CSCanada
Canadian Social Science
Vol. 12, No. 8, 2016, pp. 50-56
DOI:10.3968/8699

ISSN 1712-8056[Print]
ISSN 1923-6697[Online]
www.cscanada.net
www.cscanada.org

International Comparative Study on the Curriculum Connection Between Middle and Higher Vocational Education

TAN Qiang[a],*; LAN Ying[b]; FENG Mei[c]

[a]Associate professor, Sichuan Province Commerce & Trade School, Deyang, China.
[b]Lecturer, Sichuan College of Architectual Technology, Deyang, China.
[c]Assistant Lecturer, Sichuan Commerce & Trade School, Deyang, China.
*Corresponding author.

Received 10 May 2016; accepted 16 July 2016
Published online 26 August 2016

Abstract

The modern vocational education system is the premise and the logical starting point of the curriculum connection between middle and higher vocational education, which is the foundation of constructing modern vocational education system. The international comparative study method is employed to organize, study and analyze the curriculum connection between middle and higher vocational education in the major developed countries in the world. The thesis is aimed at finding the distinctive development characteristics and common development rules of the curriculum connection between middle and higher vocational education in many developed countries, so as to provide experience reference for the future theoretical research and practical research in China.

Key words: International comparative study; Curriculum connection; Middle and higher vocational education

Tan, Q., Lan, Y., & Feng, M. (2016). International Comparative Study on the Curriculum Connection Between Middle and Higher Vocational Education. *Canadian Social Science, 12*(8), 50-56. Available from: http://www.cscanada.net/index.php/css/article/view/8699
DOI: http://dx.doi.org/10.3968/8699

INTRODUCTION

The modern vocational education system is the premise and logical starting point of the curriculum connection between middle and higher vocational education, which is the foundation of constructing modern vocational education system. The curriculum connection between middle and higher vocational education is the key factor to construct modern vocational education system. The study of the curriculum connection between middle and higher vocational education, to a certain extent, represents not only the study of the vocational education but also the development and reform situation of a nation's vocational education. The paper organizes, studies and analyzes the curriculum connection between middle and higher vocational education in main developed countries, from the perspectives of modern vocational education system to the curriculum connection between middle and higher vocational education, to figure out the distinctive development characteristics and common development rules of the curriculum connection between middle and higher vocational education in main developed countries. Therefore, to provide experience reference for the future theoretical and practical research in China, and provide basic research for the construction and future development of China's modern vocational education system.

In the following parts, the author will study the vocational education system and Curriculum Connection between Middle and Higher Vocational Education in Germany, America and Britain, by comparing their current education systems, so as to find out their common rules, beneficial experience and inspirations for China.

1. THE VOCATIONAL EDUCATION SYSTEM AND THE CURRICULUM CONNECTION BETWEEN MIDDLE AND HIGHER VOCATIONAL EDUCATION IN GERMANY

1.1 The Vocational Education System of Germany

Germany is a representative country of implementing the vocational education system of the dual system.

The whole vocational education system of Germany presents an I-shaped appearance. In other words, general education and vocational education are combined together in the primary education period; general education and vocational education are separated in the secondary and even undergraduate education period; then, the two will be recombined in the postgraduate and doctoral education period. In the level of school's vocational education, students can choose both vocational education and general education through attending the lectures and tests of different courses.

The "dual" feature of Germany's vocational education system is salient. The significant feature of the whole vocational education system is dual: two kinds of educational institutions—schools and enterprises; two varieties of teaching contents—vocational skills and expertise; two types of textbooks—enterprise training textbooks and school knowledge textbooks; two classes of identities—trainees of enterprises and students of vocational schools; two kinds of tests—skill tests and qualification tests; two types of certificates—certificates of associations' examinations and certificates of enterprises' trainings, and diplomas.

