Jun Li

Pre-vocational Education in Germany and China

A Comparison of Curricula and Its Implications

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Foreword

For Caixia, with love

It was not easy to finish a PhD degree in a foreign country. Speaking a different language, living in a strange cultural and social environment, and being so far away from family was difficult. Nevertheless, I feel very lucky that I had the opportunity to have done this. My experiences in Germany from 2008–2011 had a profound impact on my life. To me, these experiences were not just about reading German literature and attending seminars in German universities or about opening doors to my future career. Instead, this time offered me a real chance to extend my personal experiences and vision, to get to know myself better, and to understand society from a different perspective. This kind of opportunity is very helpful for someone in the field of comparative education research because without it my knowledge ran the danger of being far more superficial than it is now.

All my experiences would not have been possible if Prof. Matthias Pilz had not invited me to do my dissertation in Germany. I would like to give him my most sincere thanks. It was his guidance and supports, in both the professional domain as well as a general sense that has helped me accomplish this task.

During my stay at the University of Education Freiburg and the University of Cologne, several professors and colleagues have helped me through daily conversation, academic seminars and discussions, and so much more. I would especially like to thank Prof. Detlef Buschfeld, Prof. Thomas Diehl, Urs Frey, Jana Krüger, Katrin Rasch, Muthuveeran Ramasamy, Susanne Berger, Jochen van der Burgt, Junmin Li, Rebekka Klages, Blanka von Zitzewitz, and Ulrike Severin. Without their kindness, knowledge, and professional support, I could not have finished my dissertation.

Good friends make life in a foreign country much easier and enjoyable. In this sense I would like to give my gratitude to the following friends: Olga Lositsky, Halinka Danielewicz, Fabian Sölter, Johannes Bausenhart, Kaiyu Chiu, Yunhong Yang, Yinghuang Wang, Svenja Laackmann, Tobias Fliegen, Balasundaram Krisanthan, Ming Hu and Daisuke Asai.

Last but not least, I would like to give my mom and my wife Caixia my particular thanks. Caixia is my greatest blessing, and without her tolerance, understanding, and support I never could have come so far.

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BW	Baden-Württemberg (a state in Germany)
Cedefop	European Centre for the Development of Vocational Training
CERNET	China Education Research Network
KMK	die Kultusministerkonferenz (Standing Conference of Ministers of Education and Cultural Affairs, Germany)
LTC	Labor and Technical Course (a form of pre-vocational education in China)
MOE	Ministry of Education (China)
NRW	Nordrhein-Westfalen (North Rhine-Westphalia, a state in Germany)
PISA	Programme for International Student Assessment
STW	School-To-Work
VET	Vocational Education and Training
TVET	Technical and Vocational Education and Training
WAG	Wirtschaft-Arbeit-Gesundheit (economy-work-health, a subject combination in secondary education curriculum in some states of Gemany)

Introduction 1

As an ancient Chinese proverb put it, "If you give a man a fish, he will have a single meal. If you teach him how to fish, he will eat all his life." Teaching the ways of making a living is a universal goal of education not only in ancient China, but also in this fast changing and globalized world.

1.1 The Choice of Research Subject

1.1.1 Choice of Pre-vocational Education as the Subject of Study

In the present day, the problem of youth unemployment is a challenge that many countries have to face. According to the statistics from OECD (2011), in 2009, the average youth unemployment rate of youth labour force between age 15 and 24 among over 25 OECD countries is 16.7 %, and several of these countries have a youth unemployment rate of over 20 %. One of the major reasons of the problem is that many young people have difficulties in changing themselves from a student into am employee or potentially an employer. Youths may find it very hard to find a job after leaving school, or they may dislike their first job; to put it another way, young people in this world find the transition from school to work very difficult to accomplish smoothly (Xinhuanet 2003). To facilitate the School-to-Work (STW) transition process of young people into labour market has thus become a critical task for many governments in the world and therefore the STW transition has been one of the hottest research topics in comparative education research since late 1990s. Most STW transition research however focuses on the education and social processes after lower secondary education, in which different types of vocational training systems are compared, the influences of labor market entry are measured,

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the effects of academic higher education are examined, the influences of overall educational attainments are calculated (cf. Müller and Gangl 2003, pp. 23–62, 186–212; Shavit and Müller 2003, pp. 2–10).

The process during the lower secondary education is however also very important in the STW transition of young people. Researches in developmental psychology as well as career development have shown that, youth aged from 13–16 years are at a critical stage of their personal development, during which self-concept is greatly developed, including its vocational aspects (Super and Hall 1978; Havighurst 1972, pp. 65–68).

In an age of higher uncertainty in the career developments and growing varieties of vocational choices, many countries already took some measures in a relatively early stage of education to improve the STW transition of young people. Despite various forms of realization, pre-vocational education, as an instrument during the lower-secondary education, as been widely applied by many education institutes in the world and therefore needs scientific investigation (cf. Sect. 3.1).

1.1.2 Choice of Germany and China as the Counterparts of Comparison

The globalization process has dramatically changed the economic picture of the entire world. Germany and China, among the world's largest economies, both not only engage deeply into this process, but also are regarded as having benefited most from this process comparing to other countries (Betts 2006).

Besides the similarities in economic features, both countries have also (at least in certain areas) undergone an important reform in the pre-vocational education, showing signs of adjusting education intervention which aims to prepare the young people for future competition.

1.1.2.1 Reform Initiatives in Recent Years

In some states in Germany, the old term "Arbeitslehre" are replaced by the concept of "vorberufliche Bildung" (pre-vocational education) or some other concepts, for example, "Fächerverbund Wirtschaft-Arbeit-Gesundheit" (subject combination economy-labor-health), implying a change in the principle of pre-vocational education. And besides the original main component "Berufsorientierung" (vocational orientation), some other parts are also integrated. A bigger share of economic education is introduced into the lower secondary education and also categorized under the pre-vocational education (cf. Chap. 2).

In China, the Labor and Technical Course (later referred to as LTC) was also almost nationwide (except some regions such as Shanghai) integrated into a new

course called "comprehensive practice activity course" during the curriculum reform since late 1990s.

In this background, it would be of great value to examine the effects of the reforms in pre-vocational, by putting the two countries together and comparing them in a systematic way.

Also due to this reason, the proper term of the research subject should be pre-vocational education instead of other names, such as "teaching of work" or "vocational guidance", which could no longer contain the components that pre-vocational education at this moment actually includes (cf. Sect. 5.3).

1.1.2.2 Cooperation on VET between Germany and China

Germany and China have had cooperation in the field of vocational education and training (VET) intensively since China's open and reform policy; the German federal and state government, as well as companies such as GTZ (German Technical Cooperation, now GIZ, or Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH) have been involved in various VET projects in China, including the establishment of several research institutes of VET, vocational teacher training programs, employment promotion and qualification projects, etc. (cf. GTZ 2010; Buchholz 1999).

Besides the collaborations on the praxis level, numerous academic research, either on each other or in a cooperative way, has also been done on VET, focusing on different levels and aspects of VET. Some research mainly pay attention to the overall VET system of a country (cf. Ruth and Grollmann 2009; Franke 2003); some concentrate on the changes and reform of a system (cf. Wagner 2000); some focus on a certain aspect of a country's system, such as the Lernfeld concept of the German VET curricula, and compare it with one's own concept and investigate the potential for applying it in its own context (cf. Wang 2008); some compare a certain component or aspect of both of the two systems (cf. Xu 2004); some explicitly study the impact of one system on the other (Barabasch et al. 2009).

On the one hand, these cooperation in both praxis and theoretical level has laid a good foundation for further comparative investigations in the field of vocational education in a broad sense, on the other hand, since no research has been done in these two countries in the field of pre-vocational education. Therefore a comparative study on pre-vocational education between Germany and China is not feasible and meaningful, but could also explore the possibilities of pre-vocational education in general in an age of globalization.

Both Germany and China has certain domestic diversity with reference to school education. Germany as a federal republic has sixteen states (Länder, later all refered to as state) and each state has its own legislations and rights in the field of school

education. Despite the existence of KMK (Kultusministerkonferenz, means culture minister conference, later referred to as KMK), the education institutions, their curricula, teacher education, and some other aspects of each states differ from each other. China as one of the largest and most populous countries in the world has many ethnic groups and regions with socioeconomic conditions that are hugely different from each other. Although generally the education as well as many other institutions relevant to education is centrally organized, the different socioeconomic conditions, history of developments of various regions have a fundamental influence on the education sector. It is therefore not feasible to investigate the overall national situations in the field of pre-vocational education in these two countries. Certain regions in each country need to be chosen as the major compared bodies of the research.

In Germany, two states Baden-Württemberg (later referred to as BW) and Nordrhein-Westfalen (later referred to as NRW) are chosen as the researched states. BW is chosen because on the one hand, BW is economically one of the most developed states in Germany which can represent the education situation in the more developed region in south Germany, on the other hand the lower-secondary school curricula in BW has undergone some reforms in the past years, implying a potentially new tendency in German education. NRW is chosen because it is the most populous state in Germany and the education provisions there always has an immediate influence on the biggest amount of youth in Germany among the individual states and can therefore represent Germany to a certain extent.

In China the city Shanghai and province Hubei are chosen as the researched bodies. Shanghai has since decades the frontier of economic and social reforms in China. The education reform in Shanghai could also represent the future development of education in China as a whole. One evidence can show this quite well: Shanghai is the first city in mainland China to participate in the PISA (Program for International Student Assessment, later referred to as PISA) investigation. Meanwhile there's no way Shanghai can represent the current situations of economic, social and educational standards for entire China. In 2009, the GDP per capita in China is about 44,600 ¥, whereas it is about 78,989 ¥ in Shanghai (the GDP per capita in China is calculated based on the exchange rate; Shanghai Statistics 2010; CIA 2010). To better understand the situation it is necessary to go inland of China and take a glance at the middle and west provinces where also huge population is living and these population form the main stream of immigrant workers in more prosperous east and south China where the so called "world factory" is. With a GDP per capita of 22,677 ¥ in 2009, Hubei in middle China with middle level of socioeconomic standard in China is chosen as the other compared body (Hubei government 2010). These two regions are also the two areas where the author has best access which plays a crucial role in the investigations later on (more details in Chap. 4).

1.2 Current Status of the Research

Despite the numerous international comparative researches done in the field of vocational education and training by scholars across the globe, the comparative research on pre-vocational education, which is mainly carried out on the lower-secondary level (cf. the definition of pre-vocational education of this research in Sect. 1.31), is rather limited. In the following paragraphs some relevant researches are briefly introduced, mainly serving as examples of the existing comparative researches that are somehow related to pre-vocational education.

