

## **Connect dual VET**

### **Live Project**

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## Management Summary

The connect dual VET Live Project is part of the International Management Bachelor program at the FHNW School of Business. The basis of the connect dual VET project is formed by the UN Agenda 2030 goals for education and lifelong learning opportunities. It could be found that countries such as Germany, Austria, Denmark and Switzerland, which have successfully implemented a dual education system, are characterized by remarkable low unemployment rates. However, many other countries face the problem of having adolescents that are trained on a theoretical basis but lack sufficient practical skills, which results in higher unemployment rates.

The aim of the project is to provide a theoretical basis with background information about existing VET systems as well as information about the current circumstances of various developing countries. The project is divided into four distinct parts. In order to understand the current issues related to different education systems and their quality, we first conducted basic research and examined topics such as the UN Agenda 2030, the problem of youth unemployment and migration as well as competitiveness reports. Secondly, we collected secondary data on already existing VET systems in five selected countries. Based on the analysis, we put together a set of best practices. We then analyzed three selected developing countries in order to gain knowledge about their existing education system. In addition, we conducted an interview in order to acquire an understanding of the requirements and needs of a specific trade in a developing country. In a last part, we were able to develop our “own VET system” based on the aforementioned analysis.

The key findings of this project include the importance of the provision of a dual track VET system (apprenticeship), shared funding by the public and private sector as well as the importance of the local presence of a coordinating institution. Furthermore, a well-structured VET system with a fixed duration of a minimum of two years is required. We suggest that a salary is paid to apprentices as an incentive for students to apply for an apprenticeship. In addition, lifelong learning is found to be a crucial factor, which could be fostered with training opportunities within the company. The focus of the VET system should lie on specific business sectors that are in need of a highly skilled workforce and the collaboration between the private and public sector is vital. In order for the system to be reputable, VET diplomas need to be accredited nationwide.

For the further continuation of the project and the actual implementation of a VET system in a developing country we recommend conducting more in-depth and country-specific research. This paper can, however, serve as a starting point and provides a rough overview of a few selected countries.

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Vivian Eido, Claudio Marghella and Martina Deplazes

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## 1. Introduction

The attainment of proper education is one of the most fundamental aims within our society. This aim is also illustrated in Goal No. 4 of the UN Agenda 2030, which is to “ensure inclusive and quality education for all and promote lifelong learning” (United Nations website, 2016a).

Countries such as Germany, Austria, Denmark and Switzerland, which have successfully implemented a dual education system, can be characterized by remarkable low unemployment rates (OECD website, 2016). In Switzerland, for instance, many young adults complete vocational and educational training (VET) after finishing compulsory school (Swiss Media Institute for Education and Culture website, 2010-2011). VET is provided on a dual-track basis, meaning students obtain practical training at a company on three to four days per week and, in addition, they attend theoretical classes on one to two days per week. There are programs available for over 230 different occupations (ibid.).

However, many other countries face the problem of having adolescents that are trained on a theoretical basis but lack sufficient practical skills, which results in higher unemployment rates (Strahm, 2010:29). Additionally, many developing countries have low economic growth due to insufficient job opportunities and knowledge in various sectors (e.g. technology, high-quality production/manufacturing plants, pharmaceutical, chemical, electrical industry). As a result, young people leave their countries because of this lack of opportunities for them to enter the workforce. That is one of the reasons why countries such as Switzerland have a high share of foreigners. However, according to Strahm et al (2016:27), second generation foreigners in Switzerland manage to sustain nearly the same unemployment rate as Swiss people. Therefore, dual VET also works for people from foreign countries.

### 1.1. Project Definition

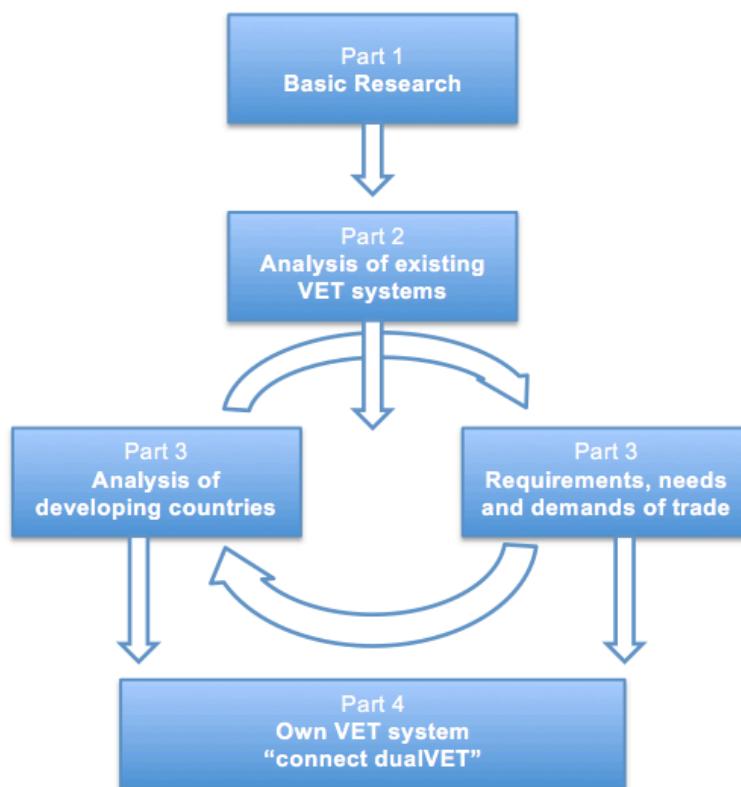
The aim of the project is to provide a theoretical basis with background information about existing VET systems as well as information about the current circumstances of various developing countries. The project will, therefore, provide an overview of already existing VET systems. Based on the commonalities and differences of these VET programs, best practices will then be identified. In a further step, the current circumstances of developing countries as well as the requirements and needs of a selected trade referring to education will be analyzed. We will then develop our “own VET system” and provide a personal recommendation regarding the continuation of the project. With this basis, one is at a later stage able to develop a business model for a specific developing

country with high unemployment in order to help this country implement a VET system and foster innovation. The project is a combination of a theoretical framework and the development of the students' own VET system. Hence, we will not implement a system within this project.

## 1.2. Methodology

The whole project is divided into four distinct parts (see figure 1).

Fig. 1: Illustration of the project



Source: Author

In order to understand the current issues related to different education systems and their quality, we first conducted basic research and examined topics such as the UN Agenda 2030, the problem of youth unemployment and migration. We also looked at two competitiveness reports in order to acquire a general understanding of the differences in the productivity of various countries. Secondly, we conducted desk research and collected secondary data on already existing VET systems in five selected countries. We examined their similarities as well as their differences and put together



a set of best practices. For the third part, we analyzed three selected developing countries in order to gain knowledge about their existing education system as well as the challenges these countries face regarding their education system. In addition, we conducted an interview with Mr Glättli, managing director of the vocational education and training department at Swissmem, to acquire an understanding of the requirements and needs of a specific trade in a developing country.

In a last part, based on the aforementioned analysis, we were able to identify several problems that occur in developing countries. Hence, we established possible solutions in order to facilitate the implementation of a VET system. Based on those possible solutions as well as on the best practices we identified from already existing VET systems, we were able to determine several matches and develop our “own VET system” accordingly. Finally, we provided a personal recommendation regarding the continuation of this project.

## 2. Basic Research

### 2.1. UN Agenda 2030

According to the United Nations Sustainable Development Knowledge Platform (2016), the UN Agenda 2030 was formed on the basis of the Millennium Development Goals and aims to achieve what could not be completed so far. The Agenda is composed of a set of actions for people, the planet as well as prosperity. It further aims to promote peace throughout the world. The 17 Sustainable Development Goals and a total of 169 targets illustrate the objectives of the global Agenda. These goals seek to balance the three aspects of sustainable development that are economical, social and environmental (ibid.).

Fig. 2: UN Sustainable Development Goals



Source: United Nations website (2016b)

Goal No. 4 of the UN Agenda 2030 is to “ensure inclusive and quality education for all and promote lifelong learning” (United Nations website, 2016a). Receiving a quality education is essential for the improvement of people’s lives. So far, considerable advancements have taken place and school enrollment rates as well as literacy rates have increased enormously. In primary education gender

equality has been achieved globally. However, only a small number of countries achieved this objective in their entire education system. According to the United Nations, in developing countries there are still 57 million children that do not have access to primary education and more than half of those children live in Sub-Saharan Africa. In addition, 103 million adolescents worldwide do not have basic literacy skills and over 60 per cent of them are female. Therefore, it is crucial to maintain the efforts in order to achieve education goals worldwide (ibid.).

Targets that have been set in order to achieve Goal No. 4 of the UN Agenda 2030 include the assurance of quality education for all children, an increase in the number of adolescents who have the necessary skills in order to enter the workforce as well as the elimination of gender inequalities in education. Moreover, education facilities and infrastructure will be built and enhanced and the number of qualified teachers will increase. Students will further gain awareness about sustainable development including knowledge about human rights and cultural differences (ibid.).

## 2.2. Youth (un)employment

Young people play an important role within a nation's demographic groups. The young generation not only ensures the persistence of a nation's population, but also accounts for its future (economic) development. From an economic point of view, the young population represents a country's human capital, which is defined as "the skills, knowledge and experience possessed by an individual or population" with regard to their contribution to the creation of economic value (The Oxford Dictionary website, 2016). It goes without saying that young people are reliant on education and training in order to exploit their full potential. Unfortunately, not every young person is offered the opportunity to develop his or her strengths. As a matter of fact, young people are often faced with difficulties on the job market, resulting in a significantly high rate of youth unemployment<sup>1</sup>. According to the UN World Youth Report (United Nations, 2016c:12), events such as the global economic crisis in 2008 and declining economic growth worldwide have exacerbated the problem. This is also true for the rest of the population; however, the young generation has been suffering severely from the bleak outlook. When comparing youth unemployment rate to the equivalently determined adult unemployment rate, statistics published by the International Labour Organization (ILO) show that the latter has been only about one-third as high (ILO, 2015:6). For the three-year period of 2012 to 2014, global youth unemployment remained at a stable rate of 13.0 per cent. In other

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<sup>1</sup> Youth unemployment is defined as "the number of unemployed 15-24 year-olds expressed as a percentage of the youth labor force. Unemployed people are those who report that they are without work, that they are available for work and that they have taken active steps to find work in the last four weeks" (Organisation for Economic Co-operation and Development OECD website, 2016).

words, a number of approximately 74 million young people worldwide were reported unemployed. Analyzing the data in a wider perspective, it is revealed that global youth unemployment has been increasing constantly since 2007 (ibid.). For 2016, the expected unemployment rate is forecasted to rise to 13.1 per cent, after declining slightly to 12.9 per cent in 2015 (ILO, 2016).

Since global youth unemployment has not been fluctuating heavily in the past few years, data collected in different regions of the world reveal massive gaps. When comparing the unemployment rates among developed, emerging and developing countries, it is observed that developed countries have been struggling the most (ILO, 2016). This might be explained by the fact that developed economies, and the European Union (EU) in particular, have been dramatically suffering from the crisis (ILO, 2015:6).

Fig. 3: Youth unemployment trends and projections to 2017

	Youth unemployment rate, 2007–17 (percentages)				Unemployed youth, 2015–17 (millions)		
	2007–14	2015	2016	2017	2015	2016	2017
<b>World</b>		12.9	13.1	13.1	70.5	71.0	71.0
Developed countries		15.0	14.5	14.3	10.2	9.8	9.6
Emerging countries		13.3	13.6	13.7	52.9	53.5	53.5
Developing countries		9.4	9.5	9.4	7.4	7.7	7.9

Source: ILO (2016)

Raising the issue of still existing poverty in developing countries, the International Labour Organization states that “in 2013, more than one-third (37.8 per cent) of employed youth in the developing world were poor (17.7 per cent in extreme poverty and 20.1 per cent in moderate poverty)” (ILO, 2015:8). In addition, it is observed that in the same time period, a number of 169 million young people with a job had to live with little money, meaning that they were living on less than USD 2 a day. By expanding the range to less than USD 4 a day, a number of 286 million working youth were considered poor (ibid.).

Table 1: Youth unemployment rates by region in 2014

Region	Rate in %
North Africa	30.5
Middle East	28.2
Central and South-Eastern Europe (non-EU) and CIS	17.2
Developed Economies and European Union	16.6
South-East Asia and the Pacific	13.6
Latin America and the Caribbean	13.4
Sub-Saharan Africa	11.6
East Asia	10.6
South Asia	9.9

Source: Author based on information from ILO (2015:18)

Data in table 1 reveals that there is a tremendous gap between youth unemployment rates in North Africa and Middle East, and the rest of the world. An analysis of the countries' individual background has shown that the implementation of "skills development" and "apprenticeship programs" alone cannot alleviate the problem (ILO, 2016:18). Moreover, it is stated that "the persistent high unemployment among both youth and adults in the regions denotes the deep-rooted structural elements that cannot be resolved by supply-side policies alone" (ibid.).

European countries have not been able yet to fully recover, since data for 2014 shows that "the youth unemployment rate exceeded 20 per cent in two-thirds of the countries" (ILO, 2015:6). In fact, youth unemployment was still subject to heavy fluctuations within the EU in 2015. On the one hand, Spain (48.4 %) and Greece (49.8 %) are ranked among the countries with highest unemployment rates (OECD website, 2016). On the other hand, countries such as Germany (7.3 %), Austria (10.6 %) and Denmark (10.8 %), that have successfully implemented a dual education system, are characterized by considerably low unemployment rates. This is also true for Switzerland (8.6 %), which heavily relies on a dual education system likewise its German-speaking neighbors (ibid.).

### 2.3. Migration

For hundreds of years, (international) migration has been occurring in various parts of the world. This development was increasingly reinforced in consideration of technological advancements and more sophisticated transportation methods (United Nations, 2016d:2). In 2015, a number of 244 million migrants were reported worldwide (ibid.:5-6). This represents an increase of 41 per cent compared to 2000 (173 million). Europe ranks 1<sup>st</sup> among the most chosen migration destinations, hosting approximately 76 million of immigrants, whereas Asia is ranked 2<sup>nd</sup>, being home to 75 million immigrants. These figures indicate that the European and Asian continent account for almost two thirds of all international migrants. In 2015, more than 70 per cent of all migrants worldwide had residence in high-income countries (ibid.). From a country-based perspective, the United States attract increasing attention. About 47 million immigrants had residency in the US in 2015, followed by Germany and Russia (12 million each) (ibid.:1). Refugees form an important part of international migrants. In 2014, 19.5 million people worldwide were considered refugees. According to statistics, Turkey reported a number of 1.6 million refugees within its territory, putting the country on top of the largest refugee-hosting nations. The majority of all refugees worldwide originate from three different countries: the Syrian Arab Republic, Afghanistan and Somalia (ibid.).

There are several reasons that need to be taken into consideration in the analysis of people's motivations for migration. As outlined by the United Nations (ibid.:2), elements such as conflicts, poverty, inequality and lack of job opportunities play an important role in this context and significantly influence people in their decision making. Migration is a double-edged sword for both the immigrants' home country and their current country of residence. With regard to its benefits, migration might have a positive impact on the home countries' economic development. In 2014, migrants from developing countries transferred approximately USD 436 billion in remittances to their home countries. This is a significant financial contribution, since it exceeds the amount provided for official development assistance. These funds are considered an important element for the establishment of new infrastructure for the communities, especially regarding new education and health facilities. In the case of host countries, immigrants represent an important part of the workforce, since they "often fill critical labor shortages, create jobs as entrepreneurs, and contribute in terms of taxes and social contributions" (ibid.).

## 2.4. Competitiveness Reports

The Global Competitiveness Report, which is provided by the World Economic Forum (WEF), ranks 138 economies based on their competitive abilities (WEF website, 2016a). It further provides an understanding for the key factors leading to productivity and success (ibid.). The WEF (2016b:35) defines competitiveness as “the set of institutions, policies, and factors that determine the level of productivity of a country“. These factors are divided into twelve weighted pillars of which two are concerned with education. The 4<sup>th</sup> pillar examines health and primary education and the 5<sup>th</sup> pillar higher education and training (ibid.:36).

According to the WEF (2016a), the newest report emphasizes that various factors could reduce growth and prosperity of the economies. Financial incentives are not sufficient to maintain growth anymore. They must be complemented by competitiveness reforms. In addition, a decline in the openness of countries could also lead to a decline in growth. Furthermore, it has been found that new business methods and innovation are now equally important as skills and the right infrastructure (ibid.).

Switzerland has been identified as the most competitive economy in the Global Competitiveness Report for the eighth year in a row (Allen, 2016). In the 2016-2017 report, the country received its highest score so far with 5.8 out of 7. However, some weaknesses such as enduring deflation, low numbers of women in the workforce as well as the amount of bureaucracy were identified. Experts also see Switzerland’s position at risk when strict immigration quotas, based on an initiative from 2014, are being implemented next year (ibid.).

The *Global Competitiveness Report* by WEF (2016b:xiii) divides our worlds’ economies into eight distinct regions as follows: East Asia and the Pacific, Eurasia, Europe, Latin America and the Caribbean, Middle East and North Africa, North America, South Asia and Sub-Saharan Africa. Although Switzerland is at the top of the ranking and seven of the top twelve are European countries, Europe only achieves an average rank of 42 due to the low performance of Central, Eastern and Southern European countries. However, it can be observed that the European countries with existing VET systems, such as Switzerland, Germany, Sweden or the United Kingdom rank at the top (ibid.).

Table 2: Global Competitiveness Report Regional Ranks

Region	Average Ranking
1. North America	9
2. East Asia and the Pacific	40
3. Europe	42
4. Middle East and North Africa	66
5. Eurasia	72
6. Latin America and the Caribbean	82
7. South Asia	89
8. Sub-Saharan Africa	111

Source: Author based on information from WEF (2016b:xiii)

Another competitiveness report is issued by INSEAD, the business school of the world (INSEAD Global Indices website, 2016). It ranks over 100 economies according to their ability to attract talent. *The Global Talent Competitiveness Index 2015-16*, is composed of an Input-Output model with six pillars (INSEAD, 2015:32). The input side reflects a country's efforts in order to stimulate its talent competitiveness and is composed of the four pillars as follows: Enable, Attract, Grow, and Retain. The output side, on the other hand, portrays the quality of talent within a country as a result of the input factors and is composed of the two pillars Labor and Vocational and Global Knowledge (ibid.).

It has been found that there is a positive relationship between talent competitiveness and wealth (ibid.:36). Hence, countries with a high GDP per capita generally rank higher than those with a lower level of income. An explanation for this observation is that wealthier countries have better education systems and are also more effective in attracting talent since they can offer a higher quality of life as well as monetary compensation. In this report, too, Switzerland achieved the highest rank, followed by Singapore and Luxembourg (ibid.:38). Furthermore, it can be observed that, again, countries with existing VET systems tend to rank very high (ibid.).



