

Embedding Entrepreneurship Education in Vietnamese TVET towards the 4th Industrial Revolution

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Abstract- *This research paper analyzes the practices of entrepreneurship education (EE) in the 4th industrial revolution in Vietnam TVET with the focuses on the existing forms of EE being offered; the awareness of leaders, students, teachers about EE; the difficulties in infusing EE at vocational colleges; and possible supports from different stakeholders. This analysis was based on the empirical data collected from document analysis, students' survey, and interviews with key stakeholders at five vocational colleges in Central Vietnam. The results of this empirical study shed light on the current practices of EE in Vietnam, which is at its beginning stage. Although there is a vocational college setting forth in imparting the official EE in their curriculum, other colleges have brought EE to their extra curricula with the purpose to inspire students and prepare students with skills required in the 4th industrial revolution. Numerous challenges and difficulties have been found such as vague understanding of these concepts, shortage of necessary resources and specific guidance on how to implement EE into TVET institutions and the loose connection between industry partners with TVET institutions. Therefore, a focus on practical innovative teaching methods and assessment for the EE in Vietnam where students are seen as processing Confucian mindsets and policies to encourage industry partners to get involved in supporting educational institutions for the implementation of EE are suggested for future research to prepare for a qualified and skilled labor force that is able to deal with technology changes in the 4th industrial revolution.*

Index Terms- Entrepreneurship education, TVET, Vietnam, 4th industrial revolution, challenges, opportunities

I. Introduction

In response to challenges of the future digital age and the national call for its vocational education system upon preparing for rapid changes, the wave of infusing entrepreneurship in VHE including Technical and Vocational Education and Training (TVET) has recently been increased from the national level to local and institutional levels. Its aim is to prepare Vietnamese students with required skills in the 4th Industrial Revolution. As a matter of fact, Vietnam ranks 90th in technology and innovation, 92nd in the technological platform and 77th in capability for innovation and 70th in human capital in the

Readiness for the Future of Production Report 2018 by World Economic Forum. Vietnam is also one of the least prepared for the coming revolution (Nguyen Ha, 2018). Therefore, the Vietnamese government has timely issued a national decision No.1655/QD-TTg dated on 30th October 2017 regarding the supports for students with innovation and EE, and training of trainers in entrepreneurship. Currently, at most universities and colleges in Vietnam, EE is a hot term that educational institutions are on a race to apply it to their training program because "EE has the mandate to equip the youth with functional knowledge and skill to build up their character, attitude, and vision. It has a vital role in developing eco-system that promotes innovation" (European Union, 2006).

EE has been researched in many countries around the world such as the United States (i.e., Solomon 2007 and Pittaway & Cope 2007), European countries (i.e., Lackeus 2015; European Union, OECD), or India (i.e. Guatam, 2015). However, there is a small body of research, especially empirical one, into entrepreneurship in Vietnam's context. The paucity of empirical research on EE, the nature, the development and evidencing of EE means that Vietnam urgently needs to develop the body of evidence to inform appropriate policies and practices that can maximize the development and effectiveness of EE to vocational education institutions. This will provide the sustainability of EE in Vietnam.

The goal of this research paper is to generate foundational knowledge about EE in Vietnam. It addresses three questions of vital importance for vocational colleges, universities and the nation:

- What are the forms of EE being offered for Vietnamese TVET students in the 4th Industrial Revolution? and how to integrate it into Vocational Training programs?
- How do the stakeholders understand and value EE in the 4th industrial revolution?
- How can vocational institutions and key stakeholders (employers, organizations, employment agencies) support teachers with EE and support students to develop entrepreneurship skills and attributes?

Specifically, it will focus on the following areas:

- Identifying challenges and opportunities of EE in TVET, especially to meet the requirements of the Vietnamese government and its national decision to introduce/offer EE in all vocational colleges by 2020.
- Analyzing primary TVET issues focusing on EE in a selected country – Vietnam, (Human resource, students' mindset for EE readiness; supporting policies from the government to local; finance)
- Examining forms of EE applied in TVET institutions and its practices.
- Investigating into the awareness of stakeholders about EE.
- Exploring opportunities for enhancing EE in TVET
- Providing recommendations for the future of EE in TVET: policymakers, TVET managers, educators (teacher/trainers), and enterprises

This paper begins with an introduction to the research paper.

II. Vietnam – an overview

Vietnam (officially Socialist Republic of Vietnam) is located in South East Asia with the population of 96 million (up to 2018), according to the General Statistics Office of Vietnam. It is the world's 14th-most-populous country. Its capital city is Hanoi, and Ho Chi Minh is the most populous city. 70% of the population is under 30. There are 54 ethnic groups, among which the Kinh is the largest, with about 85% of the population. According to an analysis by the Pew Research Center, in 2010 about 45.3% of the Vietnamese adhere to indigenous religions, 16.4% to Buddhism, 8.2% to Christianity, 0.4% to other faiths, and 29.6% of the population isn't religious.

After 43 years since the country's reunification between the North and the South, Vietnam had been integrated into the world economy by establishing diplomatic relations with 188 nations throughout the world, and joining the World Trade Organization (WTO), the Asia-Pacific Economic Cooperation (APEC), ASEAN Free Trade Area (AFTA), and recently the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTTP). Since 2000, Vietnam's economic growth rate has been the high compared to other countries in the world. Vietnam GDP in 2006 is 205.28 USD billion and expected to be 240.779 billion in 2018.

In 1986, Vietnam launched a political and economic renewal (known as Doi Moi), which facilitates a transition from a centralized economy to a socialist-oriented market economy. The former economic model is composed of only two economic sectors, state and public. The latter – multi-sector good economy is more diverse, ranging from state, public, private, foreign investors, etc. with the main role of the state component.

