

Study on Training for Senior Skilled Workers

A Comparison between Japan and China

(Summary)

DI Yan

Visiting Researcher

The Japan Institute for Labour Policy and Training

Research Fellow

China Academy of Labour and Social Security

Ministry of Labour and Social Security, P.R.China

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1. Introduction

Japan has become the second biggest economic power in the world by taking their diligent efforts after the World War II. One of the most important determinants for this impressive growth is undoubtedly the Japanese vocational training system. Along with the economic prosperity, an efficient system on human resources development was gradually established in Japan. The Japan's economic growth model as well as its human resources development system should be regarded as one of the most successful practices in the world.

China is the biggest developing country in the world. Since the implementation of economic reform and open-up policy in recent over 20 years, its economy has grown in a sound and sustainable manner. Nevertheless, along with the progress of economic system reform and the economic globalization, some pending issues emerged from its internal labor market. One of the most urgent issues is the serious shortage of senior skilled workers. Accordingly, learning Japanese experiences and drawing on some instructive lessons are beneficial to settle the said issue for China.

1.1 Scope of the Study

The training for senior skilled workers is not an independent activity. It is closely correlated with the elementary education, secondary education, vocational education, vocational training, etc. In regard of all kind of limitations, this paper will focus on vocational training, with major space on public vocational training and minor on within-enterprise vocational training.

1.2 Purpose of the Study

The purpose of this study aims to examine Japanese vocational training practice (including historical and current situation), make a brief comparison between Japanese and Chinese experiences, try to seek what we need to learn from Japanese model for Chinese practice, and attempt to find the implications for China's policy-making.

This study is conducted with a macroscopic instead of microscopic dimension. The reason to do so is that the system on training senior skilled workers which matches with China's marketing economic setting has been not completely established yet, although Chinese economic reform was commenced more than 20 years ago. Currently, one of crucial matters for Chinese government is to gradually improve the vocational training system.

2. Terminology, Methods and Limitations

2.1 Terminology: Senior Skilled Workers and Intellectual Skills

In China, *Senior skilled workers* is referred as such kind of front-line workers who are proficient at the specialized knowledge and technology, possessing exquisitely practical skills, and having the competence and ability to tackle and cope with the essential technical and craft-operational problems encountered during their working practices in the fields of production, transports, services industries and so on.

They mainly include workers who have qualification such as advanced skilled workers, technicians, senior technicians, or those who have equivalent professional and corresponding levels of skills.

In Japanese researches, a theory of *intellectual skills* was developed by Koike & Inoki (Kazuo Koike and Takenori Inoki, 1990). Intellectual skills provide a worker with the ability to handle problems and changes, during his working on mass-production assembly lines.

Although there are a few differences between the terminology of *senior skilled workers* in China and *intellectual skills* in Japan, after intensively examined, we maybe find out that there are extremely similar implications covered by both of them.

2.2 Methods of the Study

This paper is based on two interviews, the information from websites and some of published literatures.

Two interviews comprise that one was conducted in Employment and Human Resources Development Organization of Japan (hereinafter called as "EHDO"), and the other was in Japan Vocational Ability Development Association (hereinafter called as "JAVADA"). They are two pillars of public human resources development in Japan.

Furthermore, the information from the website of Ministry of Health, Labour and Welfare (Japan) as well as that of the Ministry of Labour and Social Security (China), etc. are utilized.

The previous literatures referred by this study are mainly from JILPT's library.

2.3 Limitations of the Study

There are three main limitations in this study, namely (1) this paper only focuses on vocational training, especially mainly on public vocational training; (2) few information and materials in English were available; and (3) it is difficult to make a comparison of within-enterprise vocational training between Japan and China.

3. Japanese Experiences

This paper takes over half of the space to introduce the Japanese experiences, and the main contents are as follows: (1) current situation of Japanese economy and labor market; (2) history of vocational training; (3) outline of vocational training system; (4) types and standards of vocational training; (5) administration of human resources development; (6) relevant law, regulations, and standards; (7) public vocational training system; (8) national trade skill testing and certification; (9) governmental roles in vocational training; (10) within-enterprise vocational training; (11) features of HRD at present.

3.1 Current Situation of Japanese Economy and Labor Market¹

Japanese Economy Situation

Since the end of the World War II, Japan has experienced a miraculous high economic growth from 1955 to the first half of the 1970s and became the world's second largest economic power right behind the US. After that, Japan has suffered two oil crisis in the 1970s and a collapse of bubble economy in the first half of the 1990s. Japan's economy has been in a slow recovery since 2002.

Outline of Labor Market

Japan's population increased from 72.15 million in November 1945 (immediately after the end of the World War II) to a peak of 127.78 million in 2004, but declined to 127.76 million in October 2005.

During the period of 1994 to 2005, Japan's employment structure has experienced the following changes (see Chart 1): (1) the proportion of those employed in primary industry decreased from 5.8 percent in 1994 to 4.4 percent in 2005; (2) the proportion in secondary industry also decreased from 33.4 percent in 1994 to 27.0 percent in 2005; and (3) the proportion in tertiary industries, however, rose from 60.3 percent in 1994 to 67.4 percent in 2005.

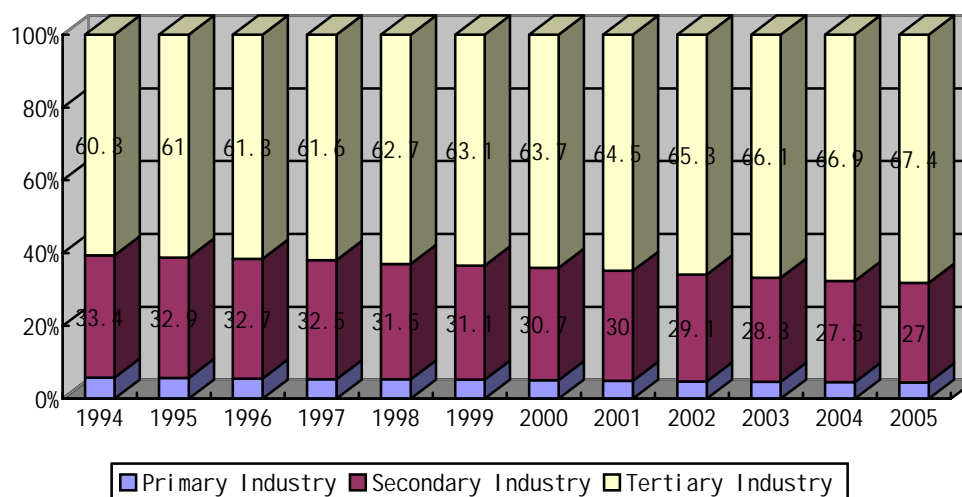
Along with the diversification in forms of employment, the number of non-regular staff rose dramatically. Those non-regular staff covers contracted employees, entrusted employees, transferred workers, dispatched workers, temporary workers, and part-time workers, etc.

