

TOWARD CONCEPTS OF SUSTAINABLE DEVELOPMENT IN ALTERNATIVE TVET PROGRAMME OF THAILAND

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ABSTRACT

This research paper presents an overview of the agreed key indicators for monitoring the outcomes and outputs of curricular/programs integrating sustainability into VTET system of Thailand and the good practices of sustainability programme provided by the Office of the Vocational Education Commission (OVEC) and Rajamangala University of Technology (RMUTT). Developing the TVET sustainable development indicators (TVET SD) was discussed by a panel of experts in different perspectives based on their understanding of TVET. Due to diverging demographic and ecology patterns in Thailand, the researchers defined that the TVET SD should be considered into 4 main dimensions: economic index, social index, environment index, and culture index. Those indexes are focused on developing the graduate students and servicing community, which are able to be in proper work, employment and be a good entrepreneur, concerned with housing, economic growth rate, production efficiency, self reliance, stability and quality of life, safety work, participation and decision making, and organizing and managing efficiently of environmental resources, under the TVET instructional process in the vocational and technical colleges. The good practice in TVET SD curricular was environmental and productive study integrating into secondary education curriculum. The different models are very suitable for TVET SD programs which are: a model of poverty alleviation in rural areas, a fast track of agricultural students based on competency standard, a flagship program for productivity efficiency, a FIX it program for community service, and an enterprise incubation for vocational students. To this end, OVEC and RMUTT are realizing the significance of TVET SD but there is still a need to integrate them properly into activities of curricular/programs. Especially, a paradigm shift of teachers and students should be done continuously.

Keywords: monitoring, demographic and ecology patterns, poverty alleviation

Introduction

Vocational and technical education and training (VTET) has considered as a master key that can alleviate poverty, promote peace, conserve the environment, and raise the quality of life for all. Learning for work, citizenship and a sustainable future is bringing together on responsibility of education, of the world of work, and of a variety of stakeholders in the socio-economic environment (UNESCO-UNEVOC, 2006).

Since the Seoul Congress, UNESCO has worked actively to raise awareness of the normative instruments in VTET and to encourage its member country to inscribe them in their practices. It has done so by advocacy among education decision-makers to implement the standards and practices set out in the normative instruments, providing opportunities for VTET institutions to interact continuously on best practices through the information exchange operations, and by producing policy documents on specific topics of interest to policy-makers (McOmish, E & Perera, M, 2007).

The concept sustainable development has been defined many times in recent years, however the term of that in the World Commission on Environment and Development (WCED) Report in 1986, was a call for a change in lifestyle rather than a concrete single goal. Difficulty to define for practical purposes, the sustainable development concept can be defined as concrete goals corresponding to criteria for various dimensions such as economic, social and ecologies. Furthermore, the WCED agreed a definition of "sustainable development" that is now generally recognized as the standard: "Sustainable Development" is ***"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"***.

The realization of sustainable development has been actively pursued in Thailand. The concept of SD has adopted as a framework for the National Economic Development Plan. There were efforts to develop indicators at the Ninth NSED Plan (2002-2006): well being index, economy index, and environmental quality. However, we had no indicators being evaluation the VTET system. Hence, SD has been more concerned in VTET system in Thailand; for example we were a host to organize the international conference regarding the theme related to sustainability. The capacity-building programs have implemented in diversity of

VTET institutions under the vocational education commission and the higher education commission.

In accordance with the connotations of “Sustainable Development of Vocational & Technical education and training” in Thailand, it still needs to explore what kind of development belongs to this concept. And also, It should be developed with agreed indicators of integrating sustainability into VTET system.

The purpose of this study is to report findings from a study conducted to examine the good practice of curriculum or short course training program integrating sustainable development into VTET system in Thailand. The findings of this study will contribute more resilient VTET policies and strategies for capacity building of sustainable development in the vocational education mater plan for the future.

Research Problems

The main problems of this study will centre on: a) the definition of sustainable development as recognized in vocational education institutions, b) the different ways on how to integrate sustainable development into VTET system, and c) the good practice of outcomes/output which is able to be applied for policy brief of sustainability of VTET system in Thailand.

Objectives of the Study

The objectives of the study will be as follows:

- To develop the agreed key indicators for monitoring the outcomes/ outputs of curricular/programs integrating sustainability into VTET system in vocational education institutions under OVEC and RMUTT.
- To examine the good practice of curriculum or short course training program which sustainable development is fully integrated.

