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ABSTRACT

Three major models of vocational education and training provision for the 16- to 19-year-old age group have been identified: schooling model, which emphasizes full-time schooling until age 18; dual model, which involves mainly work-based apprenticeship training with some school-based general education; and mixed model. Germany is an exemplar of the dual model; the Netherlands and France provide the schooling model; provision in the United Kingdom (UK) is the mixed model. Although the dual system will continue to dominate the secondary vocational-technical education and training in Germany, German full-time vocational schools may be gradually incorporated into general education. More and more university students in Germany seek two-fold qualification--university studies and practical vocational training--to enhance their job prospects. In the Netherlands, some measures, such as encouraging more employers' organizations, trade unions, and industry involvement, have been taken to reform the senior secondary vocational school system. No significant recent reform efforts are found in France. The former polytechnics in the UK recently changed their name to universities to expand their capacities for student recruitment and program offerings. The implication for secondary and postsecondary vocational-technical education in Taiwan is that it is too school-based to adapt to the labor market and that there is a need for stronger links with the labor market. (Contains 15 references.) (YLB)

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Running head: VOCATIONAL-TECHNICAL EDUCATION

Vocational-Technical Education Reforms in Germany, Netherlands, France and U.K. and Their Implications to Taiwan

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ABSTRACT

Based upon the information obtained from a field trip and related literature review, this paper presents a country-specific overview of evolving vocational-technical education in four western European countries--Germany, the Netherlands, France and the U.K. The study finds: (1) While the dual system will continue dominating the secondary vocational-technical education and training in Germany, German full-time vocational schools may be gradually incorporated into general education; (2) More and more university students in Germany seek two-fold qualification--university studies and practical vocational training--to enhance their job prospects; (3) In the Netherlands, some measures, such as encouraging more employers' organizations, trade unions and industry involvement, have been taken to reform the senior secondary vocational school system; (4) No significant recent vocational-technical education reform efforts are found in France; (5) In the U.K., both city technology colleges (CTCs) and city college for the technology of the arts (CCTAs) are newly situated in urban areas for the ages 11-18; and (6) The former polytechnics in the U.K. recently made name changes to universities to expand their capacities for student recruitment and program offerings. Consequently, an implication--more links with the labor market--was made for the secondary and postsecondary vocational-technical education in Taiwan.

Vocational-Technical Education Reforms in Germany, Netherlands, France and U.K. and Their Implications to Taiwan

The vocational-technical education in Taiwan, R.O.C. has confronted at least the following three challenges: (1) To maintain its global economic competitiveness, Taiwan has to upgrade local industries to compete in the international market and open the domestic market in accordance with world trends; thus, vocational-technical education must train world-class workers; (2) The rapid technological changes in a variety of industries have forced vocational-technical education to prepare workers for the shifting demands of workplace needs; and (3) Too many students in or from vocational-technical education institutes, who are supposed to be occupation-oriented, desire to go directly on to advanced education which leads to higher-paying jobs.

There are no simple solutions to the above problems. In order to learn some implications from other countries to suggest future reforms in the secondary and postsecondary vocational-technical education programs in Taiwan, the author and eight other educators were funded by the Ministry of Education to visit some vocational-technical education institutes in Germany, the Netherlands, France and the United Kingdom (U.K.) in May and June of 1994. As a result of the field trip and related literature review, some of the author's personal findings and opinions are

presented in this paper.

A Country-Specific Overview of Vocational-Technical Education Reforms in Germany, Netherlands, France and U.K.

Since most Soviet republics in Europe declared their independence at the beginning of the 1990s and then involved in establishing a European political and monetary union, the revival of Europe has been evident (Lewis, 1992). All Germany, the Netherlands, France and the U.K. are members of the European Community (EC) and the European Union (EU). A comparison of the basic data of these four European countries is presented in Table 1.

