THE STRATEGIES OF DEVELOPING THE EVALUATION SYSTEM OF TECHNICAL AND VOCATIONAL EDUCATION IN TAIWAN

Yau-Fang Mei

Abstract — With the rapid changes in the global issues, many countries, facing the infinite possibilities in the 21st century, have addressed several future schemes, to meet the challenges of the constant changing environment. In Taiwan, the government has officially announced to gear up for the knowledge Economy in 2000 in order to dominate the major infrastructure policies. Among the critical policies, upgrading human capital, which encompasses thoroughly reviewing the education system and dynamically nurturing human capital, is one of the major concerns. Therefore, the technology and vocational educators not only have to solve the existing problems of the ecological growth but also have to strengthen the practices of globalization, knowledge production, transmission and application.

To enrich the technical and vocational education, effective evaluation can energize each research institute and academia to map out the strategies to reach the competitive advantage. If the convention of the evaluation system is kept, not only the opportunities of educational evolution be missed but also diminish the resources and functions under the condition of tight financial budget. Consequently, the strategies of developing evaluation system and the reinforcement of vocational education should operate in coordination in order to maximize performance and well-being in ‘knowledge-based economies’.

Index Terms —higher education, TVE evaluation

BACKGROUND INTRODUCTION

The Self-reliance Movement in Ching Dynasty (1644-1991) marked a significant importance of the technical and vocational education when the ‘Emperor Education Mandate’ was proclaimed in the 28th year of Kung-Hsu (1763) which officially attributed the vocational education as part of the education system [1]. Eighteen years after the establishment of the Republic of China (1929), the government proved the ‘College Law’ allowing the 2-year and 3-year colleges to enroll students from senior high school graduates or those who held the certificate that has equal validity to pursue advanced studies [2]. During the China-Japan War, the government consented the colleges to set a 5-year system and recruit students from junior high school graduates. For the next few decades, while colleges provided great amounts of middle-level proficient to meet the needs for the government that were conducive to the economical construction, little esteem was taken into account from the government. From the mid 1960’s, the government put a great emphasis on developing higher technical and vocational education in order to provide sufficient technicians for enhancing the industry. Colleges of the 5-year and 2-year system were widely established in this economic soaring era [3]. The atoms behind this rapid growth phenomenon can be the government policies, the economic background, the self-awareness of the citizens, and the purpose of establishing private academies. While the social and economical movements keep the path of continuous progressing, it is widely concerned that changes in technology now occur so quickly that we need to set a system to evaluate the technical and vocational education in Taiwan in order to program a new curricula and teaching methodologies and to satisfy the demands of the industry.

To increase the quality of human resources developed from Technical and Vocational Education (TVE) system, the Ministry of Education in Taiwan encourages all TVE institutes to upgrade themselves to reach a higher level. The incentive of this shift for those institutes is the improvement of recognition and fame, which helps the quantity of student enrollments and the growth of revenue. The consequences, in terms of education performance, of this movement are:

- Many new institutes, which upgrade from the lower level, are not equipped with enough educational resources such as quality faculties and well-structured curriculum.

- Under this movement, many new universities of technology with post-graduate programmes, which does not exist before, are taken into consideration. As a matter of fact, the whole TVE process is prolonged, and therefore, the number of students in the whole TVE system increases drastically. This quantity expansion causes the insufficiency of the education resources.

To catch up the educational quality required by the new TVE system, the Ministry of Education allocates more budgets to encourage those TVE institutes to abound their educational resources [4]. The TVE evaluation system thus becomes a very essential vehicle to ensure the policy is well implemented.

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**CURRENT SITUATION OF TAIWAN’S TECHNOLOGICAL AND VOCATIONAL EDUCATION**

According to the statistics released by the Department of TVE in the Ministry of Education in Taiwan, there are 11 universities of technology, 50 institutes of technology, 23 junior colleges of technology, 199 senior vocational schools, and 125 experimental comprehensive high schools (see table 1) [5]. To increase the quantity of students in higher education level, the Ministry of Education Taiwan’s started to encourage colleges to upgrade themselves to the university level, and the senior vocational schools to colleges. All of current universities of technology were upgraded from the institutes of technology. Due to the encouragement by the current education policies, the fulcrum of TVE system is moving toward to the institutes of technology from junior colleges. However, since most of institutes of technology still keep junior college programs, the quantity of vocational students does not drop rapidly. During the past four years, the number of junior college enrollment has been increased from 430,000 to 450,000. On the other hand, the number of enrollment of the institutes of the technology grew from 44,331 in year 1997 to 180,620 in year 2000 with a growth of 4 times. Meanwhile, the number of students in the post-graduate schools programmed in the universities of technology increased from 2,544 in year 1997 to 6,635. In the year of 2000 with a growth of 2.6 times of the faculties in TVE system are assistant professors or above, the quality and the quantity of faculties in TVE system still yet reach the demands from the growth of student number.