Research Methodology

▪ Type of Research

This study was done by brainstorming and content analysis conducting in four steps.

Step 1 of the study did a review of existing literature related to vocational and technical education and training for sustainable development in institutions under

OVEC and RMUTT. This secondary data can be searched from the internet and VTET available organizations.

Step 2 of the study was developed on the agreed key indicators of outcomes and outputs of integrating sustainability into VTET system. The researchers used brainstorming and discussion to conduct research from the panel experts in different areas based on understanding VTET system.

Step 3 of the study was conducted in content analysis of integrating sustainable development into vocational & technical education curricular/programs provided for OVEC and RMUTT.

Step 4 of the study was surveyed in depth of the good practice in integrating sustainable development into vocational & technical short courses training programs for the community in Phathoom Tani province. The outcomes and outputs of the operations were explored in term of economics, social, environment, and culture.

Conceptual Framework of Research

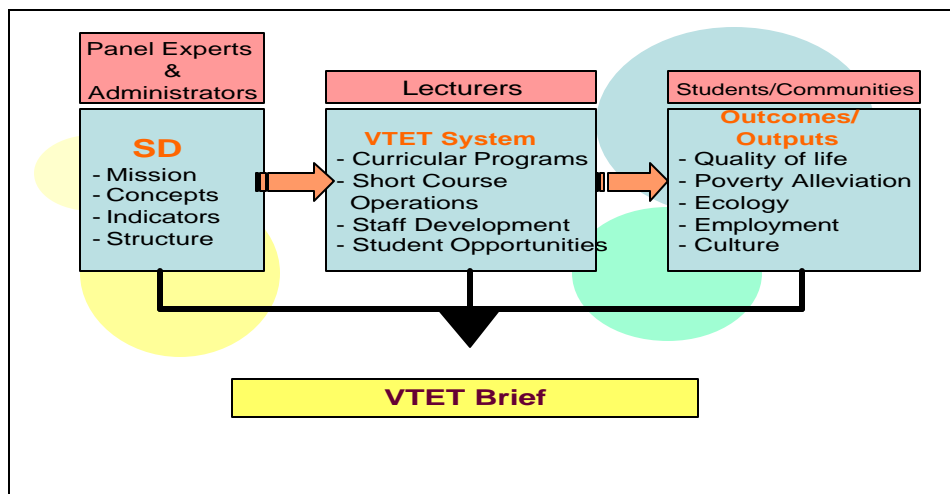


Figure 1 Research framework of VTET system for sustainable development

▪ Population and Sample Size

The population of this study was covered as the following:

1. Non-probability sampling was used for brainstorming on the VTET panel experts' SD indicators perspectives.
2. Purposive sampling technique was used to in depth study for interviewing the community serviced from the OVEC short courses training

- **Instrumentation**

The instrumentations used in this study were check list and interview questionnaires, which were reached to the content validity and reliability.

- **Data Analysis and Interpretation**

Qualitative content analysis (Mayring, 2000) was recured for simple deductive logic of the respondents' SD indicators perspectives and the good practices of sustainable curriculum development.

Research Findings

Part I: Indicators of Sustainable VTET Curriculum Development

Before expressing the indicators of sustainable TVET curriculum development, we would like to address the vocational and technical education system in Thailand. The Thai education system has been modernized and made more accessible to the general public. The country recognizes the important role of vocational and technical education and training as a key tool for producing manpower with the necessary skills required for employment and/or entrepreneurship for poverty alleviation. The Office of the Vocational Education Commission (OVEC), Ministry of Education is a leading agency providing skill manpower and practical or work-based training.

Accordance with the Education Ministry Regulation B.E. 2003, the education administration and management structure of the OVEC consists of 7 bureaus and 2 organizations as follow:

- Bureau of General Administration
- Bureau of Cooperation
- Bureau of Monitoring and Evaluation
- Bureau of Policy and Planning
- Bureau of Personnel Competency Development
- Bureau of Standards and Qualification
- **Bureau of Research and Development**
- Internal Audition Office
- Public Service Development Section

The provision of VIET is offered the formal school system and non formal education system through colleges. There are 404 colleges working under the OVEC as follows: a) 109 technical colleges, b) 36 vocational colleges, c) 44 agricultural and

technical colleges, d) 54 polytechnic colleges, e) 144 industrial & community colleges, f) 5 commercial colleges, g) 3 industrial and ship building technical colleges, h) 2 arts and crafts colleges, i) 3 business administration & tourism colleges, j) 3 fishery colleges, and k) 1 Kanchanapisek Golden Jubilee Royal Goldsmith college. The major programs has been offering to the vocational stream including industry, arts & crafts, home economics, business & commerce, tourism, agriculture, fishery, textile industry, and technology information & communication.