### 3. Analysis of existing VET Systems

#### 3.1. Switzerland

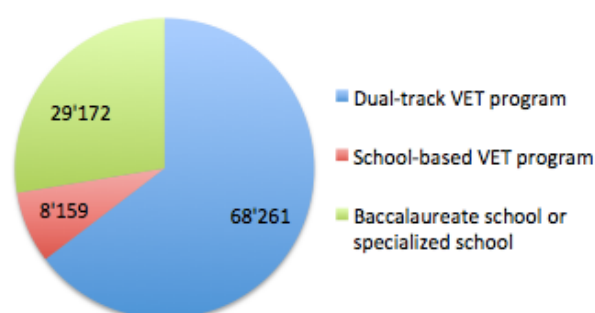
##### 3.1.1. History

According to Borkowsky and Gonon (1998:335), in the 1880s, the Swiss “Gewerbeverband” realized that its members lost competitiveness. In order to strengthen the arts and crafts trade, more institutions for vocational education were created. Since 1884, the federal authorities are permitted to financially support vocational “Fortbildungsschulen” and “Lehrwerkstätten” (ibid.). In 1930, it was made mandatory for each apprentice to attend classes on one day per week (ibid.:335-336). But it was only after the Second World War, when the dual system in Switzerland gained significant importance in the lives of adolescents (ibid.). While between 1932 and 1941 about 50 per cent of young adults completed vocational education, this proportion rose to almost 70 per cent until 1961. In 1985, one third of the companies in the secondary and tertiary sectors that employed more than one person offered at least one apprenticeship position (ibid.:337).

##### 3.1.2. Overview of VET system

As stated by the State Secretariat for Education, Research and Innovation (SERI) (2016:4), in Switzerland, two thirds of adolescents that completed compulsory education commence vocational education and training (VET). There are VET systems available for some 230 professions. These VET programs are based on a dual-track approach by practically training the apprentices in a host company (apprenticeship) on three or four days and at the same time providing them theoretical classes at a vocational school on one or two days (Swiss Media Institute for Education and Culture website, 2010-2011). Moreover, the students obtain professional skills at inter-company courses. There is also the option of attending a school-based VET program, which provides full-time classroom education. This type of education is especially common in the French- and Italian-speaking parts of Switzerland (ibid.).

Fig. 4: Enrollment in upper-secondary education in 2013



Source: Author based on information from SERI (2016:11)

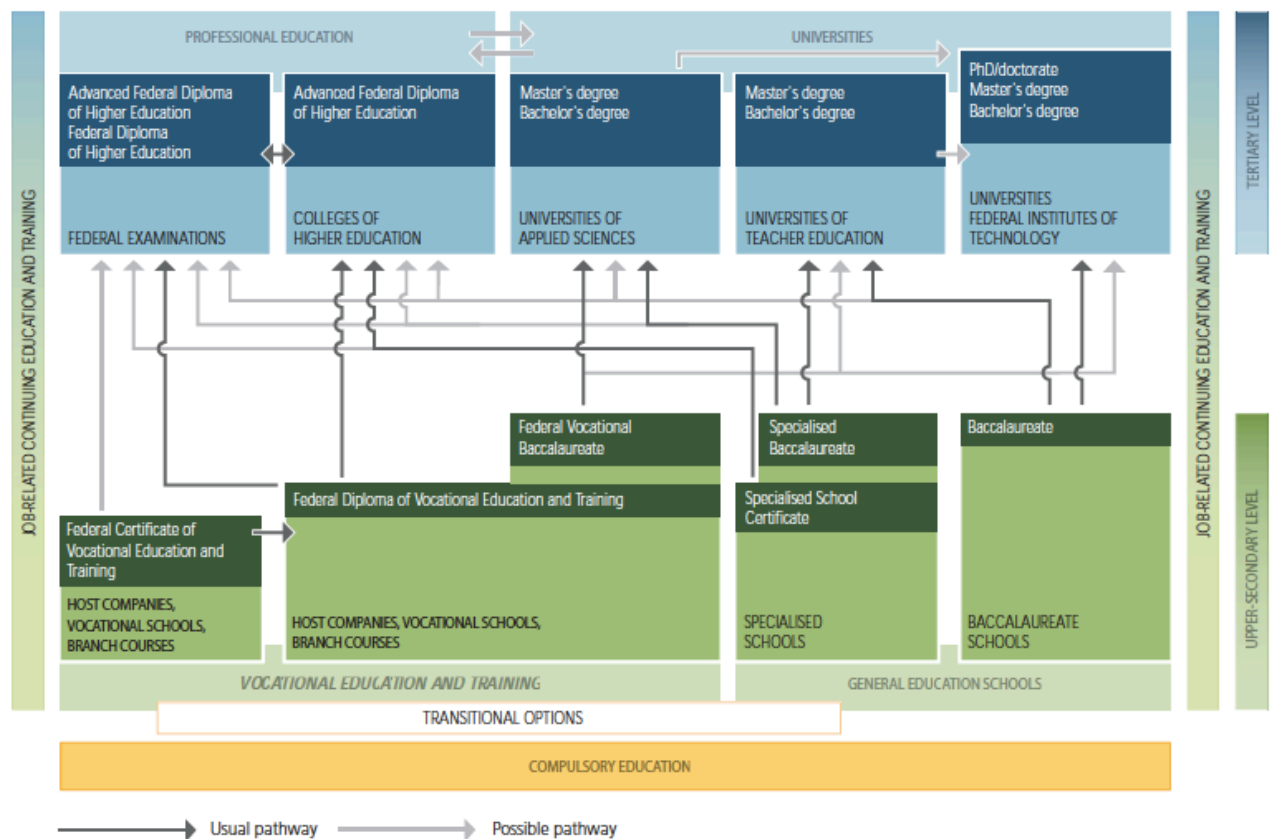
As stated by SERI (2016:7), the following VET programs are offered:

- Three- or four-year VET program with Federal VET Diploma (apprenticeship)  
These programs enable students to acquire the competences and skills that are needed in order to work in a specific profession. They further provide access to tertiary-level education and they offer the possibility to achieve a Federal Vocational Baccalaureate (FVB) either during the apprenticeship or afterwards.
- Two-year VET program with Federal VET Certificate  
This is an abbreviated form of the three or four year VET program. It offers students with more practical abilities a possibility to continue their education at a higher level and achieve a qualification for a specific profession. Students holding a VET Certificate may enroll in a three- or four-year VET program afterwards.
- Federal Vocational Baccalaureate (FVB)  
The three- or four-year VET program may be complemented with a Federal Vocational Baccalaureate program that leads to the FVB. The classes cover general education subjects and after successful completion of the program, students are able to enroll in a Swiss university of applied sciences (UAS). The FVB program can be completed either during the three- or four-year VET program (apprenticeship) or afterwards (ibid.).

For some specific professions, in addition to the traditional VET programs, there is also the possibility to enroll in so-called “Lehrwerkstätten” (Erziehungsdirektion des Kantons Bern website, 2016). These institutions function both as host company as well as vocational school for the students (ibid.). The “Lehrwerkstätten Bern”, which were renamed in 2014 to “Technische Fachschule Bern” offers training in the fields of electronics, interior work, mechanical engineering, metal construction and plumber (Wälti, 2013). The “Lehrwerkstätten” were developed for professions with a lack of apprenticeship positions as well as for students that experience difficulties while entering vocational training (ibid.). The completion of such educational institutions leads to the same certificate as traditional VET programs (Erziehungsdirektion des Kantons Bern website, 2016).

In figure 5, it can be seen that even though there is a usual pathway that most students follow, other options are possible as well. In general, anyone with the necessary abilities can attend their preferable classes (Eurydice website, 2016a). Except for a few study programs that are subject to a numerus clausus, holders with a baccalaureate diploma can choose their preferable university as well as the study program. Likewise, a federal VET Diploma combined with a FVB grants access to universities of applied sciences. However, students wishing to enroll in a university are also able to take the University Aptitude Test (UAT) after a year of preparation, which provides access to cantonal university or the federal institute of technology. A certificate or diploma is obtained by over 90 per cent of adolescents and, hence, the transition to the job market or further education is facilitated (ibid.).

Fig. 5: Education system in Switzerland



Source: SERI (2016:6)

### 3.1.3. Exemplary Demonstration: Electrician

In order to illustrate the Swiss dual-track apprenticeship model, the process of becoming a certified Electrician with a Federal VET Diploma is demonstrated. According to SERI (2016:14), Electrician is the fifth most frequently chosen profession in Switzerland. In order to be able to commence an apprenticeship to be an Electrician, students need to have completed nine years of compulsory education (berufsberatung.ch website, 2016). In addition, the host companies might request the students to take a screening test. The VET program to become an Electrician takes four years and involves practical work in the host company on four days and the attendance of theoretical classes on one day at a local vocational school. During the semesters two to four, the theoretical education might be extended to two days. In addition, students attend several weeks of so-called “überbetriebliche Kurse” which are organized by industry associations and are, hence, the third place of learning within the VET program. After the successful completion of the VET program, the Federal VET Diploma will be obtained and there are several possibilities to attend further training at different schools and institutions. In case of a high level of learning performance, students are able to complete the Federal Vocational Baccalaureate during their apprenticeship, which opens direct access to universities of applied sciences (ibid.).

### 3.1.4. Funding

According to SERI (2016:23), Switzerland’s VPET sector is financed by the Confederation, the 26 cantons, as well as companies. In 2014, public funding on the VPET system amounted to CHF 3.4 billion with about 75 per cent of the costs covered by the cantons and 25 per cent covered by the Confederation. Professional organizations also provide financial support for the VPET system. In addition, they provide services with the supply of training centers and the promotion of professions. Furthermore, companies provide apprenticeship positions (ibid.).

In order to cover the costs of the development of VET training programs, the organization of courses, qualification processes as well as the promotion of professions, a VPET fund was created (SERI, 2016:24). For companies within a certain economic branch it is compulsory to contribute to this fund. According to the Federal Office for Professional Education and Technology OPET (2011:22), the host companies cover almost 60 per cent of the expenditures for VET systems. In 2004, expenditures from host companies amounted to CHF 4.7 billion, compared to CHF 2.6 billion from the cantons (ibid.:24). However, in general, companies benefit from the participation in VET programs (SERI, 2016:24). In 2009, gross costs from the involvement in VET programs were about CHF 5.3 billion for host companies, with a productive output by the apprentices of CHF 5.8 billion, thus, generating net benefits of CHF 0.5 billion (ibid.).

Fig. 6: VET expenditures in per cent (approximate numbers)

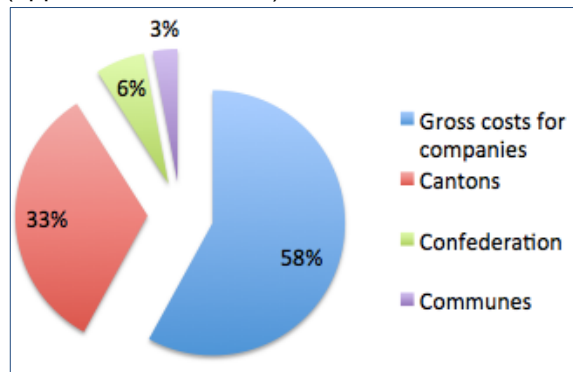
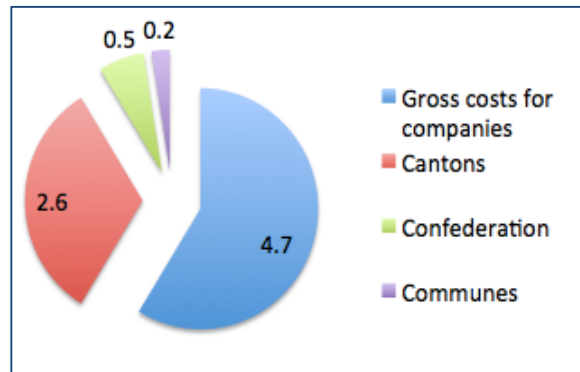


Fig. 7: VET expenditures in CHF billion (in 2004)



Source: Author based on information from OPET (2016:22-24)

### 3.1.5. Advantages and Disadvantages

The Swiss VET system offers several advantages to the apprentices themselves, the host companies as well as the society as a whole. As described by SERI (2016:4), education and training in Switzerland are focused on the acquirement of professional competences that are actually demanded by the labor market. Due to this direct link, Switzerland is able to maintain one of the lowest youth unemployment rates within Europe. In addition, a high level of permeability characterizes the Swiss VPET system. Students may switch from vocational or professional approaches to general education and university pathways and are able to change their working pathways at a later stage quite easily as well (ibid.). As already mentioned, companies can financially benefit from the participation in VET programs. In addition, companies that decide to hire their apprentices after the completion of the VET program achieve an even greater benefit by not having to invest into the costly recruitment and training of new employees (SERI, date not known:11). Another key factor of the Swiss VET system is that the qualifications are nationally recognized and protected (Swiss Agency for Development and Cooperation SDC, 2016:10). This fosters the employability of the students after completing a VET program. In addition, VPET qualifications are comparable at the international level (ibid.).

However, the Swiss VET system is also subject to several challenges and threats. Hoeckel, Field and Grubb (2009:25) found that the global recession might have negative effects on VET programs. Companies that have to cut costs are unlikely to be motivated to invest in apprenticeship training. The Swiss VET approach is supported by companies to a great extent which makes it particularly vulnerable. In addition, VET programs are threatened by a continuing trend towards “academisation”. VPET programs are feared to focus more on theoretical aspects and to lose their identity. This process is likely to be reinforced by international pressure to adjust all studies to a

bachelor/master system (ibid.:26). Moreover, the entry of international companies might threaten the Swiss VET system because such companies are less involved in the supply of apprenticeship places. Dubs (2006:XIX) further found that the bureaucratization of the education system, which is largely driven by European Union initiatives, poses a threat to the VET system. In the long run, education systems can only be successful if sufficient freedom is granted and they can evolve as needed (ibid.).

## 3.2. Germany

### 3.2.1. History

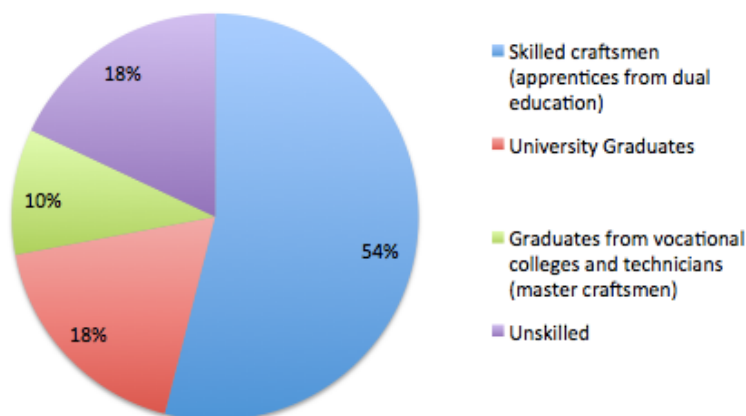
As stated by the Federal Institute for Vocational Education and Training (BiBB) (2011a:10), Germany's vocational education and training has its roots in the Middle Ages. During that era, associations of craftsmen developed regulations for the apprenticeships within their companies. These regulations have actually contributed to today's shared responsibility between the company and the vocational school. When industrialization began in the beginning of the 20<sup>th</sup> century, firms adopted the idea of the craftsmen apprenticeship. However, they adjusted the training in order to meet their own requirements. The duration of the training was agreed on and mandatory skills and knowledge were listed. As described by BiBB (ibid.), this not only led to the elimination of regional discrepancies but it also eliminated differences attributed to the type or size of the company. Little by little, national standards regarding the training as well as the qualifications were developed. However, legal regulations were not present until after the Second World War, when in 1953 the "Act Concerning the Regulation of Crafts and Trades" was passed. In 1969, regulations governing the cooperation of employers, trade unions and the government bodies in order to provide vocational education and training were passed with the "Vocational Training Act". This principle of shared responsibility was also retained in the "reformed Vocational Training Act of 2005" (ibid.).

### 3.2.2. Overview of VET System

After the completion of primary education, students move to lower secondary education where they enroll at "Hauptschule", "Realschule", or "Gymnasium" (Eurydice website, 2016b). Those schools all lead to a specific qualification. After completing the lower secondary stage, usually at the age of 15, students move on to upper secondary education. Depending on the qualifications that were acquired in lower secondary education, students have several options for upper secondary education such as full-time general education, vocational schools, as well as vocational education and training with a dual approach (ibid.). In 2014, the dual system provided vocational education and training for 327 professions (BiBB, 2016:11). The dual approach, similarly to Switzerland, is based

on two learning places: 70 per cent of the VET program is based in a company where students acquire practical skills, and additionally, 30 per cent is based in a part-time vocational school where they obtain theoretical knowledge (German Office for International Cooperation in Vocational Education and Training GOVET, date not known). As stated by Germany Trade & Invest (2014:5), about half of Germany's workforce has received its qualification from a dual VET program.

Fig. 8: Workforce in Germany by Level of Professional Education (2012, in % of total workforce)



Source: Author based on information from Germany Trade & Invest (2014:5)

According to the European Centre for the Development of Vocational Training (Cedefop) (2014:2), the following VET programs are offered in Germany:

- Dual approach VET program (apprenticeship)

This is the main pillar of the VET system in Germany. All adolescents who have completed compulsory education are eligible to commence an apprenticeship. Generally, these programs take three years, however, there are also programs that last two or three and a half years. After the completion of the apprenticeship, participants can engage in the workforce as a skilled worker and there are many options for further school-based VET programs. There is also the possibility to acquire a “master craftsman” qualification.

- Berufsfachschule

This program is based at a vocational school and aims to prepare students for many occupational fields. Depending on the area of occupation, the specialization and the qualification level, the program lasts from one to three years. Students with a lower secondary general school certificate are able to enroll in this program. Although the completion of the program

does not lead to a full vocational qualification, under certain conditions, attendance can count as the first year in the dual VET program.

- Berufliches Gymnasium / Fachgymnasium

With a duration of three to four years, this program provides general upper secondary education with a vocational orientation. The successful completion leads to a general higher education entrance qualification. Students with an intermediate level certificate are able to enroll in this program.