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Doctoral</th>
<th>Post-graduate</th>
<th>Under-graduate</th>
<th>Junior college</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>1997</td>
<td>Number of students</td>
<td>378</td>
<td>2166</td>
<td>44331</td>
<td>433865</td>
<td>480740</td>
</tr>
<tr>
<td></td>
<td>Percentage</td>
<td>0.1</td>
<td>0.5</td>
<td>9.2</td>
<td>90.2</td>
<td>100</td>
</tr>
<tr>
<td>1998</td>
<td>Number of students</td>
<td>420</td>
<td>2557</td>
<td>64402</td>
<td>452346</td>
<td>519725</td>
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<td></td>
<td>Percentage</td>
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<td>0.5</td>
<td>12.4</td>
<td>87.0</td>
<td>100</td>
</tr>
<tr>
<td>1999</td>
<td>Number of students</td>
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<td>457020</td>
<td>567112</td>
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<td>Percentage</td>
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<td>0.7</td>
<td>18.6</td>
<td>80.6</td>
<td>100</td>
</tr>
<tr>
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<td>6001</td>
<td>180260</td>
<td>447458</td>
<td>634353</td>
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<tr>
<td></td>
<td>Percentage</td>
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<td>1.0</td>
<td>28.4</td>
<td>70.5</td>
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</tr>
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Table 1. The growth of enrollment of TVE system during the academic year of 1997-2000

**THE GOAL OF THE TVE EVALUATION**

The Ministry of Education has started to evaluate the performance of junior colleges since 1975 [6]. The goal of evaluating junior colleges was set in 1990 as: Helping the improvement of education quality by grading, problem finding, problem analyzing and direction modifying [7].

In 1998, the Ministry of Education initiated the national evaluation system of vocational schools and publicized the implementation plan in detail to district educational bureaus. The purpose of this activity was to help district educational bureaus to build up the evaluation system in order to find the real problems of the vocational education system and to solve the problems. The evaluation helps education institutes to upgrade themselves in many aspects. It gives the foundation of school upgrading, and program adjustments [8]. Its result also decides how much the budget can be allocated from the federal government to those schools. Since the budget allocation will depend on the outcome of the evaluation, all parties are concerned with how the evaluation is done and what the evaluation process should be.

**CATEGORIZATION OF TVE EVALUATION SYSTEM**

The TVE evaluation system can be categorized into general evaluation and profession evaluation, in terms of evaluation contents. From the aspect of evaluation functions, it can be also categorized into routine evaluation (held every three or four years), tracking evaluation (to those with bad record of evaluation), project evaluation (by the request of schools who upgrade or adjust programs), and after-upgrading evaluation. The evaluation system is also categorized by types of education institutes into evaluation of universities, institute, and senior colleges of technology, respectively. For years, education institutes to be evaluated have been further divided into three categories, which are industry, commerce, and others. Three major universities of technology have done the evaluations alternately.

The Ministry of Education started to apply CIPP--Context, Input, Process and Product Evaluation--model in the evaluation of senior college in 1996. Items in ‘context’ include goal of programs. Items in ‘Input’ include program planning, faculty, hardware equipments, publications, administration, and expense. Process evaluation includes resources allocation and curriculum planning. Items in product evaluation focuses on the effectiveness of teaching. All evaluation items come with index, which will be calculated on weighted average basis. In addition to quantitative index, the result of qualitative evaluation will also be taken into account for the overall evaluation.

**THE PERFORMANCE OF THE TVE EVALUATION**

**Evaluation of universities and institutes of technology**

There was only one institute of technology during 1974 to 1985 [9]. Some universities started to set up 2-year senior college programs in 1985. The first university of technology...
was upgraded from an institute of technology in 1995 [9]. Evaluation of technology of universities and institutes has been done only for four times up to year 2000.

**Evaluation of junior colleges**

The annual evaluation of junior colleges has been done for more than twenty years. The junior colleges are categorized into industry, commerce, medical, and others (for those of agriculture, homemaking, and gardening, etc.). In addition to the annual evaluation, some project evaluations were also done for upgrading projects.

**Evaluation of vocational schools**

District educational bureaus did the evaluation of vocational schools. The frequency and context of the evaluation among those bureaus varies according to available budgets. The Ministry of Education started to take over the task of evaluation since 1998 [10]. The nation-wide evaluation, of around 200 vocational schools, was completed within three years since then.

**THE HARDSHIP OF TVE EVALUATION**

A. The evaluation was routinely done in every year during 1975-1986. Tracking valuations has been done to those, which were graded at C since 1987. To meet the requirement of upgrading, project evaluations were frequently requested since 1997. Many tracking evaluations were also undertaken for those upgraded institutes after 1998. The evaluation frequency of evaluation increased, and the working load of the evaluation increased year by year. Therefore, the evaluation manpower is not able to meet the requirement growth; consequently, the quality of evaluation went down constantly.