Vietnam economy is a market-oriented one, depending much on raw material export and foreign-directed investment. Agriculture remains a key economic sector. Vietnam agriculture has gained certain achievements, especially helping turning a

country often suffered from poverty in the past into the first or second rice exporter at present.

Among the economic sectors, the industrial sector has grown the fastest at over 7 percent per year. Services have also expanded at similar rates and given the sector's large contributions to overall GDP it has been the main source of economic growth over the last decade (Arndt et al., 2010). Vietnam set the goal to industrialize and modernize its economy so that it becomes an industrial country by the year 2020. However, up until now, Vietnam's industry has not yet firmly shaped and the country has not had industries at the world level (Vu Tien Loc 2018, cited from <https://trithucvn.net/kinh-te/kinh-te-viet-nam-sau-hon-30-nam-doi-moi-nhung-van-de-ton-tai.html>).

According to Nguyen Thai Hoa (2017), Vietnamese industry "has stayed the same after 30 years of Doi Moi, even relatively taken a backward step after the world" (p. 233). Manufacturing industries remain the fact of low labor productivity and value added as well as weak internal strength which mainly depends on FDI enterprises. The industrial labor productivity's growth rate for the period 2006 - 2015 is about 2.4% per year, lower than the overall average of 3.9%, and much lower than many regional countries. For example, the labor productivity of manufacturing in Malaysia and Thailand is 6.4 times, in the Philippines is 3.6 times higher than in Vietnam (Nguyen Thai Hoa 2017, p. 223). This current situation might influence the development of Vietnam economy, especially in the industry 4.0.

The Deputy Prime Minister of Vietnam, Vu Duc Dam, emphasized the role of the 4.0th industrial revolution to Vietnam economy in Vietnam ICT Investment Forum in 2017. He stated that digitalized economy is an element to facilitate the growth of Vietnam economy (<http://digigov.net/2017/10/21/pho-thu-tuong-vu-duc-dam-kinh-te-so-la-yeu-to-dan-dat-su-tang-truong-cua-nen-kinh-te/>). Vietnamese enterprises seem to have the same view. A survey conducted by VET (2017) through investigating 2,000 SMEs that are members of the Vietnam Association of Small and Medium Enterprises show that 85 % of SMEs expressed their concern related to industry 4.0. Besides, 55 % SMEs say that industry 4.0 will significantly affect Vietnamese economy. 23% of the respondents believed the industry 4.0 will impact moderately, and "no major influence" response accounts for 11 % of the respondents. However, another survey conducted at the CEO Forum held by VET (2017) revealed that 67 % of participants and current enterprises believe that Vietnam cannot catch up with this industrial revolution and only 33 % respondents show an optimistic about the prospects of keeping pace with it (Mai Mai 2017).

Entrepreneurship is also drawing a lot of attention in Vietnam recently. According to a report by Amway Vietnam which surveyed 1,037 Vietnamese males and females aged over 18 years in Hanoi, the central coast city of Danang, Ho Chi Minh City, and the Mekong Delta city of Can Tho from May 4 to May 30, 2016, Vietnamese people are more positive about entrepreneurship than those in other Asian and global countries (<http://english.thesaigontimes.vn/56353/Vietnamese-citizens-positive-about-entrepreneurship.html>). The 2015/16 Report by

Global Entrepreneurship Monitor produces positive results. Vietnam ranked 9th out of 60 economies for the perceptions about entrepreneurial opportunities in 2015. The proportion of people intending to start a business in Vietnam in 2015 is 22.3%. The Total Early-stage Entrepreneurial Activity rate is 13.7%.

The Vietnamese government has issued policies to support and develop the entrepreneurship in Vietnam. In May 2016, the government released the project "Supporting the national entrepreneurship and innovation ecosystem up to 2025" with the funding of 3000 billion VND. This project helps to finalize the legal system supporting entrepreneurship and innovation, to build up a website on the information about the nation's entrepreneurship and innovation, and to support start-ups and entrepreneurs. On October 30th, 2017, the government issued the Decision No. 1665/QĐ-TTg regarding the introduction of the project "Supporting students' entrepreneurship up to the year 2025". Following this Decision, Vietnam Ministry of Education issued Decision No. 1230/QĐ-BGDĐT on 30/3/2018 regarding the implementation of the government Project Decision No. 1665/QĐ-TTg. This Decision requires all the higher education institutions to offer entrepreneurship and innovation training in their programs which will be analysed in the next sections.

Vietnamese education

Current issues and challenges

The Education Law, the Vocational Training Law and the new Vocational Education Law passed in 2005, 2006 and 2014 respectively by the National Assembly of Vietnam recognizes vocational education as a part of the national higher education system. In this paper, the discussions of current issues and challenges of VHE refer to those of the TVET as well.

VHE has faced a number of issues and challenges in governance, teaching, the linkage with employment market, and employability (e.g., Tran Thi Tuyet 2015; Nguyen Huu Cuong et al. 2017, Hayden and Lam Quang Thiep 2010)

An issue that VHE is facing is the governance and administration of the education system. By law, the education system is centralized under MOET (Vietnamese National Assembly, 2005). Of higher education institutions, one-third is directly under MOET and two-thirds come under the aegis of other ministries and provincial governments (Nguyen et al. 2009, Nguyen Huu Cuong et al. 2017). Since the 2000s, the Vietnamese Government has promulgated a number of policies in an attempt to decentralize higher education, and increase autonomy for institutions in the educational system (Hayden and Lam Quang Thiep 2010). However, there still seems to be a big gap between policy and practice (Tran Huu Cuong, 2017). The most important decisions of higher education institutions such as course approval, number of staff, number of students admitted and even the nature of the entrance examination are still under the control of MOET (Tran Thi Ly et al., 2014). Higher education institutions do not even possess autonomy in designating their own rector (Hayden and Lam 2010; SEAMEO 2011, in Tran Thi Tuyet, 2015).