In 2007, human resource development in Japan faces some issues, such as the coming retirement of large numbers of baby boomers paralleling with the concerns on how to transfer the skills and technology, the decrease in young employees accompanying an

¹ The source of the figures and contents in this part was from and based on the "Labor Situation in Japan and Analysis: General Overview 2006/2007", http://www.jil.go.jp/english/laborinfo/library/documents/Labor2006_2007.pdf

aging society, and the increase in “freeters (job hopping part-time worker)” and “NEETs (young people Not in Education, Employment or Training)”.

Chart 1 Trends of Employment by Three Industry Divisions



Based on Labor Situation in Japan and Analysis: General Overview 2006/2007, p.25

http://www.jil.go.jp/english/laborinfo/library/documents/Labor2006_2007.pdf

Source: Labour Force Survey, Statistics Bureau, Ministry of Internal Affairs and Communication

Notes: 1) Primary industry means Agro-forestry and Fishery.

2) Secondary industry means Mining, Construction, and Manufacturing.

3) Tertiary industry means industries other than above, excluding those non-categorizable.

3.2 History of Vocational Training

Vocational Training before the Vocational Training Law in 1958

Vocational training in prewar years was confined to either the skill development scheme in large firms or the archaic apprenticeship in the artisan sectors. There were virtually no public vocational training machineries. And in the immediate postwar years, there emerged public institution as an unemployment relief measure².

The vocational training from 1945 to 1958 probably comprised two training systems, i.e. one was job training³ (職業補導) based on the Employment Security Law of 1947, and the other was training for skilled workers (技能者の養成) under the Labor Standard Law of 1947.

In 10 years after postwar, the rapid growth of economy and the concomitant leap

² The Japan Institute of Labour (1969), Vocational Training in Japan, p.10

³ Among the materials available in English, there is no the expression of the term of “職業補導”. In this paper, temporarily use “job training” to refer “職業補導”. It means vocational training for demobilized soldiers, the war-disabled, and persons came back from the war-battlefield

development of science and technology in Japan have incurred new needs for training and retraining on skilled workers in production front-line. Based on the original systems, in order to meet the needs of industries for skilled workers, after adding a system of trade skill test, the Vocational Training Law was promulgated in May 1958. Since then, a comprehensive vocational training system was established in Japan.

Vocational Training under the Vocational Training Law

The Vocational Training Law in 1958 stressed the role that vocational training could play in providing a source of young, highly trained manpower for sophisticated factory work⁴. Under the Law, vocational training was divided into two kinds: one was public vocational training conducted in public vocational training facilities aiming at job-seekers, such as the school-graduates, job-transfers, employees and so on; and the other was within-enterprise vocational training aiming at new recruited workers. The revision of the law in 1969 stipulated that the types of public vocational training comprised basic training, upgrading training, ability redevelopment training and retraining, and instructor training. Subsequently, the Vocational Training Law was revised twice in 1974 and 1978 respectively.

Vocational Training under the Human Resources Development Promotion Law

In 1985, the Vocational Training Law was revised thoroughly, and renamed as Human Resources Development Promotion Law (HRDPL). The enactment of HRDPL marked the beginning of overall promotion and development of workers' vocational ability throughout their working lives in Japan.

The original vocational training under the Vocational Training Law took technical workers of secondary industry as the main objects. The revision in 1985 attempted to provide in-time and moderate occupational ability development for all of laborers during their life-long career. It essentially targeted as follows: (1) endowing labor force with occupational ability adapting to the intensely changing socioeconomic environment; (2) offering widespread vocational training focused on occupational ability enhancement and development aimed at all of labor force, not only skilled workers, but also managerial staff and persons worked in service sectors; and (3) providing enterprises with various assistances so as to promote enterprises offering aids to their employees for their self-initiative education and ability development. Since then, the law was revised again in 1992, 1997, and 2001 respectively.

3.3 Outline of Vocational Training System

By and large, the vocational training in Japan includes public vocational training and vocational training provided by industry itself. In the late case, most of large companies, especially corporations, provide their employees with within-enterprise vocational

⁴ Shunichiro Umetani (1980), Vocational Training in Japan, p.33

training; small and medium companies offer vocational training in diversified ways. The lion's share of vocational training is provided by industries.

3.4 Types and Standards of Vocational Training

Vocational training could be classified in standards of the degree of grasping skills and knowledge or the duration of vocational training. The detailed types stipulated in line with the Ordinance of the Ministry of Health, Labour & Welfare are listed in Table 1 and Table 2.

3.5 Administration of Human Resources Development

With the revision of the Vocational Training Law and the renaming of the law, the name of the administration changed accordingly, i.e. from the Vocational Training Department under Ministry of Labor, to Vocational Training Bureau, and now to Human Resources Development Bureau under Ministry of Health, Labour and Welfare. The current administration is demonstrated in Chart 2.

3.6 Relevant Law, Regulations, and standards

The law⁵, regulations, and standards on human resources development were enacted respectively in order to secure comprehensive and full implementation of human resources development. They include the Human Resources Development Promotion Law, the Implementing Regulations of the Human Resources Development Promotion Law, and the Vocational Training Standards.

3.6.1 Human Resources Development Promotion Law

The current edition of Human Resources Development Promotion Law was revised in 2001. During the course of conducting this study, it is said that the Law was revised again in June 2006. Nevertheless, due to the updating revision in English could not be available, so this study is still based on the revision of 2001.

Purpose of HRDPL

The purpose of HRDPL is to promote the development and improvement of workers' ability needed for their vocations through comprehensive and deliberate measures. Those measures will contribute to the reinforcement and smoother implementation of human resources development and vocational ability test, and also will secure opportunities for workers to receive educational training or vocational ability test relating to their vocations in a willing and voluntary manner.

⁵ In the broadest sense, the relative laws concerning human resources development also include Employment Measures Law, School Education Law, and so on. The contents covered here excluding Human Resources Development Promotion Law are not the main issue of this study. Accordingly, this paper does not mention them.