The total number of students including both formal and non-formal streams **rose from 1,425,277 in 2006 to 1,795,154 in 2007**. A demand for greater access to short courses in VIET is also increasing for upgrading the qualifications of the work forces in local community and rural areas. (Figure 2)

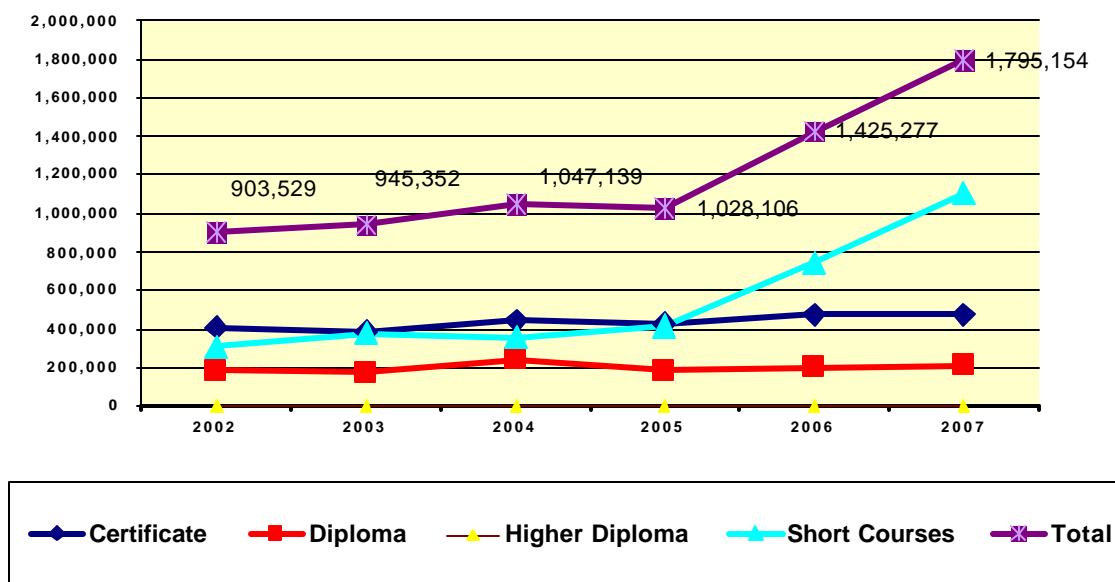


Figure 2: Number of Students in Vocational Stream, Classified by Level, Academics Years 2002-2006

As OVEC are responsible for producing the vocational manpower and serving the community, there are a lot of factors could influence the VIET sustainable development status of a major program and a region. Hence, we construct the indicator of sustainable development for VIET respecting the consistency, effective, comparable, flexible, comprehensive, and capacity of sustainable development. We organized a brainstorming meeting "Setting the Indicators of SD for TVET" from a panel of experts in different areas at Town in Town Hotel in

Bangkok. The criteria were used to consider for a good indicators of the VIET-SD as the following:

- Indicators should be easy to understand .
- They should be easy to interpret.
- They should be measured quality from the schools.
- They should be responsive to changes in underlying conditions.
- They should be trends over time.
- They should be readily available at the respondents.

In addition, this report would be focused on finding the indicator of VIET-SD for curriculum development. The Criteria were selected for the VIET-SD Curriculum Index are as follow to:

- Effect the VIET Curricular/programs or related to
- Represent to the whole picture
- Clear understanding
- Measure and find out the information and supporting data
- Avoid the same variables to evaluate at the same topic
- Consist the National SDIs of Thailand

Bestowed by the King of the Kingdom of Thailand, the Sufficiency Economy philosophy has now firmly taken root in Thai society. It has become the guiding philosophy for strategies and policies of vocational and technical education development such as rural development, poverty reduction, sustainable development, skill development and so on. Hence, the indicators of VIET for SD in Thailand were addressed into 4 dimensions: economic, social, environment, and culture dimensions. However, UNESCO-UNEVOC gave a passage of SD in term of three pillars: economic , environmental, and social sustainability (UNESCO-UNEVOC, 2004).

