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In Taiwan, technological and vocational education (TVE) is primarily offered in vocational high schools (VHS's), career programs in comprehensive high schools (CHSs), junior colleges of technology (JCTs), colleges of technology (CTs), and universities of technology (UTs), which prepare practical technical and managerial personnel for industry and business. Entrusted by the Ministry of Education (MOE), the authors have worked for a project team to assist the MOE to plan and implement a nation-wide TVE curriculum reform. This paper presents the main features of the undertaking TVE curriculum reform.

Quality TVE Is Being Pursued via Curriculum Reform

The TVE institutions in Taiwan are shown as Figure 1. For the 1999-2000 academic year (August 1, 1999—July 31, 2000), TVE students, with a total of 1,034,289, accounted for 57.7% of the total number of students in both upper-secondary and post-secondary schools (DTVE, nd). Since 1990s, TVE in Taiwan, preparing students for both work and further education, has been substantially changed. Growing numbers of VHSs have been transformed to CHSs while JCTs and CTS have been upgraded to CTs and UTs, respectively.

Compared to the fact that human walking depends on two legs, educational development depends on both its own quantity and quality. To further promote TVE quality, it is essential to have well aligned and relevant TVE curriculum.

In 1997, in response to a call for better alignment of the TVE curriculum among varied levels, school and work, academic and occupational courses, etc., the minister of education decided to develop the Aligned Course of Study for TVE System. Since 1998, the first author has been entrusted to lead a project team, called steering taskforce, to assist the MOE to plan and implement a nation-wide TVE curriculum reform. The second author joined the taskforce as a research associate in 2003.

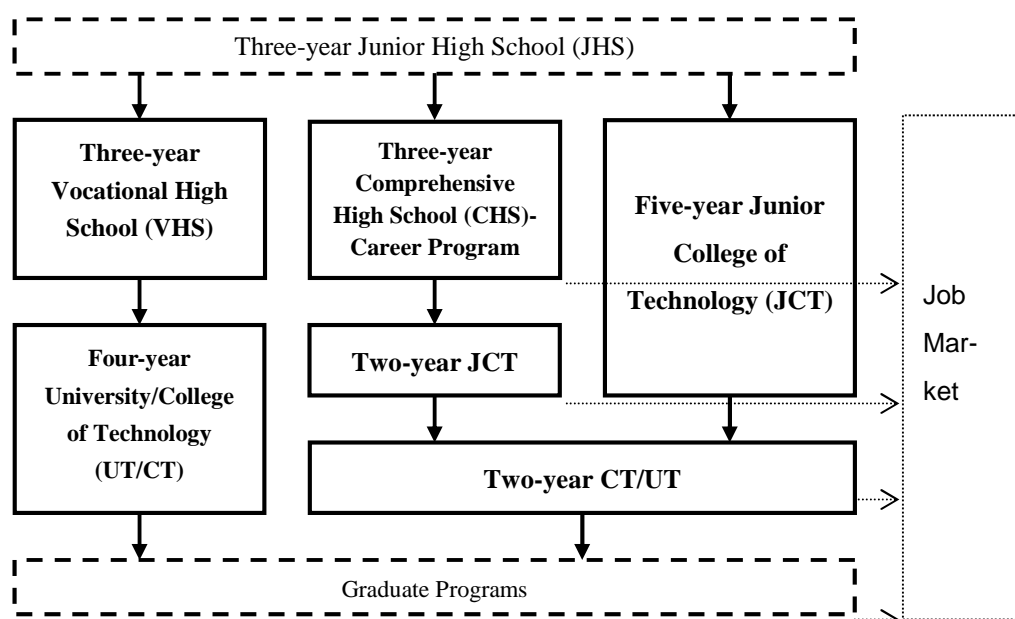


Figure 1. The TVE institutions in Taiwan

Main Features of the Undertaking TVE Curriculum Reform

World-wide TVE curriculum reforms have been focused on bringing about a wide range of changes, such as combining learning and experience; integrating vocational and academic education; developing more interdisciplinary instruction; forging links between schools, businesses, and community institutions; and avoiding training that is too narrow or ignores to update the latest information (Wonacott, 2002). In Taiwan, there are at least the following six features along with the TVE curriculum reform:

1. Career Clusters Are Created

Career clusters are a grouping of occupations and broad industries based on their commonalities. For instance, the National Association of State Directors of Career Technical Education Consortium (2002) in the United States has developed 16 career clusters which cover virtually all occupations from entry through professional levels and provide an organizing tool for schools, small learning communities, academies and magnet schools.