Table 1 **Types of Vocational Training⁶**

Types	Curriculums	Outline of training	Duration and total hours	Facilities of human resources development
General Vocational Training	General courses (普通課程)	Long-term courses for graduates from junior and senior high school, aiming to foster workers with basic and versatile skills and knowledge	Graduates from senior high school, 1 year, total more than 1,400 hours per year; graduates from junior high school, 2 years, total more than 2,800 hours, round 1,400 hours per year	Polytechnic Colleges
	Short-term courses (短期課程)	Short-term courses for employees, job-seekers and transfers, aiming to teach them necessary skills relating to their jobs required (excluding advanced skills)	Less than 6 months (maybe 1 year, depending on the degree of trainees ' skills), total more than 12 hours (10 hours for supervisor training)	Polytechnic Colleges Polytechnic Centers Polytechnic Junior College Polytechnic University
Advanced Vocational Training	Specialized courses (専門課程)	Long-term courses for graduates from senior high school, aiming to foster workers with basic and versatile skills and knowledge	Graduates from senior high school, 2 years, total more than 2,800 hours, round 1,400 hours per year	Polytechnic Colleges Polytechnic Junior College Polytechnic University
	Applied courses (応用課程)	Long-term courses for graduates who accomplished specialized courses, aiming to foster workers with necessary versatile skills and knowledge	Graduates who accomplished specialized courses, 2 years, total more than 2,800 hours, round 1,400 hours per year	Polytechnic Colleges Polytechnic University
	Specialized short-term Courses (専門短期課程)	Short-term courses for employees, aiming to teach them advanced skills and knowledge relating to their jobs required	Less than 6 months (maybe 1 year, depending on the degree of trainees ' skills), total more than 12 hours	Polytechnic Colleges Polytechnic Centers Polytechnic Junior College Polytechnic University
	Applied short-term Courses (応用短期課程)	Short-term courses for employees, aiming to teach them advanced, specialized and practical skills and knowledge relating to their jobs required	Less than 1 year, total more than 60 hours	Polytechnic Colleges Polytechnic University

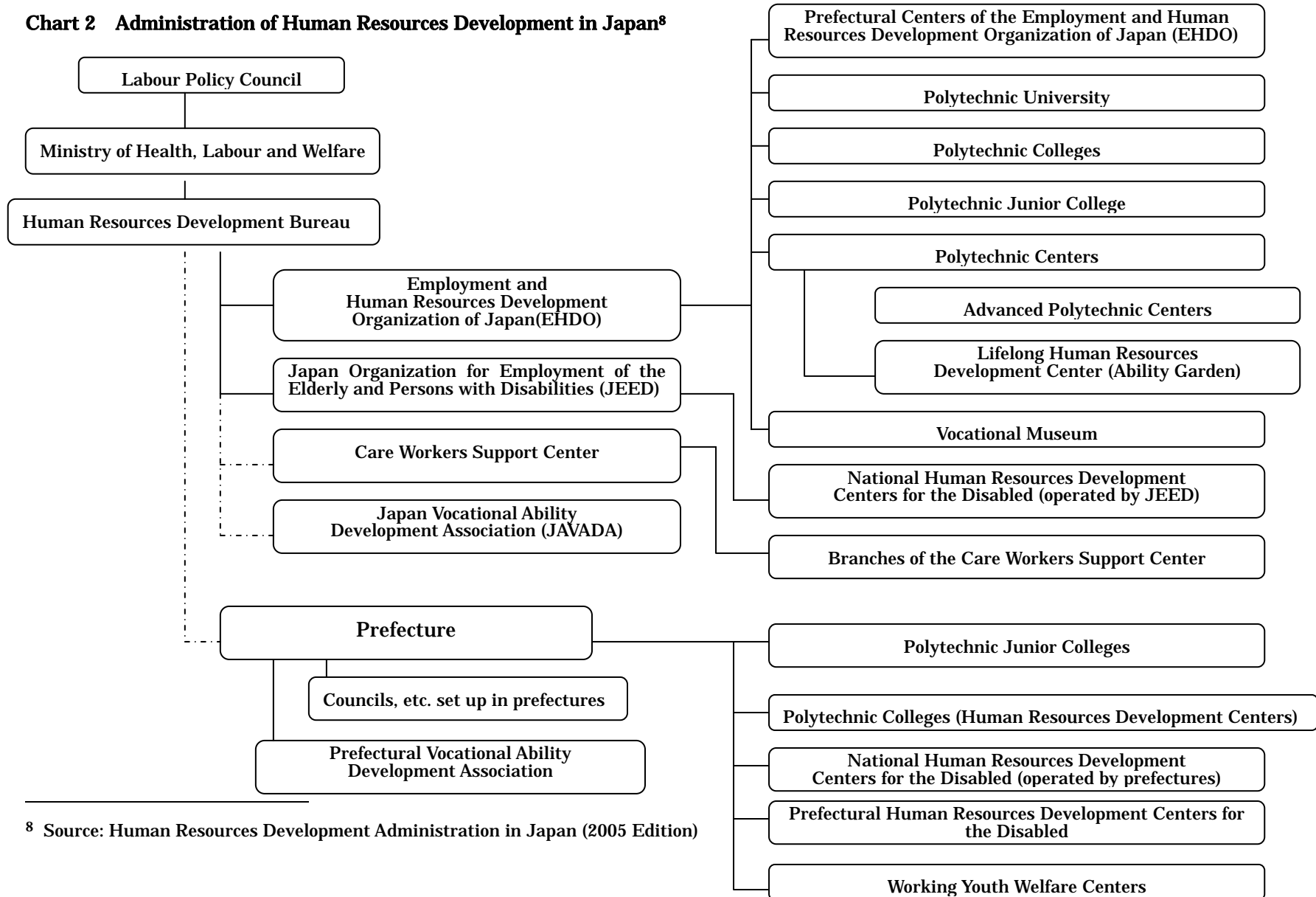
⁶ The author translates based on the Japanese version of 職業訓練教材研究会 (平成 14 年 3 月, 厚生労働省職業能力開発局監修), 職業訓練における 指導の理論と実際, p.8

Table 2 **Types of Training for Instructors of Vocational Training⁷**

Types	Curriculums	Outline of training	Duration and total hours	Facilities of human resources development
Training for Instructors	Long-term courses (長期課程)	Courses for graduates from senior high school, aiming to foster them being the instructors of vocational training	Graduates from senior high school, 4 years	Polytechnic University
	Specialized courses (専門課程)	Courses for the instructors of vocational training and persons who qualify for the instructors of vocational training, aiming to keep the qualification as instructors of vocational training	6 months or 1 year	
	Master-degree courses (研究課程)	Courses for persons who possessed a basis of advanced and specialized skills and knowledge, aiming to foster the instructors with excellent research ability	Graduates from long-term courses, 2 years	
	Applied research courses (応用研究課程)	Courses for persons who possessed a basis of advanced and specialized skills and knowledge, aiming to foster the instructors with excellent applied, research and development ability	Graduates who accomplished research courses, 1 year	
	Training courses (研修課程)	Updating courses for instructors of vocational training	More than 12 hours	

⁷ The author translates based on the Japanese version of 職業訓練教材研究会 (平成 14 年 3 月, 厚生労働省職業能力開発局監修), 職業訓練における 指導の理論と実際, p.8

Chart 2 Administration of Human Resources Development in Japan⁸



⁸ Source: Human Resources Development Administration in Japan (2005 Edition)

Basic concept

The basic concept of HRDPL is to improve worker's vocational ability, strengthen their adaptability necessary for vocations, and help the unemployed smoothly realizing reemployment under the context of changes in industrial structure, advances in technology, and internationalization of economic activities. The staged and systematical development and improvement of human resources throughout the entire vocational life lays emphasis on worker's career life design.