Germany's "dual system" also encountered many problems and challenges. However, the German government firmly stuck to the "dual system" and positively made strategic adjustment so as to adapt to the ever-changing trends. The *Vocational Education Report* of 2001 definitely put forward the goal: "to endeavor to establish a high-quality vocational education system of specialization, individuation, future-orientation, equal opportunity, flexible system and mutual coordination". (Bai et al., 2012) The Federal Ministry of Education and Scientific Research of Germany put forward ten policies to reform vocational education: (a) to raise the proportion of school-based vocational education and diversify vocational education and training; (b) to readjust the subsidization structure and provide vulnerable groups with more opportunities to receive vocational education and training; (c) to improve the relationship between school education and enterprise training and guarantee the posts of enterprise training; (d) to strengthen the employment rule and increase the flexibility of vocational education; (e) to expand vocational training and effectively use vocational training resources; (f) to strengthen the linkage between vocational education and general education and enable the students of vocational schools to receive higher education; (g) to provide young people with "the second training chance" to update their vocational skills; (h) to promote the opening, flow and mutual recognition of European countries' vocational education and training; (i) to enhance the comparability of "dual system" vocational education within the European boundaries and exploit its development potentials in the international education market; (j) to lay a foundation for the future-oriented vocational education and deepen the cooperation between vocational education and economic, scientific and technological, and political sphere.

1.2 Study on the Curriculum Connection Between Middle and Higher Vocational Education in Germany

The cohesion between German secondary and higher vocational courses is to adopt the comprehensively vocational curriculum model of ladder model so as to perfect secondary and higher vocational education system. The teaching objective is aimed at cultivating "operation ability", which is of strong flexibility, hierarchy and connectivity. The cultivation of vocational ability is emphasized. Training and course assessment are separated in the "dual system". Course examination, in the charge of guilds, is strictly implemented in accordance with the specific requirements of *Vocational Training Regulations*. It will not be limited by the contents taught by training institutions so that the objectivity of comment is assured.

First and foremost, the curriculum of "dual system" vocational education model can be divided into two types: practical training course and theory course. Generally speaking, practical training course is mainly performed in enterprises, while theory course at vocational schools, but they are not unalterable. In contrast, practical training course and theory course are overlapped to a certain extent. The instructors can give lectures of practical training in enterprises and they can also pertinently perfect and supplement textbooks according to practical needs; likewise, teachers of vocational schools can show students some skills which cannot be learned from workshops of enterprises in the laboratories and practical training workshops of schools. Secondly, the scientific combination of practical training textbook and theory textbook is the significant foundation of better implementation of "dual system" education so as to match two different kinds of courses. In order to guarantee the standard and quality of vocational skill training, practical training textbook is compiled uniformly by Federal institute of Vocational Education according to the combination of vocational skills and relative knowledge modules; the compilation of theory textbook, in accordance with the requirements of vocational training skills, is specifically formulated by the Special Committee of each state. Theory textbook, whose core is to tell students "why they should do so", has no single textbook system.

The "dual system" vocational education model pays special attention to students' practice which is put into the most important position in scientific course design. Practical training teaching is experiencing the transition from traditional four-level teaching method to such new teaching methods as project teaching method and guidance teaching method. Highlighting standard and giving due consideration to practice, the combination

of these two types of courses and textbooks formed an organic and flexible teaching system. For one thing, it meets the requirements of practical training teaching and theory teaching; for another, with both unified course of standard nationwide and course with local characteristics, the system can better satisfy the learning needs of students at different levels. Planned courses and textbook systems with characteristics can avoid overlapping and improve teaching effect. The separation of practical training and theory can meet learning needs of students with different ability levels and in different development directions. Students needing jobs can put their emphases on learning skills; students pursuing advanced studies can put their emphases on learning theory knowledge to tamp the foundation for further study. It is fair to say the implementation of "dual system" has achieved great success in specialty setup and system of course and textbook.

