Background report: Chinese vs. Swiss VET /PET systems

I. Introduction

Switzerland is the most competitive country in the world, with its particular strength in education systems and innovation. In Switzerland, Vocational Education Training and Professional Education Training (VET/PET) is highly valued by both educational institutions and companies. The guiding principles for the VET/PET education system is based on the labor market needs and permeability in education.

Chinese labor market is mainly facing with two problems: low quality and a shortage of skilled workforce. These problems have negatively affected China’s economic development and innovation, resulting in low quality products, high energy consumptions, and high rate of industrial accidents. To overcome these problems, a well-developed and efficient VET/PET is crucial (MOE, 2005).

The report compares the VET/PET system in China and Switzerland. It aims to help the reader to understand the different characteristics of the both systems. Furthermore, this report should serve as a reference for deeper discussions for future cooperation between the 2 countries in the field of VET/PET.

- Part II talks about the Chinese VET/PET system and addresses the existing problems of the current system.
- Part III give an overview of the Swiss VET/PET system and illustrates its different characteristics comparing to the Chinese system.
- Part IV presents case examples of VET/PET schools established by Swiss companies in China.

II. Chinese VET/PET

Chinese VET/PET system consists of three major parts: secondary vocational school, Dazhuan college (including polytechnic college) and Professional Master Programs in universities.

![Figure 1: Present educational stages in China](image-url)
Secondary vocational school

The Chinese VET/PET education system is demonstrated in Figure 1. At the age of about 15, the choice between vocation and academy has to be made. In 2012, about 45 Mio students are studying in secondary schools. As shown in Figure 2, about half of the students choose to go to vocational school in 2012. The percentage has been increasing in the last 7 years but maintains below 50%.

![Figure 2: Composition of Students in Senior Secondary Education](image)

For most people in China, the choice of VET/PET limits their chance to gain higher degree. The society shows less recognition for students graduated from vocational school. Most of graduates from vocational schools are quickly pushed into labor pool. Parts of them continue to pursue an advanced study in a 3-year college.

The Dazhuan (3 years college) System

The objective of Dazhuan (3 year college) is to train the student with a specific skill on the higher level. Dazhuan mainly has two groups of students:

- Graduates from vocational school who would like to deepen their skill
- Graduates from normal high school who prefer to gain a degree a shorter time and who have insufficient grade in Gaokao to attend a standard college.

Dazhuan system, despite their focus on specific skill, does not offer students a broad exposure to practice. Students do not have more support from Dazhuan college to get internship position in industry. Similar to vocational school, Dazhuan has low social recognition. Therefore, talented students who are interested to have to practical training hardly consider Dazhuan as the first priority choice after Gaokao.

The Chinese Polytechnics and the example of Shenzhen Polytechnic (SZPT)

In China there are 1’400 Polytechnics. In the ranking SZPT is number 1. A reform of the system is taking place very similar to what happened in Switzerland 20 years ago and with the same large separation
between those who believe that the Polytechnic should remain as they are and those who push for making them become universities.

The main aspects seen from the Chinese view

- The growth of SZPT with initially 59 students (1993) to today nearly 30'000 in all the professions from mainly production and management, to health, social, arts, design, etc.
- SZPT is ranked N.1 at national level among higher vocational colleges and N.80 among China's top universities and colleges (according to the 2011 Global University Network Data Rankings)
- An emphasis was put not only on the excellence of the education and training in the specific profession but also on the cultural consciousness and integrated development of the person following Confucius "Unfaithful men will accomplish nothing in their lifetime". And also <<Confucius “Unlike single-function utensils, gentlemen are versatile” and therefore talent cultivation is not to introduce utensils, iPhone or iPad, because the sickle, the hoe, iPhone and iPad are tools rather than life>>
- There is a strong commitment <<to strengthen in the students creative consciousness, promote collaborative education.....if “task assignment” and “specialization” manufacture strongly fortified isolation and closure, students will have a hard time adapting themselves to the world>>
- SZPT has developed very strong partnership with global companies like CISCO, Heidelberg, Huawei, ZTE, Siemens, etc.
- A special note should be given to the fact that Switzerland HVET, according to the chinese people, is the example to be follow