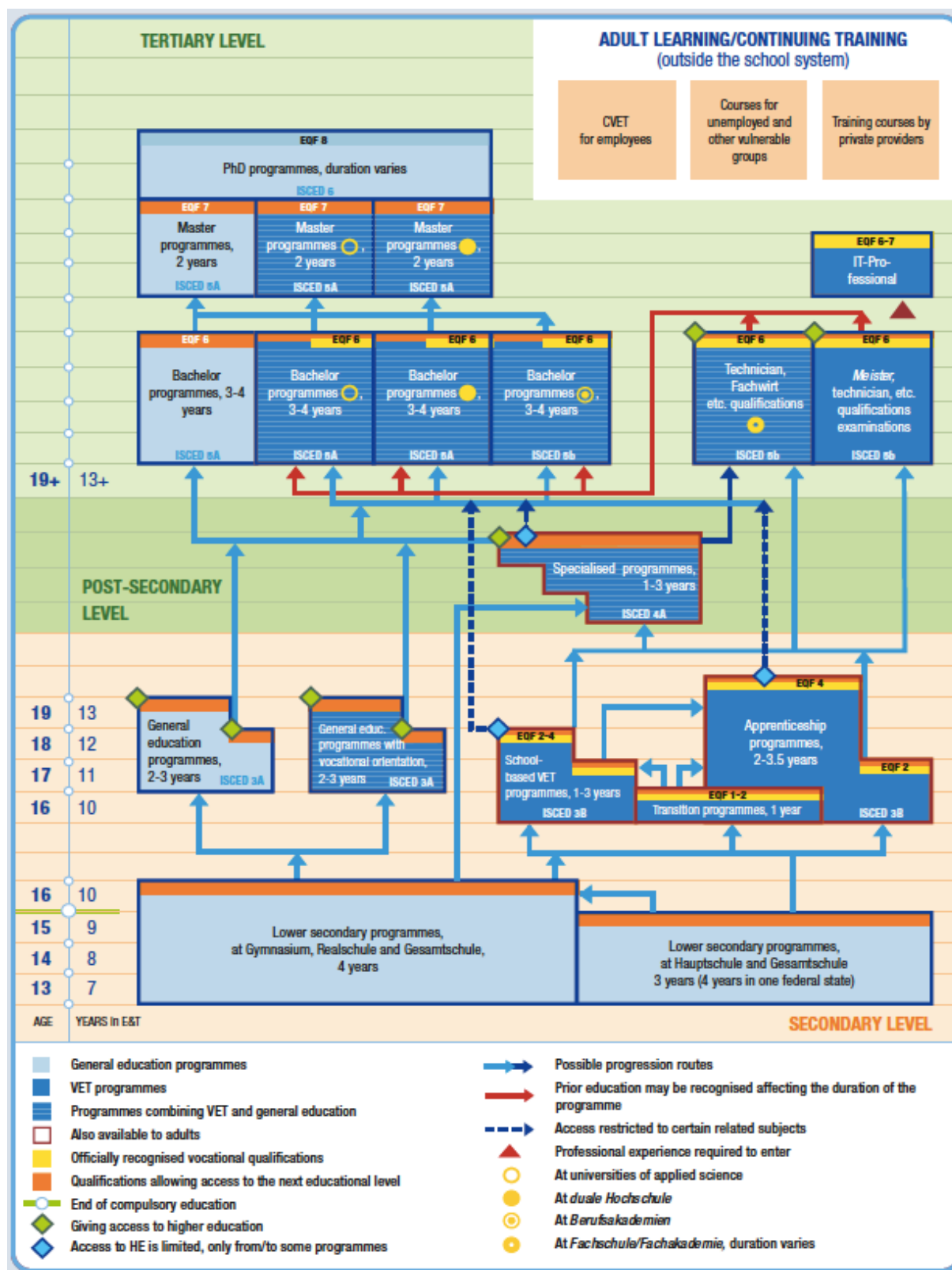
- Specialized programs

These programs last one to three years and are based on the intermediate level certificates or vocational training and aim to provide further occupational knowledge. Upon completion of these programs students are able to enroll in universities of applied sciences and, under certain conditions, students may even acquire the qualification needed to enroll in general higher education.

A comprehensive overview of the German education system is given in figure 9 on the following page.



Fig. 9: Education system in Germany



Source: Cedefop (2014:3)

### 3.2.3. Exemplary Demonstration: Electrician

Once again, the process of becoming a certified Electrician is demonstrated in order to illustrate the dual-track apprenticeship model in Germany. Students need to have completed compulsory education and have a “mittlere Reife” degree, meaning the education level of “Realschule”, in order to be able to start the dual-track VET program to become an electrician (Bundesagentur für Arbeit website, 2016). In addition, students need to have an apprenticeship contract with a host company. The apprenticeship takes three and a half years and is completed with an examination (“Gesellenprüfung”). In addition to the practical work in the host company, students attend theoretical classes either on one or two specific weekdays or in the form of an intensive course for three to four weeks. Upon completion of the apprenticeship, students are able to either work as a skilled worker or enroll in further training programs and for example obtain the master (“Meister”) qualification. Under certain conditions and depending on the region, students are also able to enroll in a bachelor study program (ibid.).

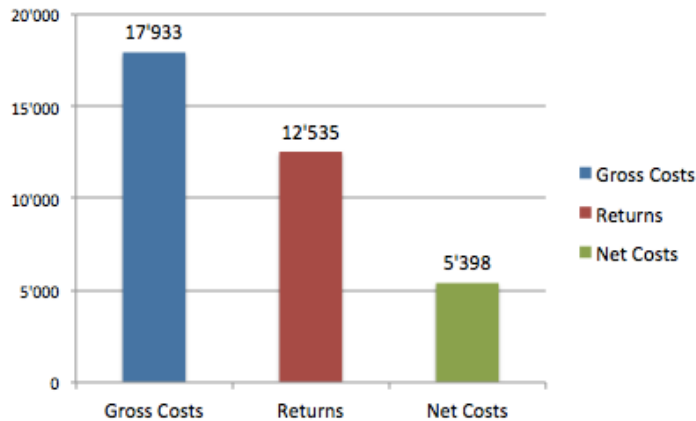
### 3.2.4. Funding

The VET programs in Germany are funded by three different parties: the companies, the public sector as well as the apprentices themselves (Müller, Wenzelmann and Jansen, 2016). In the training year 2012/13, companies’ expenditures related to dual training amounted to approximately EUR 7.7 billion. During the budget year 2013, the total expenditures of all public bodies, which are the Federal Government, the Federal States, as well as the Federal Employment Agency, amounted to EUR 9.7 billion. Public funding not only helps to finance the dual system but also provides funding for full-time vocational schools, the transitional phases as well as the structural progress. The contribution of the apprentices themselves is composed of the forgone income they suffer by being in training instead of being employed. Although there is no information available concerning the exact amount of the contribution made by apprentices, estimates suggest that the involvement is significant and, therefore, undervalued (ibid.).

According to the BiBB Cost-Benefit survey 2012/13 (2013, cited by Jansen et al, 2015), there is no obligation for companies in Germany to participate in the training of apprentices. In addition, with a few exceptions, there are also no fees that need to be paid in case a company does not offer apprenticeship positions. Companies that do provide apprenticeship training, however, bear all in-house training costs (Cedefop, 2014:4). As found by the BiBB Cost-Benefit survey 2012/13 (2013, cited by Jansen et al, 2015), most of these costs are incurred during the period of the apprenticeship, whereas benefits can be obtained at different times. In the training year 2012/13, host companies incurred gross costs per apprentice of EUR 17,933 on average. The productive inputs of

the apprentices led to an average return of EUR 12,535 per apprentice. Thus, net costs amount to an average of EUR 5,398 per apprentice per year, which means that approximately two thirds of gross costs are covered by the benefits obtained from the productive outputs of apprentices (ibid.).

Fig. 10: Average gross costs, returns and net costs per apprentice in training year 2012/13 (in EUR)



Source: Author based on information from the BiBB Cost-Benefit survey 2012/13, cited by Jansen et al (2015)

### 3.2.5. Advantages and Disadvantages

As described by the German Office for International Cooperation in Vocational Education and Training GOVET (date not known), there are several benefits for the apprentices themselves, the host companies and also the government. Apprentices are able to obtain practical skills that are necessary for the job market. Employers, on the other hand, benefit by hiring apprentices that meet their demands. Additionally, they are able to save huge amounts of recruiting costs by hiring their apprentices as skilled workers after the duration of the apprenticeship program (ibid.). Moreover, the ILO (2013:100) states that youth unemployment in Germany is very low compared to other European countries due to the fact that many companies retain their apprentices after the completion of the program. It is remarkable that a large number of students who enroll in a dual-track VET program have already received qualifications to enter higher education (Cedefop, 2014:4). In addition, the collaboration between the employer, trade unions and the government is a core element of the apprenticeship model in Germany (ibid.).

On the other hand, several challenges and drawbacks arise from the VET system in Germany. The system is highly dependent on the labor market and the economy as less apprenticeship positions are offered in times of economic downturn (ILO, 2013:100). Additionally, a relative high ratio of dropouts can be observed in some fields or regions in the early stages of the apprenticeship pro-

gram. This is largely due to a lack of career guidance within the general education system. Another important drawback is the fact that it is quite difficult for students to move into higher education upon completion of the apprenticeship (ibid.:101). As found by the OECD (2010:1), there is no specific agency in Germany with the responsibility to deliver information and career counseling to students. Thus, the degree of information delivery varies widely across regions. Moreover, the leaving examination at the end of the apprenticeship does not include the students' school performance. Therefore, students may not take schooling as seriously as they should which results in the limitation of their abilities to enroll in tertiary education (ibid.).

### 3.3. Sweden

#### 3.3.1. History

The beginning of vocational training in Europe is detectable back to the handicraft business (Guggenheim and Wollschläger, 2004:7). The history of crafts, hence the history of "vocational training and education", is analogous in almost every single country in Europe (ibid.). According to Olsson and Thunqvist (2014:5), in the early 20<sup>th</sup> century the Swedish administration approved funds for communities, which were open to provide "apprenticeship and vocational youth schools". Those establishments concentrated on specific sectors such as manufacturing, handiworks and business. Furthermore, years later "workshop schools" were introduced, where courses were held explicitly on crafts and manufacturing. Through increased state funds in the beginning of the 1950s, new vocational and workshop schools were built. Consequently, the number of students increased sharply over the next decades, so that it reached approximately 75 per cent in the 1980s. In 2011, a new education reform was launched, introducing an innovative upper secondary education with 18 national programs, of which 12 were vocational (ibid.:5-15).

#### 3.3.2. Overview of VET System

The Swedish inhabitants share the privilege to be part of a very advanced schooling and training system (Cedefop, 2009:23). Also, along with on-going training, it does provide credentials that young individuals are able to obtain via initial vocational education and training (IVET). It is typical to differentiate between the initial vocational education and training ("grundläggande yrkesutbildning") and vocational training and education for adults ("yrkesutbildning för vuxna"). Individuals up to the age of 19 years are allowed to enroll in IVET, whereas older individuals have the option to enroll in VET for adults (ibid.).

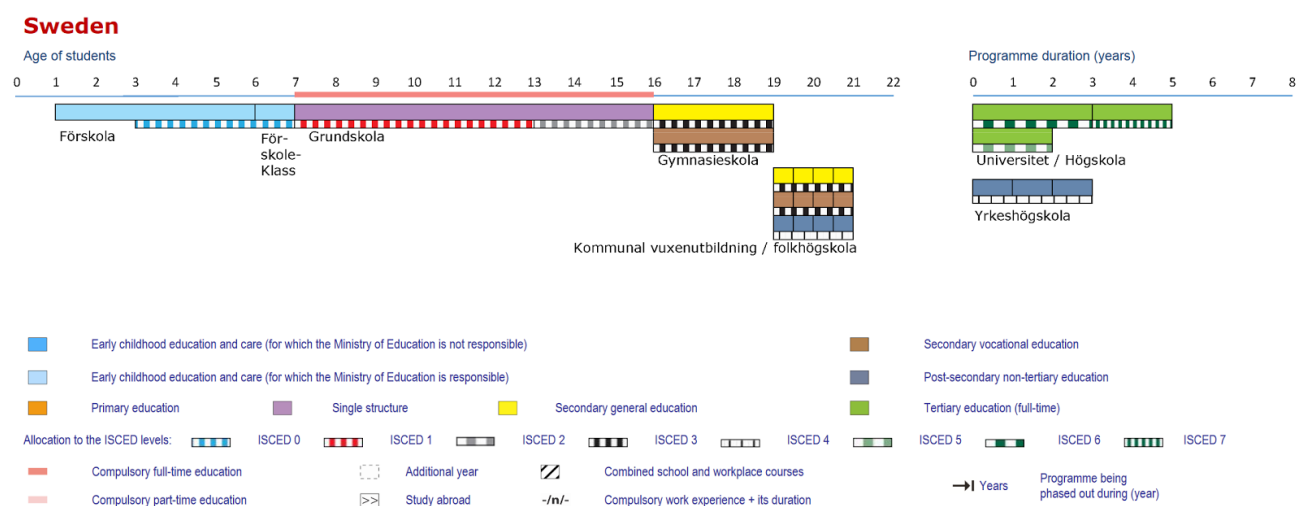
Table 3: IVET and VET in Sweden

“Grundläggande yrkesutbildning”	Individuals up to the age of 19 years are allowed to enroll to the IVET. Hence, they are part of the upper secondary education.
“Yrkesutbildning för vuxna”	Individuals at the age of 19 years and older have the option to enroll to the VET for adults. Hence, they are part of the upper secondary education and post-secondary education.

Source: Author based on information from Cedefop (2009:23-26)

By consulting table 3, the distinction between IVET (“Gymnasieskola”) and the VET for adults (“Kommunal vuxenutbildning/folkhögskola and Yrkehögskola”) can be observed.

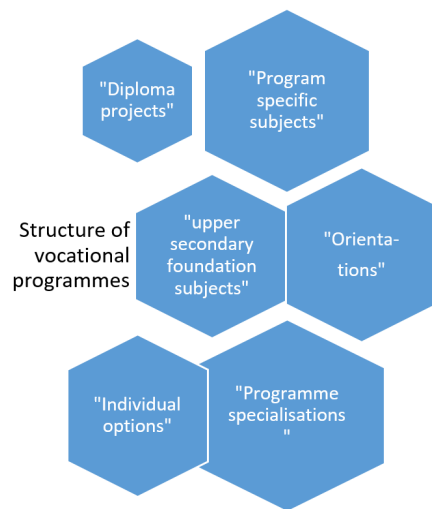
Fig. 11: Education system in Sweden



Source: European Commission/EACEA/Eurydice (2015:24)

Figure 12 on the following page discloses a structural overview of a national vocational program on the upper secondary level. Accordingly, each program shares the same structural components (Swedish Agency for Education (Skolverket), 2016).

Fig 12: Structure of vocational programs

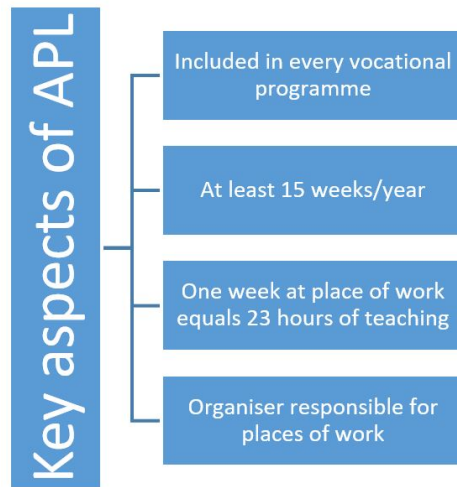


Source: Author based on information from the Swedish Agency for Education (2016)

A published review by OECD (Kuczera, 2013:7) reveals that by successfully completing a vocational program, pupils have set the basis for their professional life and supplementary higher vocational education. In addition, every pupil enrolled in a vocational program has the chance of being eligible for higher education, if supplementary subjects within the structure of the program are selected (Swedish Agency for Education, 2013:22).

According to the Swedish Agency for Education (2013:22), the common understanding of work based-learning (APL) is that the entire or components of the education in courses have to occur in one or multiple places of work. Further, the content of the curriculum is the main director of the APL (ibid.). The key aspects of APL can be listed as follows in figure 13.

Fig. 13: Key Aspects of APL



Source: Author based on information from the Swedish Agency for Education (2013:22)

In order to guarantee that pupils are enabled to attend at least 15 weeks of APL, organizers have to face high requirements (Swedish Agency for Education, 2013:22). Correspondingly, the main requirement for the organizer is to provide sufficient APL locations prior to education start. However, before every decision regarding the change of workplace, the resident “program council” has to be consulted by the organizer. Furthermore, every pupil attending an APL education ought to be assigned a supervisor at the place of work (ibid.).

A pupil has the option to choose among an “apprenticeship education” or a “school-based vocational program” (Swedish Agency for Education, 2013:23). As stated before, school-based vocational programs contain a minimum of 15 weeks of APL, whereas for “upper secondary apprenticeship education” 50 per cent has to be APL. Thus, every program, which consists of 50 per cent or more of APL, is considered an apprenticeship education (ibid.). The structure of the apprenticeship education contains the identical syllabus, hence enacts the identical requirements for a certificate in a school-based education (ibid.).

A “national program council” is assigned to every single vocational program in Sweden (Swedish Agency for Education, 2013:23). The councils are the communication medium between all members of the interest group regarding vocational education and the National Agency for Education. Furthermore, it plays a vital role in basically every key decision regarding vocational education matters (ibid.). Figure 14 defines all key support and assistance areas of a program council concerning vocational programs.

Fig. 14: Programme council



Source: Author based on information from the Swedish Agency for Education (2013:24)

The composition of the national councils is built by representatives of various sectors such as industry, concerned companies, employee groups and trade unions (Swedish Agency for Education, 2013:25). Further, there are councils that include representatives from the administration (ibid.).

Additionally, each vocational program is assigned a "local program council" (Swedish Agency for Education, 2013:25). There are no defined standards regarding its organization and scope of supporting tasks. Nevertheless, it ought to help organizers in finding appropriate APL places and to assist in the organization of projects (ibid.).

Before entering the stage of upper secondary education, every Swedish pupil has to pass the obligatory school ("Grundskola"), whereas the compulsory education is divided into nine grades, thus covering nine years (Classbase, 2016). Thereafter, upper secondary education, which consists of a three-year program, is the next step in the Swedish education system (Eurydice website, 2016c).

As stated by the Swedish National Agency for Education (2016), the general upper secondary education comprises diverse opportunities:

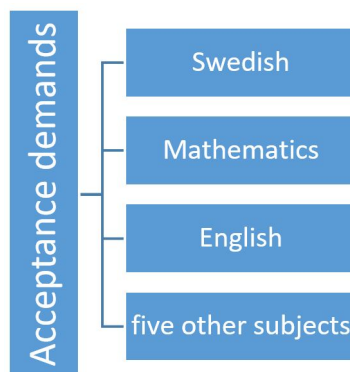
- The Swedish national program is structured by 18 different programs. Furthermore, 12 out of those 18 are accredited vocational programs and the remaining six are considered to be general "preparatory programs for higher education".



- Additionally, there are five so-called “introductory programs” for pupils who do not possess the qualification for one of the 18 national programs.
- Other programs that diverge from national programs such as
  - Unusual variations
  - National recruiting for special programs
  - Countrywide accredited sporting programs
  - Municipal education for adults

According to figure 15, the enrollment requirements for national vocational programs contain compulsory passing grades in Swedish, mathematics and English. Moreover, pupils have to pass five other courses in order to be eligible for national programs.

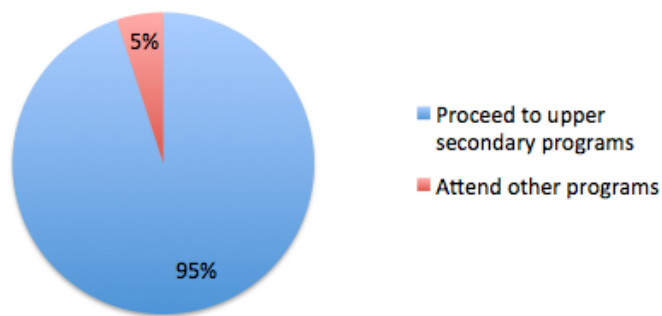
Fig. 15: Acceptance demands



Source: Author based on information from the Swedish National Agency for Education (2012:20) and Cedefop (2009:23)

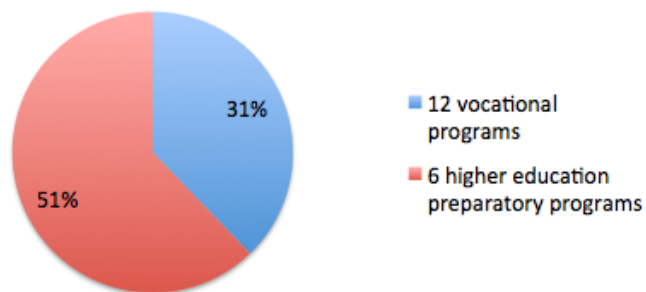
According to Eurydice (website, 2016c), in 2012 the proportion of students at the age of 17 who proceeded to one of the upper secondary education programs was approximately 95 per cent, of whom 51 per cent enrolled in a higher education preparatory program and 31 per cent in a vocational program.