Guided by vocational analysis, the specialty setup of Germany is scientific, stable, comprehensive and adaptable. In order to adapt to the progress of society science and technology, constant changes of industrial structure, and integration tend of social vocations, the Germen government will redefine training professions at intervals since many traditional professions gradually disappeared and rising professions and overlapped professions continuously emerged. The number of German "dual system" training professions was 776 in 1950, but it was reduced to 370 in 1994.

2. THE VOCATIONAL EDUCATION SYSTEM AND THE CURRICULUM CONNECTION BETWEEN MIDDLE AND HIGHER VOCATIONAL EDUCATION IN USA

2.1 The Vocational Education System of USA

USA is a representative country of implementing the single-track education system of combining general education with vocational education. We can know from the current education system graph of America that no school truly corresponds with vocational education, but all schools correspond with vocational education, which is a kind of vocational education system featured by high combination of general education with vocational education. The vocational education system has no independent system in form but it is implemented in a way that vocational education courses and projects are divided into the education system of each period. The vocational education system, featuring high integration of general education and vocational education, is performed by course implantation and mutual recognition of credit and conversion system.

Apart from the fact that students receive lifetime vocational education from primary schools in many regions, formal vocational education forms a branch after junior high school and start from the high school period. The vocational education system has become an important part of the whole education system.

The main task of the secondary vocational education is to cultivate skilled workers. The secondary vocational education has three implementation forms. The first one is that the comprehensive high schools have three divisions: academic division, general division, and vocational division. The second one is that the vocational high schools belong to special full-time school and enroll graduates from junior high school. The Vocational high schools require a four-year academic period and cultivate secondary technical talents. The third one is local vocational education center.

The technical education in the junior college period can be divided into community college, technical college, and local vocational school. There are two-year vocational technical education programs attached to institutions of higher learning. All these forms of vocational technical education schools at all levels, in the charge of education department, constitute an important part of American education system.

The vocational education system has open features. Firstly, it is opened to other educations. Vocational education, transcending secondary education, post-secondary education and adult education periods, is undertaken by such public educational institutions as comprehensive high schools and community colleges. Secondly, it is opened to all people. As long as you have free time, you can study there no matter how old you are. American community colleges can be both diploma education and further education and training. Therefore, American community colleges cannot be simply understood as equal to China's higher vocational colleges. Universality and wide range of abilities are emphasized in the American cultivation of vocational skills. The talents fostered in America are compound talents with many specialties, corresponding with industrial structure and social features.

American vocational education system is performed by powerful credit recognition and conversion system. Different educational institutions at the same level, such as comprehensive high school and regional CTE School, and private comprehensive high school and public comprehensive high school, can recognize each other in course credits; educational institutions at different levels can also recognize each other. Take the course that students can obtain credits in both high schools and universities, for example, the relevant courses students study in high schools can also be recognized by community colleges and even by four-year universities; educational institutions recognize credit in cooperative education, which means the working experience students

got from enterprises can be converted into effective credit in different regions .

The system of vocational education system and higher education are coherent in America. The four-year undergraduate education and graduate education are mainly applied only a small part academic education. Therefore, they can match with the higher vocational education of junior colleges and obtain the professional degrees of bachelor, master, and doctor accordingly.

2.2 The Curriculum Connection Between Middle and Higher Vocational Education in USA

The Curriculum Connection between Middle and Higher Vocational Education in USA is the typical "competency based education" curriculum model (CBE curriculum model for short). The CBE curriculum design has two procedures: drawing the DACUM table and formulating course syllabus. The DACUM table is drafted by the committee formed by enterprise representatives invited by schools. The committee determines the comprehensive abilities required by a profession after making analysis and conclusion. The syllabus is formulated after relative teaching personnel organized by schools analyse the DACUM table. Specific procedures are as follows. First, the same or similar knowledge will be classified into a type, forming a teaching module that can be finished in a certain period, i.e. a course; second, teachers need to order the curriculum according to foundation, major, and practical working demands so as to form a curriculum syllabus. Meanwhile, some non-professional courses will be added into the curriculum syllabus (accounting for almost 25%). Such kind of course design is a comparatively practical and maneuverable method since it can not only increase the enthusiasm of enterprises to support learning but avoid making the training objective impractical. The DACUM analysis process of professional abilities is as shown in the following figure.