The Organization for Economic Cooperation and Development (OECD) has identified the following three major models of vocational education and training provision for the 16 to 19-year-old age group: (1) schooling model, with emphasis on full-time schooling until age 18; (2) dual model, which involves mainly work-based apprenticeship training along with some school-based general education; and (3) mixed model, which includes elements of both the preceding models 1 and 2 (Cantor, 1991). Germany is the exemplar of the dual model; the Netherlands and France provide schooling model. The provision in the U.K. is mixed model. At the upper secondary level, enrolment for vocational, technical, and apprenticeship programs is higher than for general programs in Germany, the Netherlands, and France. However, more students are enrolled in general programs than in vocational ones in the U.K. (see Table 1).

Table 1
A Comparison of the Basic Data of Germany, Netherlands, France and U.K.

	Germany	Netherlands	France	U.K.
Area (sq. miles)	137,838	15,892	211,208	94,247
Population (million)	79.1	15	56.2	57.1
Persons/Sq. Mile	221	1,000	208	601
Capital	Bonn	Amsterdam	Paris	London
Language	German	Dutch	French	English with some Welsh and Gaelic
Compulsory Schooling (years)	9 (ages 6-15)	10 (ages 6-16)	10(ages 6-16)	11 (ages 5-16)
Secondary Schooling	DL DU	DL DU	CL DU	CL DU
General/ Vocational	1 : 3.92	1 : 1.97	1 : 1.29	4.67 : 1

Note: CL--comprehensive lower secondary; DL--differentiated lower secondary; DU--differentiated upper secondary
General/Vocational--the upper secondary ratio of the enrolment for general programs and the enrolment for vocational, technical, and apprenticeship programs in 1988

Sources: Kurian (1988); Lewis (1992); OECD (1993).

Germany

In general, Germany is both an ordered and orderly society where most economic life and educational provision are determined by detailed laws (Cantor, 1989). The majority of German students start their vocational training after completion of *Hauptschule* (main school), *Realschule* (intermediate school) or the 10th grade