Frommberger (2005) has shown the possibility of integrating the vocational guidance in the economic education programs in lower-secondary schools in the Netherlands and discussed briefly the possible implications and relevance for the vocational preparatory programs German lower-secondary schools.

Kerckhoff (2006) has studied the patterns of transition from school to work in a comparative perspective and has categorized education systems into two ideal types according to their degree of standardization and stratification. His study is inspiring in understanding the systematic patterns of STW transition in different countries, but the research has paid little attention to the meso-level of an education system and therefore does not reveal much about the concrete curricula and their implementations.

CEDEFOP (European Centre for Development of Vocational Training) has carried out country study and comparison on vocational guidance and counselling, including the initial vocational education programmes at lower secondary level. The investigation which is based on large scale survey in many different countries offers a very good overview of the general situation of vocational guidance and counselling in the selected European countries (cf. CEDEFOP 2011). However the investigation does not involve any non-European countries; the focus is not on the programs during lower-secondary schools and the comparison is largely descriptive.

Maon et al. (2000) have carried out a comparative study on the craft education in lower-secondary schools in England and Japan. Using survey questionnaire targeted at art teachers, the research has identified the nature and extent of learning through craft activity and discovered the rather vulnerable status of art education in both countries, it has also revealed significant differences between the two countries in the field, such as the way craft activity is taught, resourced and assessed.

Lauterbach (1987) has compared the targets, forms and contents of pre-vocational education in several European countries and has come to a basic typology of the pre-vocational programs in the international context. The article however does include a systematic in-depth investigation of the programs.

The existing researches either focus on the macro level of analysis, or tend to have an all-embracing overview. Relatively little has been done as to investigate

in-depth only the pre-vocational programs in a comparative way. To put it simply, there has been very limited international comparative researches on pre-vocational education in a systematic manner and this investigation endeavors to bridge the research gap by carrying out a comparison between Germany and China (more methodology to this research in Sect. 1.3, more details to relevant literature and methodology in the investigated field in corresponding parts, cf. Sects. 3.2 and 4.1).

1.3 Methodology

1.3.1 Definition of Pre-vocational Education in This Study

OECD's definition for pre-vocational education is:

> Prevocational education is mainly designed to introduce participants to the world of work and to prepare them to entry into further vocational or technical programs. Successful completion of such programs does not lead to a labor-market relevant vocational or technical qualification. (OECD 2002)

Empfehlung des Bundesausschuss für Berufsbildung:

> Die vorberufliche Bildung umfasst alle Maßnahmen, die im Wesentlichen für die Primarstufe und alle Bildungsgänge der Sekundarstufe I zum Verständnis der Arbeits- und Wirtschaftswelt erforderlich sind. Es handelt sich dabei um jene Kenntnisse und Fertigkeiten, Einsichten und Verhaltensweisen, die dem Jugendlichen für einen unmittelbaren oder späteren Übergang in eine berufliche Grundbildung zu vermitteln sind. (Bundesausschuss für Berufsbildung 1972)

The pre-vocational education includes all the measures which are essentially required for the understanding of labor and business world during primary education and lower secondary education courses. It is about all the knowledge and skills, insights and behaviors which should be taught to the young people for an immediate or delayed transition to a basic vocational education.

Although they are some differences among these definitions, a few important commonalties could be seen. Firstly, a pre-vocational education program does not normally lead to some vocational qualifications or a direct employment, but rather contributes to some other vocational education or training in the future. Secondly, the main purpose of pre-vocational education is manifested in its functions in helping the young people to participate in certain vocational activities in the future, esp. vocational training. Thirdly, the goals of pre-vocational education could be rather broad; knowledge, skills and behaviors could all be the goals, as long as they are

helpful for the students' future vocational choices. Fourthly, the form and structure of pre-vocational education is not prearranged, but rather flexible.

According to the definitions and their analysis given, the pre-vocational education in this study is so defined:

> Pre-vocational education contains all the educational measures taken by official educational institutions during the lower secondary education that are designed to intentionally introduce the participants to the world of work and/or to prepare them to entry into further vocational or technical programs, with a purpose of facilitating the STW transition in their future career development. It does not necessarily lead to a labor-market relevant vocational qualification but helps the participants to gain the knowledge, skills, attitudes and competences which are necessary for a smooth STW transition later. The content and form of it is not limited to one certain discipline, but open to different education activities. The main object of it is closely related to future vocational (education and/or training) activities of the participants, but not so much to the further academic education choices.

1.3.2 Choice of Central Research Question

In the field of comparative vocational education research, most studies have focused on the macro-level, namely the structure and general framework of an educational system, relative small amount of the studies paid their attention to the curriculum and pedagogic aspects and the teaching-learning process (Frommberger 2006, p. 2). This situation also applies to most of the STW transition research, in which great emphasis has been given to the macro level, for instance the institutional settings of an education system, the features of the labor markets, and relatively few attentions have been given to the meso level of the educational process (cf. Müller and Gangl 2003; Shavit and Müller 2003). However, without the knowledge of the form of curriculum and arrangement of the learning process, the attempts to the typology of the educational systems in the macro-level research would have only limited meaning (Frommberger 2006, p. 2). Therefore, curriculum, as one of the fundamental components of any education process, would be the subject of this research.

From a broad perspective, a curriculum contains not only the content and purpose of certain education activity, but also a level of plan and regulation (manifested in education plan, syllabus and so on), together with a level of realization (implementation of the curriculum plan in teaching reality), control and evaluation of the teaching-learning process (Reetz and Seyd 1995). Meanwhile, the education plan and syllabus, as a claim and description of the expectations and demands about the aims (student's knowledge, skills, attitude and competencies) that should

be fulfilled, is not always implemented and realized completely in the real teaching-learning process (cf. Sect. 4.1.1). Or put it another way, different levels of a curriculum are in many situations inconsistent with each other.

How should the differences between the curriculum plan and teaching reality in pre-vocational education be explained and interpreted? What special structural, pedagogic forces would cause the inconsistency? It is this study's aim to find out and analyze these differences and inconsistencies, to better understand and explain them, with the purpose of not only better implementing the curriculum plan, but also improving the curriculum as a whole. Therefore the purpose of this study is to answer the following question:

> How pre-vocational education, as an instrument to improve STW transition of young people, is described and narrated in the curriculum plan on the one hand and implemented in the teaching reality on the other hand.

1.3.3 Choice of the Comparative Method

In the field of comparative education mainly two methodological approaches exist: hermeneutic approach and analytical-empirical approach (Lauterbach and Mitter 1998). Developed in the humanities (Geisteswissenschaften), the hermeneutic approach tries to understand the education phenomena through the interpretation of "texts"—in education research contains both primary sources (curricula, didactic recommendations, textbooks, etc.) and secondary literature, for example research findings in the area, and gives a great emphasis on the historical background of the research subject (Lauterbach and Mitter 1998). Adopted from the social science tradition, the analytical-empirical approach is aimed at explaining facts, relations and trends. It could be both quantitative and qualitative.

The choice of one of the main methodological approaches is however not a random decision, but primarily dependent on the purpose of the comparative research.

Basically a comparative education research could serve for mainly four functions: idiographic, ameliorative, evolutionistic and quasi-experimental functions (cf. Hörner 1993). As Hellwig (2007, original in German translated by the author of this dissertation) has summarized and explained:

> The idiographic function, also described as 'searching for the special', focus on the description and explanation of different compared bodies, is thus primarily descriptive. […] is normally the foundation for other more complex comparisons. […] The ameliorative function, or the 'searching for the better model', implies that aspects in other systems may offer the potential for the home system to improve. […] The evolutionistic function, also referred to as "searching for development trend", try to identify the development trend and tendency in the field of education in a context

> of globalization. […] The quasi-experimental function, or termed as "searching for the universal", include the generation, test and specification of general theories and hypothesis.

Some basic descriptions and explanations of the curricula of pre-vocational education in both countries would be necessary for this study, but they won't be the main research concern in this study because on the one hand it is almost impossible to cover each aspect of the pre-vocational education in the two countries in an all-embracing way, on the other hand a more systematic and in-depth investigation is intended here. This study is not aimed at an ameliorative function either, because due to some of the differences existing between the two education systems (cf. Sect. 2.1) a successful model in one country does not automatically mean the same success in another country. Because of the limits of time and resources (in the framework of a doctoral dissertation done mainly by one person) it is not very practical to carry out a quasi-experimental research which normally requires the attainment and analysis of huge amount of data.

From the argumentations above it is determined that this comparative study would serve for an **evolutionistic function**, that is to say, by investigating the curriculum plans and their implementations in a two country-context, namely Germany and China, this study attempts to look for the basic similarities and differences that exist in the curriculums in these two countries, thus gain a better understanding about the possible future developments in the field of pre-vocational education and also possibly learn some lessons from each other's measures in implementing and improving pre-vocational education (but not necessarily copying the model of each other into the already existing way).

Since the study mainly serves for an evolutionistic function, or put it another way, tries to finds out the development trend and tendency in pre-vocational education instead of just describing the differences and similarities in the two countries, a structural comparison that analyzes the curriculum and its implementation in a systematic way would be necessary. This means a **problem approach** in this particular research. Such a problem approach comparative study should begin with the identification and analysis of a concrete problem instead of collection of data without a purpose (Epstein 1990). And the structure, criteria and procedure of comparison depend mainly on the model and structure of **curriculum analysis**. After the systematic content analysis of the curriculum semi-structural **interviews** with the relevant teachers will be carried out with the aim of knowing the implementation level of the curriculum (for more detailed information on the selection and choice of methodology see corresponding parts in chapter three and four). The results of the teacher interviews, which reflect the degree and situation of realization of the

curriculum plans and regulations, as well as the relationship between the curriculum plan on the theoretical level and teaching-learning reality on the praxis level, will be explained, analyzed and interpreted.

1.3.4 Choice of Compared Body

There are some evident differences between the education systems in Germany and China.

The Chinese education programs at lower-secondary level is basically not differentiated. Most middle schools in the country offer somewhat similar curricula under a common national framework. Germany, however, has a differentiated education provision at lower-secondary level. Many of the states have the traditional three-structured Hauptschule, Realschule, and Gymnasium. Although they all prepare pupils for the education at the upper-secondary level, their functions and roles have certain divergences. While the Chinese pupils in lower-secondary schools, the junior middle school have multiple choices and possibilities after leaving school, including attending academic high school, attending some form of vocational education and training, or joining the labor market, their German counterparts may have a more narrow choices for each type of school; the pupils in Hauptschule will probably enter vocational training or the transition systems which help them get into the vocational training programs, the pupils in Realschule are likely to go to vocational training directly either in the company or vocational schools, whereas the major choice for pupils in Gymnasium is to go to college (cf. Sect. 2.1.1) (cf. Autorengruppe Bildungsberichterstattung 2010, Part D).