3.6.2 Implementing Regulations of Human Resources Development Promotion Law

The contents of the Regulations mainly comprised the promotion of human resources development (covering three sections: actions for the promotion of human resources development, polytechnic university, and vocational instructor training), the juridical persons for vocational training, the trade skill test, and the human resources development associations.

3.6.3 Vocational Training Standards

The contents of the standards covered the standards of training courses (including training standards for standards course, short-term course, specialized course, short-term specialized course, practical technology course, short-term practical technology course), skills verification, and qualification.

3.7 Public Vocational Training System

The public vocational training facilities consist of two portions: one is established by the state, and the other established by prefectures.

The most of national public vocational training facilities are operated by EHDO, including Polytechnic University, Polytechnic Centers (62 centers), Life-long Human Resources Development Center (Ability Garden), Advanced Polytechnic Center, Polytechnic Colleges (10 colleges), Polytechnic Junior College, Vocational Museum and Prefectural Centers of EHDO (47 centers). In addition, the facilities for the disabled are operated by Japan Organization for Employment of the Elderly and Persons with Disabilities (JEED) (see Chart 2).

Among them, those facilities in which offer training courses for high-level skills include Polytechnic University, Advanced Polytechnic Center, Polytechnic Colleges, and Polytechnic Junior College.

Polytechnic University is the sole educational and research institute in Japan. Its activities include the education and training for vocational training instructors, the research and training to improve the quality of vocational instructor training, and to develop training materials for relevant training. It provides long-term courses for high school graduates (four years), research courses for their four-year graduates and

persons equivalent to graduates from conventional universities (two years), applied research courses (one year), and specialized courses for enhancing levels of vocational training instructor (six months or one year). The courses for bachelor's and master's degrees are offered in Polytechnic University.

The Advanced Polytechnic Center offers the human resources development programs related to high level and advanced knowledge and technologies. The main activities include modern and advanced vocational training for mid-level engineers.

The Polytechnic Colleges offer the applied courses and short-term applied courses in addition to specialized courses and short-term specialized courses. The specialized courses (two years) are designed for high-school graduates to develop them to become practical engineers having higher levels of both knowledge and skills. The short-term specialized courses are provided for employees to obtain higher levels of skills and knowledge. The applied courses (two years) are provided to those persons who have completed specialized courses in order to develop higher level skills and knowledge. The short-time applied courses (at least 60 hours) are offered to employees to obtain higher levels of specialized and application-oriented skills and knowledge required for their occupations.

The Polytechnic Junior College offers specialized courses and short-term specialized courses. The specialized courses (two years) are designed for high-school graduates to develop them to become practical engineers having higher levels of both knowledge and skills. The graduates may get the opportunity to enter Polytechnic Colleges. The short-term specialized courses are provided for employees to obtain higher levels of skills and knowledge.

As of 2005, the classification, main body, and number of public facilities of human resources development in Japan are demonstrated in Table 3.

3.8 National Trade Skill Testing and Certification

The National Trade Skill Testing and Certification System (NTSTC) started with 5 trades (8 jobs) in 1960 under the Vocational Training Law of 1958. As of August 2002, the number of trades covered by the system was extended to 137.

The grades in Trade Skill Test System are classified into special grade, grades 1 and 2 and 3, while others are not classified into grades (single grade). In addition, there are other grades such as basic grade 1 and basic grade 2 are for foreigners.

In addition, there also are two authorization systems to complement the said national system, namely Authorization System of Accredited Skill Test and Authorization System of Accredited In-house Skill Test.

Table 3 Overview of public human resources development facilities

Classification	Overview	Main body	Number of facilities
Human resources development centers	Facilities for comprehensive vocational training for unemployment job-seekers, current workers, graduates, etc.	Prefectures	186 1
Polytechnic junior colleges	Facilities for advanced vocational training for senior high school graduates, current workers, etc.	Independent administrative organization Employment and Human Resources Development Organization of Japan Prefectures	1 9
Polytechnic colleges	Facilities to pioneer advanced vocational training for senior high school graduates and workers	Independent administrative organization Employment and Human Resources Development Organization of Japan	10
Polytechnic centers	Facilities for short-term vocational training for unemployment job-seekers and workers	Independent administrative organization Employment and Human Resources Development Organization of Japan	62
Human resources development centers for the disabled	Facilities for special vocational training for the disabled	National government Prefectures	13 6
Total			288
Polytechnic University	Facilities for vocational training instructors training and to pioneer advanced vocational training	Independent administrative organization Employment and Human Resources Development Organization of Japan	1

Source: Human Resources Development Administration in Japan (2005 Edition), Human Resources Development Bureau, Ministry of Health, Labour and Welfare, p.22

3.9 Governmental roles in Vocational Training

The Japanese government plays mainly following roles in vocational training: (1) legislating relevant laws, regulations; (2) establishing and administrating public vocational training facilities; (3) establishing trade skill test system; and (4) setting up standards in Off-JT courses and subsidization of private courses which meet the standards.

In Kazuo Koike's opinion, OJT is regarded as the main way of human resources development. However, it is clear that the government cannot play the major role (Kazuo Koike, 1997, p.68). Nonetheless, the governmental roles in human resources development cannot be denied, especially for small firms which are difficult to conduct vocational training by themselves.

As a whole, the public vocational training⁹ sponsored by government and those within-enterprise vocational training complement each other.

3.10 Within-enterprise vocational training

Historically, the large modern industries in Japan prefer to rely upon within-enterprise vocational training instead of outside facilities (including public and private ones) to develop and elevate the levels of employees' skills.

There is a fact in Japan that the skilled worker is expected not only to develop expertise in one skill, but also to be both adaptable and flexible in his attitude and multi-skills in order to contribute fully to his company. For this reason, Japanese industry provides their employees with both initial and retraining programs.