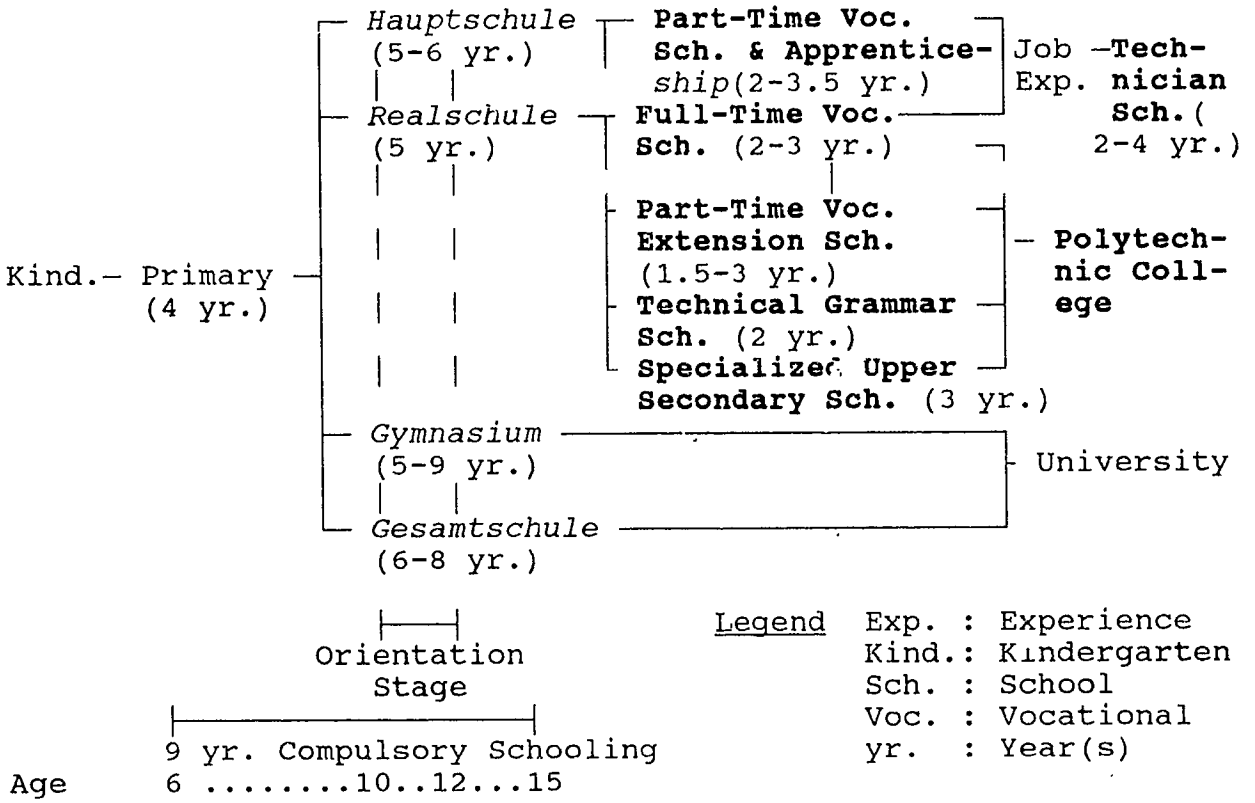

Figure 1. The Educational System in Germany.

Gymnasium (grammar school) or *Gesamtschule* (comprehensive school). Vocational training has two different paths: either in full-time vocational schools or in the dual system. The full-time vocational school (*Berufsfachschule*) equips students with a complete occupational qualification or a partial qualification for subsequent training such as going on to a polytechnic college or college of technology (*Fachhochschulreife*). For the majority of youngsters, vocational training in a recognized occupation under the dual system is the most important preparation for a job in the labor market. The dual system is a 2 to 3.5-year firm-based apprenticeship training combined with compulsory part-time

education in a vocational school with on-the-job training. Most of the trainees or apprentices spend three to four days a week in a firm and one to two days a week at a vocational school. In brief, the key features of the dual system are delivering vocational education and training in two centers of learning--at the part-time vocational school and in the firm, and binding regulations, school-outlined curricula and uniform examinations. Instead of going to vocational school, young people--especially those who have no apprenticeship training place or have not chosen an occupation--can participate in a one-year vocational preparation course (*Berufsvorbereitungsjah, BVJ*) or basic vocational training year (*Berufsgrundbildungsjahr, BGJ*). In addition to the full-time vocational school and the dual system, there are the following other types of vocational schools at the secondary level: (1) *Berufsaufbauschule* (part-time vocational extension school), which teaches general education as well as vocational education subjects up to a level equivalent to the leaving certificate of the *Realschule;* (2) *Fachschule* (technical school), which provides more in-depth technical training after completion of a vocational training program or after appropriate practical skills have been acquired on the job, (3) *Fachoberschule* (technical grammar school), which offers certain subjects such as engineering, social sciences, economics, design, and nautical science (Lauterbach, 1992).

The following vocational education and training trends are indicated (Lauterbach, 1992): (1) The vocational education and

training system will continue existing parallel to the general education system rather than merge with it; (2) The majority of youngsters, completing their general compulsory education, will mainly receive their initial vocational training in the dual system; and (3) Due to the strong competition from the dual system, the full-time vocational schools may be gradually integrated into the general education system.

It should be also noted that in 1990 the total number of students in higher education amounted to 1.58 million, thus exceeding for the first time the total number of apprentices (around 1.5 million). This indicates that university studies are becoming attractive. In the most recent trend, many youngsters combine university studies and practical vocational training (two-fold qualification) to enhance their job prospects.

Netherlands

The Netherlands is a small but beautiful country. Its educational system is shown in Figure 2. Some 70% of Dutch primary and secondary schools, including vocational institutions, are private. About one third of all lower secondary students are in junior secondary vocational schools (*lager beroepsonderwijs*, LBO; i.e., lower-level vocational school) which provide a two-year period of general instruction and a two-year period of more intensive vocational orientation. Basically, in the LBO, vocational orientation and preparation are the essential contents, rather than specialization. The senior secondary vocational school (*middelbaar beroepsonderwijs*, MBO; i.e.,