Teaching and learning in Vietnam have been described as employing a traditional transmission pedagogy in which teachers transmit knowledge and students passively receive and memorize it (Tran Thi Ly et al. 2014; Ministry of Education and Training 2009). Vietnamese education is largely curriculum-and-textbook oriented. According to Tran Thi Ly et al. (2014), knowledge imparted by the teacher and drawn solely from textbooks has been commonly viewed as incontestable. Students are conditioned to passively accept knowledge rather than being provided with opportunities to creatively and critically engage with knowledge. Furthermore, the sole dependence on textbooks has made the training curricula theoretical, lacking the link to the labor market.

Limited connection to and communication with the employment market is, therefore, another pressing issue that VHE has to deal with. Tran Thi Tuyet (2015) observes that the gap between higher education and industry appeared loose and has expanded quickly. There are more and more graduates who are unable to find jobs whereas employers still report their difficulties in finding skilled workers with required knowledge and skills. The training contents offered at higher education institutions are seen to be academic (Nguyen et al. 2009, cited in Nguyen Huu Cuong et al. 2017), lacking practical skills required in the workplace. Universities equip students with lots of professional knowledge, but graduates lack the soft skills and practice the community desires (Nguyen Huu Cuong et al., 2017). This contributes to the ill preparation of university graduates for the workplace, and increases the dissatisfaction among employers when employing recent graduates (Tran Thi Tuyet 2015). Also, the lack of training quality resulted from the hurried development of the higher education institutions (Nguyen Minh Hong, 2007) leads to a general shortage of students with professional skills suited to Vietnam's needs.

Graduate employability is another issue that challenges VHE. The unemployment rate of university graduates in Vietnam has doubled in only four years, between 2010 and 2014 (Vietnamnet, 2015). Notably, MOLISA (March 2016) reports that in the first quarter of 2016, there have been 417,000 high skilled unemployed, those with university degrees, college diplomas and/or vocational training certificates. In addition, in a dynamic and fast changing economy like Vietnam, new professions or transformed professions are always emerging (Tran Thi Ly et al., 2014). To respond to the changing employment structure and diversified demands of the Vietnamese labor market, many graduates have moved from the public sector to non-public sector jobs, and many graduates work in the areas different from the major discipline they learned in their studies. In total 50 per cent of Vietnamese graduates do not work or have been unable to secure employment in their area of specialization (Huong Giang 2012, cited in Tran Thi Ly et al. 2014). Graduates are required to be flexible and adaptable, engaged in continuous learning and always building capacity so as to be able to move between sectors and embark on new employment challenges.

The Vietnamese Ministry of Education and Training (MOET) has recognized the need to address these issues and challenges if the country is to accomplish its industrialization and

modernization by 2020 (Ministry of Education and Training 2009). Since EE was introduced in 2016 in Vietnam with the hope to increase the tie between higher education and entrepreneurs, and to provide students with opportunities to practice soft skills, some higher institutions added EE in their training curricula. The inclusion of this component in VHE institutions is quite new, compared to the countries in the world such as the United States or European countries. The practices of entrepreneurship in Vietnam higher education, is therefore facing numerous challenges.

Recent reforms in general

Subsequent to education being identified as a national priority, numerous significant documents were issued by the Central Steering Committee - the highest organization of the Vietnamese Communist Party - calling for a fundamental and comprehensive reform of Vietnamese education (Central Committee of the Communist Party of Vietnam 2013). The recent reform measures or policy changes mentioned in this paper are the Vietnam's Higher Education Reform Agenda (HERA), higher education governance and administration, the teaching and learning foreign languages, and EE.

In 2005, Vietnamese government approved the Vietnam's Higher Education Reform Agenda (HERA) for the comprehensive reform of the higher education system by 2020. According to Harman, Hayden and Pham Thanh Nghi (2010, p. 3), the main elements of the agenda are as follows:

“Sizable students attend selective research-oriented institutions, while the rest attend institutions providing professionally oriented training programs (at present, this distinction exists only in a de facto way);

Expansion of enrolments in higher education, the effect of which will be to increase the gross enrolment rate by 2020 to about 45 per cent (three times its present level);

The development of an enrolment profile by 2020 whereby 20 per cent of a significant increase in the number of qualified higher education staff, sufficient to ensure a staff/student ratio of 1:20 by 2020 (the ratio is currently about 1:30), with at least 35 per cent of academic staff having a doctoral qualification (up from 15 per cent at present);

The private sector to be greatly expanded, with enrolments at “non-public” universities and colleges to account for 40 per cent of all higher education enrolments by 2020 (up from about 13 per cent at present);

The development of an advanced research and development culture, with research and development activities to account for 25 per cent of the higher education system's revenue by 2020 (currently it accounts for less than 2 per cent);

The comprehensive reform of governance and management arrangements, with line-ministry control of public higher education institutions to be replaced by a system of governance within which these institutions have legal autonomy and greater rights in relation to their training programs, research

agendas, human resource management practices and budget plans;

The development of a more internationally integrated higher education system, involving more international commitments and agreements, improvements in the teaching and learning of foreign languages (especially English), and the development of conditions favorable to increased foreign investment in the higher education system” (Harman, Hayden and Pham Thanh Nghi, 2010, p. 3).