A comparability difficulty arises naturally from this situation. In a way, no matter which type of school in Germany is chosen as the compared Chinese counterpart, it cannot thoroughly represent the overall characteristics of the German middle school system in the relevant field, be it the corresponding curriculum in Hauptschule, Realschule or Gynmasium. It cannot be 100 % comparable to the Chinese curriculum which is more uniformly arranged and designed.

Although it is impossible to eliminate this comparability problem completely due to systematic reasons, it can be reduced to a certain extent. As the Standing Conference of the Ministers of Education and Cultural Affairs in Germany put it, and also their English names suggest, the Hauptschule, or the secondary general school, provides pupils a basic general education at lower-secondary level, whereas the Realschule, namely the intermediate school, provides a more extensive general education and Gymnasium, the grammar school, an intensified one (Lohmar and Eckhardt 2010, p. 113). This research, as an initial attempt to compare pre-

vocational curricula between these two countries, will start from **a more basic level** in the German context, which means that it will compare the Chinese curriculum with the one takes place in Hauptschule, leaving more possibilities for future researches.

The author is aware that the status of the Hauptschule is an important topic of discussion in the German education policy as well as public debate while this research is being carried out. It is also known that the future fate of this school form is not certain (cf. Mönch 2011). But the Hauptschule remains the object of this research for two reasons: on the one hand some preliminary research work has been done and the change of topic could lead to loss of time and resources; on the other hand the Hauptschule still serves as a good objective of academic comparable study despite its uncertain fates because the comparison can still be meaningful and brings interesting insights to our understanding of the education systems and the curricula embedded in it.

The structure of the following parts of this dissertation is hence as followed:

In Chap. 2, the institutional and historical context of the pre-vocational curricula in both countries will be described briefly, serving as a framework and background to understand the middle school curricula in both countries as well as the pre-vocational curricula. The description is **not all-embracing, but mainly covers the aspects relevant** to the curriculum analysis and teacher interviews as well as the interpretation of them. The institutional settings of the two countries, which mainly include important features of the education systems and the overall curriculum arrangements of the corresponding schools, will be introduced first. Afterwards the historical development of the pre-vocational education in each country will be described. In both the institutional contexts and the historical developments the situations in the two countries will be dealt independently, with a simple comparison and summary in the end of each part.

In Chap. 3, the forms and contents of pre-vocational education in different countries worldwide will be briefly presented, serving to offer an international context of the curriculum. On the basis of this international profile of the curriculum, a curriculum analysis theory will be then selected, developed/adjusted and described, from which the concrete comparison criteria are deduced. Using the method of content analysis, the curricula in the selected regions in both countries will be analyzed according to the criteria developed. Results will be presented and briefly compared among the regions.

In Chap. 4, methods for teaching reality are selected and developed. Structure and questions for teacher interviews are designed based on analysis of the curriculum implementation theory in the framework of this investigation. Processes and results of teacher interviews are then presented and analyzed.

In Chap. 5, results gained in the previous stages, namely results of curriculum analysis in Chap. 3 and results of teacher interviews in Chap. 4 will be compared. Analysis and interpretations will be carried out using sociological and hermeneutic approaches. Implications for curriculum design, implementation as well as further researches can then be drawn from the analysis.

The Institutional and Historical Context 2

In this chapter, education systems in China and Germany would be described briefly and then compared. Due to the fact that there has been enormous amount of reports, studies and investigations on the education system in both countries, this chapter does not offer all-embracing, comprehensive information on it. Instead, all the information outlined and narrated here will serve the overall objective of this research project. It is intended that, through some basic descriptions and comparisons, the readers who are not very familiar with one or both of the systems could learn the basic features of the system(s), and are therefore better prepared for the discussions in a more specific domain later on. Meanwhile, the descriptions and comparisons here should function as a foundation for the curriculum comparison, by emphasizing the aspects in the education systems which have the most significant influence on the curriculum and its implementation.

To reach the objectives mentioned above, this chapter endeavors to cover the following aspects:

- The general characteristics of lower-secondary education, its relation with the other parts of education system, especially the elements that are different between Germany and China.
- The historical development of pre-vocational education in Germany and China and the current forms of it in both context

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2.1 Description and Comparison of Education System in Germany and China

2.1.1 Education System Germany

The education system in the Federal Republic of Germany is divided into pre-school education, primary education, secondary education, tertiary education and continuing education (Lohmar and Eckhardt 2010, p. 36). Pre-school education is provided mainly by kindergarten for children from a few months to 6 years. All children reach the age of six, they are obliged to attend primary school. The elementary school, namely the Grundschule covers grades 1–4 in some states and in some 1–6 (ibid., p. 36). Since the lower secondary schools are differentiated, the pupils and their parents have to make decisions on which schools type they will enter after finishing primary education. The main reference point for this is the vote of the school which the pupil is leaving is taken. Detailed consultations with parents are carried out and the final decision is taken either by the parents or the school or school supervisory authority. The state/Länder have various regulations concerning this transition from primary to secondary education (ibid., p. 36).

2.1.1.1 The Transition from Primary Education to Lower-secondary Education

For the determination of the kind of lower-secondary school that a pupil will visit normally a certain institutional requirements together with the will of the parents are the main influencing factors (Klieme 2008, p. 62).

The German secondary education is characterized by its division into the various educational paths. The differentiated school types, namely Hauptschule, Realschule, Gymnasium and Gesamtschule, have their respective leaving certificates and qualifications. There are some other forms of schools in different states such as Mittelschule and Sekundarschule. But the Hauptschule, Realschule, Gymnasium and Gesamtschule four types are most fundamental and common ones (Lohmar and Eckhardt 2010, p. 112).

All courses in lower secondary education are of general nature, namely that they all prepare pupils for courses of education at upper secondary level. Despite their predominant nature as general education institute, some differences exist among the school types. The Hauptschule offers pupils with a basic general education, and the Realschule a more extensive general education, and Gymnasium an intensified general education (ibid., pp. 111–113).

More concretely, the three school forms differ from each other in four aspects: entry requirements, standards of the education content, duration and leaving certificate (cf. Holfelder and Holzwarth 1976).

In the 1970s there were attempts to abolish this differentiated structure of lower-secondary school in the political discussion, but the conservative parties won this "school war" against the social democratic parties, and instead of integrating the three types of school into one uniform school form, a new type of school, the Gesamtschule which combines the three forms of school was created and added to the existing school structure (Bosch 2009, p. 49).

Although the basic structure remains the same, the distribution of pupils among the different types of lower secondary schools has changed over time. From 1992 to 2008, the percentage of pupils who go to Gymnasium has increased from 31.2 % to 36.1 %, the percentage of pupils who choose Hauptschule has on the contrary decreased during the period from 26.0 % to 20.4 %, whereas the ratio of pupils who attend Realshule has grown slightly from 25.9 % to 27.9 %, and the percentage of pupils who choose other education pathways remains below 10 % (Autorengruppe Bildungsberichterstattung 2010, p. 62). This development in the past two decades or even longer time is not only the results of demographic changes, but also reflects the change of situations of different types of schools (ibid., p. 63). It is the development of perspectives on labor market together with educational chances that determine the choices of pupils and their parents.

2.1.1.2 Perspectives for Pupils in Three Types of General Secondary Schools

At the end of grade 9 or 10 of the general education pupils either attend the general upper secondary education, or go in vocational training, in exceptional cases, go directly into the labor market, depending on the qualifications they obtained (ibid., p. 66). Some pupils first go into the transition system before attending vocational training in the company.

Normally as long as pupils reach a certain standard required by the corresponding education institutes they will obtain a certificate which allows him/her the admission for certain level of education or training. Different certificates can lead the pupils into different levels and branches of the education institute or training body.

Pupils who have finished the lower-secondary part of Gymnasium, at grade 9 or 10, depending on the state, however do not get a leaving certificate but rather a qualification to enter the Gymnasium higher level. Pupils who have finished 9 years of schooling, regardless of state and school type, can have a first general education qualification, the Hauptschulabschluss, namely the leaving certificate for Hauptschule; this certificate enables a pupil's admission to vocational training in the dual vocational training system, and under specific conditions, admission to some full-time vocational school (Berufsfachschulen). At the end of 10th grade a pupil can obtain a Realschulabschluss, the leaving certificate for Realschule, also referred to as the Mittlerer Schulabschluss (the intermediate certificate), which al-

lows pupils to attend courses at upper-secondary education, e.g. at the vocational high schools such as Berufsfachschulen and Fachoberschule, it also qualifies them for admission to dual vocational training (Lohmar and Eckhardt 2010, p. 136).

2.1.1.3 Status of Hauptschule and Perspectives for Pupils in Hauptschule after Graduation

The status of Hauptschule has been the topic of education debate since 1960s. It was argued, whether the Hauptschule should deliver a "popular and folksy" (volkstümlich) education, which means a knowledge-oriented education, namely whether education at Hauptschule should be more practical and life-situation-relevant or deliver more subject knowledge (Hansel 2000, p. 4).

With the negative public image of Hauptschule, as mentioned above, a decreasing amount of pupils chose to study in the Hauptschule on the federal level; nationwide one in five of this type of schools are working in a problematic learning context, the students there are characterized as having low social status with very often have learning difficulties and behavior problems (Klieme 2008, p. 62). Factors such as poverty, the low status of parents' vocation, immigrant background are positively correlated with visiting Hauptschule (Groh-Samberg 2009, pp. 268–269).

The pupils graduated from Hauptschule used to be the main source of the trainees in the dual training system, but their situations have deteriorated over the years. In the 1950s the trainees in the dual system come predominantly from the 8-year Volkschule, which was the predecessor of the Hautpschule but includes elementary school, so the graduates from different school forms do not compete with each other (Bosch 2009, p. 49). Nowadays with the education expansion about 22.5 % of the graduates from the Gymnasium also attempt to get in the dual vocational training system (BMBF 2007, p. 59). In the competition with the graduates from Gymnasium and Realschule the Hauptschule pupils on training positions could only exhibit a few advantages, such as higher interests in practical activities, realistic expectations on salary and career as well as less inclination to shift to other companies or university study after the training; but the most companies actually favor graduates from Gymnasium and Realschule because of their broader knowledge basis; the Hauptschule graduate have become the loser in this competition, even some of them have good performance at schools, their chances on the labor market are still low (Bosch 2009, pp. 50–51).

Six months after leaving the general education system, about one fourth of the overall school leavers attend a vocational training in an enterprise, another one fourth attend full-time vocational schooling and another fourth are in the transition system; among those who are in the transition system, the largest group is the pupils from the Hauptschule, who are also the most disadvantageous group:

with or without a Hauptschulabschluss (leaving certificate for Hauptschule), only one third of them manage to obtain a fully qualifying training position within 18 months. The rate goes up to 50 % after 30 months after leaving school. Three quarters of all youths are in a fully qualifying training scheme 30 months after leaving school, while the rate is 60 % for youths with the Hauptschule background. Despite the fact that several measures are utilized to assist them, pupils with and without the Hauptschule certificate are significantly less successful in the education system (Authoring Group Educational Reporting 2008, pp. 16–17).