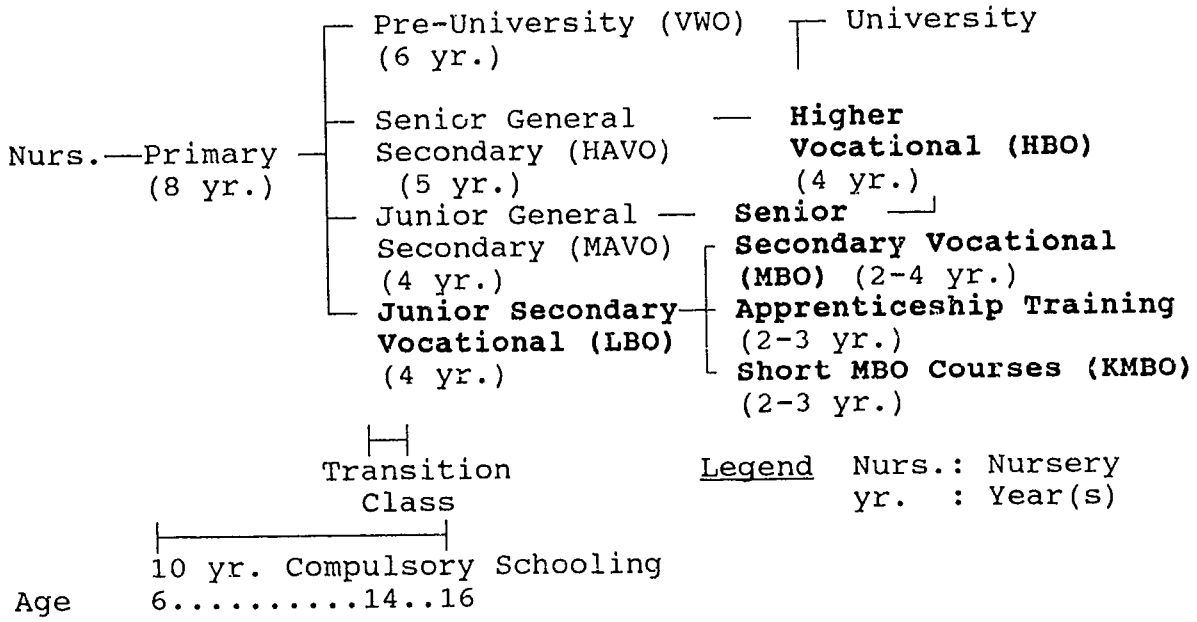

Figure 2. The Educational System in the Netherlands.

medium-level vocational school) provides two to four years of training in the disciplines taught already at the LBO. The successful MBO graduate generally obtains not only a diploma (technician, assistant, etc.) but also admission to the higher level of his/her school category. In addition, the crafts-oriented apprenticeship system, sponsored by employers, trade unions and the government, has risen since the mid-1980's. Apprentices receive job-related, part-time instruction one or two days a week (eight to nine hours totally) at specialized schools. Youngsters who neither go to a continuing secondary school nor begin an apprenticeship after the 10th grade, must undertake two years of part-time compulsory schooling to receive participation training, which fulfills the following three functions: (1) linkage--transition to other forms of instruction for those

youngsters who hold no school leaving certificate, (2) switch-over--vocational orientation and choice for those youngsters who are in employment, and (3) precautional--offer of general education and job-related instruction (Lauterbach, 1992; Loose, 1988).

The number of senior secondary vocational students is rising, but traditional senior secondary vocational education faces many problems such as lack of flexibility, out-of-date subject matter, largely varied school sizes, and staff shortages. Thus, the infrastructure of senior secondary vocational education has been improved since 1986 to reinforce its vocational aspect. Some measures have been taken to initiate a process of sector formation and innovation and achieve economies of scale. Employers' organizations, trade unions and industry have been increasingly involved in compiling curricula. Schools have had more control over finances, staff and the organization of teaching (OECD, 1991)

France

Most of the formal educational system in France is highly centralized. The French educational system is presented in Figure 3. Secondary education is divided into two cycles: the first cycle, grades 6 to 9, and the second cycle, grades 10 to 12. The second cycle of secondary education is divided into two streams--long and short. The long stream, leading to the *baccalaureat* (*bac*; i.e., a national examination given at the end of secondary school; success on this examination is normally

required for admission to programs of higher education) is further divided into general high schools and vocational schools. The short stream is purely technical and leads to the *Certificat d'Aptitude Professionnelle* (CAP; i.e., certificate of vocational competency). At the end of grade 9, students, with the assistance of their parents and school counselors, must decide whether to pursue the academic tracks leading to the upper secondary school or to pursue one of the available vocational options. However, vocational-technical education has been neglected and despised, so French youngsters almost never voluntarily go into that stream (Eicher, 1985).