Linstrom (2004) mentioned that the indicators of concept for evaluating and monitoring of education for sustainable development should consider the independence of non-formal education institutions. It means that the indicators may measure development on a local and organizational level.

Sustainable development is not a fixed concept; rather it is a culturally-directed search for a dynamic balance in the relationships between social, economic and

natural systems. A balance seeks to promote equity between present and future, countries, social classes, genders, and races. (UNESCO-UNEVOC, 2004)

The definition of agreed Index of ***VTET for Economic Sustainability*** has been addressed as ***“Developing the vocational graduate students and people for employability and entrepreneurship that economic growth should be concerned with stability, quality, and product efficiency under VTET system”***. The components of economic VTET-SD index are 3 parts: stability and equity, product efficiency, and self reliance.

As Yufeng (2005) expressed that sustainable development is an ideal model of the development of humankind. Many issues related to sustainable development of VTET need to research and discuss in theory and practice. Therefore, we should realize to initiate and program-sustainable development of VE, to organize an international expert team of sustainable development of VE; to research and list main issues of sustainable development of VE; put forward key indicators or standard to assess sustainable development of VE and distribute related outcome of these research.

Hence, we were focused on how to monitor the output and outcome of sustainable VTET curriculum development provided by OVEC and RMUTT. We founded that the VTET indexes for economic dimension can be clarified into 2 parts: curricular consistency to local community and proving of short course training course based on community needs.

The Index of ***VTET for Social Sustainability*** can be defined as ***“Developing the vocational graduate students and people for employability and entrepreneurship that social growth should be concerned with stability of life, safety work, participation, and decision making as work for a happiness of life under VTET system”***. The components of social VTET-SD index are 7 parts: equity and participation, quality of life, lifelong learning, learning organization, research for self-employed work, labor demand, and community network strengthening. The VTET curriculum development for social sustainability indexes can be modified to 4 aspects: participation in local curriculum, aptitude test, local wisdom curriculum, and community-based curriculum.

Spricis (2006) found that Important links of chemistry with many sectors of industry, with chemical environmental pollution, with global environmental problems, with greenhouse effect and climate change, with problems of resource management, with practical use of different chemicals and chemical products are basis for implementation of issues of sustainable development at the study courses and study programs of the School of Chemistry of University of Latvia. Bases of concepts for education of sustainability at the study courses and study programs of the School of Chemistry of the University of Latvia are integrated approaches for important issues of industrial production, of resource management, of energy sector, of agriculture, of transport sector, of waste management, of material flows, of community development and others, closely linked with chemistry, with environmental sciences and with issues of sustainable development. Experience of International Baltic University gave an excellent opportunity for University of Latvia to transfer knowledge for studies of common concepts of sustainable development for the Baltic Sea region.

Here, the Index of ***VTET for Environmental Sustainability*** can be defined as ***“Developing the vocational graduate students and people for employability and entrepreneurship that ecology growth should be concerned with efficiency of environmental understanding and management for balancing of economy & social capital and natural resources utilization to better a quality of life for the next generation under VTET system”***. The components of environmental VTET-SD index are 2 parts: environment management in school, and educational resources sharing among schools in a major program or a region. The VTET curriculum development for environmental sustainability index is only one part addressed as realization and understanding environment-based curriculum.

Due to diverging demographic and ecology patterns in Thailand, a panel of experts discussed the Index of ***VTET for cultural Sustainability*** defined as ***“Developing the vocational graduate students and people for employability and entrepreneurship that cultural growth should be concerned with recognition and reserving on value of Thai tradition and culture for a better quality of life to the next generation under VTET system”***. The component of VTET cultural-SD index are the cultural and traditional diversity, life skills understanding, and sufficiency . The VTET curriculum development for cultural sustainability index is the life skills and culture & tradition-based curriculum.