Even though the pupils of Hauptschule is in a disadvantageous position in the education system, they could still expect a good future perspective, but the precondition is that they can find a training position in the German vocational training system.

The German vocational training system, especially the company training part of it, often referred to as the "dual training", has enjoyed international reputation since decades (cf. Hamilton and Lempert 1996; Qiu 2009). Domestically, despite numerous debates about the possible reforms and developments of the dual system, it offers various benefits for the participated companies, individuals as well as the society as a whole in different ways (Berger and Pilz 2009). As the OECD put it, VET "is deeply embedded and widely respected in German society. The system offers qualifications in a broad spectrum of professions and flexibly adapts to the changing needs of the labor market" (Hoeckel and Schwartz 2010, p. Summary-5).

From an economic point of view, although general the people with a university degree has a higher income compared to one with a vocational qualification; but when taken into considerations the earnings during the education periods, the risks of unemployment, and the taxes given, a vocational training may even bring a higher education return than the university education (cf. Anger et al. 2010).

Here it can be seen, that despite with somehow lower social status and prestige, VET is considered in Germany "an alternative to an academic career" (Laske 2001, p. 12). Young pupils who find themselves not very competitive in the academic domain can choose first attend some form of vocational training and find a job that could still bring them dignity and acceptable life standards. For the pupils in Hauptschule, although their chances of attending higher education is low, they don't have to strive for that "royal road" (in German: der Königsweg) and they could still have a good perspective for their future career and life as long as they can make attend and finish the vocational training and. Hence one of the major aims and motivations of learning in the Hauptschule is to find a training position after graduation.

2.1.1.4 Immigration Issue in the Hauptschule

Pupils' ethnic background has a significant influence on the school types they choose as well as their chance of success in schooling and finding vocational

training places. In 2006 only 22 % of the pupils at age 15 with a migration background are in the Gymnasium, whereas the quote of the pupils without migration background is 37 %; on the contrary, 36 % of the pupils with migration background and 16 % of the pupils without migration background study in the Hauptschule (Autorengruppe Bildungsberichterstattung 2010, p. 65). By the end of the lower-secondary schooling the pupils with a migration background are much more likely to have a Hauptschule leaving certificate or no certificate at all, compared to those without migration background (ibid., p. 92). Surveys show that the pupils are also disadvantageous at other stages of the school system and have a postponed and less successful transitions to vocational education (Authoring Group Educational Reporting 2008, p. 19).

The relatively high rate of pupils with migration background in the Hauptschule, particularly in certain areas in West Germany, due to a potentially weaker ability in reading, writing and understanding of these pupils, has some influences on the way of teaching and classes are organized.

2.1.1.5 Education Provision at Hauptschule

The requirements on performance for entering Hauptschule are lower than that of Realschule and Gymniasium; although the subjects and the periods of each subject are not much different among the three school types, the way of differentiation, depth of the content and the setting of priorities differ considerably from each other; the duration at Hauptschule is normally one year less compared to that of Realschule; although with the certificate of graduating Hauptschule one can enter dual vocational training or fulltime vocational school, many have to visit this *prevocational training year*(Berufsvorbereitungsjahr) first (Kouli 2003, p. 243).

2.1.1.6 Education Spending

In Germany the education spending is integrated into the budget for education, research and science; in 2007 the proportion of education spending in GDP is 6.1 %, is less when compared to 6.8 % in 1995 (2010, p. 30). However the spending on each pupil has increased to 5,000 € in 2007, from 430 € in 1995 (2010, p. 32).

Education spending vary among states as well as school types. In 2007 the average spending on each pupil in the general education sector is 5,400 €, that of Baden-Württemberg 5,400 € and Nordrhein-Westfalen 4,900 ; the spending on Hauptschule is nationwide 6,000 € and Baden-Württemberg and Nordrhein-Westfalen correspondingly 6,000 € and 5,600 € (Statisches Bundesamt 2010).

2.1.2 Education System in China

2.1.2.1 Brief Introduction to the Chinese Imperial Examination System

Before describing the features of the current Chinese education system, the main features of the ancient Chinese Imperial Examination system, which shaped the Chinese education and learning before its modernization most significantly, is briefly described. This historical background will be helpful to understand the possible influences the thousand-year tradition may have on the current education system and the way people behave in this system.

The Imperial Examination system, or the civil service examination system was an examination system designed to select the administrative officials for the state's bureaucracy which was initiated in 605 A.D. during Sui dynasty and abolished in 1905, a few years before the end of imperial China. Before this system existed, the officials are selected mainly through recommendations from local officials and interviews by the emperor himself or high-ranking officials. In the former case the recommendations became gradually based on relevant examination process; whereas in the latter case, due to its nature of pure subjectivity, nepotism and bribery became very common (Hou 2008).

The imperial examination system consisted of a pyramid structure of official selection which include tests in local, provincial and national levels (Hou 2008). The content of this exam is mainly the Confucius classics and the interpretations of them by other prestigious scholars. With its emphasis on "Confucian learning, literati prestige, state power and cultural practice", the imperial examination system became a "measurable arbiter of elite culture, politics, and society" (Elman 1991).

Despite the criticism on the imperial examination system from the elite class throughout the time it was in force (Weerdet 2006), the system has undeniable social functions. Baokun Zhang (2006) argues that the imperial examinations was a peaceful and relatively fair method for official selection which gradually became a wide accepted and recognized political ideology and formed a long-standing examination culture; it could meet the needs of China's feudal bureaucrats and is therefore used by the rulers to control and stabilize society. Tao and Lin (2007) argues that the imperial examinations during early Qing dynasty has improved the class mobility between the dual structure of officials and working classes. Yi Zhang (2006) argues that the imperial examination system, through the reinforcement of Confucianism as the ideology and offering a channel for circulation of the elite class and therefore balancing the psychological feelings in different social classes, "played a supporting role in strengthening the function of the state and making the feudal system sacred".

For each individuals, to work hard, to be successful in the imperial examinations and therefore to become an official is the ultimate goal, instead of learning to get to know more about the world. The government on the other hand is also more interested in organizing and codifying examination competitions than in establishing schools and training teachers (Elman 1991, p. 11).

The forms of imperial examinations, of which the typical form is called "eight-legged Essay" or "Baguwen", became extremely rigid in the late imperial (Ming and Qing dynasty, from 1368 to 1911). The source and form of title, the structure and components of the main body of the article, etc. are all regulated and fixed.

With the publication of an education law in the empire sense, the modern school system was first adopted nationwide in China in 1904, a year before the abandonment of the Imperial Examination System which had existed for about 1,000 years (You 2004). Under this new law a set of regulations were established concerning the education administration, curriculum, exams, teacher training, etc.; this changed the traditional situation in Chinese education, namely "education without regulation, school without system" (Liu 2004). The new education system took the Japanese education system at that time as the blueprint, thus included three levels of school, namely primary level, middle level and higher level. In 1912, after the establishment of the Republic of China, another new education system was applied, but the basic education structure and form it took was the same as the one applied eight years ago (Zuo 2002).

After the establishment of the People's Republic of China, some major education reforms were carried out but the basic education system remained the same as it was during the Nationalism rule. Therefore, in terms of the basic structure and form, the current education system is mainly a continuation and inheriting of the school system since about a century ago.

2.1.2.2 Structure and Main Features of the Education System

The current Chinese education system is composed of three parts: basic education, higher education, and adult education. Basic education includes pre-school education, primary education which normally lasts 6 years, and regular secondary education, which is divided into academic secondary education and vocational/technical secondary education, each of which lasts 3 years (CERNET 2004). Some provinces have a 5-year primary school and 4-year junior middle school, but the contents taught are basically the same as the 6 year-three year system. The secondary education consists of lower-secondary education, the majority of which is general academic education (in the form of junior middle school), and higher-secondary education, which contain both general education as well as vocational and technical education.

According to the Education Law of the People's Republic of China (Eighth National People's Congress 1995, Article 18) the country adopts a 9-year compulsory education system, which includes the primary school and junior middle school.

Children normally attend primary school at age between 6 and 8. Nationwide 99.4 % of the children at school age attend school, the rate for boys and girls are 99.36 % and 99.44 %, respectively, (MOE 2010a). The overall number of pupils at primary school in China in 2009 is altogether 100,714,700, whereas the number of teachers is 5,633,400 making the student-teacher ratio 17.88:1 (MOE 2010a).

Ninety-nine percent of the primary school graduates attend middle school, the number of which account for about 5,630,000. Among these schools, the absolute majority is general junior middle school; nationwide there are about 200 vocational junior middle school. The number of teachers and students at junior middle school are 3,518,000 and 54,409,400 correspondingly, with the student-teacher ratio 15.47:1. Among all the junior middle schools, about 59.87 % and 73.14 % of the schools have music and natural science equipments (MOE 2010a).

In Hubei province in 2008, the average number of pupils per school is 1109, among all the middle school graduates, 45.7 % attend general senior middle school (Hubei Provincial Department of Education 2009). In Shanghai in 2008, about 105,800 pupils graduated from junior middle school, 55.39 % of them attend general senior middle school (Shanghai Education Committee 2009).

After graduating from junior middle school, it is not compulsory anymore for the pupils to keep staying in the education system. They either join the one of the two branches of higher secondary education (general and vocational), or they can enter the labor market directly.

In 2009 nationwide some 17,977,000 youths graduated from junior middle school; 14.40 % of them do not continue their education, they either go to the labor market directly or become jobless; 46.19 % of them attend the general senior middle school and 38.81 % attend various forms of vocational higher secondary school.

Basically the admission to higher secondary education is not dependent on students' performance in the entrance examinations, so one can decide for his/her own whether to continue education or not. Most of the people therefore make their decisions based on their future perspectives and financial situations. Thus one can choose to continue general education as long as they are willing to pay the tuition fees for that.

However due to the regional and intrapronvincial differences in education financing etc. the chances of attending higher education differ from school to school (Lin et al. 2009; Cheng 2009). In order to get in those limited number of high schools with good human and material resources one has to perform well in the entrance examinations to senior middle school.

For those who continue to choose general education pathway the disciplines that were taught in junior middle school as well as the examination subjects for the college entrance examinations remain largely similar. Chinese, mathematics and foreign language (mainly English) are the subjects that everyone has to take if they want to attend higher education. One needs to choose a direction of the entrance examinations, either natural science, which includes physics, chemistry, biology, etc., or social science and humanity, containing politics, history, geography, etc. The concrete forms of the examinations vary from time to time and also from province to province, but the basic structure and contents remain similar. Normally most of the schools will spend the last 2 years of teaching focusing on preparing for the college entrance examinations.