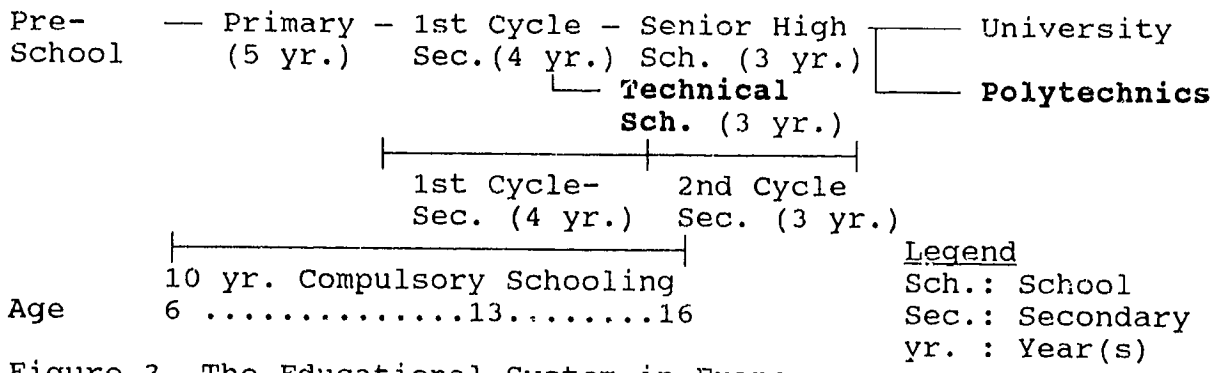

Figure 3. The Educational System in France.

At the higher education level, French polytechnics, university institutes of technology (IUT), newly created in the 1960s, mostly provide two-year programs and lead directly to a university diploma in technology (DUT). Programs of study include electrical and mechanical engineering, management, applied biology, etc.

United Kingdom

The present structure of British educational institutions is

shown in Figure 4. At age 16, students may stay on in full-time education in schools until age 18 or transfer to a further education college for the same purpose. The range of school subjects narrows down dramatically to a relatively few specialized subjects in the period of post-compulsory schooling from ages 16 to 18. Launched in 1983 and later coming to support the National Curriculum, the Technical and Vocational Education Initiative (TVEI) is designed to equip 14 to 18-year-old students with qualifications and skills needed for broad employment and further study. In addition to TVEI, the Youth Training (YT; formerly named Youth Training Scheme--YTS) is another government initiative preparing British school leavers for work. Normally, a two-year program combining occupational and basic skill training with intensive guidance counselling is offered under YT. Excepting TVEI and YT, British secondary schools make virtually no provision for occupationally specific programs (Ainley, 1990; Cantor, 1989; Sebaly, 1988).

The 1988 Education Reform Act represents the most important governmental initiative in the education service of England and Wales since 1944 (Bash & Coulby, 1989). Under the Act, both city technology colleges (CTCs) and city colleges for the technology of the arts (CCTAs) are situated in urban areas to provide education for students of different abilities in the 11-18 age-group. These colleges have a broad curriculum with an emphasis on science and technology, in the case of a CTC, or on technology in its application to the performing and creative arts, in the