CBE, determining competency standard according to observation on competency, makes professional competency on the basis of teaching objective and evaluation criteria and converts competency standards into courses. According to the various skills reflected by DACUM, industry experts, learning managers and curriculum developers will develop and instruct students together in order to help students grasp the learning materials of set skills, such as learning guide books, textbooks, lecture notes, experiment instruction, operation guide, sound and computer-aided software. Technology preparing education after junior high school is initiated in line with the regulations of *Perkins Vocational and Applied Technology Act*. Secondary vocational education is closely combined with the technology preparing education after high school, adopting the application-oriented cohesive model of secondary and higher vocational courses. Besides, the internal links between the preparation course of technical education after high school and the practical technology course of community college and technical college. Special attention is paid to explore the cohesion and model of vocational curriculum reform and technology preparing curriculum after high school.

The American CBE teaching mode adopts the "self-training assessment system", emphasizing the self-assessment of students and the cultivation of students' ability to give feedback. Teachers' roles in the teaching process are no longer to teach and explain something but to instruct students and give them advice; students are no longer to receive passively but to obtain actively, which greatly enhance their consciousnesses and sense of responsibilities. With regard to teaching methods, CBE comprehensively uses demonstration, reading instruction, practice, visiting, discussion, imitation, internship and experiment, and modernized E-teaching method, reflecting individualized teaching. In that way, students' positivity could be brought into full play and their independent thinking abilities and innovative abilities also achieved comprehensive development. As for the academic assessment, first and foremost, students need to make their own study plans according to the requirements in the learning handbooks of the CBE model along with combining their plans with the practice of time, learning abilities, and nature of work. They have to finish the learning tasks required by their study plans. In the next place, students have to make self-assessment first and then teachers will evaluate and judge it after students finish their self-assessment and meet the demands of CBE. The examination process will be demonstrated by students and watched by teachers, and the examination results will be formally recorded into files. Whenever students decide to stop learning, schools should hold graduation interviews for them and grant certificates accordingly.

3. THE VOCATIONAL EDUCATION SYSTEM AND THE CURRICULUM CONNECTION BETWEEN MIDDLE AND HIGHER VOCATIONAL EDUCATION IN BRITAIN

3.1 The Vocational Education System of Britain

Britain is a representative country of implementing the vocational education system under the framework of national qualification. National culture determines education system. British culture features typical gentlemen culture, eclecticism and empiricism. Britain implements liberalism policy in economic development and brings in the market mechanism as much as possible. British industrial structures are mainly medium and high-tech manufacturing and tertiary industry. With the change of industrial structure, labor force structure also changed

accordingly and non-physical labor jobs constantly increased.

One feature of British vocational education system is its openness to market. British vocational education system, believing in the strong power of the market, is of minimum government intervention. British government insists that training is mainly the responsibility of industries and government should reduce intervention to its best. We can know from the current British education system picture that British vocational education system can be concluded as one based on courses under the framework of national qualification. Graduates of compulsory education can further their study at school or receive vocational education at Continuing Education College or receive various kinds of training provided by government, such as modern apprentice system, or training provided by employers.

Another feature is the basic element characteristic of modern apprentice system. British vocational education system implements alternating in-service training and full-time study. For example, two thirds of time is spent receiving training in enterprises and one third of time learning theoretical knowledge at school; apprentices and employers need to sign an agreement so as to identify each others' duties and responsibilities; apprentices enjoy a salary lower than that of adult apprentices in training period; social partners (owners of enterprises, training providers, and training management organizations, etc.) formulate training contents and training contracts together; apprentices will be granted vocational qualification certificates acknowledged by the country after passing the examinations when training are over.