Fig. 16: Share of pupils after compulsory school in 2012



Source: Author based on information from the Eurydice website (2016c)

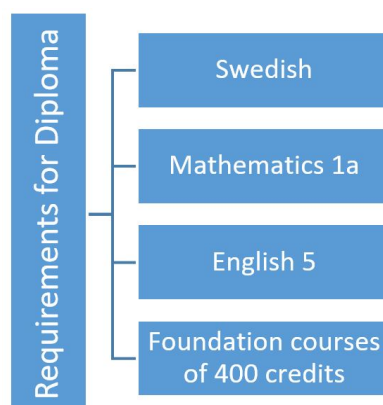
Fig. 17: Share of pupils attending upper secondary school in 2012



Source: Author based on information from the Eurydice website (2016c)

Pupils enrolled in vocational programs are enabled to be part of a “school-based education or an apprenticeship education” (Swedish National Agency for Education, 2012:20). Succeeding in those two education paths sets the cornerstone to an “upper secondary school diploma”, in this case “vocational diploma” (ISCED 3, see figure 11) (ibid.). Congruently, figure 18 reveals the required subjects to receive a vocational diploma.

Fig. 18: Requirements for diploma



Source: Author based on information from the Swedish National Agency for Education (2012:21)

According to Cedefop (2009:29) the “municipal adult education” offers the biggest program of vocational education and training for individuals older than 19 years. Its main goal is to facilitate integration of the students in the labor market. Nonetheless, it can provide direct admission to further higher (vocational) education. Referring to figure 11, its education level corresponds to ISCED 3, thus the curriculum is equal to the general upper secondary level (Swedish Agency for Education, 2016).

### **3.3.3. Funding**

Most of the vocational education and training in Sweden is publicly subsidized, whereupon the financing is split between the general government and municipalities (Cedefop, 2009:51). The funds provided by the general government are distributed via “state grants to municipalities”. Supplementary, municipalities might as well obtain financial resources from council taxes. Once the municipalities have collected all funds granted, they assign capitals to different local schools (ibid.). However, municipalities are permitted to use financial resources in the area’s best interest (European Agency website, 2016).

The upper secondary IVET, which is completely financed, thus free of charge, receives the biggest share of the granted financial resources (Cedefop, 2009:51). According to Cedefop (ibid.:52) the amount added up to “SEK 19 billion in 2007”. By comparison, in 2007 the IVET municipal adult education obtained SEK 2 billion by the state and municipalities. Therefore, offering that education program, like most adult VET, free of fees (ibid.).

### **3.3.4. Advantages and Disadvantages**

The Swedish upper secondary VET education provides numerous benefits and positive characteristics (Kuczera et al, 2008:10). One of those characteristics is the fact that the upper secondary education and training can rely on a very strong performance by the pupils in the previous mandatory education level (ibid.:11). Thus, Sweden can evidence a moderate rate of quitters of vocational programs, as the pupils already possess fundamental school skills and low potential to drop out (ibid.).

By contrast with global standards, Sweden’s vocational education and training enjoys high appreciation and standing in the education system compared to other countries (Kuczera et al, 2008:11). Moreover, due to the fact that municipalities can act rather independent relating to the local education programs, there are a lot of possibilities for innovation in implementing the VET (ibid.).

Nevertheless, there are also numerous weaknesses in the VET system of Sweden. As Sweden, in contrast to worldwide standards, is faced with an important unemployment rate (Kuczera et al, 2008:11). Even if there are several factors involved in determining that rate, doubts rise when examining the VET systems effectiveness in “delivering the required skills” (ibid.). In addition, due to a rather great segregation “between the world of work and the world of education and school-based VET”, the upper secondary VET education fails to identify the actual necessities of the labor market, hence struggles to turn the students into “job-ready” employees (ibid.:12). One of the reasons for that segregation is, besides the program councils, the limited fora for stakeholders of vocational education and training in Sweden in order to reach agreement on important targets (ibid.). Further, due to very restrained Swedish labor markets, companies cannot balance the apparently required training expenses (after upper secondary VET) of starting jobs by simply distributing lower salaries as salaries are “pegged to those of older workers”. Therefore, employers may see the recruiting of young individuals as gathering higher potential risks and cost-triggering or cost-inefficient employees (ibid.).

### 3.4. United Kingdom

The United Kingdom of Great Britain and Northern Ireland (UK) is a sovereign state that currently forms part of the European Union. It comprises the countries England, Scotland, Wales and Northern Ireland. However, there is no single constitution that governs the United Kingdom (Cuddy and Leney, 2005:9). As a consequence, “the government and institutional framework” of the member states vary significantly, since the countries have “extensive autonomy” (ibid.). This means that each state defines the applicable governing framework independently from the others, and therefore the responsibility lies with the corresponding educational departments (ibid.:19). Even though there are similarities between the member states with regard to the characterization of their educational systems, various terms differ from one another. Therefore, for the purpose of this paper, the authors primarily lay their focus on the existing VET system in England.

#### 3.4.1. History

The modern understanding of a dual education system is relatively new to the United Kingdom. Apprenticeships were first introduced in 1994 (Cuddy and Leney, 2005:31). Since then, the organization of the VET system in the UK was subject to numerous changes. In the case of England, the different roles were allocated as follows for many years: The ‘Department for Education and Skills’ (DfES) was in charge of framing overall policies for vocational education and skills, whereas the ‘National Learning and Skills Council’ (National LSC) was responsible for “funding of providers in

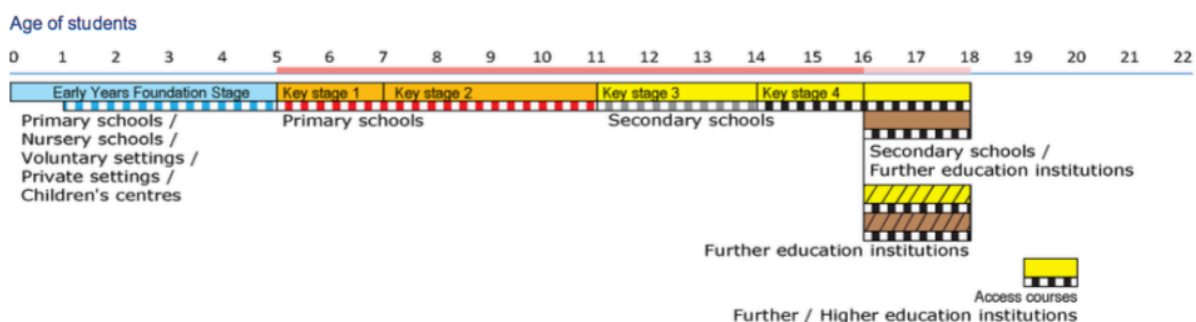
the learning and skills sector” (Cuddy and Leney, 2005:20). However, both departments were subject to reorganization in recent years. For example, former DfES was split into two separate departments in June 2007 with distinct responsibilities (European Quality Assurance in Vocational Education and Training website, 2016). On one hand, the ‘Department for Children, Schools and Families’ (DCSF) was created, and on the other hand, the ‘BIS’, which stands for ‘Business, Innovation and Skills’, was established. The latter’s mission is “building a dynamic and competitive UK economy by creating the conditions for business success, promoting innovation, enterprise and science, and giving everyone the skills and opportunities to succeed”. The former National LSC was reorganized in 2010, whereas the corresponding responsibilities were assigned to a funding agency (adult skills) and local authorities (14-19 year olds) (ibid.).

### 3.4.2. Overview of VET System

In the United Kingdom (with the exception of Northern Ireland), school attendance is compulsory from age 5 to 16, whereas the “National Curriculum” represents the governing framework (Cuddy and Leney, 2005:23). This is applicable for all four key stages in compulsory schooling (primary and secondary education), which means that all “local-authority-maintained schools in England must teach these programmes of study” (Government of the United Kingdom website, 2016a). With regard to the different key stages throughout compulsory schooling, the relevant subjects (Maths, English, Science, etc.) vary accordingly (ibid.). The following graph provides an overview of the education system in England:

Fig. 19: Education system in the UK (England)

#### United Kingdom – England



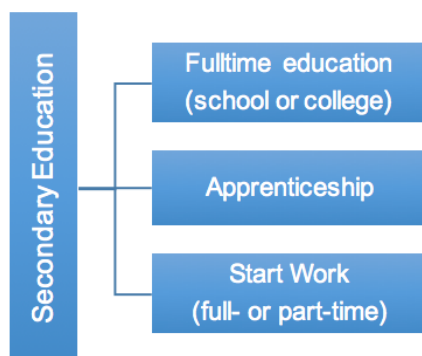
Source: European Commission/EACEA/Eurydice (2015:25)

At lower secondary level (meaning during compulsory schooling), students are given the opportunity to prepare themselves for their future, as they first gain experience in the working field and “learn about work and careers education” (Cuddy and Leney, 2005:27). In addition, they have the

chance to participate in programs such as the UK charity Young Enterprise, which offers students the possibility “to develop enterprise and employability skills” (ibid.).

At age 16, students are required to take a final exam in order to graduate from secondary school. Depending on their performance, the achieved grade varies from A (highest grade) to G (lowest grade). In case of successful exam completion, students obtain the ‘general certificate of secondary education’ (GCSE) (Level 2) (ibid.:23). Students who decided to focus on vocational related subjects such as engineering or manufacturing are awarded with a so-called “Vocational GCSE”. Moreover, the participation in those subjects offers students a more “applied approach to learning”. With regard to the corresponding certificate, “a vocational GCSE is equivalent to two academic (general) GCSEs and enables progression to further education, training or employment” (ibid.:27). At this stage, young people have several possibilities to choose from, as outlined in the graph below.

Fig. 20: Pathways after completion of secondary school

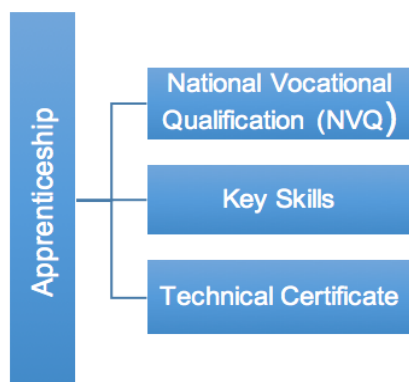


Source: Author based on information from Cuddy and Leney (2005:23)

As described by Cuddy and Leney (2005:23), students who decide to continue full-time schooling either choose a sixth college or a further education college, where they are free to choose between general (academic) and vocational courses. Education normally lasts for two to three years. Depending on their GCSE qualifications, “interests and intended destination”, students register for five subjects in the first year. After one year, they are awarded with the GCE advanced subsidiary (AS) qualification. In the second year, students deepen their knowledge in three out of five subjects and finally graduate by receiving the full GCE A-level certificate, whereas ‘A’ is the highest and ‘E’ the lowest possible grade (ibid.).

Students who apply for an apprenticeship after compulsory education are offered regular (level 2) or advanced (level 3) apprenticeships. Depending on the job and sector, apprenticeships normally last between one and three years, whereas the minimum duration is 12 months for level 2 and 24 months for level 3 apprenticeships (Cuddy and Leney, (2005:31). It is further explained that students can choose from a wide variety of apprenticeships, covering more than 80 different industries in the UK. After completing the corresponding apprenticeship, students have the possibility to enter higher education or employment (ibid.). Moreover, an apprenticeship, which is defined as “a mixture of work-based training and education”, consists of the following three pillars:

Fig. 21: Three pillars of an apprenticeship



Source: Author based on information from Cuddy and Leney (2005:31)

NVQ is defined as an “occupationally specific qualification, delivered and assessed mainly in the workplace”. Key Skills are measured in various areas such as communication and information and communications technology (ICT), whereas the technical certificate “provides the underpinning knowledge of the technical or business areas associated with the job” (ibid.). Generally speaking, the features of an apprenticeship are described as follows:

Students typically spend one day per week at college studying the technical certificate and the remainder of their time in training or work with their employer. Apprentices have a contract and also an individual learning plan, which employers develop with the help of local learning providers, who also handle assessment and quality control and help businesses recruit a suitable apprentice. (ibid.:32)

To summarize, students doing an apprenticeship are trained both on-the job and off-the job and thereby develop important skills and knowledge that are necessary for entering the job market after completion of training. However, Wolf (2011:51) states that about two-fifths of upper secondary students decide to continue schooling in order to obtain an A-level certificate, whereas only a relatively small share of students applies for a regular apprenticeship (even fewer students for level 3).

This development is observed in spite of increasing political efforts by the government to strengthen the apprenticeship pathway. In addition, many students that are not enrolled in any program on upper secondary level are faced with severe challenges, as “there are too few apprenticeships and enormous excess demand for places, especially on advanced (level 3) apprenticeships” (ibid.:52).

### 3.4.3. Funding

Generally speaking, education in the UK (and in England in particular) is publicly funded, which means that the government mainly invests money collected in form of general tax revenues (Cuddy and Leney, 2005:57). Compared to the share of government funding, a relatively small share of funding is provided by private funding initiatives and the students themselves (ibid.). However, there is a distinction between the different education stages. In England, compulsory education (age 5 to 16) is guaranteed and completely financed by the public (ibid.:58). In addition, it is stated that “any subsequent education provided in schools or at further education institutions is normally free for students up to 19”, depending on the corresponding residency of students (ibid.). State-funded schools in England are financed by the DSG (Dedicated Schools Grant) (Roberts, 2016:5). For the period from 2015 to 2016, the total DSG accounted for GBP 40.2 billion, whereas the amount is allocated to three different blocks, namely the “Schools Block”, the “Early Years Block” and the “High Needs Block”. Around 80 per cent or GBP 32.2 billion were provided for the “Schools Block”, which entails primary and secondary education for young people up to age 16 (ibid.).

### 3.4.4. Advantages and Disadvantages

The advantages of the VET systems are closely related with UK’s economy and directly benefit its development. First, it is expected that “increasing vocational skills could benefit the UK economy by up to GBP 163 billion in GDP over the next decade” (City & Guilds Group, 2015:3). Second, it is stated that “the return on investment from apprenticeships is between GBP 16 and GBP 21 for every GBP 1 invested” (ibid.:6). Third, young people participating in vocational education are often rewarded with a higher salary (ibid.:7). This is particularly true for level 3 apprenticeships, where an increase of approximately 20 per cent in wages is observed (ibid.). In addition, a successful VET system in terms of apprenticeships is characterized by an optimal participation of all the parties involved, meaning both the government and employers. As outlined by Hoeckel et al (2009:13), the UK’s “conscious attempt to engage employers is commendable”.

However, the VET system in England also reveals several drawbacks. Even though the existing VET system offers students various opportunities at the upper secondary level, the organization of the system is “highly complex” (City & Guilds Group, 2015:4). There were more than 20 “quasi-



governmental agencies” in charge of organizational matters with regard to VET in the last few years (ibid.). In addition, policy structures are also considered more unstable compared to other OECD countries (Hoeckel et al, 2009:13). Moreover, the corresponding qualifications have been subject to various changes. The existence of different qualifications at different levels contributes to the complexity of the system (City & Guilds Group, 2015:4).

### 3.5. South Korea

#### 3.5.1. History

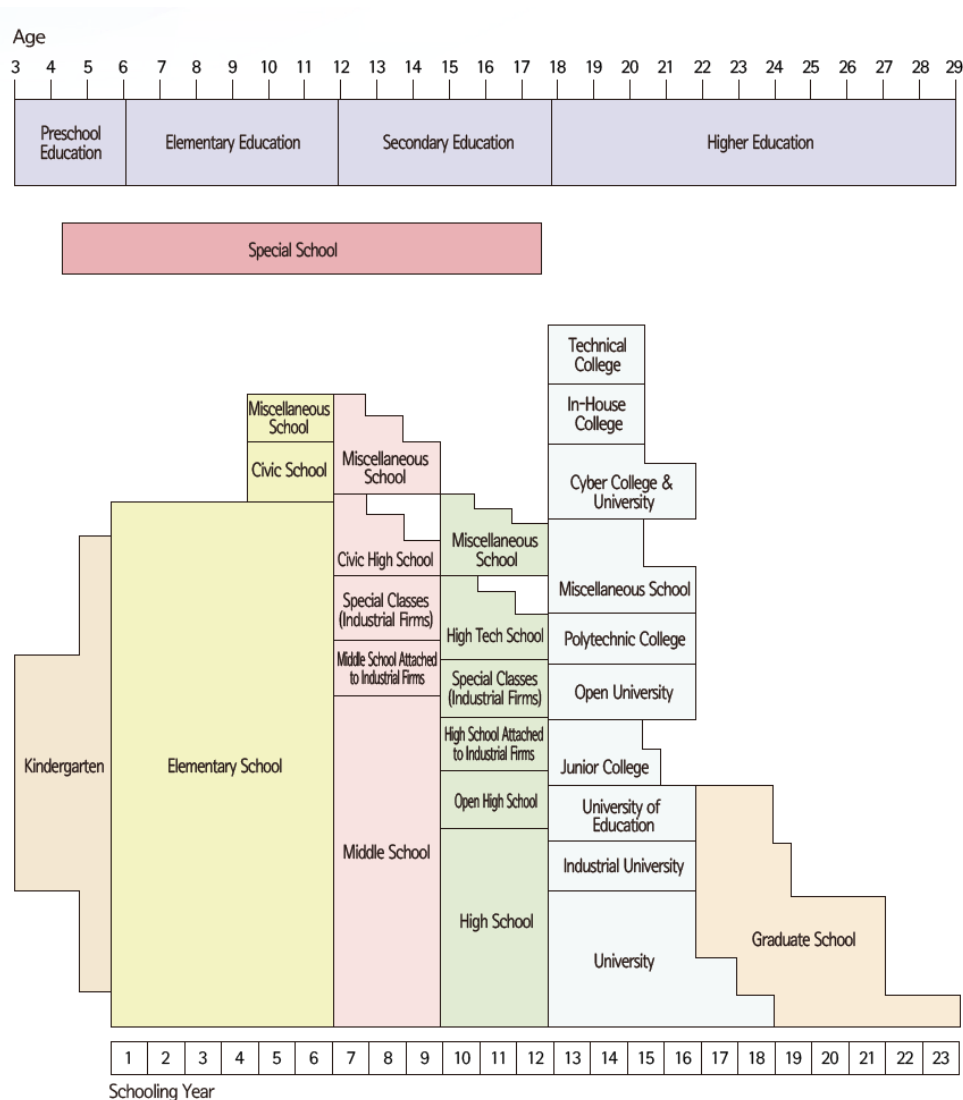
It was in 1945, when Korea reached independency from Japan, that vocational training started to receive attention “as a means of non-formal education” (Korea Research Institute for Vocational Education & Training (KRIVET), 2000:23). In May 1953, the Labor Standard Act was passed, which formed a legal basis for VET in South Korea. Subsequently, demand was high for the “Industrial Manpower Training system” as enormous progress took place in economic development. Therefore, in order to being able to meet the high industrial demands, the Vocational Training Law was enacted in 1967 (ibid.:66). Thus, various new vocational training facilities were founded. During the 1970s, industrial demand for trained workers peaked, leading the government to pass the Basic Law for Vocational Training in 1976, which legally ordered private enterprises to provide in-house vocational training. In order to meet social and political demands, the government strengthened opportunities for higher education during the 1980s (ibid.:67). However, whereas the number of people enrolled in junior vocational colleges began to increase, enrollment in vocational secondary school decreased, leading to a shortage of skilled workers in production.