The main aspects seen from the foreigner view

- The history of polytechnic education is different from country to country but the polytechnic education is now at the center core of discussions in many debates, political and government priorities and business initiatives and it is one of the major solution for the next generation of learners
- The applied research is also a growing need in many polytechnic institutions. Business and industry look for innovative and creative solutions that the polytechnics can provide to help build new processes, new products and new opportunities to grow and expand.
- In Canada, the business community <<view successful graduates would have also an international perspective and a network of colleagues from outside their region and country>>

How the Polytechnics are developing in China

- University of Wolverhampton (www.wlv.ac.uk) is very much like a UAS and they focus on helping regional innovation. They have a cooperation with SZPT.
- Beijing Union University (http://english.buu.edu.cn/) stressed the need for a de-administration of the staff and to better integrate skills and knowledge.
- Question may be asked if to push traditional universities towards vocational or to push vocational schools towards academia? (the Swiss answer is clear and came with the reform of the UAS)
• Shunde Polytechnic in Foshan, Guangdong was created only in 1999 but it has developed very rapidly. The President is one of advocate of a new generation of polytechnic based on open education, collaborative innovation by breaking down regional boundaries and transformation of knowledge into product.
• Tsingtao Polytechnic insisted on collaborative education by implementation and interaction of the triple helix (government, industry, people).
• North-East Tachin Polytechnic has more than 50’000 students and they are located in the oil extraction region. All their teacher are double qualified (industry and academia)
• Shandong-Jinan Polytechnic is focusing on quality. Internal quality of its teachers, external quality with the local industry and quality of its students

The reform of the Polytechnic School in China is an important development that need to be followed. Here some considerations:

• The number of Polytechnic Schools is staggering (1’400) and, of course, the quality is quite diverse.
• The MOE – Ministry of Education has decided to stop the request of some (many) Polytechnic to become normal Universities but a reform is in process. For example, SZPT and SZU (Shenzhen University) have signed an agreement and the best students from SZPT can obtain a Bachelor and a Master Degree by SZU but training is done in SZPT.
• Many foreign universities have established strong programs and partnership relations with the Polytechnics and offer the possibilities to get degrees to the students under certain conditions
• There are various ways to cooperate with the Polytechnics and the UAS have to understand very well what and how this can be accomplish.

The professional master program system

Chinese Ministry of Education (MoE) started including VET/PET as a part of higher education from 2009. The direct result of this policy is a huge increase of offers of “Professional Master” Programs, such as MPA, ME, etc. They are set up in regular universities who also offering academic master of degree.
As it reveals in Figure 3, the percentage of professional master student is still significantly less than academy but it is steadily increasing.

However, these programs do not show a clear difference to the traditional academic program. Students have a lot of written exams as in regular college. Not sufficient industrial internships are included in these programs to train the practical skill of the students.

Summary

Although the Chinese government is making effort to improve its VET/PET system, the current system is still not mature and flexible enough. The corporation with industrial partners is low, which leads to the mismatch between the market demand and the training. Talented students are hesitating to choose the VET path due to low social recognition and limited possibility for future development.

Chinese education in general suffers from a huge regional disparity. The more developed areas like Beijing, Shanghai and Guangzhou see much better education at all levels, including VET/PET.

III. Swiss VET/PET System

In Switzerland, VET/PET shares the equal credits as of academic education. The education system values professional education on all levels.

The Swiss vocational education and training (VET) is provided at upper-secondary level. Professional education and training (PET) is provided at tertiary level. Both VET and PET use clearly defined curriculums and national qualification procedures. They are also characterized by a high degree of permeability: a credit system to keep track makes it much easier for learners to pursue additional opportunities and change the course of their professional lives.
The Swiss VET/PET system offers broad training options. Courses targets different skill and meet the needs of different age groups. The major parts of the VET/PET system are Dual Education System and Universities of Applied Science.

![Diagram of the Swiss Education System]

**Figure 4. Education system of Switzerland**

**Dual Education System**

Dual education system combines apprenticeship in a company and vocational education at a vocational school in one course.