3.2 The Curriculum Connection Between Middle and Higher Vocational Education in Britain

The course element of British vocational education is from vocational analysis. The essence of the cohesion between vocational education and training course content is the organization issue. The father of modern curriculum theory, Ralph Tyler, thinks that curriculum organization needs to make sure the "course element used as organization clue". Three periods are included in British vocational education and training course development: The first one is from vocational analysis to vocational standard, the second from vocational standard to learn unit, the third from learning unit to qualification course. Due to the fact that the course element is from vocational analysis, the vocation-orientation of course is ensured and that of vocational education is also ensured. On this basis, course element is organized to achieve the course cohesion according to the requirements of different ability levels in the qualification system.

Course teaching is coherent with learner's ability. Apart from being reflected by the cohesion between course content, the cohesion between British vocational education and training course also enables learners to choose courses on the basis of their practical abilities through the credit system and "recognition of previous learning" system. Thus, the cohesion between courses can be realized in the sense of "teaching process". With the development of society, students of vocational colleges will become more and more diversified. The cohesion between the course of teaching process and learners' own knowledge, understandings and skills will be more and more important.

Industries and enterprises take part in course development. Industries and enterprises play essential roles in British vocational education and training course development system, which guarantee the vocation-orientation of vocational education and training course. The first phase of British vocational education and training course development is vocational standard development. This phase, in the charge of British Industry and Skill Committee, mainly makes qualitative study and quantitative study to know the industrial and professional needs. Furthermore, the role and function of a position will also be made detailed analysis. The vocational standard developed under this basis can truly reflect the practical needs of industries and enterprises. In the phases of developing learning units and qualification courses, experts and other stakeholders will also participate in this process, which increased the possibility of the cohesion between vocational education and training course and vocational standard.

The course evaluation method is that there must be evaluation standard in each learning unit. This evaluation standard is the specific standard expected to be reached in finishing a learning unit; the evaluation standard is relevant to the language expression of individual learning result; the evaluation standard must be detailed enough so that schools can judge whether learners have acquired credible, coincident, and powerful learning results. However, these standards should not be the needless burdens of learners and evaluators; method used in evaluation should not be included.

CONCLUSION

It is not difficult to draw the conclusion that all countries and regions in the world attach due importance to the development of vocational education. The more developed a country's economy is, the more importance it attaches to the development of vocational education. Vocational education has been regarded as the "secret weapon" of the soaring economy and national rejuvenation of such developed countries as Japan and Germany. People can know from the western countries' experience that countries' developments are closely related to the development of vocational education. No two countries have the completely same development system and model of vocational education, but they all follow the practical situation of their own society, economy and culture,

achieving the expected development goals. Although each country's development model of vocational education is different and diversified, the cohesion between their secondary and higher vocational courses all reflected the idea of lifelong education. They have common features and successful experience in completing vocational education system, favorable laws and policies, and making course cohesion of their basic cores, which can be our reference and is worth learning.

(a) Improve vocational education system: The premise of the coordinated development of secondary and higher vocational education.

Each country's vocational education system pattern is different, but they all ensured the coordinated development of secondary and higher vocational courses. German vocational education is featured by "dual system", adopting the spiral type in school system cohesion and the ladder type cohesion between secondary and higher vocational courses. High level's vocational technology education is based on the relatively lower level's vocational education. The British vocational education system of connecting high level and low level education and communicating general education and vocational education is established under the unified national qualification framework. In this system, courses, not educational institutions, are emphasized. There are multiple subjects and forms of running schools in vocational education. The overpass of secondary education, vocational education and higher education is built through the national qualification framework. Japan has a complete set of educational stratification's vocational education system, such as high schools, colleges, and vocational universities. In the CBE model represented by America, students can obtain bachelor's degree, master's degree and doctor's degree accordingly due to the cohesion between vocational education system and higher education. Chinese Taiwan is the representative region of implementing the "dual system" vocational education system, having the independent vocational-technical education system from senior vocational middle school to college to undergraduate or from senior vocational middle school directly to undergraduate to research institution (graduate and doctoral students).