In terms of higher education governance and administration, the right of having autonomy for higher education institutions is mentioned in the Vietnam Education Laws issued in 2005 and 2012. The institutions are allowed to exercise autonomy in the areas such as administration and personnel, finance and assets, training, science and technology, international cooperation, and higher education quality assurance. Since the issuance of the Decree No. 77/NQ-CP on October 24th, 2014 by the government regarding piloting institutional autonomy for public higher education institutions during the 2014 – 2017 period, there have been 23 universities declared their autonomy (<https://baomoi.com/tu-chu-toan-dien-de-cac-truong-dai-hoc-phat-trien-dot-pha/c/24733377.epi>). Heightening institutional autonomy helps maximize the institutions' internal strength, proactivity, flexibility, creativity, and ability to meet the demand of training the work force for the country's socio-economic development.

EE has been highlighted as an important task force for Vietnamese higher education (VHE). MOET expresses its determination to culture entrepreneurial and innovative spirit for Vietnamese students by issuing Decision No. 1230/QĐ-BGDĐT on 30/3/2018 regarding the implementation of the government Project Decision No. 1665/QĐ-TTg. The policy seems ambitious, expecting 100% universities, colleges, institutions and vocational schools having plans to implement EE by 2020. At the same pace, 90% of students at all levels will be educated, raised their awareness and equipped with knowledge and skills on entrepreneurship by 2020. With entrepreneurship and innovation training, the institutions are expected to equip their students with functional knowledge and skill to build up their character, attitude and vision.

III. Spotlight on TVET practices with particular reference to entrepreneurship in Vietnam

As mentioned previously, in response to the “hot term” - the Fourth Industry Revolution - including the pace of technological changes in recent years, TVET which is considered as a vital part of higher education in Vietnam has been highlighted since it is playing a crucial role in preparing Vietnam labor force with required skills. As Schwab (2016) identifies that the 4th industry revolution seems to create fewer jobs when “technology and digitalization revolutionize everything” (p.9). That may bring more dilemmas about unemployment, create new jobs and increase demands for EE in Vietnam. In this section, key existing, emerging trends and the availability of EE are presented through a pilot research at 5 vocational colleges in Central Vietnam. The results and discussion will be based on the document analysis, interviews of 5 leaders and 10 lecturers of 5

vocational colleges, 100 questionnaires of students at a pioneer college that has been providing the EE during the last 2 years. 10 students at this college were selected as a focus group for in-depth interviews.

Key Existing

During the last two decades, TVET, known as a part of VHE system has been attracting the government attention. That is evidenced by the issue of the Vocational Training Development Strategy of Vietnam by 2020, approved by the Prime Minister on the 25th of May 2012. This strategy focuses on the improvement of the quality of vocational training regarding as a critical element in the socio-development of human resources (Ho Thi Hanh Tien, 2014). As a matter of fact, the labor forces in Vietnam is considered as unqualified enough, lack of skills and ill-prepared to join the world of work (Le Thi Thuy Lieu & Huynh Xuan Nhut, 2009; Tran Thi Tuyet, 2014, 2015). TVET in Vietnam has encountered many difficulties in providing a skilled labor force to meet the industry demands and changes in the 4th industry revolution. Despite the reform policy in regard of curriculum development, teaching and learning, management system, and cooperation with industry partners and international partners, there are some key existing as follows:

Policies in practice

The release of emerging policies in EE has attracted a lot of interest from many stakeholders, parent and students. Specifically, the Prime Minister issued a decision No 1665/QĐ-TTg on the 30th of October 2017 to approve for the national project namely "Supporting students with entrepreneurship by 2025" with an ambitious goal of 100% universities, colleges, institutions and vocational schools having plans to implement EE by 2020. At the same pace, 90% of students at all levels will be educated, raised their awareness and equipped with knowledge and skills on entrepreneurship by 2020. At a line ministry, Ministry of Labor, Invalids and Social Affairs (MOLISA) that takes charge of TVET management, proposed a strategic plan to advocate students at vocational colleges and schools with EE on the 1st of February 2018. Among important tasks, supporting EE through teacher training programs, providing entrepreneurship training for students and publishing materials and resources on entrepreneurship skills and knowledge is considered as one of the breakthrough in TVET because vocational training is mainly providing human resources with required skills and knowledge in the 4th industry revolution. However, at lower level, many vocational colleges and schools are naïve with EE revealed in the interviews of 5 colleges' leaders. Even in some colleges such as the main research site of this paper which is known as a pioneer in providing EE as a core subject during the last two years, there is still no available institutional policies to officially mention their support for students with EE or prepare for teachers and students with EE. As a matter of fact, from the document analysis, there is no specific guidance for vocational colleges and schools on how to infuse EE in their existing curriculum or extra activities due to the MOLISA is on the way to accomplish the supporting policies and guidance.

Another policy issue as a key trend is the encouragement of linking industry partners with universities,

colleges and schools to promote entrepreneurship and prepare required skills for students. However, many universities and colleges are struggling with connecting to and looking for their industry partners. In contrast, enterprises seem to not be interested in or to be very busy to work with educational institutions (My Quyen, 2014). This loose connection may cause some difficulties for preparing teachers and students with entrepreneurship skills and knowledge that are related to the industry.

Mindsets

As mentioned in the overview of Vietnamese education with its historical development, the Confucian is one of the influences on teaching, learning and forming mindsets of Vietnamese people. The students' passive mindsets known as waiting for teachers to pour the knowledge are a thrown stone in providing EE. As Kuratko and Hodgetts (2004, p. 30) define "Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks in terms of time, equity, or career; the ability to formulate an effective venture team; the creative skill to marshal needed resources; and fundamental skill of building solid business plan; and finally, the vision to recognize opportunity where others see chaos, contradiction, and confusion." Ideally, EE can be done well if the students are active and have an open-mindset. However, as Tran Thi Tuyet (2013) explains, Asian students in general, and Vietnamese students in particular do not have any expression of their interest and any reflection of their actual behavior. They are known as passive and obedient listeners although many Vietnamese students nowadays think they are changing to be more active, confident and dynamic than their previous generations. As a matter of fact, they heavily depend on their parents such as choosing their future careers or their study (Ho Thi Hanh Tien, 2014; Tran Thi Tuyet, 2012). Such choices, which are not based on their strengths and industry needs, contribute to the high rate of unemployment of universities graduates in Vietnam and increase the reality of TVET attracting more Master and Bachelor graduates to enroll for TVET programs (Anh Khoa, 2011). The issue of mindsets is not only applied for students, local institutional leaders and teachers are not willing to welcome the wave of EE. This will be further discussed in the section on EE availability.