With the great expansion of higher education since late 1990s, the number of newly registered undergraduates in regular higher education institute increased from 2,206,100 in 2000 to 6,394,900 in 2009, thus it is no longer very difficult to get in colleges in recent years anymore (MOE 2010b). Among the 8,360,600 senior middle school graduates in 2008, about 67.07 % chose to attended higher education, the rest either went to labor market directly or joined some form of vocational training (MOE 2009).

For those who attend vocational high schools, finding a job is their main choices after graduation, therefore practical and labor market relevant skills is of critical importance to them. In 2008, over 95 % of the graduates from the higher secondary vocational education institutes either get employed or continued their education; among them, some 79.38 % get employed in private and public sectors, 10.42 % are self-employed and 10.20 % continue to study in a higher level of education (Wang 2009).

2.1.2.3 Arrangements of Curricula in Junior Middle School

The courses offered in junior middle school include politics, Chinese, Mathematics, English (or some other foreign language), science (including physics, chemistry and biology), history, geography, health and sports, art (or music, painting).

From the 7th to 9th grade, among the overall 36 or 37 teaching hours per week, Chinese takes 6, mathematics takes 5, English takes 4, history and geography both takes 2 or 3, physics and chemistry takes 3 or 2, biology takes 2 or 3, politics and LTC both takes 2, art takes 2, and the rest of the teaching hours are distributed to various non-subject programs or used as flexible learning hours.

Normally the main examination subjects in the entrance test for general senior middle school are Chinese, math, English, physics, chemistry and sports, the performance in physics and chemistry experiments and students' behavior at schools are also taken into account.

2.1.2.4 Perspectives for Middle School Graduates

As mentioned above a junior middle school student will have three future possibilities after graduating, namely attending general senior middle school, attending vocational high school or entering the labor market directly.

But these three directions will take the youths to future possibilities of great differences. Parents and pupils normally already have preferences among these choices and therefore their expectations on the performance of the pupils are also almost fixed the first day they enter the school.

Despite the lack of statistics and investigations on the vocational chances and developments of those who entered labor market directly after leaving junior middle school, information concerning the numerous amounts of company recruitments in China indicates that major vocational opportunities for these school leavers are occupations requiring very low skills and simple repetitive manual work in the manufacturing and service business. Their salaries are generally lower than those who work as skilled workers in various branches of the economy where a vocational training is necessary and much lower than those who work as engineers, technicians, doctors and other professionals for whom a university degree is the prerequisite.

Meanwhile several researches on education return in China have shown that:

1. Although education return in China was relatively low in the 1980s, it has increased when China moved from socialism plan economy to a more market-oriented economy (Li 2003; Hung 2008).
2. Despite disparities across provinces and regions, education has a significantly positive impact on the monthly income of the residents in rural areas in inland China in the 1990s (Wei et al. 1999).
3. The educated people have significant income superiority in China, particularly the higher education can raise the earnings in a market economy situation (Chen and Min 2001).
4. Inspired by the high returns of higher education, pupils at senior high school in the regions where the economy is strongly market-oriented also aspire for a higher education (Hung et al. 2000).

Although there has been some new developments since late 1990s, namely that due to the dramatic increase in number of university students, the earnings and vocational chances of the university graduates have relatively decreased (compared to other groups of newly employed) since then, the pressure and aspiration for higher level of education still exist because substantial disparity in terms of career chances and income still exist among the universities and majors students choose (cf. MOE 2010b; Mycos consulting 2010).

Besides the fact that higher level of education can bring economic benefits to the individuals and the families, the cultural tradition and the historical legacy can also affect people's educational decisions in a way that increase the wishes and demands of Chinese people for higher level of education. As mentioned above, the imperial examination system which lasted over a thousand years long has had powerful and lasting influence on the perceptions of Chinese people on education in general. Inspired and motivated by both the Confucius ideas on education as well as the opportunities offered by the imperial exams, the Chinese people believe in the value of learning, hard-working and becoming literate and educated, and through this learning they can have a chance of moving upward in the social hierarchy.

Due to the evident high return of education as well as the cultural tradition which attaches high value and social status to education, parents also have clear expectations for their children, namely that they should go to university and become "well-educated", attending vocational training and become a skilled worker is generally regarded as an inferior choice. The performance on the tests, which almost solely determines the chance of attending higher level of education, therefore become the crucial arbiter of success for the pupils. The one-child policy, which allows the most family to have only one child, reinforces the high expectations of the parents on their only child. With only one son or daughter to depend upon and his/her overwhelming importance and obligation to family, Chinese parents are hyper keen to equip their child with the best possible education for future earning power. A survey carried out in Beijing, Shanghai and Guangdong, the economically most developed regions in China shows that 86.8 % of the parents in these regions expect their children to attend general higher education, whereas only 7.2 % of the parents are satisfactory with a vocational high school or college degree for their kids (Institute of Social Science Survey Peking University 2010).

The evident education return, together with the expectations from parents presents a very clear requirements on the role of junior middle school and therefore form an indirect influence on the curricula. They expect, among other things, the curricula in the junior middle school to prepare their children for the entrance examination for the next level of education institutes, namely senior middle school, so that the children can succeed in competing for the admission to a good high school, the feature of which is of course still the preparation for next level of education. To meet this social demand and fulfill these expectations from the parents, most of the junior middle schools in China logically devote most of their human and material resources to the teaching of the examination disciplines, so that pupils in their school can perform well in the examinations and the schools can obtain its status, prestige and popularity among the parents.

As a consequence, the teachers as well as the pupils inside school strive hard to work on the examination subjects, to improve pupils' competencies in them. This

almost overwhelming emphasis on the examination subjects can be well reflected in the performance of the pupils in Shanghai in the 2009 PISA studies. The pupils in Shanghai outperformed the OECD average level a significant margin in literacy, mathematics, and natural sciences, which are exactly some of the major subjects in entrance examinations for senior high school (OECD 2010, p. 50, 131, 149).

2.1.2.5 Education Spending

In 2009 the proportion of education spending in Chinese GDP is 3.59 %.

Education spending vary among according to provinces and level and type of education. In 2009 the average spending on each pupil, including the personnel spending (teachers' salaries, scholarship for students), is at the lower-secondary school 4331.62 rmb yuan (the exchange rate between euro and rmb yuan varied normally between 8.5 and 9.5 in 2010, and rmb yuan will later be refered to as yuan). The spending, when not taking this personnel cost into account, is 1161.98 ¥ per student; in Shanghai, this number is 4495.26 ¥, an increase of 14.80 % compared to 2008; in Hubei province, this number is 1121.94 ¥, experienced an increase of 40.11 % compared to 2008 (Hubei province is not the province with the lowest spending per student, which is 627 ¥ in 2009) (National Bureau of Statistics of China 2010).

2.1.3 Comparison of the Institutional Settings

After outlining the basic institutional settings of pre-vocational education in both countries, some basic comparison can be of great value, particularly for the analysis and interpretations of the findings in the chapters that follow.

In general the current Chinese and German education system share a lot in common. Both systems has the form of a modern education system with clear division of primary, secondary, higher and continuing education, with some slight differences in terms of period. Both systems also have a rather clear separation of general and vocational education pathways. The admission rates in compulsory education, including in lower secondary schooling are high in both countries and therefore the vast majority of the young people have the opportunity to attend the lower-secondary school. The pupils in both countries have to learn their mother language, mathematics, a foreign language (English plays a significant part in both countries, and even more so in China), some disciplines in natural sciences as well as humanity or social studies/sciences, art and sport have a position in both of the curriculum plans.

Some obvious differences can also be observed. The forms of vocational education during higher-secondary level in Germany include both company training as

well as school-based vocational education, whereas in China the over-whelming main stream is the school-based vocational education.

Meanwhile, in the German education system pupils are already divided into different education pathways during lower-secondary school, with the chance of attending certain type of upper-secondary school largely different; whilst in China most pupils attend a same type of junior middle school during lower-secondary education and are first allocated after the end of nine-year compulsory school.

This crucial structural difference leads to such a consequence, that while the Chinese junior middle school students have to choose after graduating among three different options (vocational education, general education, work), their counterparts in the Hauptschule Germany basically need to strive for a vocational training position in the dual training system or other forms of vocational education; due to education returns and cultural influences the Chinese students strive to prepare for and perform well in the entrance examinations for next education level, whereas the German pupils in Hauptschule have the main objective of attending vocational training in the dual system or in a vocational school; although in order to enter the dual vocational training a pupil also needs to participate in some form of test, this test does not define the very justification of the entire lower secondary education in Germany. This fundamental disparity between the two countries has a substantial impact on the pattern of pedagogic decisions made by the teachers, the value schools and teachers attach to the different disciplines, the learning behavior of the pupils and the curriculum implementation in different subjects.

Evident differences also exist on the education spending and therefore the financial situations of the schools in the two systems. As mentioned above, in 2009 the average spending on each pupil in China, including and without the personnel spending are the 4331.62 ¥ and 1161.98 ¥ respectively, whereas the education spending on each pupil in Germany is 5,000 € on average. Even the education spending per pupil in the economically most advanced region Shanghai is much lower than that of Germany.

The financial conditions, even when taken into account the aspect of different buying powers of the currency in each country, vary greatly from Germany to China. German schools in general have a better availability to educational resources than the Chinese schools. Inside China, as the data demonstrates, the education spending without the personnel costs on each pupil in Shanghai is about four times of that in Hubei, the difference is also considerable. This is undoubtedly having some effects on the education realities in the investigated regions.

2.2 Historical Development of Pre-vocational Education in Germany and China

2.2.1 Historical Development of Pre-vocational Education in Germany

2.2.1.1 Historical Legacy

The "Arbeitslehre" (teaching of work) or "ökonomische Bildung" (economic education) in the current Germany system middle schools had its root deep in the history of German cultural and educational tradition.

The ancestor of the German elementary school (Volksschule) in the fourteenth century, the deutsche Schule (literally means the German school) had a "utilitarian-vocational spirit" which is reflected in the fact that the teaching of reading, writing and calculating all serves primarily for the preparation of a vocation (Spranger 1949, p. 14).

In the seventeenth century there were already work school and manufacturing houses where the young people get some form of work oriented elementary classes; by the end of eighteenth century and beginning of nineteenth century the traditional elementary schools are replaced in entire Germany by the industry schools, which prepare the young people as future labors (Dedering 2004, p. 25).

At the beginning of twentieth century in the work schools founded by Georg Kerschensteiner the education of work is realized through the "vocation preparation workshop classes", which help the pupils to apprehend the manual vocations and the vocations that "service the whole" (ibid., p. 26).