For the new recruits, there will be an initially orientation training. After initial orientation, the new employees usually receive a basic technical training according to their educational background and the concrete situation of company's business. The small enterprises rely further on their parent companies, the local trade association related to their business, and training institutes (including public and private ones).

The main types of within-enterprise vocational training are on-the-job training (OJT) as well as off-the-job training (Off-JT), and the core of skill formation is OJT on the shop floor. Nowadays, for developing workers' skills, the means of broad OJT, supplemented with short, inserted Off-JT are widely employed in Japanese companies (Kazuo Koike, 1997).

⁹ Here is referred to public vocational training in broad sense, namely including vocational training conducted at public human resources development facilities and those that educational and training expenses are defrayed by government in the manners of subsidies and grants.

3.11 Features of HRD at present

Currently, the distinguishing features of HRD in Japan are as follows: (1) informal OJT performs a considerably greater role than formal OJT; (2) a long-term informal OJT is indispensable for employees to acquire high-level skills. Some of the principle forms of informal OJT include gradual progression of work experiences, a rotation system and serve in a variety of positions. Long-term OJT gives workers the opportunity to gain broad skills; (3) long-term informal OJT is implemented in large companies in a wide and organized manner. While in most small- and medium- sized companies, they implement OJT in a manner of senior workers giving guidance to junior workers; and (4) Off-JT is being implemented between the OJT. Workers deem to organize and systematize the OJT experiences through Off-JT and acquire the knowledge and theoretical skills necessary for handling issues in practical business affairs¹⁰.

4. Chinese Experiences

This paper takes a space of round 30 pages to introduce the experiences of vocational training in China. The main contents include: (1) outline of Chinese labor market; (2) history of vocational training; (3) current system of vocational training; (4) legislative situation; (5) vocational training institutions; (6) occupational skill testing and qualification certification; (7) training for vocational training teachers.

4.1 Outline of Chinese Labor Market

China is the biggest developing country in the world. Since its pursuance of economic reform and open-up policy in late 1970s, its national economy has witnessed a sound, sustainable, and rapid growth. In the last ten years, Chinese GDP has been increased by an annually average rate over 8.5 percent (see Chart 3).

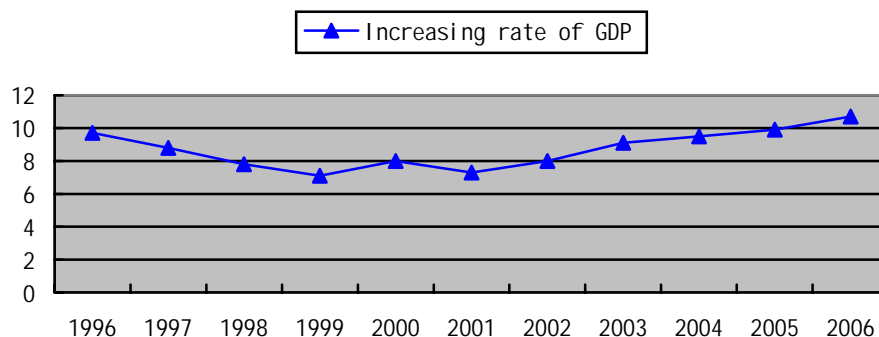
China is also the most populous country possessing tremendous workforces in the world. Up to the end of 2005, the total population of China reached 1.30756 billion (excluding Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan Province)¹¹.

With the adjustment of industrial structure and the acceleration of urbanization, the composition of employment by industries has changed accordingly. The trends from 1978 to 2005 are demonstrated in Chart 4.

¹⁰ The Japan Institute for Labour Policy and Training (2006), Labor Situation in Japan and Analysis: General Overview 2006/2007, p.54
http://www.jil.go.jp/english/laborinfo/library/documents/Labor2006_2007.pdf

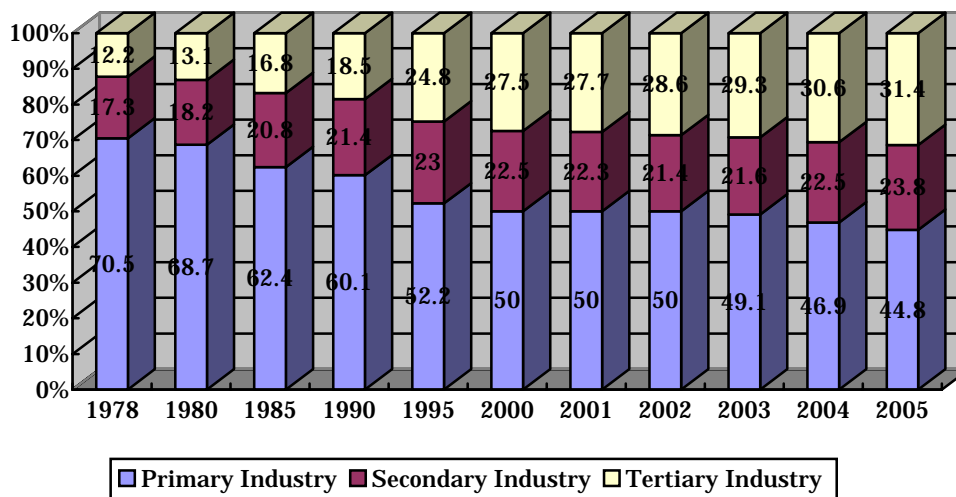
¹¹ Sources: China Statistical Yearbook (2006), Compiled by National Bureau of Statistics of China

Chart 3 Increasing Rate of GDP from 1996 to 2006



Source: (1) The figures from 1996 to 2005 were from the National Economy and Social Development Statistical Bulletin, National Bureau of Statistics of China
 (2) The figure in 2006 was from “Xie Fuzhan, Commissioner of the National Bureau of Statistics of China briefs the media on China's economy in 2006 at a press conference hosted by the State Council Information Office on January 25, 2007, [china.com.cn]”
http://www.chinadaily.com.cn/china/2007-01/26/content_793128.htm

Chart 4 Trends of Composition of Employment by Industries

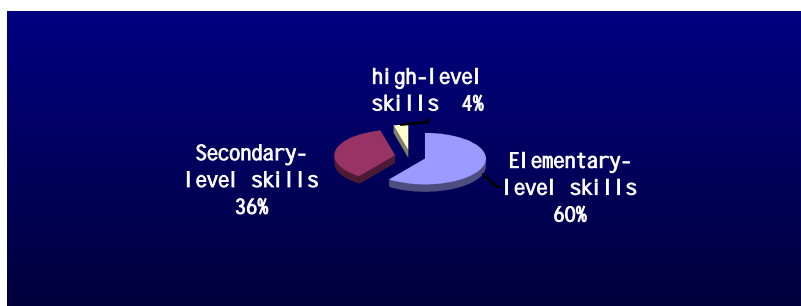


Source: (1) China Labour Statistics Yearbook (2005), Compiled by National Bureau of Statistics and Ministry of Labour and Social Security, P.R.C
 (2) The figure in 2005 was based on China Statistical Yearbook (2006), compiled by National Bureau of Statistics of China
 Notes: (1) Primary industry means Farming, Forestry, Animal Husbandry and Fishing.
 (2) Secondary industry means Mining, Manufacturing, Production and Supply of Electricity, Gas and Water, and construction.
 (3) Tertiary industry means industries other than above.

