurship lecturer is a Master of Business Administration (MBA) holder and owns a printing business. While the lecturer needs to be exposed to the 'technical minded' of TVET students, her knowledge and experience in the entrepreneur field significantly impact her students.

As the subject is complicated enough for the TVET students, they verify that the lecturer plays an essential role for them to get familiar with the subject. One view responds,

"Our lecturer will guide us one by one on how to do the business plan, the report, presentation slides and many others".

Another student supports the view,

"Although we think this subject is boring for a technical student, however, lecturer plays a role in motivating and encouraging us to learn this subject. Then, it should not be any problem".

It is argued that the effectiveness of learning EE subjects cannot be successfully achieved as most lecturers still use conventional teaching and apply less experience-oriented methods to save time (Othman & Nasrudin, 2016). This argument has implications for some students as some lecturers still maintain the conventional way of teaching and do not use experience-based teaching and learning methods. In a similar view, other student highlights:

"Some lecturers tend to read slides during the lecture. We look forward to young lecturers, particularly those with entrepreneurship experiences".

Some other students also comment that,

"Some lecturers like to talk about the big world problems and concepts. I think they must adapt to the latest trend and economic position to keep up with us".

A competent and knowledgeable lecturer to teach EE is needed by TVET students to 'spark' the interest and motivation to engage more with entrepreneurial learning. This finding goes further with a study by Nasrudin and Othman (2012). The study speculates that problems in EE somehow result from the incompetence of an educator, being less skilled in practicalities; less committed and had less experience in the business. Ismail and Ahmad (2013) found that most of the instructors needed to be better equipped in entrepreneurship, and some of the coordinators of entrepreneurship activities were not trained in entrepreneurship but in engineering or other disciplines, results that somewhat corroborated with the study.

Further investigation revealed a lack of various teaching approaches employed by the entrepreneurship lecturer:

"None of our class activities includes sharing knowledge by real entrepreneurs…but…university sometimes offers talk session where entrepreneurs are invited as speaker".

"We do have company visit before, but it was arranged under a different subject. The focus is on human resource areas, not entrepreneurship".

The above findings signify that most students expect their entrepreneurship lecturers to have prior business experiences. Favorable teaching methods for entrepreneurship, such as experiential learning, case studies and simulation, should be attempted (McLarty et al., 2010). Entrepreneurship lecturers should also limit the use of textbooks and lecture materials, instead inviting real entrepreneurs to be lecture guests to motivate and share real-life experiences with the students so that they can set an example of success and act as role models (Othman et al., 2012).

Infrastructure Facilities: Lenita and Taina (2015) describe infrastructure facilities are essential for the students to acquire a conducive learning atmosphere to learn EE. Having 'conducive' infrastructure, facilities, and resources influences the students' development to attain hands-on entrepreneurship experience.

Most students are being modest when talking about infrastructure facilities. Although EE is mostly theoretical based compared to other TVET subjects, most students perceived the infrastructure facilities provided by the institution as average. One student in particular said,
"I believe the facilities and resources for the subject are sufficed as it is mostly theoretical and less practical than any other subject".

To stress their modesty,

"Although the facilities are not superb, we accept it at par as long we can finish and enjoy the subject".

To further signify the average infrastructure facilities in the institution, one student claims:

"For printing, we prefer to have it done outside. Service is friendlier, cheaper and faster".

Some recommendations, however, have been highlighted. One student suggests that,

"The management needs to create a platform for us to start our business. For example, by providing more stalls to sell our product. With more stalls, the students will have the opportunity to do business and also create networking. It is called business networking".

In another area, some students claim that the current cooperative shop on the campus serves an 'outdated' product with less attractive stock. The customer service also needs to be improved as the students can evaluate the services delivered by the cooperative shop. The suggestions indirectly indicate that the students observe the conduct of operating businesses on campus. It demonstrates a deeper understanding of EE by connecting a business operation with human interaction (Grytnes et al., 2018). Analysis and observation highlights from the findings promote various skills and traits for an entrepreneur.

Students mentioned the critical role of the Technopreneurship Club on campus. They strongly believe the club plays a vital role in cultivating entrepreneurship experience. One student implies,

"Sometimes the club will invite our alumni who became an entrepreneur. If I'm correct, for a printing company. They tell us their story of becoming entrepreneurs, and we got a free coupon!"

The session presents a platform for the students to learn about the entrepreneurial experience from their seniors. Thus, entrepreneur learning based on experience is closely connected to the implementation of EE (Ruskovaara & Pihkala, 2013).