Lacking professional lecturers on EE

In response to the national requirements for an entrepreneurship program at vocational colleges and schools in Vietnam, there is a big challenge in putting them in practice. An expert in entrepreneurship training, Dr. Nguyen Ngoc Dung insists that in order to support for the development of entrepreneurship wave, it is very essential to have a certain number of trained lecturers for entrepreneurship (Ha The An, 2017a). Indeed, there is a lack of lecturers trained on entrepreneurship (Ha The An, 2017b). Therefore, the Ministry of Education and Training encourages universities and colleges to use concurrently held lecturers to deliver the entrepreneurship

courses. Another dilemma is that most of trained lecturers are deficient in entrepreneurial experience.

Budgets for EE

As mentioned previously, the Vietnamese government decides to spend 3.000 billion Vietnam dong to support for the national project on building an innovation and entrepreneurship ecosystem. However, the allocation of this budget is not spread throughout the country. It mainly focuses on the main cities and key universities. Therefore, it is hard for colleges to get funds and approvals from the national project though the call is open for all.

Emerging and changing trends in EE

In response to the national project namely “Supporting students with entrepreneurship by 2025” by the Vietnamese government, as analyzed in previous section, most universities and colleges in Vietnam are developing an entrepreneurship curriculum, and expanding their entrepreneurship training programs. The race to apply entrepreneurship training programs to universities and college is of high and important in preparation for qualified labor forces with skills required in the 4th industrial revolution. As D. F. Kuratko and Hodgetts (2004, p. 30) define:

“Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks in terms of time, equity, or career; the ability to formulate an effective venture team; the creative skill to marshal needed resources; and fundamental skill of building solid business plan; and finally, the vision to recognize opportunity where others see chaos, contradiction, and confusion.”

Thus, in the integration and globalization process and in response to the emerging demands of the new industry – the 4th industry, Vietnam needs to prepare their labor forces with needed skills including adaptability and innovation skills and take steps by steps to change students – future labor force – from passive to active learners through the entrepreneurship training programs.

Another emerging trend in EE is the interest, engagement and participation of international experts and donors to support VN with EE. One of the prominent donors is the Finland Government’s support via the Vietnam – Finland Innovation Partnership Program (IPP) managed by Vietnam Ministry of Science and Technology since 2015. This program has worked with both Finnish and Vietnamese experts to firstly develop a core curriculum on Innovation and Entrepreneurship that is known as a flexible and applicable curriculum for different purposes. Then, it provides three intensive training programs for entrepreneurship coaches, Training of Trainers for key lecturers from 13 universities and colleges and accelerators in innovation and entrepreneurship in Vietnam (www.ipp.vn). Other donors from Belgium, UK, US, France and so on have been engaged in the support for building an entrepreneurship ecosystem including EE in Vietnam apart from the investment and assistance of many foreign experts rooted in Vietnam.

One of the most important trend is to set linkages with industry. In fact, the Law on Vocational Training in 2006 indicates the rights and obligations of enterprises in vocational training, specifically the responsibilities of enterprises to provide training and develop employability skills. However, during the last ten years, both vocational institutions and enterprises have not successfully carried out their tasks. Within the increase of the unemployment and ill-prepared graduates, currently, from the top management level to local and institutional levels, the movement of cooperating with industry is highly paid much attention and taking into action. Vietnamese leaders have realized the importance of industry cooperation in preparing skilled labor forces meeting the emerging technological changes (Bộ Lao Động-Thương Binh và Xã Hội, 2018; My Quyen, 2014). Therefore, some colleges and universities have confidently applied the training models with the direct participation of industry partners. Additionally, the models known as institutions in enterprises and enterprises in institutions have been partly put in application.

The appeal for using innovative teaching methods at colleges and universities spreading throughout the country is another trend. It is undeniable that most colleges are under the immense pressure to provide skilled labor force for the society in the 4th industrial revolution. To overcome this issue, the traditional teaching methods must be replaced by innovative teaching methods that encourage a high-level thinking skills, inspire students’ creativity and curiosity through activities in team-working, project-based learning. Particularly, in EE, such innovative teaching methods are of important since entrepreneurship relates to the new and continual innovation and creativity. Therefore, entrepreneurship lecturers must have at least the same innovative drive as their students (D.F. Kuratko, 2003).

Availability of EE

Since the release of many national, provincial and local policies encouraging the integration of entrepreneurship training programs into vocational colleges and universities in Vietnam, there are a small number of vocational colleges applying entrepreneurship programs for their students.

Available forms of EE at some vocational colleges to prepare for students in the 4th Industrial Revolution in Vietnam

A description of a vocational college as a pioneer in teaching entrepreneurship as a main course

College 1 is the only college among 12 Vietnamese educational institutions (11 universities and 1 college with 36 key instructors across Vietnam) receiving the support from Vietnam-Finland Innovation Partnership Program (IPP) to participate in the Training of Trainers 2 (TOT2) program since 2016. During this time, a core curriculum was introduced for 12 selected educational institutions. After the intensive IPP TOT2, 3 key instructors from College 1 organized a seminar to introduce the training results and the IPP2 core curriculum to the leader board and to seek their approval for embedding entrepreneurship at College 1. With the support from the leaders, College 1 key instructors worked with their assistants to adapt the IPP2 core curriculum and made its own one namely “Innovation and

Entrepreneurship Course” (see Figure 1) since 2016 with the purpose to help students change their mindsets, encourage their creativity and provide basic knowledge and skills on entrepreneurship. College 1 Innovation and Entrepreneurship curriculum was undergoing a pilot teaching, then, getting consultation from IPP2 experts every month before having its final curriculum (see Figure 2).