The indicators of VET-SD curriculum/programme are shown in Table 1 , Figure 3 and 4. They are expressed in a component of 4 main dimensions, index, unit which are clarify in status of index on VET system: input, process, and output/outcome. The status of index is benefit to understand for collecting of data. We clarify educational stakeholders under VET system as student, curriculum, instructional method, teacher, vocational graduate students, and occupational group/community.

Table 1: Indicators of VTET Sustainable Development for Curriculum/Programme

Component	Index	Unit	Status					
			Input	Process			Output /Outcome	
			Student	Curriculum	Instruc-tional Method	Teacher	Vocational Graduate Student	Occupation al Group/ Community
Economic Dimension local curricular and community need	- Number of VTET curriculum met or consistence to a local need - Ratio of short course training program based on the community's need assessment to total training programs	Number Ratio						
	- Number of curriculum integrating entrepreneurial skills	Number						
	- Unemployment Rate	Percentage						
Social Dimension	- Percentage of community participating in curriculum development of college	Percentage						
local curriculum, aptitude test, local wisdom curriculum, and community based curriculum Participation and Society	- Provide the occupational attitude test	Yes/No						
	- Provide the occupational skill test	Yes/No						
	- Number of curriculum effecting to entrepreneurship in community	Number						
	- Percentage of students interested in Agricultural Program which is a national occupation of Thailand (Majority)	Percentage						

Component	Index	Unit	Status					
			Input	Process			Output /Outcome	
			Student	Curriculum	Instruc-tional Method	Teacher	Vocational Graduate Student	Occupation al Group/ Community
Environment Dimension Realization and Understanding	- Number of subjects including the <i>consumers' health</i>	Number						
	- Number of subjects <i>realizing the environment</i>	Number						
	- Ratio of subjects <i>sharing educational resources in college</i>	Percentage						
Cultural Dimension	- Number of curriculum related to <i>local technology</i>	Number						
Life skills, Sufficiency, Tradition, Local Wisdom, and Reserved Occupation	- Trend of Students interested in <i>Agricultural Program which is a national occupation of Thailand (Majority)</i> (3 yrs)	Percentage						