The efforts of the industry school and work school, which aimed at a holistic think-feel-will-action all-inclusive general education and at the same time justify the necessity of introduction to the world of work, were however interrupted during the national-socialism period and the World War II and only led to the groundwork of teaching of work (Arbeitslehre) in the 1950s, after the massive criticism of the economy on the functionality of school (Kupser 1986, pp. 42–43).

2.2.1.2 Genesis of Pre-vocational Education in Post-war Germany

After the Second World War, because of the big problem the transition of young people from school to work which was due to the lack of training and working places, the necessity of some form of vocational orientation was realised in West Germany during the middle 1950s (Dedering 2002). At that time the status of the pre-vocational education was working class preparation for apprenticeships and is primarily restricted to the Hauptschule (Marshall 1991).

Although the education system in the Federal Republic of Germany needed to be reformed, this reform did not take place immediately because the Federal governmental organization which coordinate nationwide implementation of educational policy was absent and, due to the large reserves of unemployed populations and the continuing influx of highly qualified refugees from East Germany there was no emergent demand for qualified workers on the education yet (ibid.). However with the foundation of Standing Conference of Ministers of Education and Cultural Affairs (Standige Konferenz der Kultusminister der Lander in der Bundesrepublik Deutschland, or KMK, later referred to as KMK), the first obstacles for education reform were overcome (ibid.).

In 1950s der Deutsche Ausschuß für das Erziehungs- und Bildungswesen regarded the essential function of Arbeitslehre is the adaptation of students to the demand of economy together with the preparation of the students to enter the modern world of work (Ziefuß 1996, p. 103).

Later on, the changing demand of the working world requires the students to have a wide and flexible vocational view and the elementary and vocational school at that time could not meet this demand (Dedering 2000, p. 2). In consideration of the gap between the education system and the employment system many scholars in early 1960s took part in a big discussion about the "education catastrophe"; some proposed the idea of work-oriented education which always acted as a part in the German education history (Dedering 2000, p. 3).

In 1964, partly as the result of many scientific discussions about the issue in the past few years, the Deutsche Ausschuß für das Erziehungs- und Bildungswesen, a consultative committee of education experts set up by the Federal Government in 1953, issued a recommendation concerning the build-up of Hauptschule. This is regarded as "the birthday of Arbeitslehre in West Germany" (Bönkost 1995, p. 63). Some of the following general goals are contained in this document:

- Promotion of technological understanding
- Attainment of working virtue
- Understanding and acceptance of work division and cooperation as inherent economic/technical interest
- Comprehension of moral obligation, adapt oneself to the economic/technical structure
- Facilitating the vocational choices
- Preparation for "manual and technical job" through timely expansion of practical work (Ziefuß 1996, p. 103)

> The objective of Arbeitslehre is not something like "vocational qualification", which is only available after the vocational training program, but rather an education of "head,

> heart and hand", in which modern technique and economy and its practical requirements are combined, which have an impact in an educationally responsible way. … Arbeitslehre could not be seen as an education for special jobs…. (Bönkost 1995, p. 64, original in German, translated by the author of this dissertation)

From the recommendation a few key points could be seen, as Dedering (2000, p. 7) put it, Arbeitslehre is pre-vocational education and not vocational training. By making the students familiar with the main feature of working and production method, Arbeitslehre offers a general foundation for work in production and service industry. Arbeitslehre is an independent course and should be so organised as uniting the manual, intellectual and characteristic education of work in a situation similar to the production condition. Arbeitslehre could be held in workshop, as normal class teaching, in form of business investigation and in industrial placement. Arbeitslehre is for all boys and girls (Dedering 2000, p. 7).

Due to the reason that after the Reunification of West and East Germany in 1990, the previous teacher training in the field of pre-vocational education in East Germany has oriented strongly towards the measures which was taken by the Laender in West Germany, the introduction of the development and historical context is focussed on that of West Germany (Bönkost 1995, p. 63).

2.2.1.3 Development Emphasises of Arbeitslehre

In the middle 1960s the basic commission and role of Arbeitslehre was still discussed, people still have very different views concerning what defines Arbeitslehre and which major contents Arbeitslehre includes (Dedering 2000, pp. 10–11).

In KMK's recommendations in 1969 for Arbeitslehre in Hauptschule, the objectives are described as:

> to impart insights, knowledge and abilities in the technical, economic and socio-political sectors which constitute essential elements in the basic education of every citizen; to provide new impulses for co-operation;
>
> to provide assistance in choosing an occupational area and preparation for choosing an occupation, but not to provide vocational training itself. (KMK 1969; Quoted from the original text, but using the translation by Marshall 1991)

According to this recommendation Arbeitslehre consists of three parts: a general orientation on the industrial and working world; the development of "work habits"; choosing an occupation (KMK 1969).

By and large, programmes of Arbeitslehre in the late 1960s and early 1970s was not conceived just as a training programme for employment, not as a preparation for working life, but as a form of general education (Allgemeinbildung) and

practical learning, which proponents believed to be an essential part of the students' secondary education (Marshall 1991).

In 1978 the society for work-technique-economy in school (die Gesellschaft für Arbeit-Technik-Wirtschaft, or GATWU) is founded (Bönkost 1995, p. 75). The society organise all the Arbeitslehre teachers and students in middle school and college who are interested in the virtual and theoretical developments of Arbeitslehre.

Parallel to the theoretical efforts, the curriculum plan of *Arbeitslehre are also overworked, which took place in most states in the early and middle 1980s, the other states, like* Bremen, Hamburg and Hessen followed this trend in the 1990s (Dedering 2002).

Since 1980s with the problems and phenomena of unemployment and new technology etc. as well as the search for solutions of these problems rose in the public awareness, implementing the preparation for the world of work also gained special value in the context of modern general education; the efforts to further develop the teaching of work (Arbeitslehre) are also reflected in the discussion of a "new general education" (Dedering 2000, p. 15).

2.2.1.4 Discussions on the Education Policy Level

In the education policy discussions different interest groups also participated and took their positions. Because of their political importance and their direct influence on the companies the labor unions and the employer associations have the ability to promote and stabilize this new learning field of pre-vocational education (ibid., p. 62).

In the Positionspapier for teaching of work 1979 by German Confederation of Trade Unions (der Deutsche Gewerkschaftsbund, later referred to as DGB) (DGB 1981, p. 19), the DGB included a concept of teaching of work for the interests of the employee; the pedagogic principles of uniformity, relatedness to subject knowledge and reality relevance should be followed. The purpose of the teaching of work should be, according to DGB (ibid., p. 20):

> It should qualify the pupils for vocational training as well as vocational and general further education;
> It should lead to a high quality standard job;
> It should advance ability in vocational choice; and
> It should clarify and explain the relationship among technology, economy, politics, and work and through this help to fulfill the demand for a humanization of the work (original in German, translated by the author of this dissertation into English).

For the Confederation of German Employer Organisations (Bundesvereinigung der Deutschen Arbeitgeberverbände later referred to as BDA) (BDA 1981, p. 29), by the introduction of the pupils into the world of economy, work, and vocation the concrete aim should be, to teach the pupils first knowledge and insights about the

operational and the macroeconomic facts, requirements, relationships and problems, to lead pupils to judgment and decision-making abilities, self-reliance, and responsible behavior in economic, vocational and social domains. From the employers' perspective the main concern of this course is to help the pupils handle with life situations in household, company and market (ibid., p. 30).

2.2.1.5 Ascertainment of the Status of Pre-vocational Education

In 1984 the KMK decides that, the recommendations about Arbeitslehre in 1969 be actualised and in entire lower secondary education applied (Bönkost 1995, p. 81).

KMK ascertained in 1993 in its decision that the introduction to the vocational and work world is a compulsory component for all education institution in lower-secondary education (KMK 2006, p. 9).

In 2001 KMK confirmed the economic education as an indispensible component of the general education which belongs to the task of the general education institute in Germany; it outlines three forms of this form of education, namely inside class, outside class as well as outside school. KMK supports cooperation and dialogue between school and economy. For KMK the economic education includes vocational guidance as well as subject or subjects-combination such as economics, teaching of work (Arbeitslehre), work-economy-technology, etc. (KMK 2008).

After 2000, different organizations keep showing interests in developing and maintaining the economic education and the teaching of work in lower-secondary schools. Not only KMK, which mainly represent the official position, but also some other actors in the economy as well as organizations, attach great importance to the economic education.

The Deutsches Aktieninstitut (2000), an association of German exchange-listed stock corporations and other companies and institutions with an interest in the capital market, mentioned in a memorandum to economic education that basic economic education in the frame of general education is necessary to understand the economic and social basis of human existence, that it is not about special vocational knowledge, but rather about the general basic knowledge for the understanding of vocational, economic and technical processes in the complex industry and information society.

The German Society for Economic Education (Deutsche Gesellschaft für ökonomische Bildung e.V.) (2004) argues that the economic education is essential for understanding the complexity and differentiation of reality domains and the modern life world.

Some scholars, such as Kaminski and his colleagues (Kaminski et al. 2008, p. 8), admitting economic education an important component of general education, however do not regard it as a form of pre-vocational education; for them economic education shall be identified as a necessary intellectual source not only for understanding, but also for the further development of market economic order.

However, the development of the pre-vocational education, of which the main form is the teaching of work, has not always been a story of success and progress. After many years after the introduction of the course, wrote Dedering (2000, p. 21) in 2000, that there's still no generalized and future-oriented theory and praxis of the teaching of work (Arbeitslehre) that is based on consensus, that big uncertainty still exists about the theoretical basis and possibility of practical implementation, that this course is still not immune from the ideologization and abuse in education policy. The relationship between work and general education in the history of German school system is not constant and setback, reorientation, and comeback always took place; the teaching of work is mainly restrained to a certain school form (Volksschule earlier, and currently Hauptschule) and differentiate strongly between theoretical and practical learning and prefer practical learning, in doing this it narrows the possibility of an overall personality development (Dedering 2004, p. 27).

2.2.1.6 Current Forms of Pre-vocational Curricula in Different States and School Types

Currently the pre-vocational education in Germany takes various forms and are embedded in different subjects and the positions of it vary from state to state. It can take place inside the classroom as an independent course or as a part of discipline-combination, it can also be carried out outside classroom in form of a school company or project, it can even be implemented outside school together with other partners; the most common subjects that relate to the pre-vocational education are Arbeitslehre (teaching of work), Wirtschaft (economy), Technik (technique/technology), Hauswirtschaft (household) etc. (Dedering 2000, pp. 55–58; KMK 2008).