MODULE	CONTENT	PERIOD (hour)	Teaching methods
Module 1: Entrepreneurship	Introduce about entrepreneurship	1.0	Group activity
	Sharing on entrepreneurship from successful entrepreneurs and alumni	4.0	Talk shows and Q&A
Module 2: Creating Value	Principles of Effectuation and practices	1.5	Lecture & Interactive activity
	Retrospective and efficacy evaluation	0.5	Retrospective
Module 3: Innovation	Paper tower	2	Interactive activity
	Types of innovation	1.5	Lecture
	Job to be done	1.5	Lecture
	Retrospective and efficacy evaluation	0.5	Retrospective
Module 4: Business Models	Introduction to Business Models	5	Lecture & Interactive activity

	Business models of non-profit organizations	1	Lecture
	Retrospective and efficacy evaluation	0.5	Retrospective
Module 5: Go to market	Marshmallow challenge	2	Interactive activity
	Create a wallet	2	Interactive activity
	Introduction to Lean Startup and Business Experimenting	2	Lecture
	Retrospective and efficacy evaluation	0.5	Retrospective
Module 6: Communication	Effective communication	3	Case study & Interactive activity
	Pitching: introduction & key	3	Interactive activity
	Retrospective and efficacy evaluation	0.5	Retrospective
Total		30	

Figure 1: College 1 Curriculum Framework - 1 Credit

Nội dung Content	Hình thức tổ chức dạy học Class organisation				Ghi chú
	Lý thuyết (tiết) Theory (Hour)	Thực hành, thảo luận (Practice and discussion) (tiết)(hour)	Bài tập lớn, đồ án, tiểu luận (Big Project assignment (Hour).	Tự học, tự nghiên cứu (Soft study (hour)	
Bài 1: Kỹ năng giao tiếp hiệu quả Effective communication skills		10		20	
Bài 2: Kỹ năng ứng dụng công nghệ thông tin IP application skills		5		10	
Bài 3: Kỹ năng thuyết trình Presentation skills		5		10	
Bài 4: Kỹ năng làm việc nhóm Team work skills		5		10	
Bài 5: Kỹ năng tìm kiếm việc làm Job search		5		10	
Bài 6: Kỹ năng khởi nghiệp Entrepreneurship skills		30		60	
Tổng/Total:		60		120	

Figure 2: An extract from a 2-credit-innovation and entrepreneurship curriculum at College 1

At the first stage, this Innovation and Entrepreneurship Course was provided to the official training program with 1 credit practical course (30 periods). After the first semester, basing on students and instructors’ feedbacks, we made it into 2-credit-course integrated soft skills such as communication skills, teamwork skills, presentation skills, job-searching skills and technology application skills. It was named as “Soft Skills and Entrepreneurship” course with 60 periods. This course has been

introduced to all students from the first year to the final year during the last two years.

Apart from the official course applied here, College 1 has constantly developed their human resources - entrepreneurship instructors by sending them to participate training of trainer program organized in main cities in Vietnam. College 1 has organized 3 Training of Trainers (TOT) programs on Innovation, Entrepreneurship and soft skills with the supports from international and national experts and industry partners in this field to prepare for its entrepreneurship instructors to be ready for teaching this course. Instructors from other colleges in Central Vietnam have been welcomed to College 1-TOT programs on Soft Skills and Entrepreneurship.

College 1 has been selected as a lead education institution to promote innovation and entrepreneurship to Central Vietnam. Therefore, College 1 has organized more than 50 workshops, seminars and startup events during the last 2 years with the purpose to elevate the awareness of local instructors, students and youths on innovation and entrepreneurship.

Forms of EE

From the above presentation, the official training program on innovation and entrepreneurship is considered as one form of EE in Vietnam. However, this form has not widely implemented because there are not clear guidance how to start with EE at colleges and universities in Vietnam. Some colleges selected entrepreneurship as a 30-period-course for intermediate vocational students and a 45-period-course for vocational college students (I.CL3.LD). As a matter of fact, although vocational colleges have not been integrated into their official training programs, they did organize related activities (i.e., seminars and workshops on entrepreneurship) as an extra curriculum for students to participate in at weekends (I.LD2.LD31). Leaders of these colleges have recognized the importance and necessity of EE in response to the 4th industrial revolution; so, they have directed related offices and faculties to revise their training programs to make it suitable for the integration of EE (I.LD2). In addition, participating in Innovation and Entrepreneurship Challenges organized for students is regarded as educational activities on entrepreneurship that some colleges have already done during the last years (DA.CL1, CL2, CL32).

Awareness of students and instructors on EE

The data analysis from questionnaires for students and interviews of students and instructors reveals different perspectives on EE. 36% of students think that entrepreneurship is to start with a passionate job while 32% of them believe thinking of a new business idea and starting with that is entrepreneurship. 18% of respondents consider entrepreneurship as starting a career (see Figure 3 for more details).

¹ I.LD2, LD3: I: Interview; LD: leader; 1,2,3: number of colleges participated in this research

² DA: Document analysis; CL: College

TRƯỜNG ĐẠI HỌC CÔNG NGHỆ VÀ THIẾT KẾ

Câu 1: Theo bạn, "khởi nghiệp" là:

Trả lời	Số phiếu
1. Bạn hay nhóm bạn nghĩ ra ý tưởng kinh doanh rồi tự bắt tay vào thực hiện ý tưởng đó	32
2. Đi làm và kiếm ra tiền	4
3. Xây dựng sự nghiệp cho mình	18
4. Tìm việc làm	4
5. Là bắt đầu mọi ý tưởng	10
6. Bắt đầu công việc mà mình đam mê/Theo đuổi đam mê	36
7. Ý kiến khác	6

Câu 2: Bạn có đã hoặc đang tham gia vào vận hành một công việc kinh doanh?