B. The evaluation model has been applied so long without a widespread modification that the effectiveness of evaluation is unsatisfactory. To meet the future requirement, visionary strategies and integrated index should be built into the evaluation system.

C. The ultimate goal of evaluation is to lead the direction of TVE, and to improve the education quality. The aim of the evaluation is not for analyzing the current environment and trend of the technical and vocational education only. It should serve the long term and short-term goals of TVE.

D. The items of evaluation grew daily without adequately modification and integration. There are too many dimensions to be focused for evaluation. From the prospective of context (general evaluation and program evaluation), administration (routine, tracking, and project evaluation), category (industry, commerce, and others), targets (university, institutes and junior college, etc) , or areas (north, middle, and south of the island), the evaluation system should decide which framework is the major dimension to be focused, in order the integrated evaluation system becomes possible.

E. The goals of all level of institutes are different; therefore the evaluation system should be different. Additionally, evaluation from the Ministry of Education is only a preliminary grading. To have an institute developed and grew, an institute should build its own self-evaluation system to make sure it is on the right track. The evaluation system is primarily a tool for direction guiding instead for budget gaining. A self-evaluation system will not be built unless the institute realizes the system is for the purpose of its development.

F. There must be some similarity between TVE evaluation system and other evaluation systems. And so are the differences. What is the unique feature of TVE evaluation system is its mission should be readdressed and focused.

**DEVELOPMENT STRATEGY**

It is about time to integrate the evaluation of TVE system in order to upgrade the quality of TVE institutes. Four strategies for improving the evaluation system are proposed as follows:

A. The evaluation policy should be formulated and reviewed yearly by a committee. The committee should clarify the goal, function, index, and evaluation process. More importantly, the evaluation policy and implementation should be always closely complied with the overall TVE policy.

B. The system of evaluation information management is a key to manage and improve evaluation process. It provides sufficient information about the quality of the evaluation system ensuring its compliance with the educational policy. This information system includes raw data and self-evaluation result of institutes’ performance, and the quantitative and qualitative evaluation results. That information helps the policy makers to adjust the policy direction, allocate education resources, and get involved with the field.

C. Separating the evaluation of professional items from that of administration performance and putting more efforts on the professional evaluation will be an important move. Two independent systems are:

- **Evaluation of Organizational Performance**
  
  This part focuses on the evaluation of general affairs of education institutes. The evaluators can be professionals in the industry as well as those in education institutes. Institutes evaluation can be categorized by a private or public school, or a(n) university/ institutes/ junior college of technology. Evaluation is treated as a tool for improvement, not
only for getting resources from the government. Self-evaluation is thus encouraged.

- Evaluation of Professional

There were six groups in TVE system in Taiwan. Those groups are industries, businesses, agricultures, home economics, medical, and marine and fishery. There were about five hundred diverse departments of TVE system in Taiwan. To improve the context of the programs and the competitiveness of Taiwan, Ministry of Education integrates all programs into a coherent system in 2001. The new system has 17 professional groups which are mechanical engineering, motor mechanics, electrical engineering, chemical engineering, architecture and construction, business and management, agriculture, home economics, tourist and hotel management, marine and fishery, pharmacology and nursing, medical, art, design, food, language and general program.

Selecting professional evaluation parties to do the evaluation is suggested. Professional and objective evaluation helps the institute to clarify its policy and positioning. It also improves the performance of teaching and overall education quality. Professionals from industry as the evaluators will help the institute to know the real demand of industry. Applying international benchmarks helps the institutes to follow the world trend.

D. Set up a nation-wide mechanism of evaluation

The evaluation policy is formulated and reviewed by a committee. The evaluation process is developed with evaluation management information system. Institutes are encouraged to do more self-evaluation of general affairs to improve their performance. Evaluation of professionals is opened to professional evaluation parties. The whole evaluation mechanism will be well generated. Once these strategies are implemented, the evaluation system will be effectively working and support the TVE policy. The structure of the evaluation system with three dimensions (level of institutes, function, and professional groups) is shown in figure 1:

**Figure 1. The structure of evaluation system**

- **D.** Set up a nation-wide mechanism of evaluation
- **E.** Form the evaluation party
- **F.** Set up an evaluation criteria
- **G.** Define the evaluation process
- **H.** Implement the evaluation system
- **I.** Evaluate the results

To develop the competitiveness in the new economy, Taiwan’s TVE system has to be information, internationalization, and program oriented. Maintaining flexibility to meet industries’ needs, and integrating the programs to improve overall educational quality are the major focus of TVE system. Moving towards these directions, an effective evaluation system has to be developed to support the policy-upgrading the overall quality of students graduating from TVE system.

**REFERENCE**