Nevertheless, going with the economic growth, some factors, such as the adjustment of industrial structure, the acceleration of urbanization, the advances in technological innovation, and the globalization of economic activities, have caused a number of troublesome issues in its internal labor market. The most prominent one of them is the serious shortage of high-level skilled workers.

Furthermore, according to an estimation made by the Ministry of Labour and Social Security, the number of skilled workers reached round 70 million at present. Among them, the number of workers with elementary-level skills reached round 42 million, and it accounted for 60 percent of total skilled workers; those with secondary-level skills reached round 25.2 million, accounted for 36 percent; and those with high-level skills, covering advanced-level skilled workers, technicians and senior technicians, reached only 2.8 million, accounted for only 4 percent (see Chart 5). The ratio of senior skilled workers to total skilled workers is far lower than in developed countries.

Chart 5 Proportion of Skilled Workers with Different Levels of Skills



Sources: Bi Jieli (2005), Research and Practice on Development of High Skilled Talents, p.4

4.2 History of Vocational Training

Since the founding of the People's Republic of China, the vocational training has gone through four stages, namely (1) the vocational training during the recuperation period of national economy; (2) the vocational training during the period of economic construction; (3) the vigorous growth and rapid development for vocational training; and (4) the period of adjustment, reform and development of vocational training since the end of 20th century.

4.3 Current System of Vocational Training

The current system of vocational training in China is mainly composed of the following elements: (1) occupational classification and occupational skill standards; (2) vocational training; (3) occupational skill testing and qualification certification; and (4) occupational skill competition and skilled talents awarding.

4.4 Legislative situation

Up to now, there is not special law on vocational training yet in China. The matters of conducting vocational training were stipulated in Labour Law and Vocational Education Law. Moreover, a set of regulations and policies were set up to standardize the practice of vocational training. In the scheduled Employment Promotion Law, there would be covering the contents of vocational training.

4.5 Vocational Training Institutions

The vocational training institutions in China mainly consist of technical schools, employment training centers, within-enterprise vocational training facilities, vocational training organizations run by private sectors, and those organizations run jointly by both domestic and foreign parties.

Up to the end of 2005, there were total 2,855 technical schools, 3,289 employment training centers, more than 20,000 vocational training facilities within enterprises, and 20,341 vocational training organizations run by private sectors nationwide (see Table 5).

Table 5 Number of Vocational Training Institutions in 2005

Name of vocational training institutions	Number
Technical schools	2,855
Employment training centers	3,289
Vocational training facilities within enterprises	More than 20,000
Vocational training organizations run by private sectors	20,341

Source: (1) Except for the number of the facilities within enterprises, other figures are from Labour and Social Security Development Statistical Bulletin (2005), Ministry of Labour and Social Security and National Bureau of Statistics, P.R.C http://www.molss.gov.cn/gb/zwxx/2006-06/12/content_119277.htm

(2) The number of the vocational training facilities within enterprises is from *Training and Employment* (Edited by YU Faming, 2005, China Labor and Social Security Press)¹², p.18

The vocational training institutions offer various vocational training programs aiming at fostering skilled workers according to the demands of labor market. Among them, the technical schools are the major facilities to foster senior skilled workers.

¹² The original name in Chinese is 培训与就业 (于法鸣主编, 2005年1月第2版, 中国劳动社会保障出版社)

Technical Schools

Technical schools were established with the primary responsibility to foster skilled workers. Moreover, they are the comprehensive bases to offer various short-term and long-term vocational training programs.

Training objects and goals of technical schools

There mainly are four types of long-term vocational training courses offered by technical schools, namely (1) enrolling from the graduates of secondary vocational schools, after 3-year-schooling training, the students will be fostered to senior technical workers; (2) enrolling from the graduates of secondary vocational schools, after 4-year-schooling training, the students will be fostered to technicians; (3) enrolling from the graduates of junior high schools, after 5-year-schooling training, the students will be fostered to senior technical workers; and (4) enrolling from the graduates of junior high schools, after 6-year-schooling training, the students will be fostered to technicians. The details are represented in Table 6.

Table 6 Types of Long-term Vocational Training Courses in Technical Schools

Training Subjects	Years of Schooling	Objectives
Graduates of secondary vocational schools	3	Senior technical workers
Graduates of secondary vocational schools	4	Technicians
Graduates of junior high schools	5	Senior technical workers
Graduates of junior high schools	6	Technicians

Sources: BI Jieli (2005), Research and Practice on Development of High Skilled Talents, p.9

The courses mainly cover skill training and technological theory, adding with certain cultural courses according to the need of concrete occupations. The hours of practical courses usually account for 60 percent of the total courses, while the cultural and technological theory courses account for 40 percent (see Table 7).

Table 7 Proportion of Skill Training and Knowledge Courses

Contents of Vocational Training Courses	Proportion (%)
Practical Courses	60
Cultural and Technological Theory Courses	40

Sources: CHEN Yu (1992), Vocational Training of Chinese Workers¹³,
<http://blog.sina.com.cn/u/48c4e0be01000512>

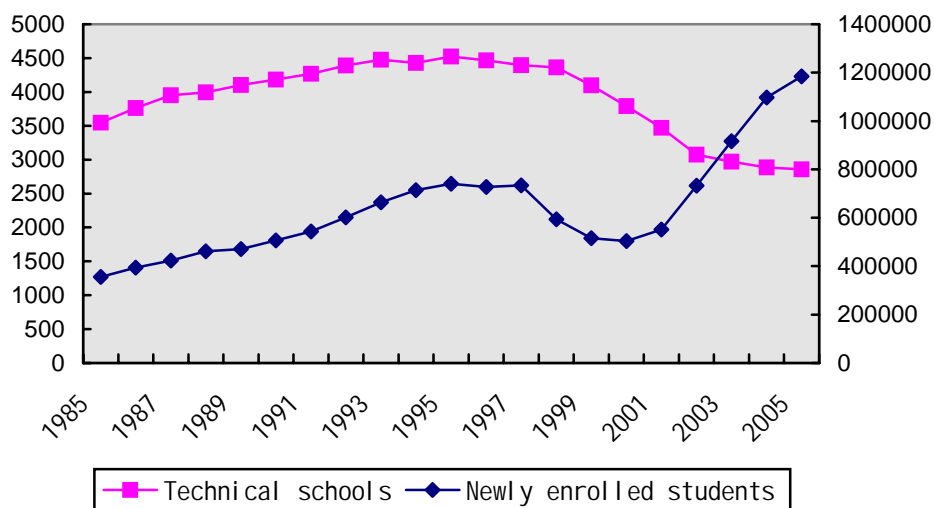
¹³ The original name in Chinese is 中国工人职业培训 (陈宇, 1992)

The subjects offered by technical schools were mainly aimed at secondary industries originally, and afterward they have been expanded gradually to cover tertiary industries in line with the changing needs of social and economic development.