Figure 3: Students' awareness of Entrepreneurship Education

Translation from Figure 3:

Question 1: According to you, what is entrepreneurship?

You or your group think of a business idea and start with that idea

Work and earn money

Build up one's career

Find a job

Start with any idea

Start with the job you passionate/Start with your personated work

Other ideas

Regarding skills needed for successful entrepreneurship, taking risks is the most important skills students must be well prepared. Similarly, developing a business plan is relatively crucial. The most obstacle for students to prepare for them with entrepreneurship skills in the 4th industrial revolution is foreign language skills. Enterprises also confirm the importance of such skills.

Most of the research participants find the EE is of importance in the 4th industrial revolution. From students' perspectives, EE brings students with more capacities and confidences to orient their future and contribute to the society's development (I.CL1.S3). Although some students do not understand clearly what the 4th industrial revolution is, they think students can achieve disciplines, high cognitive skills through EE in the 4th industry. Otherwise, they will be discharged from the society (I.CL1.S1& S4). Particularly, the shift from high schools to colleges with different learning styles and courses such as "innovation and entrepreneurship" course with learning activities in groups including discussion, critical thinking, design, and presentation may make students feel difficult but be inspired (I.S2). Importantly, this student realizes that:

"Many countries over the world have well prepared their labor forces for the 4th industrial revolution and Vietnam is being in a further distance from other countries. Therefore, Vietnam with a huge potential human resource needs to furnish their labor forces with new technology and skills through EE with the purpose to help students develop innovation ideas" (I.CL1.S2).

In other words, creativity, innovation, autonomy and ability to control risks should be stimulated by vocational colleges through the EE in the 4th industrial revolution.

The instructors participating in the interviews are aware of the essence of EE in the 4th industrial revolution. They affirm that teaching entrepreneurship will assist students to think and make things differently, think of their future because students nowadays seem to have no clear career orientation. Therefore, within this course, students will be well prepared for integration with their dynamic, professional and innovation working styles (I.T3.T4.T6). In other words, "within the business minds students are trained through the EE, they will have a clear career orientation for their future and prepare well with required skills in the 4th industrial revolution" (I.T3). As the teachers explain, when students achieve such skills and working styles, Vietnam will have quality labor forces that contribute a lot to the nation's socio-economic development. Similarly, one of the leaders states that the EE is a requisite for not only universities but vocational colleges as well. Students will be acquired skills and knowledge about entrepreneurship, innovation, and adaptability skills and self-study skills that are very important in response to the technology changes (I.LD.CL1). As a matter of fact, the EE is just a small part of the wheel of educational changes. The most important is that Vietnamese education needs to be innovative and adaptive to the new requirements.

In short, most students, instructors, and leaders are aware of the necessity of the EE in the 4th industrial revolution.

Difficulties in infusing EE at vocational colleges

Despite the recognition of the vital roles of EE at vocational colleges, it is still a new term for many instructors when putting this course in an official training program at all vocational colleges in Vietnam. Some students and instructors response that they do not understand clearly how the EE is and how it will be integrated into the training program in the coming years. As it is a new and vague course, instructors feel hard to teach it well (I.LD3). Meanwhile, the number of instructors who can deliver well this course is very limited (I.T1, T2,T3, T4). Some of the technically based instructors must participate in several intensive pieces of training of trainer courses on entrepreneurship and innovation teaching to fill in this big gap (I.T1.T2). Specifically, a teacher shared: "My major is in technical field, thus, my biggest difficulty in entrepreneurship teaching is that I haven't had deep knowledge about enterprises as well as experience in doing business or startups" (I.T1).

Other vocational colleges are eager to bring the EE to their program; however, they are encountering the reducing number of students enrolled in their college that makes their effort fade (I.LD.CL3). Students look at EE with indifference, as far as world developments are concerned (I.LD2). This is seen as one of the obstacles to introducing EE into their training programs. Particularly, there is not a small number of instructors who reject the integration of EE in the official training program as they think students come to vocational college to learn for a career; so, vocational colleges should try their best to prepare for students with their selected careers. It is not necessary to waste

students' time on this (I.LD.3). This is considered as an obstacle of this college with such different mindset people as soon as the requirement from the government for delivering the EE at all vocational college by 2020.

The effective implementation of this course is a headache issue. Each vocational college has carried out in its own way. The difficulties in selecting entrepreneurial teaching contents, assessing students, having exams or no exams, and teaching resources are common at most vocational colleges now (I.LD.CL2, CL3.CL4, and I.LGR)

Supports for instructors and students with EE from different stakeholders

In light of the above findings, supports for instructors and students in EE are vital from the top level of management to the lower one.

- From central and local government:

As suggested by a representative taking charge of entrepreneurship activities in the local government, it is very crucial to have proper policies with clear guidance for universities and colleges (I.LGR). In essence, policies must be holistic and methodical from the general education to college level to promote the entrepreneurship (I.LGR). Although the local government has organized many activities for students and youth to inspire their innovation and entrepreneurship, more activities for each target such as women, students, or startups should be held to create an entrepreneurship environment or ecosystem for students' innovative ideas to be developed.

Budget assistance for entrepreneurship implementation at vocational colleges should be allocated from the central government, local government to vocational colleges in order to make entrepreneurship activities be feasible and applicable. Ideally, supports from the central and local government for developing a local ecosystem or an innovation hub where students' innovative ideas have a space to be and to be developed. A network in such entrepreneurship ecosystem will be very useful for students, instructors, and vocational colleges.