In the 1990s, the government undertook various measures and policies in order to strengthen the vocational education and training sector and the number of students enrolled in vocational secondary education started to increase (ibid.:68-69). In addition, Meister high schools were established in order to reorganize the vocational high school system (Young-bum et al, 2014:27). Starting in 2010, the government organized vocational education facilities into institutes specialized according to professional fields (ibid.:30).

#### 3.5.2. Overview of VET System

In the South Korean education system, schooling is compulsory for students from age 6 to 15 (Clark and Park, 2013). The government in form of the Ministry of Education (MOE) sets the guidelines for the national curriculum, which represents the governing framework for all local public schools. The structure of the education system is outlined in the following graph.

Fig. 22: Education system in South Korea

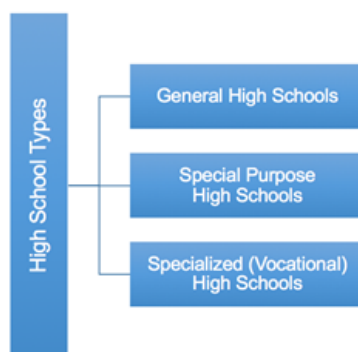


Source: MOE (2016a)

Figure 22 indicates that students are enrolled in elementary education courses from age 6 to 12. Recent statistics show that approximately 99.9 per cent of young Koreans enter primary education (MOE website, 2016b). The students are taught in a variety of subjects such as Mathematics, Korean language, sciences and arts, whereas English as a foreign language was introduced in 2007 (ibid.). After the completion of primary school, students enter secondary education in form of middle schools, which usually run for three years (Clark and Park, 2013). Moreover, it is observed that “since 1990, progression from primary school to middle schools has essentially been universal” (ibid.).

Compulsory education ends upon graduating from middle school. At this level, students who have successfully completed middle school usually continue education and enter high school (Clark and Park, 2013). Unlike middle schools, high school institutions are not free of charge. Students are required to pay tuition fees to have access to further education. However, “the progression rate from middle school to high school has been above 99 per cent since the mid-1980s” (ibid.). Once entering the high school program, students can choose between three different types of education (BiBB, 2011b:30). Typically, every program on the High School level consists of three years of education (ibid.).

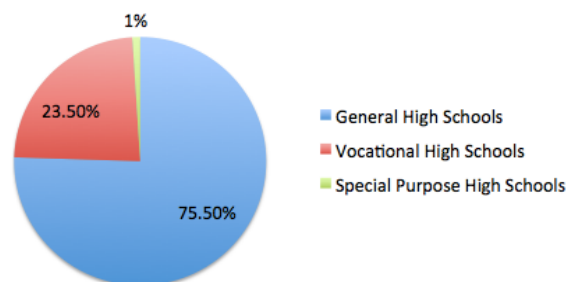
Fig. 23: Three types of High Schools in South Korea



Source: Author based on information from BiBB (2011b:30)

According to Kis and Park (2012:15), the distribution of students who enter High Schools is depicted in the following figure.

Fig. 24: Distribution of High School enrollment

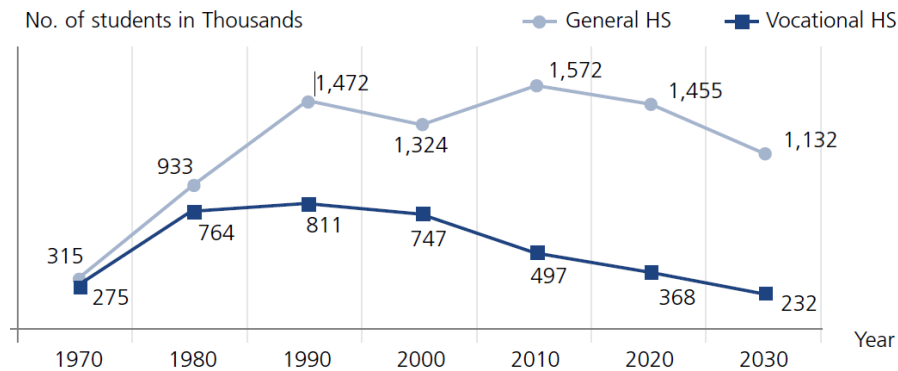


Source: Author based on information from Kis and Park (2012:15)

As graphically demonstrated in figure 23, the path to possible further higher education is provided by each high school. Nevertheless, it is apparent from figure 24 that the large majority leans towards general high schools. This inclination stands out, too, in the development of the VET enrollments. Correspondingly, figure 25 reveals that there has been a gradual decrease in the number of

pupils who enrolled in vocational high schools. Hence, the labor market in South Korea puts more emphasis on the general education foundation than the actual skills acquired during a vocational program (Ji-Yeon, 2014:5).

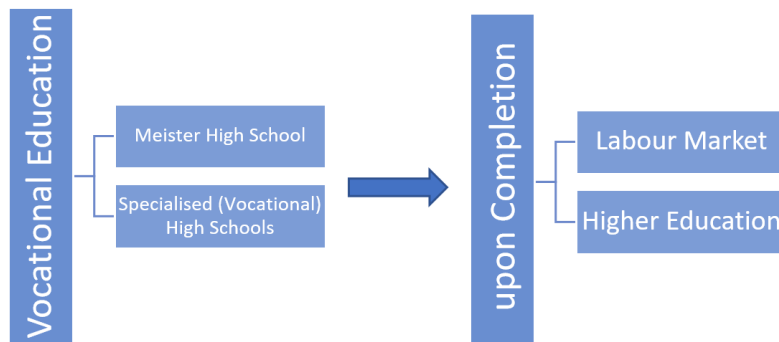
Fig. 25: Enrollments in VET High Schools 1970-2030



Source: Author based on information from MEST (2010, cited by BiBB, 2011b:31)

According to BiBB (2011b:31), secondary vocational education in Korea can be classified into two programs, which are the “Specialized (Vocational) High Schools” and the “Meister High Schools” (MHS).

Fig. 26: Vocational Education in High Schools

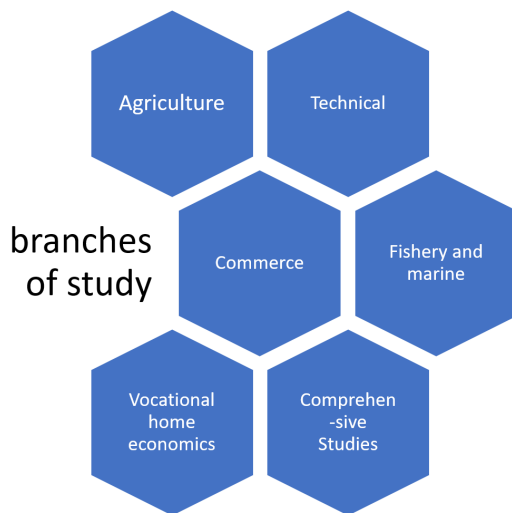


Source: Author based on information from BiBB (2011b:31)

Specialized (Vocational) High Schools have been considered to be the traditional and main institutions to offer secondary vocational education (BiBB, 2011b:30). The Vocational High Schools provide various programs, which rely on the specific industry. Furthermore, these institutions offer the graduating pupils the possibility to directly enter the labor market, or to proceed to further Higher Education programs (see figure 26) (ibid.). The aim of these high schools is to yield a premium technical labor force and to reinforce the pupils’ knowledge in key sectors (Ji-Yeon, 2014:9). Thus,

the system's branches of study are: "agriculture, technical, commerce, fishery and marine, vocational home economics, and comprehensive studies" (Chae and Chung, 2009:2). The schedule is designed in order to offer general courses in the first year and then specializing in the in figure 27 mentioned branches of study in the last two years (Clark and Park, 2013).

Fig. 27: Branches of study



Source: Author based on information from Chae and Chung (2009:2)

If the Specialized High Schools are broken down by branches, the share of "commercial, comprehensive, and agricultural high schools decreased while those of technical and vocational home economics increased" (Chae and Chung, 2009:2). More attention needs to be assigned to the branches vocational home economics and comprehensive studies due to special features. In vocational home economics, two or more of all available branches of study are combined, or contains the home economics branch. Then, comprehensive studies provide the "general and vocational course" together (ibid.).

Graduation can be obtained only if attendance of at least 66 per cent of classes is attained. Furthermore, "promotion between grades is based on educational assessment and evaluation, with midterm and final exams at the end of each semester" (Clark and Park, 2013). If all requirements are achieved, a student receives a "Vocational High School Certificate" (ibid.).

However, upon graduation of Specialized High Schools, the majority of students proceed to higher education instead of directly entering the labor market (Chae and Chung, 2009:3). Accordingly, the number of students who enrolled in higher education programs after Specialized High School augmented enormously, approximately 63 per cent in the period from 1990 to 2007 (ibid.). Thus,

Ji-Yeon (2014:9) states that in order to counteract this trend and mainly regenerate Specialized High Schools, the following policies were introduced:

- Former successful students who can verify that they have been employed in a company for the minimum of three years are permitted to enroll in higher education programs, thus are exempt from the duty to write the “national college entrance exam”.
- Former successful students are accredited to “corporate universities, contract department programs, industry commissioned education, the Korea National Open University and the credit bank system, and specialized cyber universities”.
- Raised Grants to graduated students of Specialized High Schools who are enrolled in universities.

Moreover, the Korean administration has introduced the “Global Field Training Program” in 2011 (Ji-Yeon, 2014:9). This program is especially targeted at Specialized High School students and offers the chance to benefit from a three months “field placement” in other progressive countries, hence to obtain unique job skills (ibid.:10).

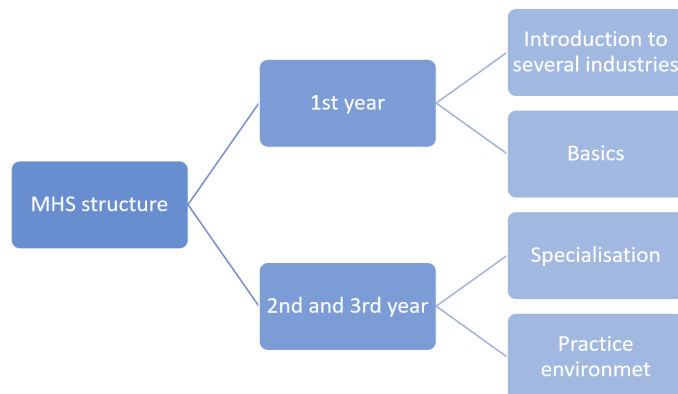
### **3.5.3. Meister High Schools**

As the traditional Vocational High Schools are facing challenges concerning the adaption to fluctuating requests of industries and needs of students, all stakeholders are collaborating to incorporate “an innovative, demand-oriented and competence-based system of vocational education” (WEF, 2014a:2). Therefore, the in 2010 founded Meister High Schools (MHSs) were explicitly intended to maximize students’ work preparation in highly qualified industrial professions and further areas. Furthermore, the MHS charges no tuition fees to its pupils (ibid.:3). In 2014, Korea counted 37 operating Meister High Schools, which by contrast accounted for approximately 8 per cent of total Specialized Vocational High Schools (Ji-Yeon, 2014:10). Besides, the ultimate decision regarding the choice of a MHS is assigned to the “Ministry of Education” (ibid.).

A significant factor of the Meister High Schools is that the courses are fitted to commercial needs founded on arrangements with targeted industrial sectors (Ji-Yeon, 2014:10). In addition, graduating MHS students are constrained to apply for an occupation, thus do not have the additional choice to proceed to higher education. Moreover, MHS complies with a firm idea of “Employment First, College Later”. In this way, it counteracts to the disparity “between the supply and demand” of the labor force. Congruently, the key objects are to operate important vocational education and to yield a highly skilled labor force.

Figure 28 displays an overview of the three-year MHS program structure. Possible basic courses in the first year are for example foreign languages (WEF, 2014a:3). Furthermore, students are encouraged to take part in “internships and field work” with a succeeding work offer as the best outcome.

Fig. 28: Meister High School (MHS) Structure

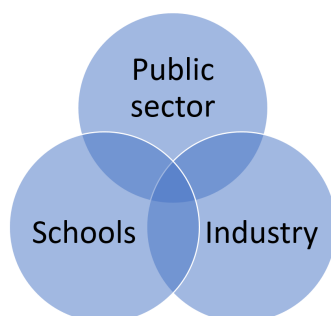


Source: Author based on information from WEF (2014a:3)

The key stakeholders of the MHSs are illustrated in figure 29. The WEF (2014a:3) defines the functions of the stakeholders as follows:

- The “public sector” is responsible for the funding of the MHSs.
- The “industry” has the duty to deliver needed gear, infrastructure, grants for students, work, counseling and training.
- “Schools” are independently designing the curricula, autonomously using the complex of the MHS, and grow business relations. Moreover, “each school requires an agreement between the local government, the local school board and companies”.

Fig. 29: Stakeholders of MHS



Source: Author based on information from WEF (2014a:3)

There were significant positive outcomes after the implementation of MHSs. Accordingly, one of the key success indicator was the evident effect on the “employment rate of Vocational High School graduates”, growing 23 per cent in only two years after the first MHS was founded (WEF, 2014a:3). Additionally, 85 per cent of the first group of graduates found a job (ibid.).

#### **3.5.4. Vocational Training**

When talking about South Korea, it is important to distinguish between vocational education and vocational training (Yoon and Lee, 2010:164). The two terms cannot be used interchangeably; therefore, they need to be properly defined.

“‘Education’ usually refers to academic learning in school, while ‘training’ refers to various out-of-school vocational training programs for workers, usually provided by firms or the government”. (ibid.).

In addition, the authors state that education plays an important role in young Koreans life and significantly influences “a person’s economic and social status”, whereas vocational education and training is associated with a lower status.

In the 1970s, the government introduced a new policy that obliged large firms to offer in-house vocational education, which was considered a win-win situation for both the government and firms. (ibid.:171). Ten years later, the economic situation had changed. Companies became more independent and liberalized, which eventually led to a declining incentive for companies to maintain vocational training for their workers. In 1995, the Korean government introduced a new concept called the “job skill development program (JSDP)”. This program replaced the former mandatory in-house vocational training and entailed various components adjusted to the industries’ needs and demands (ibid.:172). For example, “self-directed training” for employees as well as unemployed workers was implemented, along with employer-led training. Moreover, initial training for new employees combined with further training for current employees was introduced, which allowed companies to adjust overall training according to their requirements (ibid.).

Unlike in the education sector, training in South Korea is completely funded by private institutions and the employers, respectively (ibid.). Since mainly employers take advantage of trained workers, they also bear the accruing costs. The distribution of costs is arranged according to the size of the companies in terms of full-time workers. Usually, the contribution rates are derived as a percentage of total wage bills, lying between 0.1 and 0.7 per cent on average (ibid.).



### 3.5.5. Funding

Education funding in South Korea is provided by both the public and private institutions and households. Public schools are mainly funded by the central and local government, whereas private schools heavily rely on private funding (Center on International Education Benchmarking website, 2011). Compulsory schooling in South Korea, which entails education for students between the ages of 6 and 15 enrolled in primary and lower secondary education, is entirely financed by the government. Upper secondary education, providing further education for students at age 15 and above, additionally relies on public funds to a large degree. Funding in the public education sector is highly centralized, meaning that the central government is responsible for about 80 per cent of funds. In the private education sector, tuition fees paid by students and funds provided by private donors and organizations represent the main source of financing (ibid.).

The education budget of the central government primarily consists of national tax revenues (MOE website, 2016c), which are distributed to the corresponding education institutions. Local governments mainly rely on subsidies transferred by the central government. In 2004, South Korea's education budget accounted for a share of 11.9 per cent of the government's total expenditure, which represented the 3<sup>rd</sup> highest cost position in the overall budget (ibid.). Statistics reveal that the MOE budget has more than doubled since 2000, operating at a level of more than KRW 50,000,000 million in absolute terms in 2015 (2016b:49). In other words, spending on education accounted for a share of 15.9 per cent, in comparison with the total government budget of South Korea (ibid.).

### 3.5.6. Advantages and Disadvantages

As found by Kis and Park (2012:27), education is of high value to the Korean society, which results in high enrollment rates in upper secondary school. In the period of 1995 to 2008, the rate has increased from 75 per cent to 88.5 per cent. A strength of the Korean VET system is the establishment of a good research institution. The Korean Institute for Vocational Education and Training (KRIVET) was founded in 1997 in order to foster the development of the VET system, conduct policy research as well as research on the qualification system. Therefore, various surveys can be found which provide useful knowledge about the vocational education and training system in Korea (ibid.:28). It was further found that on the tertiary level, progression from post-secondary VET programs (junior colleges) to university programs is quite common and in general, the credits acquired during the VET program can be transferred. However, it needs to be considered that challenges might occur, as the curricula of VET programs are not coordinated with those of university programs (ibid.).

The Korean VET system, however, has many drawbacks. As mentioned earlier, vocational high schools played a crucial role in enabling Korea's rapid growth and development starting in the 1960s (Park, 2011:30-31). Even though the economy evolved in the last years and more skilled workers are needed, vocational high schools still focus on educating students to be efficient when performing simple tasks (ibid.:31). This leads to the fact that employers view vocational school graduates as low-skilled workers who can easily be replaced with low-wage migrant workers. A study by the MEST (2011, cited by Park, 2011:31) shows that the percentage of vocational high school students who find employment after graduating has decreased from 76.6 per cent in 1990 to only 19.2 per cent in 2010. As a result, most of those students who pursue a vocational path in high school enroll in higher education upon graduation. However, the problem remains as only two-thirds of the students find a job that matches their skills upon completion of higher education while the others either face unemployment or over-qualification in their job (ibid.). Whereas there is a high youth unemployment rate in Korea, at the same time, businesses face labor shortages. This phenomenon indicates that there is a skills mismatch between what is learned in the education system and what is needed on the labor market (ibid.:31-32).

Moreover, as found by Kis and Park (2012:29), the cooperation of the businesses and industries is generally weak which makes it difficult to implement policies that help the VET programs to meet the labor market needs. Another important challenge for the Korean VET system is the fact that workplace training is not generally provided within VET programs and when it is, quality varies widely (Kuczera, Kis, Wurzburg, 2009:23). However, practical skills are mostly acquired within school and not on the basis of workplace training (ibid.).

In terms of vocational training, it needs to be considered that the training largely focuses on regular workers in larger corporations, whereas workers in small companies are not granted equal access (Yoon and Lee, 2010:183). In conclusion, the system puts a strong emphasis on young people and, furthermore, it leans towards academic education (ibid.:185).

### 3.6. Commonalities and Differences

#### 3.6.1. Overall commonalities of all four systems

Although the five education systems that were reviewed vary greatly in terms of VET, some commonalities can be observed. In each of the five systems, the structure of the compulsory education with primary and secondary school is very similar. It can be observed that students enter primary education in between the ages of 5 to 7 years and generally, they complete compulsory school

with the age of 15 or 16. In addition, students do have similar possibilities in each of the five systems after completion of compulsory school, which include general education (full-time schooling), VET programs or start working without further education.

The apprenticeship model does not exist in all five systems. However, where it does exist, the structure is very similar by being partly based on on-the-job training in a company as well as on off-the-job training in a vocational school (dual-track approach). Practical skills are acquired at the workplace and complemented with theoretical knowledge which is obtained in vocational schools (see figure 30).