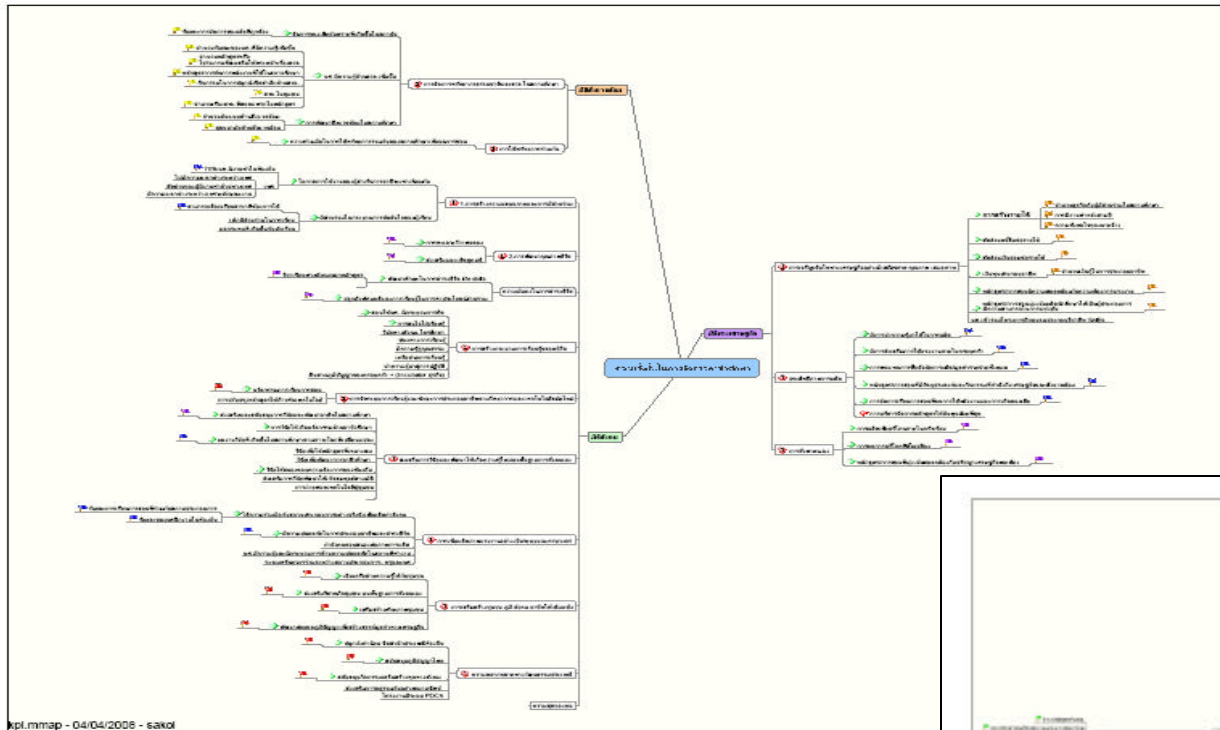


Figure 3 Indicators of Sustainable Development for TVET system

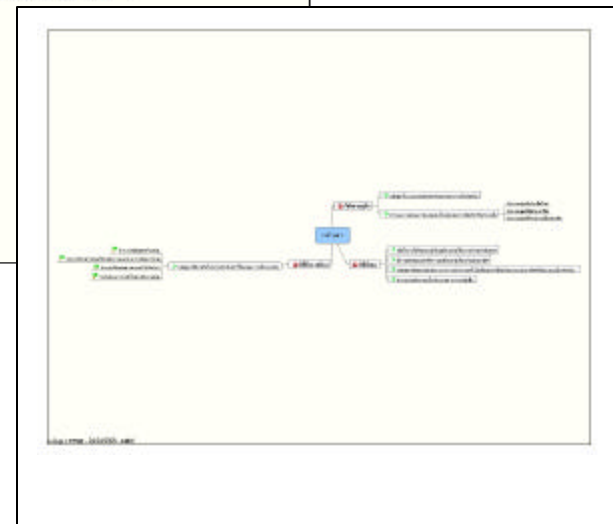


Figure 4 Indicators of Sustainable Development for TVET curriculum/Programme

Part II: The Good Practices of VTET curriculum Development

VTET - Formal Education

OVEC has been provided in 9 programs to 118 major fields and 310 minor fields (Figure 5). Most of major fields is industrial technology program (34 major fields), followed by business and commerce (19 major fields), and arts & craft (17 major fields). Two major fields are provided in an information technology and communication program. A detail on the courses provided by OVEC can see at an Appendix.