(b) Perfect laws and policies: The effective guarantee of the curriculum connection between middle and higher vocational education.

The normal operation mechanism of the cohesion between secondary and higher vocational education is effectively ensured by the complete laws and policies of each country. In 1969, Germany enacted the *Federal Vocational Education Law* and further revised and supplemented it in 1973. The law not only included the labor training of dual system but other vocational education and specialized education. The German *Vocational Education and Training Law* of 2005 defined the study methods of vocational education: preparatory education, preliminary education, continuing training and retraining. These methods existed in different educational training institutions and formed complex relationships. Countries and governments are responsible for solving the core problems of transition and transformation between these learning methods and learning institutions. Over the recent 30 years, America enacted more than dozens of vocational education laws among which the most important ones are *Vocational Education Law*, *Regional Development Law*, *Manpower Development and Training Law*, *Employment Opportunity Law, Employment Training Cooperation Law*, and *Vocational Education Amendment*, etc.. These laws require that the whole society attach importance to and support vocational education. They define the goals to be reached by vocational education and effectively promote the development of vocational education. It is stipulated by American Perkins Act that the cohesion between secondary education and post-secondary education can be achieved by helping students in secondary education visit the bidirectional and simultaneous entrance projects and obtain credits of post-secondary education (Deng et al., 2011). The British NQF integrated vocational education with general education to achieve longitudinal cohesion, equivalence and communication of general education and vocational education through NQF (QCF in the future). The equivalent system of general education and vocational education is employed to improve the position of vocational education.

(c) The curriculum connection between middle and higher vocational education: The foundation and core of constructing vocational education system.

Although each country's vocational education system and cohesion mode of secondary and higher vocational course is of different features and contents, their cores and foundations are all cohesion between secondary and higher vocational courses. Germany adopted the ladder type in the cohesion between comprehensively vocational courses and spiral type in school system. America adopted the model of integrated courses and direct cohesion between syllabus and increased the modules of mathematics and basic knowledge of science in the structural reform of higher vocational courses. What's more, America developed the comprehensive courses of integrating academic contents into vocational contents and brought advanced technologies into vocational courses simultaneously. The technical courses were established on the basis of career clusters so as to widen the course framework and adapt to the development needs of modern society's professions. The courses of American community colleges reflect that American higher vocational education pays more attention to people's overall development. In terms of the depth of theory, courses are designed according to the demand of forming professional abilities; in terms of the integration degree, the integration degree between theory and practice

is pretty high. The course cohesion between British secondary and higher vocational education adopted the hierarchical teaching mode, inventing the unit cohesion method. Almost 5,000 standard teaching units were designed and they were divided into 6 levels according to their degrees. The former three units belong to secondary vocational education and the latter three higher vocational educations. The units at the first level are connected with the courses of junior high schools and units of adjacent levels can also be connected with each other. Schools will grant students diplomas of secondary and higher vocational education and other vocational qualification certificates accordingly in accordance with the minimum of the total unit number students learned and the minimum percentage held by units at high levels, which can better achieve the cohesion between secondary and higher vocational courses.

REFERRENCS

Bai, H. G., et al. (2012). International comparative study on the modern vocational education system. *Management Observation,* (01), 39-42.

Deng, Z. M., & Zhang, Y. Q., et al. (2011). *The four modern vocational education mode.* Beijing, China: China Railway Publishing House.

Qing, H., et al. (2010). To our enlightenment from characteristics of education system among Germany, Japan, and United States. *Educational Reform*, (05), 95-99.

Qing, H. (2002). Secondary and higher vocational abroad street pick mode. *Chinese Vocational and Technical Education,* (16), 51-53.

Zhang, X., et al. (2000). *An overview of the dual system vocational education.* Hainan China: Hainan Publishing House.