Fig. 30: Dual-track VET (apprenticeship) model



Source: Author

### 3.6.2. Special features of each system

A very distinct characteristic of the Swiss VET system is the interconnectedness of the different pathways. Students are able to switch from vocational or professional approaches to general education pathways. This is due to the fact that a Federal Vocational Baccalaureate (FVB), which can be acquired either during the apprenticeship program or afterwards, grants access to universities of applied sciences. In addition, there is also the possibility to prepare for the University Aptitude Test after completion of the apprenticeship, which provides access to cantonal universities or the federal institute for technology. In Switzerland, the dual-track VET model is highly prevalent with two-thirds of all students enrolling in an apprenticeship program upon completion of compulsory education. Companies, too, are willing to participate in the programs since the productive output of their apprentices actually outreaches the gross costs from the involvement in the VET programs, resulting in a net benefit. Furthermore, 90 per cent of young adults acquire either a certificate or a diploma and, therefore, the transition to the job market or further education is facilitated.

The VET system in Germany has many similarities to the Swiss VET system. However, there are some key elements that distinguish the German system. A remarkable share of the students who commence a dual-track apprenticeship have already obtained qualifications to enter a higher education program. Hence, they already attended either general education programs or programs that are based on general education with a vocational orientation and, therefore, have a good educational background. However, it can also be observed that the dropout ratio is quite high in some fields and regions in the early stages of the apprenticeships. This is largely caused by a lack of career guidance for students during compulsory education.

Compared to earlier mentioned VET systems of other countries, the Swedish VET areas where significant variances have been detected include the structure of a vocational program and the complementary introductory programs. Correspondingly, every national vocational program on an upper secondary education level is built according to the same model. Hence, upon completion of a program, every pupil is ought to have a similar academic basis. Moreover, a distinguishing structural characteristic is the fact that all young pupils who desire to enroll in a national vocational program have to fulfill the identical acceptance requirements. Similarly, every pupil has to have passing grades in the same subjects, except minor variances in the foundation subjects in order to obtain a vocational diploma. However, unlike other VET systems, it is the organizer of a vocational program's duty to provide a workplace in order to offer work-based learning to its students. Supplementary to the organizers, program councils are composed, whose task is to assist in developing the vocational program and finding APL work places. As already mentioned above, the introductory programs are another distinctive feature. They draw up individual study plans so that the students are enabled to recover the failing grades in compulsory education and, also, to match the education needs of the students.

UK government has recognized the importance of vocational education and training for young people and correspondingly laid its focus on work-related learning at lower secondary level. In the case of England, students are given the opportunity to gain experience and develop their skills with respect to three different elements. First, students have the possibility to gain an insight in their future working life through short periods of work experience. Second, they learn about work and future pathways in terms of career education. Third, and probably most important, students have the chance to apply their theoretical knowledge by participating in programs such as the UK charity Young Enterprise, where they expand their practical experience and prepare themselves for the future working life.

An exceptional feature of the Korean VET secondary education is found in the Meister High School. By contrast with most traditional secondary programs, this concept of vocational education aims to produce a young highly skilled workforce, which is prepared for any job requirements. Therefore, the young graduates acquire and meet the practical needs of the industries. Furthermore, upon completion of the Meister High Schools graduates enter the labor market and cannot proceed to a tertiary education program. Due to that policy, it is ensured that students are more trained to fit in a job profile and do not postpone employment upon higher education nor do they face the problem of being overeducated. In a highly competitive labor market as it is the case in Korea, the Meister High Schools have gradually achieved to increase the employment rate of secondary VET graduates.

Table 4: Commonalities and Differences of existing VET systems

	Switzerland	Germany	Sweden	United Kingdom	South Korea
<b>VET System</b>					
Stakeholders	Government Company Apprentice	Government Company Apprentice	Government Schools Trade Unions Organizer of vocational program Students	Government Company Apprentice	Government Schools Company Employee
Funding: public/private(company)	Public: 40 % Private: 60 %	Public: 55 % Private: 45 %	Public	Mostly public	Mostly public
Job Readiness upon completion (y/n)	Yes	Yes	Rather no	Rather no	Rather no
Access to tertiary education (y/n)	Yes	Yes, with restrictions	Yes	Yes	Yes
Success Factor	Permeability	Practical oriented	Organizer provides APL work-place	Initial VET at lower secondary level	Meister High School
Program Diversity	4 options	4 options	2 options	3 options	3 options
VET Enrollment (percentage of total secondary education)	70 %	Approx. 50 %	Approx. 30 %	n/a	Approx. 25 %
Full-time school with vocational focus (y/n)	Yes	Yes	Yes	Yes	Yes
Grading system	1 - 6	6 – 1	A – F	A – E	A+ - F
<b>Apprenticeship</b>					
Apprenticeship (y/n)	Yes	Yes	No	Yes	No
Duration of Apprenticeship	2 – 4 years	2 – 3.5 years	n/a	No fixed duration (depends on program)	n/a
Proportion in % (on-the-job/off-the-job)	Approx. 70/30	Approx. 70/30	n/a	80/20	n/a
Admission requirements for apprenticeship	Completion of compulsory education	Completion of compulsory education	n/a	Completion of compulsory education	n/a
Legal Aspects (main partner of apprentice)	Host company	Host company	n/a	Host company	n/a
Salary (y/n)	Yes	Yes	n/a	Yes	n/a
<b>Ranking</b>					
Ranking Global Competitiveness Report (WEF)	1	5	6	7	26
Ranking Global Talent Competitiveness Index (INSEAD)	1	14	6	7	37

Source: Author

### 3.7. Best Practices

In the analysis of existing VET systems in Switzerland, Germany, Sweden, the United Kingdom and South Korea, we primarily laid our focus on the organization and structure of the corresponding system. Since there exist significant differences between the countries, every system reveals certain advantages and disadvantages. Based on our previously collected findings, we defined three aspects, which we think are considered success factors in a VET system.

- Funding is ideally provided by both the public (government) and the private sector. This approach assures equal power distribution and more importantly creates incentives for both parties to actively design the relevant content of vocational education and training programs. Companies involved in this process can autonomously decide on training for their employees, which allows the company to shape employee's abilities according to the companies' specific requirements. With regard to apprenticeships, the emphasis on on-the-job training for employees results in a better balance between industry demands and traditional vocational education. This eventually leads to a highly skilled and well-prepared workforce upon completion of training, which indicates a positive correlation to young people's job readiness.

Example: proportion of 70/30 (on-the-job/off-the-job training) in Switzerland and Germany

- Vocational education and training should be introduced in specific business sectors, which show a high demand for skilled workforce. In addition, a well-organized VET system assures the development of a sustainable and efficient workforce.

Example: Meister High Schools in South Korea – focusing on practical training and experience rather than producing over-educated graduates (either vocational or general academic education)

- In a further step, lifelong learning for the workforce in their relative sector should be provided. This means that they should have access to tertiary/higher education in a vocational context, in order to expand their knowledge and keep up with technology.

Example: University of Applied Science (Switzerland, Germany) and Junior College/Polytechnic College in South Korea

## 4. Analysis of Developing Countries and Trades

### 4.1. Mexico

#### 4.1.1. Political Situation

Mexico is a federal republic that comprises 31 states; therefore, the official name of the country is United States of Mexico (Willey et al, 2016). Based on the constitution of 1917, governmental power is divided into three branches: executive, legislative and judicative. The executive branch is represented by the president, who acts as both head of state and head of government. The current president of Mexico is Enrique Peña Nieto, who was elected in the presidential elections in 2012 (ibid.). The president is popularly elected for a six-year-period and cannot be re-elected, meaning that the Administration is limited to one presidential term (Geo Mexico website, 2016). Despite these regulations, the executive branch is considered “the most important and powerful” branch. The legislative branch has a congressional structure (official name: General Congress of the United Mexican States), and is divided into two chambers. The 128 members of the Senate represent the upper house, whereas the 500 members of the Chamber of Deputy constitute the lower house. Regarding the election process, there are certain differences between the two chambers. The members of the Senate serve for the same six-year-period as the President. 96 out of 128 Senators are directly elected by plebiscite, whereas the remaining 32 members are elected by proportional representation of the political parties. In the case of the Chamber of Deputy, 300 out of 500 members are elected by direct popular vote, whereas the remaining 200 members are allocated according to proportional representation. Members of the lower house serve for a three-year-period and cannot be re-elected (ibid.). The judicative branch consists of both federal and state courts (Willey et al, 2016). The most important court in Mexico is the Federal Supreme Court of Justice, whose judges are directly elected by the President (ibid.).

Even though Mexico has a multi-party system, three political parties regularly dominate the elections: National Action Party (PAN), Institutional Revolutionary Party (PRI) and Party of the Democratic Revolution (PRD) (Mexico Institute, 2012). Historically, PRI has been the most influencing party in Mexico. For more than 70 years until the year 2000, the Mexican president represented a member of PRI (ibid.). This was mainly because the presidential candidates were directly elected by the sitting president, whereas the party regularly won the elections despite “allegations of vote rigging” (Willey et al, 2016). The situation changed in 2000, when electoral reforms were introduced by Ernesto Zedillo, who was president from 1994 to 2000. His successors Vicente Fox and Felipe Calderón were members of PAN (ibid.). After 12 years of absence, PRI returned to become the leading political party after the 2012 presidential elections.



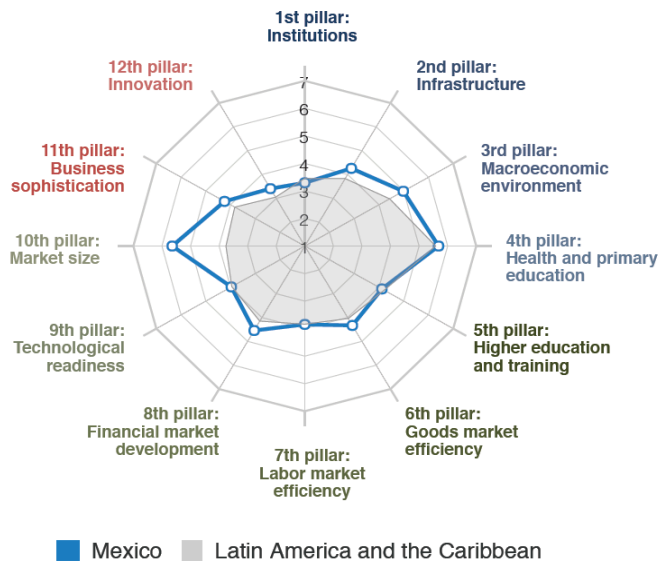
As outlined by Bremmer (2016), Mexico is currently facing various (political) challenges. Corruption is identified as one of the country's main drawback, since experts estimate the annual costs of "endemic corruption" to amount to 2 to 5 per cent of Mexico's GDP. Over the past few years, crime issues have been increasing constantly. Statistics show that the crime rate in Mexico is almost three times as high compared to the United States. Politicians are particularly vulnerable to violence, as the number of disappeared or killed is on the rise (ibid.).

The *Corruption Perceptions Index* provided by Transparency International "measures the perceived levels of public sector corruption worldwide", based on expert and business surveys conducted in the relative year (Transparency International, 2016a:3). Data for 2015 shows that Mexico has achieved a relatively weak performance, ranking 95<sup>th</sup> out of 168 countries analyzed (ibid.:7). Taking into consideration Mexico's developments in this sector over the past 10 years, corruption remains to be a critical issue. According to the index reported for 2005, Mexico was ranked 65<sup>th</sup> out of 158 countries, achieving the same score as the other Latin American countries Peru and Panama (Transparency International, 2016b).

#### 4.1.2. Competitiveness Report Ranking

According to the yearly-published *Global Competitiveness Report* (WEF, 2016b:260), Mexico is the third most competitive country in Latin America, only falling behind Chile and Panama. Mexico ranks 51<sup>st</sup> out of 138 analyzed countries, achieving a score of 4.4 on a scale of 1 (lowest) to 7 (highest). Thus, the country improved six positions compared to the previous report. The report further outlines that Mexico has been suffering from falling oil prices, low levels of global trade and a decline in industrial production. The twelve analyzed pillars show a large disparity in terms of the country's performance in the relative sectors. Mexico performs relatively well in both "Health and primary education" and "Market size", with scores of 5.7 and 5.6, respectively. However, performances in sectors such as "Institutions" and "Innovation" (scores of 3.3 and 3.4) reveal the country's weaknesses in an international comparison. With regard to the most problematic sectors for doing business, Mexico is mainly struggling with three different issues. "Corruption" is listed as the most harmful element, followed by "crime and theft" and "inefficient government bureaucracy" (ibid.).

Fig. 31: Mexico's Performance in 2016



Source: WEF (2016b:260)

#### 4.1.3. Domestic VET System

As stated by García, Romero and Lima (2010:187-188), increasing economic growth entails some major challenges for the Mexican labor market. Approximately 50 per cent of the “economically active population” (EAP) is employed in the informal sector. The authors further outlined that the majority of these workers “acquired their work skills outside formal education and training systems, through gradually accumulated work experience”. This is a direct consequence resulting from the lack of job opportunities for young people in the formal sector. This is true for young people with different levels of educational and technical backgrounds. Even young people who have previously received initial vocational training (VT) lack these opportunities and eventually seek employment in the informal sector.

The authors further outlined that vocational education is divided into two parts: initial VT and further VT (ibid.:191-194). Initial VT is offered to young people and students entering the labor market, whereas further VT is targeted to existing members of the labor force. Initial VT mainly takes place at the intermediate level (upper secondary level), where the focus lies on technical disciplines. Other subjects such as arts, medical and educational services are also part of the curriculum. This training structure is mainly offered in public educational institutions, but there are various private and independent institutions providing similar training. In the context of vocational training, students choose a VT-only program (Technical/Professional media). These programs aim to prepare students “for the direct entry into the work force”. One of the major public institutions that offer

initial VT is the National Technical Professional College (CONALEP), which is also considered “the main provider of technically training young people for the productive sector”. For students in the higher education sector, institutions such as the National Polytechnic Institute (IPN) offer students the possibility to enter vocational training. The main feature of the program is identified as work-based learning. This means that young people are given the opportunity to prepare themselves for their working life. Company visits organized for students, practical training and full-time training periods in companies, just to name a few examples, are important tools to strengthen young people’s job readiness (ibid.).

In Mexico, further employee training in companies is enforced by law (García, Romero and Lima, 2010:198-199). According to the authors, “all businesses must have a joint training committee (CMCA) made up of equal numbers of worker and employer representatives”. However, only a small number of businesses adheres to the law, whereas “complicated guidelines and bureaucratic management of training policy” contribute little to employee-related skills improvements. Moreover, businesses are forced to deal with several challenges. For example, providing workers with training is closely associated with additional costs. Furthermore, especially small businesses are faced with high employee turnover. In addition, the authors reveal that “formal training is limited to manufacturing sectors with high technological standards”. Employees engaged in other industrial sectors are often neglected or take part in outdated training programs (ibid.).

#### **4.1.4. VET Funding**

Funding for public schools is primarily provided by governmental sources, either on federal or state-level (OECD, 2013:17). Funds from the federal government are mainly distributed through the Secretariat of Public Education (SEP). Autonomous schools can partly rely on governmental support in form of subsidies, whereas private schools are self-financed and therefore operating completely independently (ibid.). Statistics reveal that in 2012, Mexico has spent a share of 6.2 per cent of total GDP for educational purposes (from primary up to tertiary education) (OECD, 2015:3). Training for employees in companies situated in Mexican states that are participating in the dual VET system (collaboration between CONALEP and BiBB) is fully financed by the companies themselves (Cáceres-Reebs and Schneider, 2013).

#### **4.1.5. Key Business Sectors**

Mexico as a location for businesses has been gaining importance over the past two decades. This development is mainly due to governmental reforms with the aim to liberalize trade. As a consequence, Mexico has signed 10 Free Trade Agreements (FTAs) with 45 countries worldwide (Pro-

México, 2016). According to Deloitte (2015:2), the country has transformed into a “fully integrated manufacturing center”. Especially the implementation of the North American Free Trade Agreement (NAFTA) in the early 1990s has significantly influenced the Mexican business environment (ibid.:3). Moreover, the substantial increase of Foreign Direct Investment (FDI) into Mexico and the manufacturing sector in particular, has boosted the economy (ibid.:9). Approximately 32 per cent of Mexico’s output is associated with the manufacturing sector, and around 80 per cent of trade relies on manufacturing (ibid.). The key sector in this field is the automobile industry. In 2015, Mexico ranked 5<sup>th</sup> among the largest car producers in the world, and by 2020, it is forecasted to belong the top 5 countries (ibid.:3-10). Other sectors of importance in the manufacturing business are the electronics and aerospace industry, as many of them are part of the supply chain of U.S. manufacturers (ibid.:12). In respect of total contribution to GDP, the most relevant business sector is “manufacturing”, followed by “retail and sales” and “real estate and housing services” (Government of the United Kingdom website, 2016b). One of the fastest growing business sectors in Mexico is tourism. In 2014, Mexico was listed among the world’s ten most visited countries (Deloitte, 2015:18).

In the past few years, the Mexican government has announced several reforms concerning various (business) sectors. The aim of these reforms is to positively reinforce certain fields and to strengthen Mexico’s performance in the relative sectors.

Table 5: Recent reforms announced in Mexico

Type of reform	Main objective(s)
Labor	<ul style="list-style-type: none"> <li>- Combat informal work</li> <li>- Increase productivity level</li> <li>- Facilitate rules and procedures in labor market</li> </ul>
Fiscal	<ul style="list-style-type: none"> <li>- “increase tax collection and close loopholes and exceptions” (Wilson and Valenzuela, 2014)</li> </ul>
Telecommunications	<ul style="list-style-type: none"> <li>- open monopolistic sector for foreign investment</li> <li>- increase competition and efficiency</li> </ul>
Energy	<ul style="list-style-type: none"> <li>- transform state-owned company into state enterprises</li> <li>- open energy sector for foreign investment</li> <li>- increase competition and efficiency</li> </ul>
Transparency and Anti-corruption	<ul style="list-style-type: none"> <li>- minimize corruption and strengthen transparency</li> </ul>

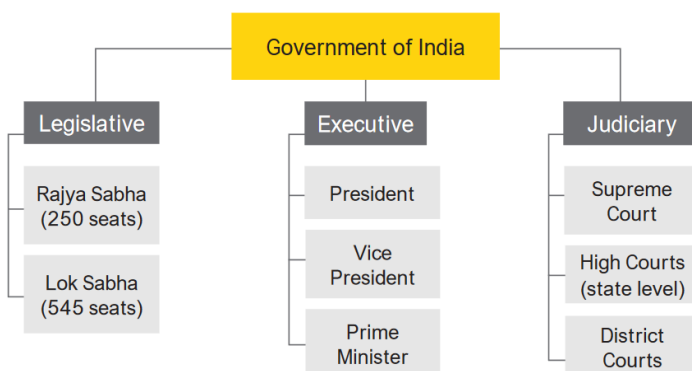
Source: Author based on information from Valenzuela (2016:13-33)

## 4.2. India

### 4.2.1. Political Situation

Among all democracies in the world India is regarded to be the biggest one, including a “parliamentary form” of administration (Ernst and Young (EY), 2013:10). Moreover, the administration is traditionally split into separate but interconnected parts, which are “the legislative, the executive and the judiciary”. According to a report on how to do business in India the political system is depicted as follows:

Fig. 32: Political system in India



Source: EY (2013:10)

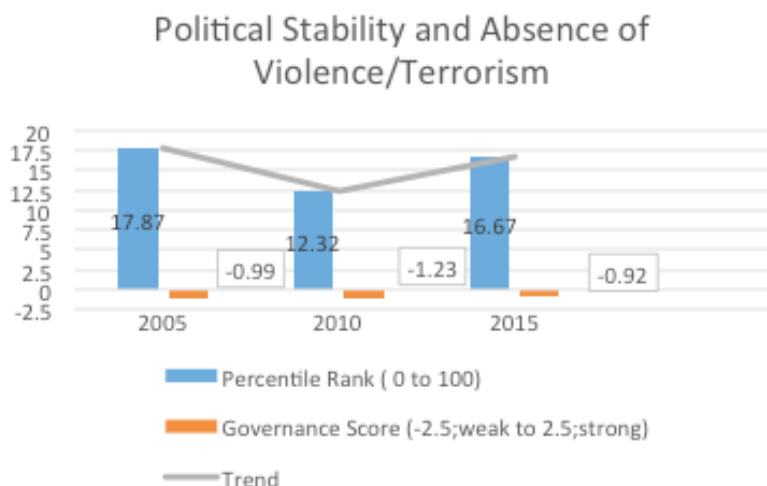
Congruently, the legislative part is built on a dual Parliament containing the “Rajya Sabha (Council of States)” and “Lok Sabha (people’s Assembly)” (EY, 2013:10). The parliament’s main purpose is to pass bills on constitutionally stated subjects. Furthermore, the executive part contains three main bodies in “President”, “Vice President” and the head of the “Council of Ministers”, or “Prime Minister” (ibid.). However, as the President incorporates a rather ritualistic leading figure, the actual “executive power” belongs to the Council of Ministers, hence the Prime Minister as its leader (ibid.:11). Further, the third pillar represents the judiciary part, which comprises the “Supreme Court”, the “high courts” and “district courts” respectively (ibid.).