2.2.2 Historical Development of Pre-vocational Education in China

Before the twentieth century, for about a thousand years the Chinese education system is characteristic of its exam system. As mentioned earlier, this exam system measures the participants' abilities in memorizing Confucius classics and writing literature and political comment articles according to certain rigid forms. It is through this hierarchy exam system the government officials are selected and recruited. Because of its content (Confucius classics) and its major function (as a political selecting system instead of a teaching institutions) hardly any elements of a pre-vocational education exist.

Since the founding of People's Republic China, the pre-vocational education in mainland China has experienced roughly four stages of development, each with its own specific features.

2.2.2.1 The Establishment of Pre-vocational Education in 1950s

Shortly after the founding of People's Republic China, because of the wars in the past decades, the economy of almost the entire country was in a very destructive situation. Meanwhile the education provision could not fully satisfy the educational needs of the public, so many graduates from junior middle school or even elementary school have to also participate in the economic reconstruction of the country and could not continue their education (Xu 2004). In 1954 the government released a "propaganda guidelines about the participation of graduates from elementary school and junior middle school in production and labor activities", advocating that "carrying out the propaganda activity that focuses on reinforcing the labor and technical course (LTC), in order to solve the thought problem of the students and their parents" (meaning that they may not be willing to participate in working in an early age) (Zhuo and Li 2000, p. 91). This could be regarded as the original cause of the so-called "labor and technical education".

In 1955 a delegation team consisting of the middle and elementary school teachers was sent to Soviet Union to learn the Soviet experiences in comprehensive technical education (Zhuo and Li 2000, p. 347). In September that year an "elementary school curriculum plan" was published by the education department, in which it is advocated that basic production technical education should be conducted and the labor education should be strengthened.

In 1958 the central committee of Chinese Communism Party (CCP) and the central government advocated the approach that "education should serve the proletariat politics, should be combined with production and labour". At the same year, the education department designated in "Notice about the middle school curriculum plan in education-year 1958–1959": a new discipline production labour should be added to every grade in senior and junior middle school, 2 h per week; each student should participate in manual labour 14–28 days a year (Zhuo and Li 2000, p. 348). With the implementation of this curriculum plan, the labour and technical curriculum has become a part of the formal education plan. It has since then established itself an official status in Chinese basic education.

2.2.2.2 The Politicization during 1960s and 1970s

In early 1960s, the policy that labour and technical education is carried out in basic education was well implemented. But later on, especially with the beginning of Cultural Revolution in 1966, it went into a different direction.

In May 1966, in a letter from Mao Zedong to Lin Biao he writes that

> The period of schooling should be shortened. Education should be revolutionized, and the domination of our schools by bourgeois intellectuals should by no means be allowed to continue… While their main task is to study, they should in addition to

> their studies, learn other things, that is, industrial work, farming and military affairs. They should also criticize the bourgeoisie.

This letter has come to be known as "the instructions of May 7th" (Morning Sun 2003) and had a huge influence on starting the Cultural Revolution.

In the same month, the leader of the "Great Cultural Revolution leading committee" Chen Boda totally devaluing the work done by the education system in the past 17 years as "capitalism education", the education policy started undergoing some major shifts, namely from the "capitalism education" to the wholly new socialism education.

One of the major policies during this stage is called as "opening door education". It conducts that all students should not only learn theoretical knowledge in school, but also participate themselves in labor and production activity.

In July 1968 Mao Zedong emphasized that school must continue but must be shortened, pupils and students should begin to labour and university students must be chosen from the experienced workers and peasants. In December that year, People's Daily publishes Mao Zedong's directives "Intellectual youth must go to the rural areas to receive re-education from the poor peasants". As a result, there was a wave of young people around the nation who left the cities and went down to the countryside. Overall the number of youth who "went down" was around 16 million.

To a certain degree the labour and technical education has become the major component of the education and most other parts have been neglected and devalued in this period. On the one hand the labour and technical education was given great emphasis and widely carried out; on the other hand, this strange phenomenon could not last very long and thus not sustainable. More critically, labour and technical education was so important, only because it served for the ideological purpose of the Cultural Revolution. The aim was not to improve the life-long development of the students, but highly politicized, namely "to completely change bourgeois intellectuals' control of the schools".

With Deng Xiaoping back into leading position, the situation has gradually turned normal in the later stage of the Cultural Revolution.

2.2.2.3 The Steady Improvement of Pre-vocational Education from Late 1970s to 2001

According to Marxism education theory – the guiding education theory in People's Republic of China since its foundation, combination of education activity and construction and labor activity is always one of the major basic principles (Xu 2004).

In Aril 1978, at the national conference in education, Deng Xiaoping pointed out, "in order to train the personnel that is needed in socialism construction, we

have to investigate how to implement the policy of combining education and construction labor in the new circumstances".

In 1981, in the new official curriculum plan the labour and technical education's status of a component of the curriculum was confirmed, with a similar amount of the curriculum content percentage in the entire curriculum compared to the situation before the Cultural Revolution (Xu 2004).

In 1982, ministry of education published the "Proposal about the tentative implementation of the labour and technical education in general middle school". In 1988, the national Committee of education (actually it is the ministry of education, but its name was changed into national Committee of education until 1998 when its name was changed back to ministry of education) distributed the "The Curriculum Plan of Labor and Technical Education in Junior Middle School (first version)", regulating that: the time taken for labour and technical education in junior middle school should be at least two teaching hours per week, altogether should reach 200 teaching hours during the three years schooling. In September 1988, the national committee of education announced "Curriculum plan of elementary school and junior middle school in compulsory education", stressing in the decision principles that, to adhere to the combination of education and production and labor, feasibly strengthening labor education and appropriately carry out technical and vocational education (Xu 2004). Through the sequential policies and adjustments, the national committee of education confirmed repeatedly the basic discipline status in compulsory education.

In 1992 Deng Xiaoping's "talk in the south" symbolized a new stage in China's reform process; the reform in education field was also quite active. In 1993, "disposition of the Chinese education reform and development" which is published by the central committee of CCP and central government states when summarizing the experiences in developing education that,

> one of the major principles in establishing the socialism education system with Chinese characteristics is, education must serve for the socialism modernization construction, must be combined with production and labor, should serve for and follow the central point of economic construction, assist the overall progress of the society;
>
> Elementary and middle school education should transform from "exam-oriented education" to the track that could promote the quality of entire nation all over, (education should) face all the students and pupils, generally promote the moral, cultural, scientific, labor skill, physical and psychological quality of the students (MOE 2002, p. 381; original in Chinese, translated by the author of this dissertation in English).

The significance of labor and technical education was emphasized in this document, showing its high status in the education system.

"The Curriculum Outline of Labor and Technical Education in Fulltime Middle School (tentative version)" which is published in 1987 was implemented in many regions in China until 2001, when a major reform took place, and thus is one of most widely used and important official documents in pre-vocational education in China.

The educational objectives of labor and technical education are, according to this document (cf. MOE 1987),

> Foster the correct attitude towards labor, thoughts and emotion of loving hometown and loving working people; form the good laboring habits; learn initially some basic knowledge and skills in production and labor; attain the competence in self-management and simple production, in order to lay the initial foundation for work and life in a modern society.

The basic principles that are employed in determining the curriculum content are as followed (ibid. 1987):

- The starting point of the curriculum content selection should be the actual need in Chinese socialism modernization construction and social life, to select the most common and basic technology knowledge and labor skill in industrial and agricultural production and service industry as the teaching content. Attentions should also be paid to the progressiveness of technology;
- the content in labor and technical education should facilitate students' thought education;
- the selection process should be based on reality, should be in accordance with the local condition and the demand in economic development there, the measure and content should suit the region and school reality, should combine uniformity and flexibility;
- the curriculum content should fit in with students' age, psycho and physical conditions and knowledge level; only the labor projects that are suitable to students' abilities, not poisonous, and not harmful could be selected; these projects should be helpful in the psycho and physical developments of young people;
- the connections with other disciplines should be considered; the selection of curriculum content should help to promote its own curriculum and other ones by the interaction of them, should help the students to imply their knowledge into the labor practice;
- elements of technical and vocational education and training (TVET) could be infiltrated into the curriculum; the labor and technical education in higher grades could be combined with TVET.

The compulsory content includes four major fields: plant, grow and manufacture agricultural and sideline products; wood work, metal work and use of some common agricultural machine; electric work and electronic technique; house hold. Besides these required contents there are also nine selective components that could be integrated into teaching.

In the document some suggestions are given concerning the implementation of the curriculum plan. A few combinations are stressed in the suggestions, namely, the combination of thought education and skill training, the combination of praxis and theory, the combination of learning basic knowledge and labor skill training.

Here a shift of focus or justification can be observed compared to the period before. Whilst the main aim of LTC during Mao's period was to develop a mentality that is in accordance with the working class spirit- the political ideology at that time, during the post-Mao era the main legitimacy comes from the economic function of it:

> "the actual need in Chinese socialism modernization construction and social life", "the most common and basic technology knowledge and labor skill in industrial and agricultural production and service industry", "the progressiveness of technology"have been the benchmark and major criteria for selection of curriculum contents (ibid., 1987).

2.2.2.4 Integration of Pre-vocational Education into the "synthesized praxis activity course" Since 2001

A major reform in Chinese basic education was initiated in 1999, with a general purpose of improving the quality of education and improving students' creativity. In 2001, "The implementation draft of basic education reform" was published. According to this document, the labor and technical education which has been implemented as an independent discipline is integrated into "synthesized praxis activity course". The synthesized praxis activity course contains mainly four domains, namely inquiry learning, community service and social practice, labor and technical education and information technology education. Therefore labor and technical education has changed from an independent discipline to a branch of a more comprehensive course. In this round of reform and the introduction of the synthesized course the major intention of the education administration is actually the "inquiry learning", which could according to the intention of the designers change the rather passive learning style of the pupils (Luo and Li 2001).

Currently in most provinces in China the LTC course is a component of the synthesized praxis activity course, in some provinces or cities the old form of LTC remains. And even in the provinces where the LTC is no longer an independent

course, the curriculum plan is still the same as before it is reformed. Thus in this research in both the regions where the LTC is an independent subject and where LTC is a component of other subject the LTC and the corresponding curriculum will be the main body of investigation.

2.2.3 Brief Comparison of the Developments of Development Tracks of Pre-vocational Curricula in Germany and China

As can be seen in the description above that the pre-vocational education in Germany and China have undergone very different development tracks. Germany has in its education traditions during the middle age already a "utilitarian-vocational spirit"; despite the interruption during the WWII, the schools in the 1950s started to carry out some of vocational and technical orientation, with the demands on technical workers increased with the economic growth and education reform in the 1960s the status of Arbeitslehre was ascertained in the school system, particularly in Hauptschule. Later on the concept of Arbeitslehre is revised and developed into a more comprehensive concept economic education and it is no longer restricted to only one school type. Currently in different states and school types various forms of pre-vocational education are taking place and in Hauptschule it is of central importance to the pupils. China has a weaker tradition in the vocational element in education compared to Germany. Early in the communist rule the education of working class for all has been an important factor in the political agenda. After the over-politicizing during the cultural revolution the post-Mao era has witnessed a major shift to the economic-centered curriculum justification. The status of LTC has decreased when it is integrated into a more comprehensive course but its curriculum plan and the guideline remain unchanged.