Dual education system starts at the age of about 15, after 9 years of basic schooling. The student is an employee of the company from the beginning and receives tasks according to his growing abilities. During the course of study, the students get certain amount of compensation to cover their living cost. If a company is willing to make an employment-contract with the student after his dual education time, the company will get an employee who knows the company's workflow. The student can also benefit from the knowledge about hard skills and soft skills of more experienced co-workers. The student develops under real conditions. Therefore, he can see if he is not able or willing to do this job quite early and not after exams. Furthermore the student earns money from the beginning.

Although the dual education system is generally considered to be exemplary, more and more young people in Switzerland find it hard to get a placement in a company of their choice.

**Apprenticeship system**

There are two sides to the apprenticeship market: the supply side (host companies offering apprenticeship positions) and the demand side (young people looking for apprenticeship positions). Not the federal government but the states play a mediating role: it ensures the best possible general
conditions for host companies, encourages the provision of apprenticeship positions and helps young people to choose an occupation.

The states usually have their own PET/VET offices that establish and maintain contacts with local business. Accordingly they provide support to young people who are willing to receive apprenticeship at companies.

**University of Applied Science system (UAS)**

Universities of Applied Science (UAS) were founded 20 years ago to push innovation by offering this platform for companies and universities working together. Switzerland currently has seven regional public UASs financed by canton. UASs offer around 300 degree programs. UAS offer degrees of Bachelor and Master but not PhD. In 2009/2010, around 70,000 people were studying at a university of applied sciences in Switzerland, and about 17% of them were foreign students. The students at UAS learn theoretical knowledge and gain real practical experience at the same time. Full-time programs at universities of applied sciences generally last for three years, while part-time programs last for four or five years. The part-time program, particularly, enables students to gain a lot of working experience during the four or five years of study. The rich working experience and solid theoretical understanding is highly valued by the companies. Therefore, talented young people can make rational choice between regular universities and UAS. The choice depends only on the personal goal and preference, not under the pressure of the social situation. After graduation the student can continue to study at the normal university or start work in the industry. The graduates gain competitive salary, although the start salary is often a little lower than graduates from regular universities. However, the rate of employment is higher with UAS graduates.
The 20 most common occupations in Switzerland

In Switzerland, there are VET programs for around 250 different occupations. The 20 most popular occupations in 2011 account for over 60% of all newly signed apprenticeship contracts. (see Figure 5)

**New enrolments 2011**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial employee</td>
<td>12,330</td>
</tr>
<tr>
<td>Retail employee</td>
<td>5,780</td>
</tr>
<tr>
<td>Health care worker</td>
<td>3,240</td>
</tr>
<tr>
<td>Social care worker</td>
<td>2,480</td>
</tr>
<tr>
<td>Electrician</td>
<td>2,130</td>
</tr>
<tr>
<td>Cook</td>
<td>1,970</td>
</tr>
<tr>
<td>IT specialist</td>
<td>1,740</td>
</tr>
<tr>
<td>Mechanical engineer</td>
<td>1,720</td>
</tr>
<tr>
<td>Draughtsman</td>
<td>1,570</td>
</tr>
<tr>
<td>Automotive mechanic</td>
<td>1,510</td>
</tr>
<tr>
<td>Logistician</td>
<td>1,450</td>
</tr>
<tr>
<td>Retail assistant</td>
<td>1,440</td>
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<tr>
<td>Cabinetmaker</td>
<td>1,410</td>
</tr>
<tr>
<td>Gardener</td>
<td>1,340</td>
</tr>
<tr>
<td>Hairdresser</td>
<td>1,330</td>
</tr>
<tr>
<td>Farmer</td>
<td>1,150</td>
</tr>
<tr>
<td>Carpenter</td>
<td>1,100</td>
</tr>
<tr>
<td>Painter</td>
<td>1,030</td>
</tr>
<tr>
<td>Dental assistant</td>
<td>1,020</td>
</tr>
<tr>
<td>Plumber</td>
<td>1,020</td>
</tr>
</tbody>
</table>

![Figure 5. The most 20 popular occupations in Switzerland in 2011](image)

**Summary**

Swiss VET/PET education system is well-established and has gained high social recognitions. The close relationship between the industry and the schools ensures the quality of the education. The training is high market oriented, which always offers the market with people with skills of the latest market demands. The trained talents are recognized by industry. The VET/PET system and the academic system are also closely related, which offers the flexibility to students in both academic path and vocational training path.
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