At the moment, Narendra Modi is the Prime Minister of the Indian government, hence the most influential and powerful man (Elections website, 2016). Furthermore, he is the leading member of the “Bharatiya Janata Party (BJP)”, which embodies the biggest party in the Indian parliament. Its political creed is regarded as “cultural nationalism”, hence politically positions itself to the “right-wing”. Therefore, the BJP strives to preserve the “cultural unity of India” with its values and customs (ibid.).

Regardless of the fact that India has a very high annual gross domestic product growth rate of 7.3 per cent, it is still struggling with a high rate of poverty, especially in the countryside (Trading Economics, 2016; and Berrebi, 2016). According to data published by the World Bank (2016a), in 2011 approximately 268 million citizens of India were living under the “poverty line of \$1.90 a day”. Moreover, roughly 30 per cent of those affected by poverty are living in the countryside (Rural Poverty Portal, 2016). A main reason of poverty in the countryside is the absence of “productive assets and financial resources”. Furthermore, the large share of illiterates, insufficient health services and restricted admission to “social services” highly contribute to the poverty in the countryside (ibid.).

According to the World Bank (2016b) the index of “Political Stability and Absence of Violence/Terrorism” statistically describes the probability of destabilization of the Indian administration or whose overturn by unlawful or vicious aids e.g. “terrorism”. Furthermore, The Global Economy (2016a) provides data of 191 countries, whereupon the average political stability of 2014 was measured at a -0.04 “governance score” (GS)<sup>2</sup>. As evidenced in figure 33, the Indian administration has been accompanied by a very low GS (or “percentile rank”<sup>3</sup>) over the last ten years, ergo its political stability was considerably low. Hence, in 2014 India was ranked 165<sup>th</sup> on the political stability ranking list (Global Economy, 2016b). However, the trend (see figure 33) shows that from 2010 to 2015, India could improve its GS by 0.31, thus improved its political stability.

Fig. 33: Political Stability and Absence of Violence/Terrorism



Source: Author based on information from the World Bank (2016b)

2 Estimation of «governance», scale: high stability: 2.5; very instable: -2.5

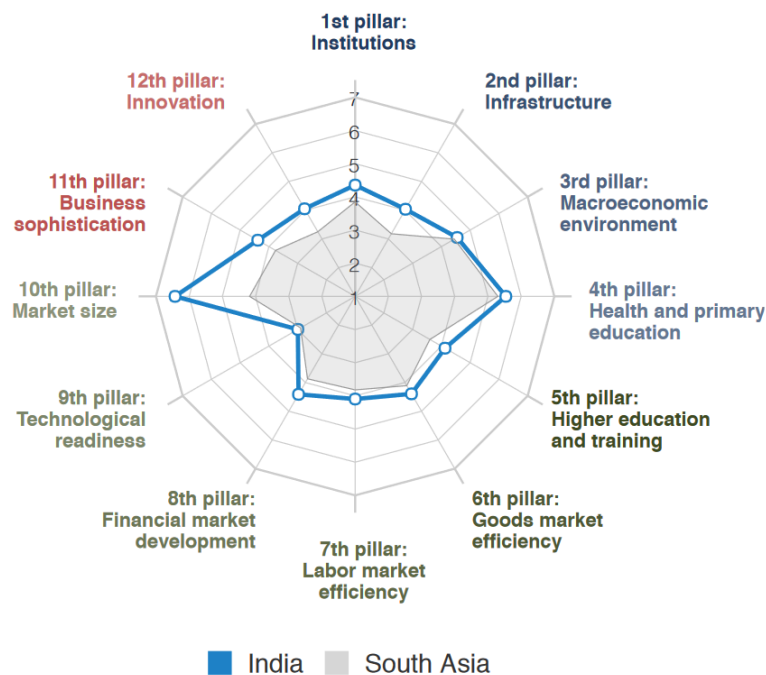
3 Reveals ranking of country in contrast with other countries, scale: high ranking:100, very low ranking:0)

The problem with corruption has been extensively studied. A good summary of the classification of corruption has been established by Transparency International (2016a). Therefore, in the 2015 *Corruption Perceptions Index*, India was ranked 76<sup>th</sup> among a total of 168 countries, with a score of 38, thus established itself in the middle area (ibid.:6). Another useful tool of measuring corruption is the *Bribe Payers Index* (BPI)<sup>4</sup>, whereas India is ranked 19<sup>th</sup> of a total of 28 countries, scoring a BPI of 7.5 (Transparency International, 2011:5). Therefore, Indian companies rather tend to make use of bribery when doing business overseas (ibid.).

#### 4.2.2. Competitiveness Report Ranking

To further examine the current competitiveness of India, WEF (2016b:202-203) carried out a series of analyses of the 12 “Global Competitive Index” (GCI) key indicators. As a result, in 2016 India was placed on the 39<sup>th</sup> rank (out of 138 countries). Accordingly, figure 34 provides an overview of the results in the relevant pillars of India in contrast with the average South Asian scores.

Fig. 34: India's Performance in 2016



Source: WEF (2016b:202)

<sup>4</sup> Positions the countries based on to what extent it is probable that domestic companies bribe in a foreign country. (0: very likely to bribe, 10: free of bribery)

The fact that India once was classified at the bottom of the infrastructure ranking list and now has settled on the 68<sup>th</sup> rank in that pillar reflects the substantial development India is undergoing (WEF, 2016b:18). As India is significantly improving its infrastructure, other urgencies arise. When consulting figure 34, it becomes obvious in what sector the biggest issue in modern India lays, namely in the technological readiness. Furthermore, as India is basically able to outclass “countries in the same stage of development” in every pillar with the exception of “labor market efficiency”, more emphasis on that sector has to be assigned (ibid.:19). As figure 34 illustrates, India’s pillar “market size” clearly stands out in contrast with the South Asian Median. In fact, India does rank on the 3<sup>rd</sup> place in market size, reflecting India’s large potential to do business in its domestic market (3<sup>rd</sup> overall rank) and foreign markets (4<sup>th</sup> overall rank) (WEF, 2016b:202-203). Also, when examining the “higher education and training” and “health and primary education” pillars in figure 34, only little advantages for India, compared to South Asia’s median, can be observed. Even though India’s “primary education quality” (40<sup>th</sup>) and higher education’s quality (29<sup>th</sup>) are not ranked significantly low, the enrollment rate for the secondary education level is ranked on the bottom of the ranking list (102<sup>nd</sup>), indicating issues with the proceeding of studies after primary education (ibid.).

#### 4.2.3. Domestic VET System

As the Indian VET system is examined, it is essential to separate vocational education within the school framework and vocational training in “institution-based training programs (Mehrotra et al, 2014:36). Key differences are as follows:

Table 6: Differences between vocational education and vocational training

Vocational Education	Vocational Training
<ul style="list-style-type: none"> <li>- The vocational education in India begins upon secondary level, namely “at school level in 11th and 12th standards”.</li> <li>- Normally takes three years to complete.</li> </ul>	<ul style="list-style-type: none"> <li>- External vocational training programs vary in duration (six months to three years) and admission (8th grade to 12th grade) due to training requirements in diverse industries.</li> <li>- Key provider are administration, “private Industrial Training Institutes (ITI)/Industrial Training Centers and polytechnics”.</li> </ul>

Source: Author based on information from Mehrotra et al (2014:36)



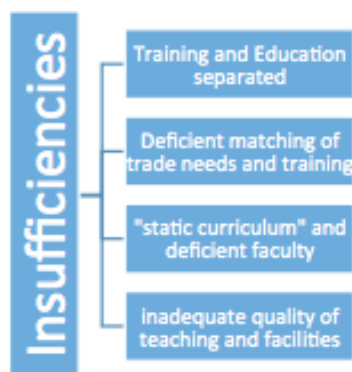
However, the responsible authorities of VET in India are the “Ministry of Labor and Employment (MoLE) and Ministry of Human Development (MHRD)”, whereas MoLE has its focus on vocational training and MHRD on vocational education (Mehrotra et al, 2014:36-37). Furthermore, the “National Skills Development Agency” was introduced in order to synchronize and organize the progress of abilities in India and to promote collaboration of administration and private sector so that relevant ability needs are covered (ibid.).

Additionally, the “Apprenticeship Training Scheme (ATS)” in India intends to offer training possibilities for as many individuals as possible in various industries in diverse companies (ibid.:40). Accordingly, there are apprenticeship possibilities in 252 industries. Moreover, ATS and advanced training are applied mutually by “union territories/state governments and central government” (ibid.).

Accompanying ATS, the “Craftsman Training Scheme (CTS)” focuses on delivering highly prepared craftsmen to trades in compliance with the demands (Mehrotra et al, 2014:40). In addition, it offers freelance possibilities to young educated individuals by providing “industrial training”. Thus, CTS emphasize on “industrial trades and are operated by ITIs” (ibid.).

According to MHRD (2011, cited in Mehrotra et al, 2014:40-41) the following four crucial insufficiencies in VET have been observed:

Fig. 35: Insufficiencies of VET in India



Source: Author based on information from MHRD (2011, cited in Mehrotra et al, 2014:40-41)

Furthermore, a recent national program called “Skill India” was brought to life by the Prime Minister in order to offer qualitative supreme training and education for adolescents in India (EY, 2015:22). Thus, this initiative intends to reach approximately “500 million youngsters by 2020” (ibid.).

#### 4.2.4. VET Funding

The system of vocational education and training in India is deeply reliant on publicly financed investments (Pilz, 2016:48). Consequently, the few facilities where “private funding” occurs are considered to be “in-house training” (Pillay 2014, cited by Pilz, 2016:48). However, financing of the different training programs is jointly split between the “central and state” administrations. According to Pilz (2016) and the Planning Commission (2013, cited by Pilz, 2016:49), the expenditures between central and state administrations are shared as follows:

Table 7: Expenditures between central and state administrations

Central Administration	State Administration
<ul style="list-style-type: none"> <li>- 100 per cent support for “apprenticeship training, district vocational surveys, text-book development workshops, instructional material subsidy, resource persons training, workshop/laboratory building, equipment to schools”</li> <li>- 50 per cent support for “vocational wings of State Directorates of Education, State Council for Education Research and Training (SCERT), district vocational wings, provision of raw material/contingency funds and field visits by students”</li> <li>- 75 per cent support for the personnel</li> </ul>	<ul style="list-style-type: none"> <li>- 25 per cent support for the personnel</li> <li>- 100 per cent support for undertaking assessments, tests and offering vocational supervision and counseling</li> </ul>

Source: Author based on information from Pilz (2016) and the Planning Commission (2013, cited by Pilz, 2016)

#### 4.2.5. Key Business Sectors

According to a study conducted by EY (2015:9-10), India is considered to be the best performing nation among all BRIC (Brazil, Russia, India and China) countries. Due to the evident growth and huge size of its market and endeavor to lose foreign direct investment regulations, India is presently providing a healthier “investment climate” in contrast with other BRIC nations (ibid.). In order to continue this positive development, several initiatives or national programs have been launched lately. Congruently, EY (2015:22) describes the most prominent and effective programs amongst others as follows:

Table 8: Relevant policies

"Make in India"	-	Intends to sustainably and enduringly grow 10 per cent in manufacturing. Due to that fact, it will increase "job creation" and ability development in India. However, the comprehensive objective of this initiative is to "build a best-in-class manufacturing infrastructure". Altogether, 25 sectors are affected, e.g. automobile industry.
"Digital India"	-	This program is considered to be the most aspiring "broadband project". Initially €15.2 billion has been invested, in order to deliver "broadband communication villages by 2017". It aims to offer Internet to every single Indian. Accordingly, three main core areas have been identified, which are going to enhance the progress of the electronic system design and manufacturing (ESDM) sector, namely "Digital infrastructure" as a convenience to all Indians, "Governance and services on demand" and "Digital empowerment of citizens".
"Smart Cities"	-	This initiative is straightly correlated to the progress of the Indian infrastructure. The main objective is to build 100 "Smart Cities in India by 2020". As a consequence, regulations have been adapted to permit 100 per cent FDI in order to boost the development of the cities.
"Clean India"	-	Emphasizes the construction of sanitation infrastructure, "waste disposal systems", "village cleanliness" and sufficient and effective "water supply".

Source: Author based on information from EY (2015:22)

### 4.3. Angola

#### 4.3.1. Political Situation

According to Vines and Weimer (2011:6), Angola is a "multiparty democracy", where power is divided between three departments of the government. However, Angola's presidency is highly powerful, as the president is head of state, head of government, commander in chief of armed forces as well as president of the controlling party. Therefore, the parliament is regarded quite weak with no real power over the government's formation. In addition, the president has the sole right to suspend the parliament. In 2010, significant changes to the election process of the president were established (ibid.:7). So far, the parliament members were elected independently from the president, meaning that in theory it could have happened to have a majority in parliament from one party but a president from another party. However, with the new changes the head of the party who wins the majority in the parliament is automatically the president.

As further stated by Vines and Weimer, civil society in Angola is weak and the local press emphasizes corruption, yet the state-owned media rarely openly criticizes president Dos Santos. However, there are several church and humanitarian organizations as well as civil rights groups that highlight issues such as the malfunctioning of the government, forced expulsions or domestic police corruption. In Angola, power is widely used for personal gains and control is highly centralized, leading to an inefficient government, which poses a threat to the country's stability (ibid.:8).

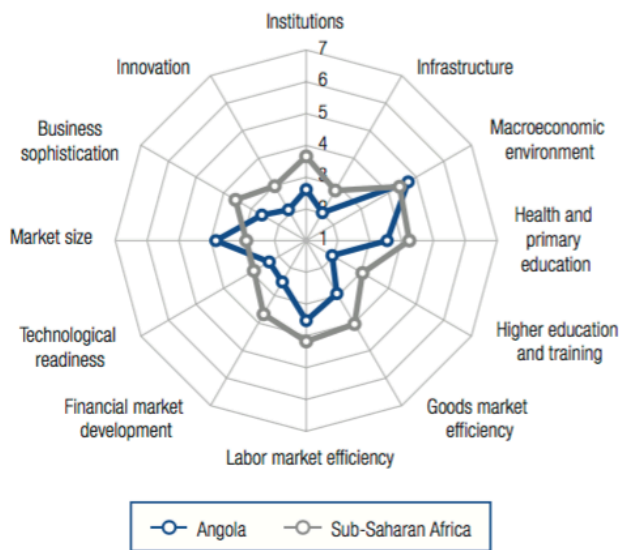
Hanson (2008) highlighted that Angola is a very rich country, yet it is also very poor and faces harsh development challenges. While Angola is not in need of foreign aid, it also is not obliged to adopt the rules of foreign institutions. Some argue that this has led to a nontransparent financial system as well as corruption. In addition, Angola was not able to conduct multiparty elections since 1992 and the main opposition party UNITA is regarded as weak. Lazar Antonic (cited by Hanson, 2008) from the International Republican Institute stated that "opposition parties and viewpoints do not have the same access to media as the ruling party does".

In the 2015 *Corruption Perceptions Index* by Transparency International (2016a:7), Angola achieved an extremely low rank of 163 out of 168 countries with a score of 15 out of 100. It is therefore seen to be one of the most corrupt countries in the world.

#### **4.3.2. Competitiveness Report Ranking**

The latest *Global Competitiveness Report* provided by WEF that contains information about Angola is the 2014-2015 edition. According to the report (WEF, 2014b:108), Angola achieves a rank of 140 out of the selected 144 countries. Its score is at 3.0 on a scale of 1 to 7. Out of the twelve pillars, the three with the lowest scores are in fact "higher education and training", "infrastructure" and "innovation" with scores of 1.9, 2.0 and 2.1, respectively. The report also highlights the most problematic factors for doing business. In the case of Angola, those factors include access to financing, insufficiently educated workforce, inadequate supply of infrastructure as well as corruption. However, it has to be considered that Angola scores quite well on the 3<sup>rd</sup> pillar which is macroeconomic environment with a score of 4.7 (ibid.).

Fig. 36: Angola's Performance in 2014



Source: WEF (2014b:108)

#### 4.3.3. Domestic VET System

As illustrated by the African Development Fund (2001:35), Angola's education system consists of primary education, followed by lower as well as upper secondary education, which is either general or technical (vocational). Technical and vocational education (TVE) has the objective to train technicians at an intermediate level (ibid.:2). The MoEC provides vocational training in addition to the formal education in several industrial professions such as construction, electronics, mechanics and chemistry. However, there are also courses offered in economic, agricultural and health as well as other specializations (ibid.:9). Additionally to the vocational education at the upper secondary education level, adult education provided in Angola also offers a vocational orientation (ibid.:9). It is targeted towards adolescents aged 12 or older who did not have access to school or have a limited educational background.

As reported by the African Development Fund (ibid.:10), in 1985, 23 multi-skill training schools existed while this number declined to only three in 2001. Youth and adult training generally takes place in the afternoon or evening. However, in many provinces there is a lack of electrical lightning, which affects the quality of the education. In addition, most facilities are in quite poor conditions with a lack of books or pencils. Furthermore, it has been found that most students do not attend upper secondary technical schools with the aim to enter the workforce, but rather to continue with tertiary education (Do Nascimento Alexandre, 2014:11). Figueira and Inácio (2012:19) reported that Angola is looking at the possibility of introducing a National Qualifications Framework. It has

been explored that there are various advantages of a consistent qualification structure across all levels. However, no information can be found on whether a National Qualifications Framework has been implemented so far or not.

In conclusion, even though there is an existing VET system in Angola, information about it is limited and education seems to be in very poor condition. However, there are also private institutions in Angola that provide vocational training, such as Ajuda de Desenvolvimento de Povo para Povo (ADPP) Angola. ADPP provides practical and theoretical training at eight schools in six different provinces (ADPP website, 2016). The focus lies on the training of adolescents in fields and trades that are much needed in Angola. Therefore, training is provided in the following professions: Water Assistant, Energy Assistant, Food Producer, Environment Promoter, Modern Cook, Community Health Agent, Information and Media Assistant, and Pre-School Assistant (ibid.).