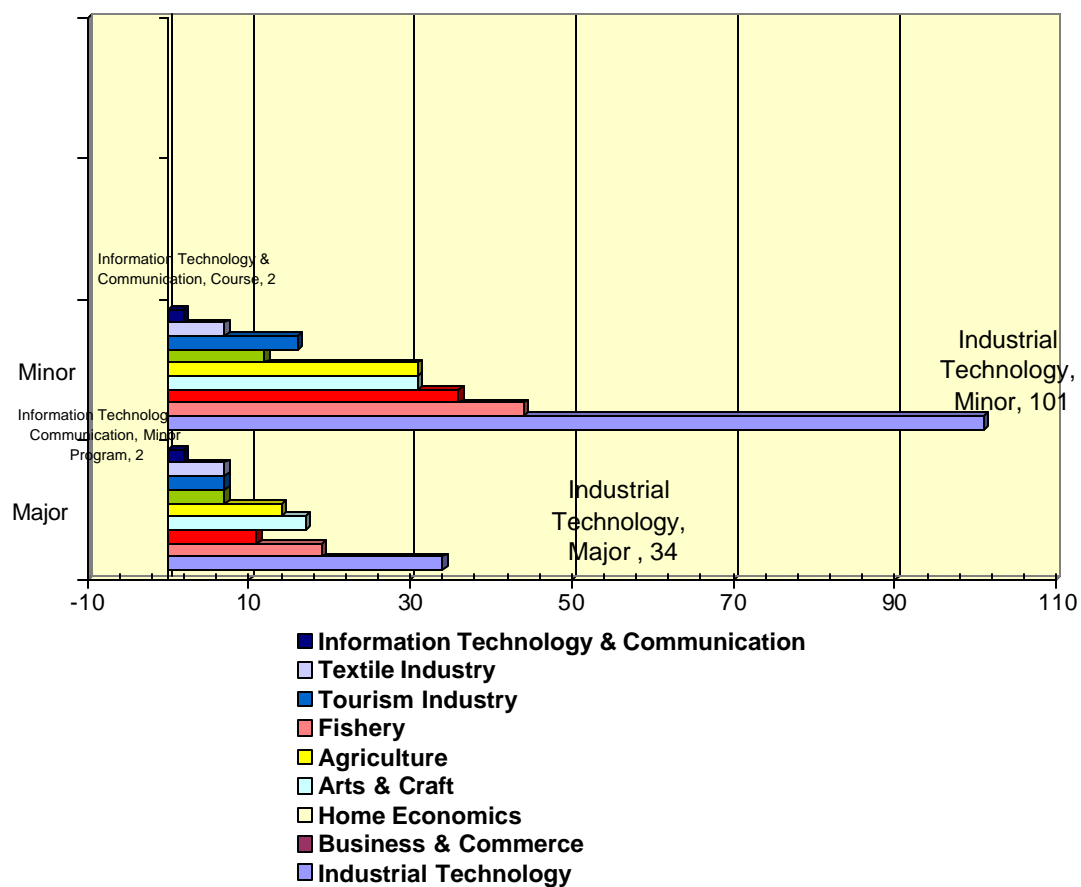


Figure 5 Curriculum/Program in VTET System of OVEC

Jakobsson (2006) expressed that The Uppsala University initiated the Baltic Universities Programme (BUP) in 1991, which aims to support the key role that universities play in a democratic, peaceful and sustainable development by

developing university courses and by participating in projects in cooperation with authorities, municipalities and others.

Then, we did a content analysis of OVEC curricular and programs provided for the vocational students and people for short course training. We found that ***all VTET curricular in secondary level are integrated SD and put in elective compulsory courses such as subjects of environment study, product efficiency, resource management, and so on.*** However, ***those subjects related to SD are put in free elective/alternative courses at the post-secondary curriculum of OVEC.*** This point was still kept in our minds that we should integrate in elective compulsory course or integrate in student activities or integrate in teaching methods.

As OVEC has been a major course called as environment technology in program of industrial technology. We found that a number of students interested in this major courses trends to decrease. As a result, it may come from the difficulty of employment for the vocational graduate students in this area. However, we would suggest that OVEC should integrate environment issue in all courses of the programs.

Isoaho (2004) found that the Finnish universities and polytechnics carried out an amount of teaching and research that promoted sustainable development. However, the main emphasis is still on environmental know-how, whereas multidisciplinary expressions of SD are searching for a stronger role in teaching and role.

To ensure sustainable development for VTET curriculum, we were identified that as a following:

- **OVEC has a regulation of curriculum flexibility for setting by the vocational colleges under OVEC that can depends on a local community.**
- **It encourage all vocational colleges working on vocational student incubation for improving entrepreneurial skill.**
- **It still provide the program of agriculture called agricultural and technology colleges.**

- According to the Vocational ACT-2008, OVEC has to support the vocational colleges for sharing educational resources. This is one of major issues to be concerned on the vocational education commission board.

However, we still need to improve our program implementations for addressing the SD for VET. They still need work on the aptitude and skill tests for the vocational student enrolment. It may encourage the vocational graduate students to work at their local community that will help their hometown for a better quality of their communities. In contrast, most of the vocational graduate students want to study further now.

➤ VET- Non Formal Education

Grannall (2005) identified that many countries should reach agreement on: a) regional VET qualifications framework, b) the format of competencies, c) the titles of occupations and the priority for which the competencies should be developed, and d) the method by which competency development would be coordinated. These agreements on competencies can be approached to sustainability of students' competency. By the way, the author suggested that Thailand could take the lead in the coordination and fast-track development of regional competencies to meet the need for some research and the development of a formal discussion paper.

OVEC has been provided a lot of programs for students and community services. Some programs were assigned from the Thai cabinet for urgent to help people such as building of knock down house for Tusunami people, FIX It project, and so on.