The original responsibility of technical schools was to foster skilled workers with intermediate-grade skills. Afterwards, through establishing senior technical schools and technician schools, their responsibility was expanded to raise senior skilled workers covering advanced-level skilled workers, technicians.

In recent 20 years, the technical schools witnessed such a history as demonstrated in Chart 6. By the end of 2005, the number of technical schools decreased than last year, however, the number of students newly enrolled had a large-scale increase. Both the number of students in school and new enrollment reached the historically highest in this year. Such a trend maybe indicated that the rapid economic growth had raised the large needs for skilled workers.

Chart 6 Changes in Number of Technical Schools and newly enrolled Students from 1985 to 2005



Source: China Statistical Yearbook (2006), Compiled by National Bureau of Statistics of China

4.5.2 Within-enterprise Vocational Training Facilities

Within-enterprise vocational training is conducted in the facilities sponsored by enterprises themselves, including training centers, workers and staff schools, and various training courses. Some of enterprises also established their own technical schools. Such technical schools mainly offer vocational training to key skilled members and employees. The within-enterprise vocational training usually takes the ways of off-job training, part-time training or training in spare time.

4.6 Occupational Skill Testing and Qualification Certification

In order to raise the desire and enhance the workers' initiative to participate in occupational skill testing, and to strengthen the consciousness to respect skills in the public, the nation has established a national occupational skill testing system. This system includes the testing and examination to the levels of workers' skills and the appraisal to the qualifications of technicians and senior technicians.

4.7 Training for Vocational Training Teachers

The training for vocational training teachers is not conducted by any exclusive organization in China. Such training institutions comprise advanced occupation technology education university and colleges (高等职业技术师范院校), senior technical schools, some of technical schools, and within-enterprise training centers.

The length of receiving upgrading training for teachers in technical schools should not be less than 80 hours every two years; and those in employment training centers and others vocational training organizations should not be less than 50 hours every two years.

5. A Comparison between Japan and China

After examined the outline of labor market situation and the experiences of vocational training in both Japan and China, the main resemblances and differences between two countries could be easily observed.

5.1 Being in Different Economic Development Phases

Actually, it is said that the modernization of Japan started in 1868 when the feudal system was replaced by a more outward-looking and modernization-oriented government (Saburo Okita, 1980, p.94), so far near to one and half centuries. Its nation has witnessed a longer history of industrialization, and then entered the era of information technology. In spite of encountered the collapse of bubble economy, the stronger foundation of economic development maintains the Japanese economy keeping the rank of the second biggest economic power in the world.

The modernization in China was started in 1978, and has witnessed only more than 20 years and less than 30 years. It almost entered the era of both industrialization and information technology simultaneously.

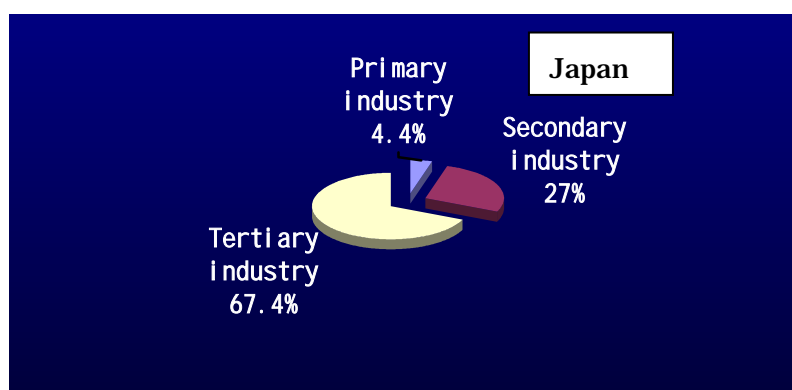
As suggested by the Lewis model (Lewis, 1954), initial economic development often causes intense shortages of skilled and highly qualified workers (Kazuo Koike and Takenori Inoki, 1990, p25). Maybe, the said suggestion could explain the reason, to some extent, why the issue of serious shortage for senior skilled workers emerged in China at present.

5.2 Different Features of Labor Markets

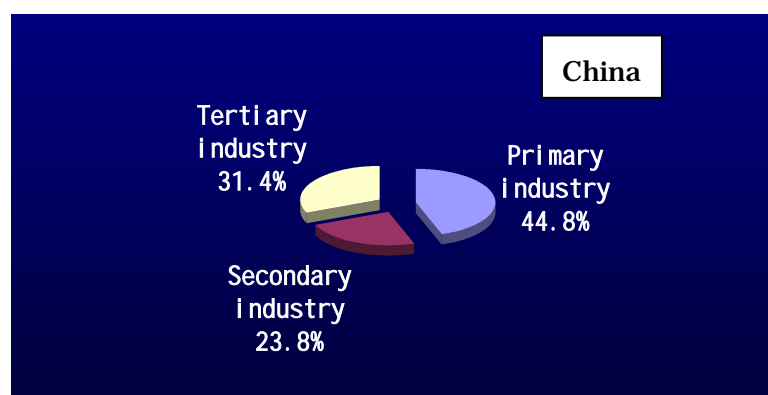
There are many differences in the labor market between Japan and China, especially in the employment structure. Take the number in 2005 for an example, the proportion of persons employed in primary industry was 4.4 percent in Japan, and it was far lower than 44.8 percent in China; the proportion in secondary industry was 27.0 percent in Japan, and it was slightly higher than 23.8 percent in China; and the proportion in tertiary industry was 67.4 percent in Japan, and it was far higher than 31.4 percent in China (see Chart 7).

Furthermore, the employment structure in China would be expected to rapidly shift in the future, especially from primary industry and to tertiary industry. The differences of employment structure in existing situation and trends in future raised the different needs for labor force, including for skilled workers.