In Taiwan, there are hundreds of formal programs in VHSs, JCTs, CTs and UTs. These programs have been classified into many trade-oriented categories such as industry, business, agriculture, and home economics and so on. However, the scope of many categories is considered to be too wide. Additionally, some programs in the whole TVE have been criticized as being too narrow, too broad, or out of date, etc. In order to solve the problems and embrace the world-wide reform ideas mentioned above, the present TVE's program categories have been restructured into 17 career clusters, such as mechanical, power mechanical, electrical & electronic, civil & architectural, chemical-industrial, and design.

2. Courses of Study at Varied Levels Are Simultaneously Developed

The curriculum designers at varied TVE levels should be like the members in a relay team. In order to ensure the alignment of curriculum at varied TVE levels, all courses of study in every career cluster mentioned before are planned by a specific curriculum committee at the same time. That is, every committee is anticipated to develop the following five courses of study: 3-yr VHS (also suitable for CHS-career program), 5-yr JCT, 2-yr JCT, 4-yr CT/UT and 2-yr CT/UT; as well as pay attention to the relevance of curricula to jobs, the curriculum articulation between the schooling levels (for example, 3-yr VHS → 4-yr CT/UT) and the curriculum coordination between general and technical courses. The final course of study mainly includes core competencies, core courses with course descriptions and synapses, fundamental equipment, and other guidelines are included.

3. Standard-based Development Approach Is Utilized

Compared to academic education system (senior high school—4-yr college/university), TVE system is more practical, purposeful and career-oriented. Thus, the TVE curriculum reform adopts standard-based development approach as shown in Figure 2. In this approach, student-centered and the coherence of standard, curriculum, instruction and assessment are emphasized.

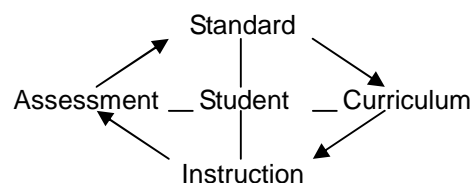


Figure 2. The standard-based development approach

4. Core Competencies Are Identified to Serve as Standards

In the TVE curriculum reform project, every cluster committee was asked to identify promising jobs in existing and future workplaces which should be pursued by the students at its VHS, JCT and CT/UT levels, respectively. Then, competencies needed to fulfill every job at

every level were identified to serve as the standards guiding curriculum, instruction and assessment. After that, the confluence of those competencies for a specific level was seen as work-based core competencies. Because TVE should equip its students with not only working skills but also living and learning skills, every cluster committee was asked to appropriately expand “work-based core competencies” to “core competencies” (see Figure 3).

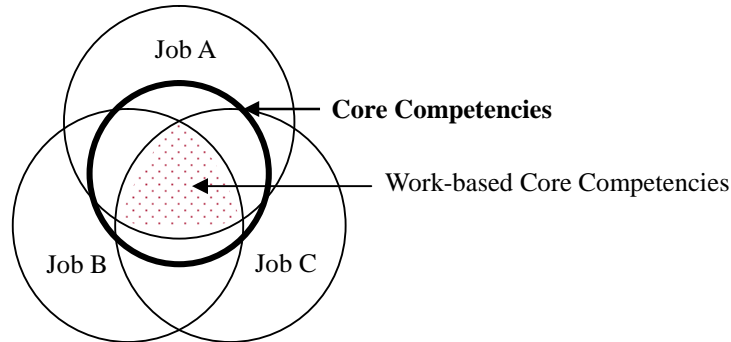


Figure 3. Core competency is a confluence of competencies

5. Core Courses Are Mandated or Suggested

A set of core competencies for any cluster may be divided into the following two domains: general/liberal and technical/specialized. General competencies, by their nature, may be cross-cluster and cluster-specific, while technical competencies cluster-specific and program-specific (see Table 1). Thus, the core competencies could be divided in to the following three levels: cross-cluster core, cluster-specific core and program-specific core.