Overall, most students perceived the current infrastructure facilities offered in their institution as average and expected improvement. Infrastructure facilities are significant to facilitate the EE. Research confirmed the association between ideal infrastructure and facilities and students' entrepreneurship development (Kamaruddin, 2010; Othman et al., 2012).

Learning Assessment: It is essential to note that the learning assessment for EE cannot be 'one size fits all' because it needs to be tailored to where the learning environment is operated (Morselli, 2019). Because the private technical university is a leading university in engineering technology, the focus on learning assessment of EE needs to be assessed on initiative and entrepreneurship among students in their educational settings of engineering technology. The entrepreneurship subject enrolled is widely known as technopreneurship. Students competently explained their EE project by reconsidering the usage of future engineering technology. One particular example,

'We need to create a prototype model of a travel bag. While considering how to do that model prototype, we must also consider the prospect of selling that product as a business. We need to consider all aspects of entrepreneurship, our (potential) or target customer, the marketing activities and many others.

By combining the student's core knowledge of technology engineering with EE, students can value learning assessment that promotes a sense of initiative and entrepreneurship (Pittaway, 2019). Thus, it promotes learning EE among engineering students.

The critical competencies in EE also be tested for its learning assessment. Introducing EE to technical and engineering students can imply a shift in knowledge, skills and attitudes essential to developing students' competencies. Looking at the background of her family business, one student competently explained how and what EE has impacted her as an engineering student.

'The assessment from this subject made me learn much about doing business. Especially on pricing, I learned how to put an appropriate price, the pricing strategy, the product's location, how we should deliver the product and many more.

Indeed, the learning assessment represents the learning outcomes for the EE subject: to focus on developing attributes of entrepreneurs seeking viable opportunities into a successful business.

5. Managerial Implications and Recommendations

This study offers relevant inputs for the TVET stakeholders, including regulators, policymakers, industries, communities and TVET institutions, in particular, for EE to be effectively positioned within a TVET program. It is worth noting that RM4.5 billion is spent yearly by the government on TVET (Surendran, 2018). Thus, poor integration of EE into the TVET program could result in a potential loss of investment. This study also enlightens researchers seeking to further examine EE within a TVET institution.

Whilst this study may have provided empirical contributions in several respects, it is subject to certain limitations in terms of the scope and extent of the sample drawn. The coverage of the TVET students included was constrained by practical issues concerning access to the TVET institution and the time available. Certainly, confinement to a single TVET institution restricts the findings reported in this study. Future research could expand the number of TVET students to include TVET students from different technical programs and extend to other higher TVET institutions, such as community and vocational colleges, to offer rigorous grounds of assessment.

Conclusion and Recommendations: This study analyzed the extent of the four instructional elements, i.e. content, teaching methods, infrastructure facilities, and learning assessment of EE in a private technical university in Malaysia. The findings mark a few meaningful points. First, it supports that the four instructional elements as significant in facilitating the development of entrepreneurship skills among TVET students. Secondly, the content should be redesigned and tailored to the readiness of TVET students. Enterpreneurship subjects should be positioned as equally crucial to the TVET subjects. The number of course assessments (including TVET and entrepreneurship courses) should be rethought, focusing on their quality rather than quantity. Too many assessments would lead the students to neglect their entrepreneurship course to a certain degree, whilst the focus will be their TVET courses, consequently hampering the development of EE. Third, more favorable (i.e., action-based) and a variety of teaching approaches should be conducted to entice the TVET students towards entrepreneurship. Teaching delivery that accommodates the preferences of Generation Y (the generation that participated in the study) and the younger generation should be devised. Collaborative efforts with other higher TVET institutions or non-TVET institutions (universities that offer entrepreneurship programs) should be accounted for. Fourthly, the TVET institutions must specify prior entrepreneurship experiences and relevant business qualifications to qualify as an entrepreneurship lecturer. Finally, infrastructure facilities must be ideal for entrepreneurship culture to take effect in the TVET institution. TVET institutions should consider architecting their landscape that simulate an entrepreneurship environment to instill entrepreneurial spirit and attitudes.

In conclusion, this study, at least within its context, renders the need for EE in the TVET program to be rejuvenated. The current threshold of the four instructional elements should be lifted to yield greater potential for EE when offered alongside the TVET program. The efforts, however, demand multi-level engagements and links between the TVET stakeholders collectively to prevail in the greatness that EE could bring into the TVET program.

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