**Chart 7 Employment Structure by Industries in Japan and China
(In 2005)**



Source: The Japan Institute for Labour Policy and Training (2006), Labor Situation in Japan and Analysis: General Overview 2006/2007, p.25
http://www.jil.go.jp/english/laborinfo/library/documents/Labor2006_2007.pdf



Source: Labour and Social Security Development Statistical Bulletin in 2005,
Ministry of Labour and Social Security

5.3 Emergence of Public Vocational Training

In the period of immediate postwar, there emerged public institution as a measure to relief unemployment in Japan. The vocational training from 1945 to 1958 mainly comprised the job training (職業補導) based on the Employment Security Law of 1947 and the training for skilled workers (技能者の養成) under the Labor Standard Law of 1947. The Vocational Training Law in 1958 and the Human Resources Development Promotion Law in 1985 was and is the legal foundation of original and existing public vocational training system.

As for China, the public vocational training emerged at the beginning of the founding of new China, and it also was the measure to relief unemployment in the late 1940s to the early 1950s. At that time, the government provided the unemployed workers with job-transfer training based on the practical needs of national economic development. Afterward, the vocational training has been gradually developed, reformed and improved along with the changing needs of the socioeconomic context.

5.4 Legislation

Japan has enacted a special law of vocational training, original named as Vocational Training Law, and renamed as Human Resources Development Promotion Law in 1985. The enactment of Human Resources Development Promotion Law marked that the emphasis of vocational ability development has been moved from fostering skilled workers aiming at secondary industry to overall development during the labor force' career life-time.

In China, there has been not a special law on vocational training yet up to now. The matters of conducting vocational training are stipulated in Labour Law, Vocational Education Law and a set of regulations and policies.

5.5 System of Vocational Training

Japan has established a highly centralized system on public vocational training since 1958. The government has invested largely to establish public vocational training facilities, such as Polytechnic University, Polytechnic Centers, Life-long Human Resources Development Center, Advanced Polytechnic Center, Polytechnic Colleges, Polytechnic Junior College, Vocational Museum and Prefectural Centers, as well as Human Resources Development Centers for the Disabled. The system covers various targeting groups from school graduates, job seekers, employees, white-collar workers, to employers, etc. The public vocational training sponsored by the government and the within-enterprise vocational training complement each other. The lion's share of vocational training remains the provision of those within enterprises (or said industries). The training provided by industries, especially in large corporations, are widespread, intensive, and of high quality.

In China, the government has been attached importance to vocational training since the founding of new China, with a longer history over 50 years. Overall, the vocational

training has been comprehensively managed by labor and social security departments (the early name was labor departments) at various levels, and respectively operated by the bodies that established the vocational training institutions. The manners of labor and social security departments to manage the vocational training institutions (excluding those established by labor departments) are further to control the training quality instead of to operate directly. The vocational training institutions comprise technical schools, employment training centers, within-enterprise training facilities, etc.

5.6 Fostering for Senior Skilled Workers

In Japan, the main way to foster high-level skilled workers is on-the-job training (OJT), especially informal OJT, in large companies. The principle forms of informal OJT include gradual progression of work experiences, a rotation system and serve in a variety of positions. Off-job training (Off-JT) is being implemented between the OJT. In public vocational training system, some courses, such as specialized courses and applied courses, may play a role in fostering senior skilled workers to some content, in particular for small- and medium-sized enterprises.

In China, with respect to the fostering for senior skilled workers, they are mainly provided by technical schools, especially by national key technical schools and senior technical schools. The technical schools mainly aimed to foster the skilled workers suitable for secondary industries originally, and afterward they have been expanded gradually to cover tertiary industries.

5.7 Fostering for Vocational Training Teachers

The vocational training instructor training is exclusively offered by Polytechnic University in Japan.

In China, the vocational training teachers cover classroom teachers, practical training teachers, and classroom-training teachers. The fostering for them is provided by a number of institutions, including advanced occupation technology education university and colleges (高等职业技术师范院校), senior technical schools, some of technical schools, even within-enterprise training centers.

5.8 Appraisal of Occupational Skills

Japan has established a National Trade Skill Test System under the Human Resources Development Promotion law (original named as Vocational Training Law). This system started with 5 trades (8 jobs) in 1960 under the old Vocational Training Law of 1958. After the revision and rename of the law in 1985, the trades were rearranged and unified. As of 2002, the number of trades covered in the system was extended to 137. The grades are classified into the special grade, grades 1 and 2 and 3, and basic grades 1 and 2, while others are not classified into grades (single grade)

In China, a national occupational skill testing system has also been established. It

began with the examination and test for the skill grades of skilled workers in the 1950s. The current system was shaped in line with the Occupational Skill Testing Stipulation, promulgated by the Ministry of Labor in 1993. This system includes the testing and examination to the levels of workers' skills and the appraisal to the qualifications of technicians and senior technicians. Up to now, the grades covered by the system are divided into 5 levels, namely elementary-, intermediate-, advanced-level, technician and senior technician.

6. Conclusion

Japan has established a vocational training system based on the cooperative efforts between government and industries. Such a system has made Japan become the second biggest economic power in the world, in particular for such a nation that has no abundant resources of raw materials. Therefore, the outstandingly economic performance has also proved that Japanese vocational training system is pragmatic and effective in practice.

In view of each country having its own conditions of politics, history, culture, traditions, and economy, it would be infeasible to simply transplant the experiences from foreign countries, including transplant Japanese experiences into China.

Nevertheless, some ingredients of Japanese vocational training system may be worth considering for Chinese policy-making. Firstly, Japan has enacted a special law. This law emphasizes a concept of promoting overall human resources development. The government is liable for formulating a long-term plan of human resources development in line with the special law. Secondly, in order to ensure the implementation of the long-term plan, the government has also taken many measures, including establishing highly centralized public vocational training system, and encouraging companies and employees to provide and participate in the vocational training by various ways. Thirdly, the industries regard the vocational training as their responsibilities and a way of capital accumulation, especially in the large companies in which have introduced a lifelong employment system.

On the whole, the Japan's vocational training is mainly composed of two portions, namely a highly centralized public vocational training system and more widespread, intensive, and high-quality within-enterprise vocational training. The China's system seems to be more flexible and socialized. In author's opinion, the Japanese within-enterprise vocational training may be more suitable to foster skilled workers in secondary industries, because in which have longer product circles and are fit to introduce a long-time employment system. As for the tertiary industries, a flexible vocational training system may be more suitable because of the rapid change and the diversification of needs in both the public's demand and products' providing.

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