Here, we would address the good practices of VET training programme for sustainable development. The major performances to ensure VET-SD Training Programme:

- Poverty reduction
- Developing skills for employability
- Fostering new entrepreneurship or self-employed worker
- Servicing society/ community

The good practice models of VET-SD program can be indicated as the following:

1. A fast track of agricultural students on competency-based curriculum

This project has launched by 3 departments: 1) Office of the Vocational Education Commission (OVEC), 2) Office of the Agricultural Land Reform (OLAR), and 3) Bank of Agriculture and Cooperatives (BAC). OVEC is responsible for agricultural curriculum providing for the agricultural students. OALR is responsible for agricultural land to allow the students for studying and working on the reserved agriculture land where is expected to be belonging of those lands in the future. BAC is responsible for the agricultural capital and study loans to the students for learning by doing in those lands. The agricultural students are required to study met a competency-based curriculum. This project can encourage the agricultural graduate students to be self-employed at their hometowns and also serve the rural community for poverty alleviation. Those reasons are ensured to sustainability for economic to self reliance; for social to participation and work their own places; for environment to conserve their lands; and for culture to better understanding their society and knowledge management. To consider in sustainability on VIET curriculum, we found that this program was fit to the students need, flexible to a local place, upgrade the occupational skill.

2. A Flag-Ship program for increasing of product efficiency

Based on the strategic of performance based budgeting (SPBB), the OVEC has implemented and evaluated the projects concerning the productivities of organization. This project is served for poverty reduction, vocational manpower development, and vocational education development in southern region. The projects have run by 404 colleges under the OVEC. The outcomes and outputs of this project have been affected to the vocational graduate students, workforces in rural areas, small and medium enterprises, and business & industry companies. The main point of this project is met the sustainability for economic to reduce poverty line in the community. However, they still need more to be concerned about how the community understand and is realized on method of waste car oil.

3. A FIX It program for community service

This program has been provided to the rural area in community. The students can serve the rural or local people then they can transfer credits from those serving works in the community places to their study plan. This program will help

community reduce living cost of people in community. To ensure sustainability, we found that this program can be served as curriculum for lifelong learning and flexibility on credit transfer.

4. An enterprise incubation for new entrepreneurship

This program is consist of two main parts: 1) give a knowledge to the vocational students for new entrepreneurship, and 2) support the vocational college to set up a cluster of business enterprise in school. This program was served to the VIET –SD curriculum as student-centered based study. It means that we provided a curriculum based on the students need. And also, they can be self-employed after their graduation. However, this program may have to integrate more on environmental and cultural dimensions in the program.

RESULT OF INTERVIEW

In this section, we did an interviewing a community people served from the OVEC run as FIX It Program. We were focused on the good practice in VIET-SD curriculum development. Interview was held with a community leader in Pathoom Thani Province. A purposive sampling technique was used in this case.

As OVEC provided a FIX It Program servicing to a community who would like to repair his/her occupational machines. Then, the vocational colleges always contact a village leader for organizing and coordinating villagers interested in this program. Hence, we interviewed a village leader name as Mr.Prachob, Klong Luang, Phathoom Thani Province. This leader was served by the Thayaburi Technical College, Office of the Vocational Education Commission. The respondents gave the opinions on this program that it can help people to reduce cost of fix their machines especially on agricultural machines for farmers. In addition, they can apply the maintenance knowledge to a day life. Moreover, some villagers can apply those knowledge to be a self-employed work in village but they still need more short course training for better quality of job.

Furthermore, we noticed that the environment of the leader's house was not a well appropriate enough for living. Because they didn't keep a bottle of machine oil to a suitable place. As a result, they still do not understand how to manage a

machine equipment and waste for a good quality. At the end of interview, he recommended that this program was so very good for them, but still need more to continue this program for a long period.

To consider in VET-SD Curriculum development, this program was served for a main sustainability for economic to alleviate poverty, and increase income. However, we should do integrate the environment knowledge into FIX It program for a better quality of life.

Recommendations

Under the current situation and context of dynamic, interrelated, and increased complexity of globalization, issues of sustainable development are broadly associated with interconnections of different units and levels of societal governance. Some of the major recommendations are considered as the following:

1. Given the findings from this study on VET-SD curriculum development at the post secondary level, we may integrate environment study into instructional method or student activities that OVEC has to put the major policy for college implementation.
2. Establish VET sustainable network
3. Develop VET sustainable learning center
4. Increasing efficiency and effectiveness VET-SD learning through competency-based curricular and work-based learning.
5. Facilitating VET-SD self-learning and e-learning through ICT systems
6. Strengthening the cooperation between public and private sectors for research innovation related to VET-SD such as energy safe invent/innovation, bio-gasoline, etc.
7. Incentive system for students working on issue related to VET-SD

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