- **TVET institutions**

As suggested above, the existence of an entrepreneurship ecosystem at vocational colleges is of essential for instructors and students if the EE is applied as an official curriculum or extra curriculum. Students need some spaces where their innovative ideas can go further and more practical.

In order to deliver the EE to TVET institutions, human resources should be the first priority in according to the curriculum development. Therefore, vocational colleges need to take key steps in preparing their teaching staff for the EE. The findings show that 5 research sites have already sent their instructors to participate in some training of trainer program to learn and upgrade knowledge and skills in entrepreneurship. Some colleges have very limited trained instructors from 1 to 2 instructors (CL3 & CL5) while the others have well prepared their staff enough for the delivery of EE. Therefore, it would be good if vocational colleges create a network of entrepreneurial instructors to share their experience and good practices. Apart

from the network, vocational colleges should organize seminars, talk shows and workshops about entrepreneurship with the participation of different stakeholders (i.e., entrepreneurs, investors, local government representatives, international and domestic experts) to constantly upgrade skills and knowledge and share experience with instructors.

- **Industry partners**

The issues relating to the graduate unemployment or ill-preparation or retraining at the industry might be minimized when the linkage between educational institutions and industry partners is connected to adapt to the requirement of the new industry. By setting such linkage, industry partners might invest in the learning and teaching activities as well as entrepreneurship activities. Students achieve practical knowledge and skills while being at a real workplace for their learning. Similarly, industry partners may give advice in curriculum design, teaching, updating technology and supporting students' entrepreneurial ideas to be applicable in the market. With the experience in the market, the advice and consultation of industry partners will be useful for students and teachers in EE. This is also a current trend of vocational colleges if they would like to provide the society with skilled labor forces.

IV. Concluding remarks and future research

The paper briefly analyzes the practices of EE in Vietnam TVET with the focuses on the existing forms, the awareness of leaders, students, teachers about EE, the difficulties in infusing this course at vocational colleges; and possible supports from different stakeholders. This analysis was based on the empirical data collected at five vocational colleges in Central Vietnam. The results of this empirical study shed light on the current practices of EE in Vietnam, which is at its beginning stage.

As shown in the previous section, the Vietnamese TVET institutions have taken some steps in responses to the government's policies regarding inspiring entrepreneurial spirits to all students. Depending on each institution's conditions, different actions have been taken ranging from offering the entrepreneurship course for this training curricula (e.g., College 1) to establishing a Center for Innovation and Entrepreneurship which organize activities to faster entrepreneurship. These actions are encouraging as entrepreneurship and EE are new concepts for teachers and students. The participants' interviews and questionnaires show their vague understanding of these concepts. The institutions' leaders themselves expressed their concerns about the lack of guidance on the implementation of EE from the related ministries and government. What the institutions have done so far illustrate the determination of their leaders and teachers to culture the entrepreneurial spirits to their students.

The empirical study also shows that the practices of EE in Vietnam have faced numerous challenges although it has been strongly supported by the government. The shortage of necessary resources for EE such as teachers' specialization in this field, specific guidance on how to implement EE budget to maintain this course in the institution's curricula, the loose linkage between TVET institution and entrepreneurs is a real concern for the successful implementation of the government's ambitious

policies. The recent involvement of foreign organizations such as IPP has offered great helps for the participating institutions in designing their activities, training faculty members or organizing supporting activities. However, that help seems not sufficient. Instead, there should be consistent and long-lasting efforts from every level (institutions, local governments, and central government).

The implementation of EE has proved its benefits in their changing and learning practices in Vietnamese TVET institutions, at least in the teachers and students' awareness. The research participants in this study emphasized the cause-effect relationship between EE and the integration of soft skills in their teaching and learning. Given that soft skills are what Vietnamese students lack the most, the introduction of entrepreneurship such as innovative thinking, creation values, critical thinking and problem solving skills is a real help for a better higher education. Moreover, EE adds more weights to the practicability proportion to higher education curricula, which have been criticized as being too theoretical. Efforts from foreign donors have been taken to bring EE with a more practical curriculum and innovative teaching methods through TOT programs to Vietnamese educational institutions. However, teaching methods and materials should be adapted and modified to fit with the Vietnamese context and students. It should avoid the mass borrowing from foreign countries' available sources without any concerns of appropriateness due to the current lack of teaching materials. Within the aim to inspire students' mindsets and entrepreneurship, teaching methods need to be flexible, attractive, motivated and be encouraging students' involvement in activities to help them develop their autonomy, innovation, creativity and other skills such as teamwork, communication, presentation, problem solving and entrepreneurial skills.

Further research on using entrepreneur instructors or non-entrepreneur instructors to teach this course in Vietnam's context. Students' evaluation of the effectiveness of the entrepreneurship course should be further explored in regard to teaching contents, assessment, and teaching methods. Future research should focus on practical innovative teaching methods and assessment for the EE in Vietnam where students are seen as processing Confucian mindsets. Although there is some international research on teaching methods for EE, it is impossible to bring all to Vietnam's context, especially in vocational colleges. Teaching methods and assessment need to be adapted or Vietnamised in order to apply for Vietnamese vocational college students within the boundary of available facilities, conditions, and rewards for teachers. Further research should be investigated into policies to encourage industry partners to get involved in educational institutions. This linkage, if it is effectively connected, will bring to the society a qualified and skilled labor force that is able to deal with technology changes in the 4th industrial revolution.

To conclude, we would like to use words in an interview of an institutional leader participated in this research: "The very important thing that prepares for students to sustain themselves in the 4th industrial revolution is to bring EE to all schools" (I.LD.CL1).

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