#### **4.3.4. VET Funding**

According to the African Development Fund (2001:3), public funding for the education sector in Angola has drastically fallen within the 1990s. While public expenditure amounted to 18 per cent in 1991, in 1999 it was merely 4.2 per cent. It needs to be considered that staff salaries as well as benefits represent a portion of 70 per cent of this budget; in Luanda Province the portion is even higher with 80 per cent. Despite the fact that the resources for education are insufficient, basic education is free for the public. In addition, there are privately funded education institutions, however, the scope of such programs is highly limited (ibid.).

As further stated by the African Development Fund (ibid.:6), the actual allocation of funds for the Ministry of Education and Culture (MoEC) has remained approximately the same with 5.61 per cent of total public expenditure in 2000 and 5.75 per cent in 2001. In comparison, in 2004, South Korea's budget for education amounted to 11.9 per cent of total public expenditure and the portion even rose to 15.9 per cent in 2015 (see page 49). However, it also needs to be considered that the MoEC in Angola is not solely responsible for education funding, as there are institutions such as the FAS program (Social Action Fund), which contribute to education funding as well. In addition, provincial budgets compensate for the salaries of primary teachers, whereas the MoEC covers the salaries of other teachers. Most of the capital expenditures such as construction or equipment are within the budget (ibid.).

As seen in the following table, of the total education budget by MoEC 22.7 is spent for primary education, while only 8.6 per cent is spent for secondary education, where vocational education and training can be obtained.

Table 9: MoEC budget by branches of education in 2001

Branch of education	Percentage
Preprimary and primary	22.7
Secondary	8.6
Tertiary	20.6
Education services not identified by level	20.1
Subsidies	23.3
Other Services	4.7
<b>Total</b>	<b>100.0</b>

Source: Author based on information from the African Development Fund (2001:6)

#### 4.3.5. Key Business Sectors

Angola's wealth comes from oil, which represents 90 per cent of its exports (Our Africa, date unknown). In fact, over 1.6 million barrels of oil are produced daily and reserves are expected to be over 13 billion barrels. The second largest source of revenue is the diamond industry in Angola. In addition, the mining sector has contributed to a boom in construction, mainly in the capital city of Luanda, where houses as well as offices are built in vast numbers. It can further be observed that the services industries such as banking, finance and telecommunications are emerging in Angola. Additionally, the tourism sector is growing as well, yet there is still a shortage of hotels as well as other accommodation places, which drives up prices. Most people in Angola, however, are engaged in farming as their main source of income. They grow their own food and, if possible, make profits out of coffee or sugar canes (ibid.). As mentioned earlier, vocational training is offered to students mostly in industrial fields, yet there are also courses offered in economics, agriculture, and health.

#### 4.4. Requirements and Needs of Manufacturing Industry

In order to acquire an understanding of the requirements and needs of a specific trade in developing countries, we conducted an interview via phone with Mr Glättli, managing director of the vocational education and training department at Swissmem. Swissmem is an organization of "mechanical and electrical engineering industries (MEM industries)" (Swissmem website, 2016). The com-

pany represents the demands of 1000 companies in various matters. Swissmem Vocational Training is “the center of competence and service for the vocational training in the Swiss mechanical and electrical engineering industries (MEM industries)” (ibid.).

Swissmem is one of the partners of SkillSonics, an institution whose mission is to

“implement top-quality vocational training and education based on Swiss know-how and methods at companies, training institutes and public organizations to address the worldwide need for skilled labor.” (SkillSonics website, 2016)

SkillSonics has managed to implement a functioning VET system in India. It needs to be considered that Mr Glättli’s experience and therefore our findings in this section are based on the implementation of a VET system in India.

#### **4.4.1. Prerequisites**

According to Glättli (2016), the most fundamental step in order to start the implementation of a VET system in a developing country concerns the proper analysis of the relevant countries’ culture and education system. Due to historical events, it is necessary to consider that there are discrepancies between countries. India, for instance, used to be a colony of the British Empire, thus the structure of India’s education system is based on the British example. Nevertheless, it is essential to understand that a VET system cannot simply be transferred one-to-one from one country to another. In a further step, companies need to be approached and educated about potential benefits in order to attain their overall support (ibid.).

#### **4.4.2. Insights regarding implementation of dual-track system in India**

As stated by Glättli (2016), the skills of the local workforce do not meet the requirements of the international partner companies of SkillSonics, which are entering the Indian market. Even those who had the chance to successfully complete a certain level of education on a theoretical and practical basis are not equipped with the appropriate skills to meet the demands of the industry. However, the potential of those who already possess an educational training background is higher, hence they are more suitable to participate in a dual-track VET program. As further outlined by Glättli (2016), international companies strive to reach a predefined level of quality, regardless of production site. Hence, it is vital to globally apply the same production standards and manufacturing processes (ibid.).

In order to increase the job readiness of the young local workforce, SkillSonics, in collaboration with internationally operating Swiss companies, implemented an apprenticeship system adapted to



the Indian market (Glättli, 2016). A characteristic of this apprenticeship is that the duration is limited to two years. In addition, the apprentices are educated in different core areas where they become multi-skilled workers. In contrast, for India it is common to train its workforce on a specific skill only rather than on a multi-skilled level. Generally, Indian companies are willing to incorporate such an apprenticeship system, as they are aware of the potential benefits. A significant feature of the program established by SkillSonics is the fact that the development and validation of the apprenticeship examinations as well as the diplomas are provided by Swiss companies in collaboration with SkillSonics. However, it is of major importance that the diplomas are accepted by the local government. When implementing a VET system, not only the workforce must be educated but also the supervising and training staff needs to be taken into consideration (e.g. training of teachers) (ibid.).

#### **4.4.3. Funding**

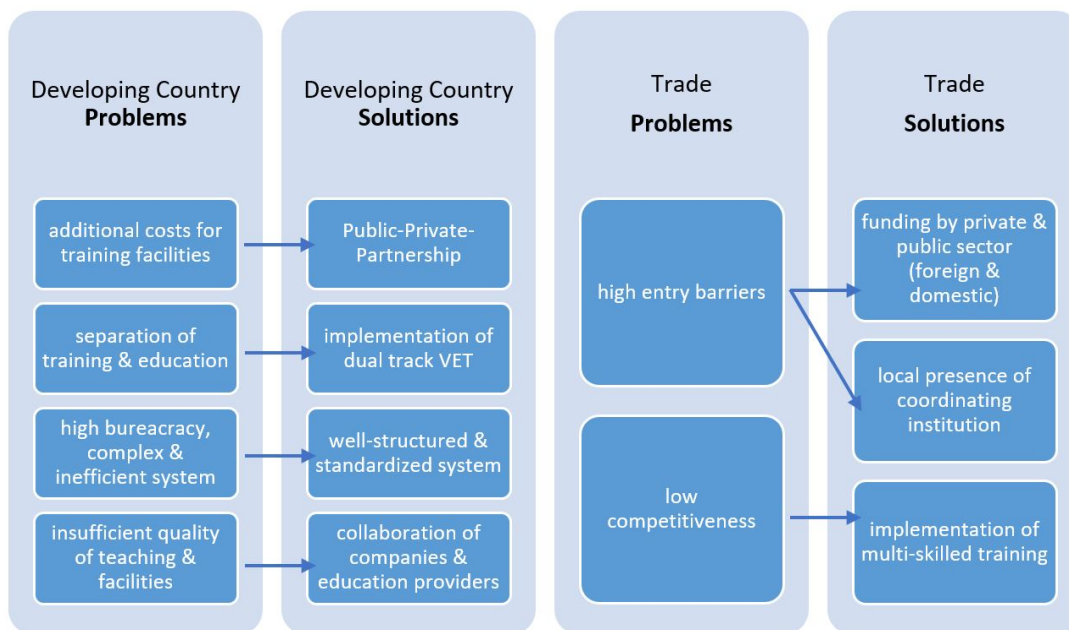
As mentioned above, local companies show interest in the adaptation of an apprenticeship program. However, most of them are not aware of the financial burden of such an implementation (Glättli, 2016). Besides regular costs such as equipment, machinery and staff wages, other costs need to be considered. Apprentices receive a fixed salary which represents a novelty for the Indian business environment. Additionally, most Indian companies do not realize that institutions such as SkillSonics are privately organized and, therefore, sell their services in exchange for a monetary compensation. Furthermore, the workforce as well as machinery is reallocated to training facilities and therefore, opportunity costs occur. As a consequence of all these costs, local companies are reluctant to participate in such a program. As a counteract, SkillSonics managed to find financial support of the Indian government (ibid.).

## 5. Matching

### 5.1. Summary of Matches and Gaps

Based on our previous analysis, the following problems regarding a vocational education and training system could be detected in developing countries and corresponding trades. Hence, we elaborated potential solutions in order to facilitate a successful VET implementation in developing countries (see figure 37).

Fig. 37: Findings of developing countries and trade



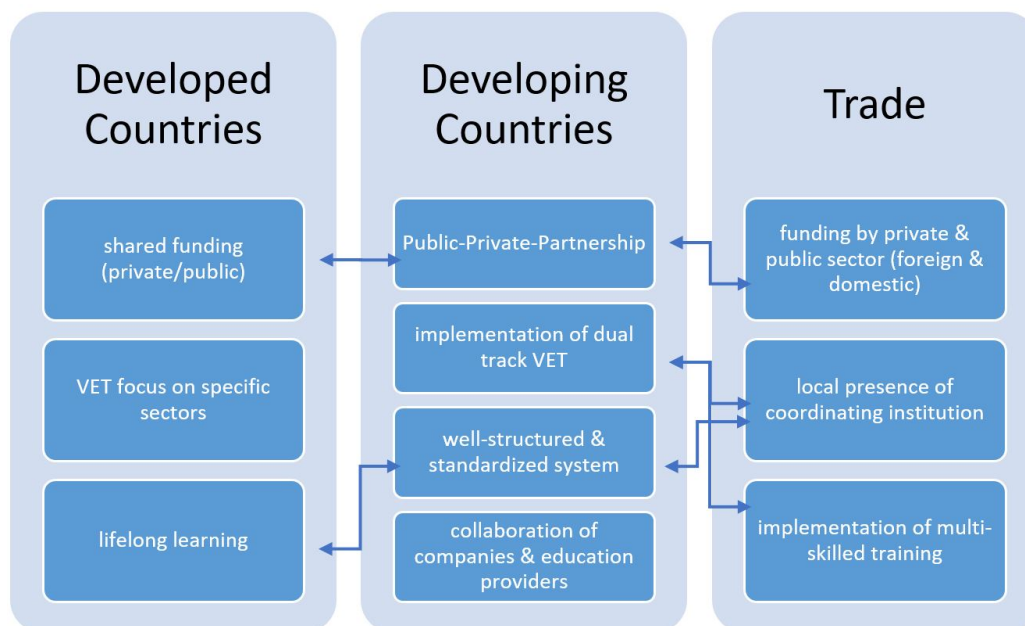
Source: Author

A key problem for the developing countries as well as the specific trade is that companies are confronted with a lack of equipment and knowhow. As a consequence, the provision of such basic conditions are linked with high costs and, in the case of the trade, with high entry barriers for the implementation of a VET system. Therefore, it is beneficial to incorporate the public sector with regard to funding, which would reduce the cost burden of companies and lower the entry barriers. In addition, there are also entry barriers for local companies with regard to the knowhow of the structure as well as the lack of resources. Thus, it is essential to include the local presence of a coordinating third party (e.g. SkillSonics in India). Another issue is the separation of education and training, which leads to an inefficient workforce. The implementation of a dual-track apprenticeship combines the two elements and leads to a higher degree of job readiness upon completion. Generally, in developing countries there is a rather high amount of bureaucracy. Consequently, systems tend to be quite complex and inefficient. Hence, a well-structured but standardized approach

is vital in order to guarantee a better feasibility. Moreover, in developing countries the general level of teaching quality and facility standards are quite low. The collaboration of companies and local education providers would facilitate an improvement in both areas. Regarding a company operating in a specific trade, both the production sites in developed countries and developing countries need to be able to meet the same productivity and production quality requirements. Thence, local companies are generally motivated to increase multi-skilled training and, as a result, increase their competitiveness.

The following section intends to describe the matches between developed countries, developing countries as well as the analyzed trade based on the best practices of existing VET system and our previously elaborated solution approach for developing countries and trades. As mentioned above, shared funding by both the public and private sector is found to be one of the most fundamental factors for the successful implementation of a VET system. Furthermore, a well-structured and standardized system with training opportunities within the company facilitates lifelong learning (e.g. further VT in Mexico). Based on our own analysis, we came to the conclusion that the solution approaches for developing countries and trades match. Precisely, the implementation of a dual-track VET system corresponds to the implementation of a multi-skilled training system needed in trades. Both of which could be facilitated with the local presence of a coordinating institution (e.g. SkillSonics in India). Such an institution would also support the standardization and (re)structuring of a VET system.

Fig. 38: Summary of Matches

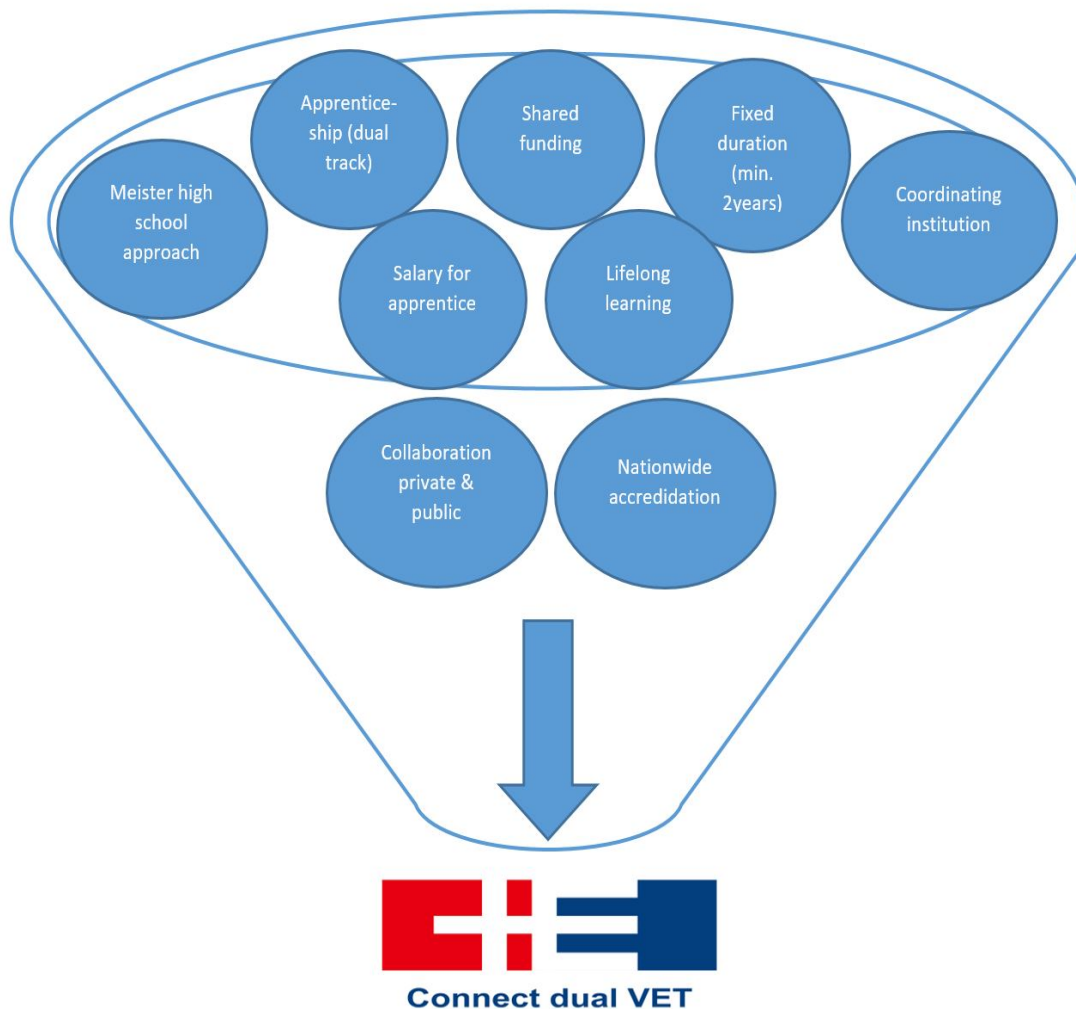


Source: Author

## 5.2. Development of “own VET system”

On the basis of the analysis in the previous sections, we developed a proposal for our own VET system. The system should include several components as illustrated in the following figure.

Fig. 39: Own VET system



Source: Author

- **Meister high school approach**

Focus on specific business sectors that are in need of a highly skilled workforce. Teaching content adapted to needs of specific trades (practical environment).

- **Apprenticeship (dual track)**

Practical training on-the-job and theoretical training off-the-job at the same time.

- **Shared funding**  
Financial contribution by both public and private sector.
- **Fixed duration (min. 2 years)**  
A duration of minimum two years is required for the provision of multi-skilled training (e.g. Switzerland and Germany).
- **Coordinating institution**  
Support for the development, implementation and supervision of a VET system through local presence (e.g. SkillSonics).
- **Salary for apprentice**  
As an incentive for students to apply for an apprenticeship and in order to enhance performance the apprentices should be paid a salary.
- **Lifelong learning**  
The provision of further education and training within the company.
- **Collaboration private & public**  
Involvement of both private and public sector in terms of curriculum development in order to match needs and demands of both stakeholders.
- **Nationwide accreditation**  
VET diplomas need to be accredited nationwide in order to gain reputation.

### 5.3. Limitation of the Research

The aim of this project is to provide a theoretical basis with necessary background information about existing VET systems as well as the challenges in education systems faced by developing countries. However, it needs to be taken into account that the scope of this project only allowed a rough overview of the subject matter. In order to fully assess whether to implement a VET system in a developing country, more profound research and, in particular, more country-specific research would need to be required.

Furthermore, it needs to be considered that data concerning developing countries could not be easily obtained through the Internet and books. In addition, even when data could be derived from accessible sources, at times, data was not available in English.

#### 5.4. Personal Recommendation

Based on the research, the discussion of the findings and considering the aforementioned limitations, several recommendations regarding the implementation of a VET system in a developing country can be given.

First of all, it is absolutely necessary to conduct more in-depth country-specific research when considering implementing a VET system in a developing country. This paper can only serve as a starting point and provides a rough overview of a few selected countries. In addition, there are significant differences among developing countries regarding their economic status, political stability as well as educational framework. As a consequence, more funding might be needed in countries with a lower level of development. In addition, it needs to be considered that corruption is a major issue in developing countries and, hence, the implementation of a VET system might be hindered. Furthermore, it might be an advantage to initially approach foreign companies which are already operating in the targeted market when implementing a VET system. These companies could act as pioneers in order to trigger the interest of local companies, thus foster the expansion of VET in the respective market.

In conclusion, for the realization of such a program it is essential to assign more emphasis to various fundamental factors (e.g. culture, work-related attitude, historical background etc.), which we could not take into consideration within the framework of this project. Moreover, we believe that the collaboration of multiple stakeholders interested in the execution of such a substantial project is needed.

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