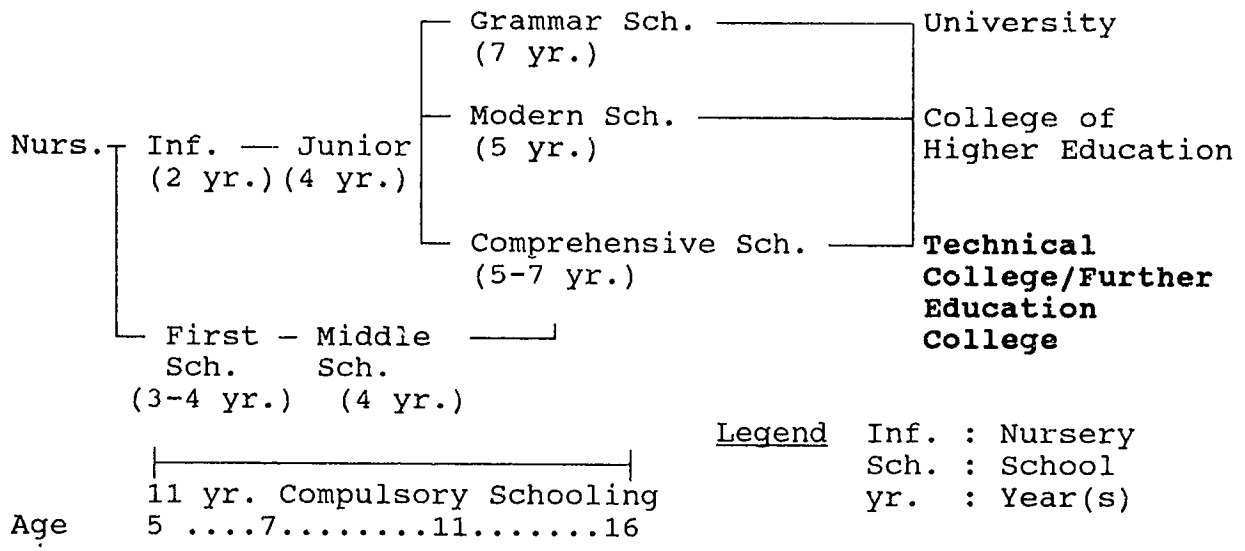

Figure 4. The Educational System in the United Kingdom.

case of a CCTA. It is also evident that "the closer relations of education with industry and commerce are preserved in some of the institutional arrangements of the 1988 Act, which require representation by local business on the governing boards of all schools and colleges" (Ainley, 1990, p. 2).

In addition, at the higher education level, since the older established universities had been unwilling to increase student numbers and were generally unable to match the increased productivity of the polytechnics, the polytechnics were given the option to change their title to university as a consequence of government legislation in 1992. All of the former polytechnics, in which student numbers rapidly expanded during the late 1980s and 1990s, took the option and two colleges of higher education were also enabled to become universities (Morris, 1994).

Implications: More Than the Sum of Their Parts

It is widely recognized that Taiwan is very lacking in

natural resources. Thus, the abilities of its human resources must be fully developed and utilized. To achieve this, vocational-technical education system has to play a critical role. It should be noted that in Taiwan the current proportion of the enrollment of the secondary vocational-technical students to total student enrollment at the upper secondary level exceeds 70%.

A summary of the vocational-technical education reforms in the four western European countries may be made as follows: (1) While the dual system will continue dominating the secondary vocational-technical education and training in Germany, German full-time vocational schools may be gradually incorporated into general education; (2) More and more university students in Germany seek two-fold qualification--university studies and practical vocational training--to enhance their job prospects; (3) In the Netherlands, some measures, such as encouraging employers' organizations, trade unions and industry involvement, have been taken to reform the senior secondary vocational school system; (4) No significant recent vocational-technical education reform efforts are found in France; (5) In the U.K., both city technology colleges (CTCs) and city college for the technology of the arts (CCTAs) are newly situated in urban areas for the ages 11-18; and (6) The former polytechnics in the U.K. recently made name changes to universities to expand their capacities for student recruitment and program offerings. All the above reform trends are meaningful to Taiwan.

However, education must ultimately reflect society's perceived needs. In the author's opinion, there is at least one implication that may be drawn from the above summary. The implication is that the vocational-technical education in Taiwan is mainly found to be too school-based to adapt labor market and new circumstances. Thus, links with the labor market must be strengthened. Due to the fact that the scale of most corporations in Taiwan is small, employers in Taiwan have been unwilling and unable to invest considerable sums of money on the training of their employees. Therefore, government and educational institutions must place increasing emphasis on linking the school and workplace.

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