Table 1. A core competency continuum

Cluster Core / Required		Program-specific Core / Required
Cross-cluster Core	Cluster-specific Core	
For All Students in All Clusters at A Specific Level of TVE	For All Student in A Specific Cluster	For All Students in A Specific Program
Ex: Participate as a team member	Ex: Use home economics terminology	Ex: Locate information in child care services

The relationship of the cross-cluster core, the cluster-specific core, and the program-specific core is shown as Figure 4. Each cluster committee was responsible for developing both “trunks” and “branches” and let the “twigs” be developed by the TVE institutions themselves. The program-specific core courses tend to be more technically oriented while the cross-cluster core courses more generally-oriented. Once cross-cluster and cluster-specific core competencies were appropriately identified and verified, core courses were developed to ensure students effectively demonstrate the competencies. These cluster-related core courses are mandated for VHSs and JCTs but only suggested for CTs/UTs.

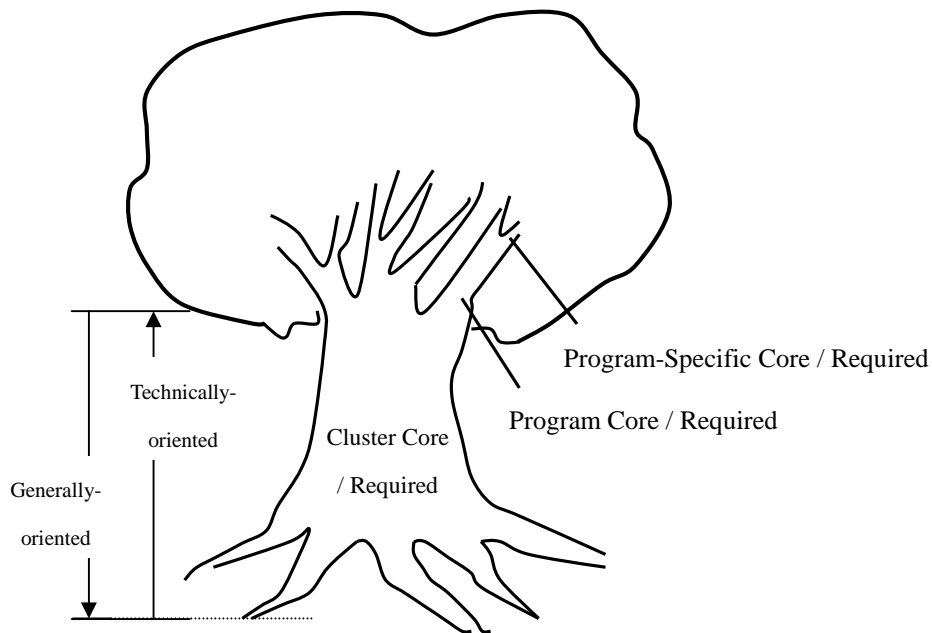


Figure 4. A metaphor of three types of core courses

6. School-based Curriculum Development Is Highly Emphasized

Core courses are only part of the curriculum of any program. For example, Table 2 indicates the allocation of course categories and semester credits for a 5-yr JCT. In Table 2, there are 80-110 credits of cluster-related core courses created by cluster committees. Every TVE institution is anticipated to implement the required core courses promulgated by MOE and create its own institution-wide and/or program-specific required or optional courses.

Category	Required Core Course (Promulgated by MOE)	Required or Optional Course (Created by TVE Institution)
General Course	66	
Technical Course	20 - 44	
Total	86 - 110	110 - 134
Minimal Requirement for Graduation	220	

Table 2. The allocation of course categories and semester credits for 5-yr JCT

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