Curriculum Analysis: Theory, Criteria and Findings

3

In this chapter, firstly an introduction to the pre-vocational education programs in several countries in the world will be carried out, with the purpose of laying a foundation for the selection of the curriculum analysis theory. Secondly the curriculum analysis theory for this investigation will be chosen based on the analysis of career development theories and curriculum theories; the selection will take into consideration of the characteristics of the investigated subjects. The selected curriculum analysis theory will then be developed and deduced into concrete analysis criteria, according to which the corresponding curriculum plans will be analysed with the content analysis method. Lastly the results of the curriculum analysis will be compared and presented, upon which some basic comparisons and interpretations will be carried out.

3.1 Pre-vocational Education in the International Context

Before the analysis of the curriculum, the range, scope, form and contents of pre-vocational education program in the world would be outlined first, in order to lay a good foundation for the comparison in the international context and make sure that the curriculum analysis framework is comprehensive enough for a cross-nation comparison.

Although in many countries such "vocational oriented" programs in the lower secondary education are not referred to as pre-vocational education, they do exist in their curricular, with different terms and forms. In order to grasp the different possibilities of contemporary pre-vocational education programs, their breadth, range and anchoring in the school curricular, it is meaningful to take a glance at the programs that are applied by various countries in the world and to summarize briefly their commonalities and differences, based on which the appropriate curriculum

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analysis theory can be better chosen. Hence a basic introduction about the pre-vocational programs in several countries would be given in the following part.

In Argentina, in the polytechnic school, a branch of the lower-secondary education, the combinations between general and vocational contents are one of its major characteristics. The so-called vocational basic education attempts to develop the basic competencies in a broad vocational field (Lanzendorf 1995, p. 49).

In Austria in grades 7 and 8 of the school system school (lower secondary level), "vocational orientation" is compulsory for all students; it is "either offered as a separate subject of instruction or integrated into other compulsory subjects". The purpose is "to put students in the position to make mature, informed career choices and to make them aware of their own career expectations, interests, abilities etc" (Eurybase Austria 2008, p. 229).

In Australia, the vocational preparatory and basic courses in the lower-secondary education are offered in cooperation with the TAFE-colleges (technical and further education, Australia's largest vocational education and training provider) or industry (Lauterbach and Lanzendorf 1995, p. 37).

In Brazil, a vocational orientation exists in the lower-secondary education, mostly in the last 2 years of the compulsory education. This **orientation** is normally carried out through the big vocational education institutions. The **practical training** could be integrated into the curriculum in the following different ways: the probe of the skills through systematic practical activities; beginning of practical working in factories or laboratories; vocational education courses (Lanzendorf and Huck 1995, p. 40).

In Bulgaria, in lower secondary education, the teacher responsible for the class has 1 h per week for **vocational guidance education**. Part of the time is devoted to discussions with pupils regarding their problems/questions related to their choice of profession and future career. The educational counsellors employed by schools provide pupils with information and advice on possible educational and vocational pathways after the 7th and 8th year (end of lower-secondary), and help pupils to determine their centres of interest and their professional skills based on a specific methodology. (Eurydice Bulgaria 2008)

In Canada, applied skills belong to one of the compulsory subjects. It includes **technology education, home economics, business education**, in Grades 4–6, these skills are not studied specifically, but are included in other subject areas, in Grades 7–10, and students choose one or more of the three subject options. Personal planning, namely career development, personal development and student learning plans would be taught from Grade 9 onwards (INCA Canada).

In Cyprus, the lower-secondary school gymnasium serves as an observation period, during which the pupils should think about their own interests. Meanwhile,

the teachers and parents should be offered enough opportunities, the abilities and interests of the pupils to evaluate and accordingly **counselling** to give. This is consistent with the weekly half-an-hour-long **vocational orientation** in the third year of the lower secondary education. The vocation- and life-preparatory education has different emphasis for girls and boys. For girls, **the home economics and household** are attached more importance, whereas for boys, the **practical-technical courses** play a larger role (Bartel and Cseh 1995, p. 49).

In Denmark the educational and vocational **counselling** is compulsory from seventh to the ninth school year; abilities would be taught, possibilities would be informed, concerning the further education and training opportunities and paths in the labour market (Lauterbach and Huck 1995, p. 27).

In England, in the national secondary education, the non-statutory **program economic wellbeing and financial capability** are introduced. It includes **work-related learning, enterprise and financial capability** (QCA 1). But since 2004, the program work-related learning has become compulsory for grade 9, 10, 11. It comprises three strands:

- learning through work: for example, placements in the community, work experience, part-time jobs, **school enterprise activities**, vocational contexts in subject learning
- learning about work: for example, vocational courses and **careers education**
- learning for work: for example, **developing employer-valued key skills and career management skills**.

Among this, **careers education and guidance** (CEG) has become a statutory requirement for school years from 7 to 11 (QCA 2).

In Finland, the **vocational counselling and preparation** for an occupation life play a very important role in the lower-secondary education. The counselling is carried out by its own teachers in schools. These teachers obtain necessary information and materials from the central agency. They offer counselling for the pupils individually about applications and other formalities, they also organise the general information management for pupils and their parents. The schools could use three weeks for vocational counselling during the 3 years. The pupils could gain their first workplace experiences (Huck and Lauterbach 1995, p. 23).

In France, from the start of the of 2005/2006 school year, a new vocation option "découverte professionnelle" (**professional discovery**) will be available for pupils in the *troisième* (a branch of lower-secondary education). Pupils will be able to choose between 3 h of "découverte professionnelle", 3 h of modern languages or 3 h of Latin or Greek. Students experiencing difficulties with academic subjects could take a 6 h

module of "découverte professionnelle". The option aims to provide students in this year group with an insight into the world of work and to help inform future option choices (INCA France).

In Greece, in the last year of lower-secondary education and first year of upper-secondary education a **vocational orientation** is carried out. Because the teachers in the schools are not well prepared for this task, the necessary knowledge then comes mainly from the publications instead of vocational practice. Therefore the orientation in this stage takes some characteristics of academic lectures (Lauterbach et al. 1995, p. 31).

In Ireland, pre-vocational-education-related optional subjects during lower-secondary education include **home economics, craft, design, material technology (wood), metalwork, technical graphics, business studies, typewriting etc (INCA Ireland)**.

In Italy, **technical education** is one of the compulsory subjects in lower-secondary school (INCA Italy).

In Japan, since 2002, at the last 3 years of compulsory education, the subject industrial arts and homemaking (which includes **domestic science—cooking, sewing and nutrition**) is a part of compulsory courses and has 58 h time allocation per year in the first 2 years and 29 h in the third year (INCA Japan). Meanwhile, the last 2 years of compulsory education, a vocational oriented course should be offered to the pupils, in the form of theory of working, in order to lay a good foundation or the so-called industrial education, especially to the pupils who would start an employment relationship after finishing school. But the number of pupils who start working immediately has declined rapidly (in the 1970s only less than 5 % of the pupils). The proportion of vocation-preparatory courses also dropped (Georg and Demes 1995, p. 53).

In Poland, at ISCED level 2, the compulsory subject called civic education (three teaching hours per week in a period of 3 years) comprises elements of **vocational guidance** and consists of three sub-subjects: family education, civic education and education for active participation in the economic life of the country. The latter contains elements of vocational guidance. Seminars and workshops related to vocational guidance education programmes are organised by schools in cooperation with the professional world. There is no national regulation concerning the issue. However, cooperation is taking place on an individual institution, local business and community basis. (Eurydice Poland 2008).

In Portugal, at the ninth school year, besides a common core curriculum, several optional subjects of a **pre-vocational character** are offered. The pupils could choose any single one of them. However, this choice is not decisive for their future studies. (Berlard and Matos 1994, p. 237).

In South Korea, the courses such as home economics, technology and industry are integrated into the middle school curriculum and it is obligated for all the pupils to participate in these courses (Georg et al. 1995, p. 39; INCA Korea).

In Luxemburg, three school forms during the lower-secondary education. In one of these three directions, the vocational-technical middle school, the **vocation-preparatory courses**, vocational courses and training-collateral courses are offered. The education in vocational-technical middle school consists of three stages, namely orientation stage, middle stage and upper stage. In the orientation stage general and vocation-preparatory courses would be offered. But there's a tendency for the differentiation inside the general courses. During middle and upper stage, pupils could choose between 1 or 2 years of **apprenticeship** after 1 year **school training** and 4 years **school-based vocational-technical training** (Huck 1995, pp. 22–23).

In the Netherlands, secondary education encompasses schools providing pre-university education (VWO; 6 years, age 12–18), senior general secondary education (HAVO; 5 years; age 12–17), pre-vocational secondary education (VMBO; 4 years, age 12–16) and **practical Training** (PRO; age 12–18) (Ministry of education, culture and science Netherlands). At the end of the second year of VMBO students could choose a particular sector and learning pathway. The four learning pathways are:

- The theoretical programme, which qualifies students for entry to the top two levels of secondary vocational education (middle-management and professional training). If students have studied mathematics and either French or German as exam subjects, they can also transfer to HAVO.
- The combined programme, which is similar in level to the theoretical programme, but includes a practical subject. It qualifies students for entry to the same two levels of secondary vocational education as the theoretical programme.
- The middle-management vocational programme, which has a more practical/vocational slant, but also leads on to the same levels of further education.
- The basic vocational programme, which qualifies students for entry to basic vocational training only.

And within each of the four learning pathways programmes there are four sectors:

- Engineering and technology
- Care and welfare
- Business
- Agriculture.

(INCA Netherlands)

In Northern Ireland, at final 2 years of compulsory education (key stage 4, ages 14–16), an additional subject had to be selected from history, geography, **business studies, home economics, economics**, political studies, or social and environmental studies. Crossurricular themes such as **career education** (the objectives are to develop students' personal knowledge and development; knowledge of opportunities available; and skills and personal qualities in relation to career development) were woven through the main subjects of the curriculum. Meanwhile, also during key stage 4, students could get 2-week-long **work experiences**, during which work placements took place on the employer's premises and students carried out a range of tasks or duties similar to employees, but with the emphasis on the learning aspects of the experience. In the education reform in 2007, ***learning for life and work*** becomes the core elements of the post-primary key stage 4 curriculums. It contains elements like education for employability, local and global citizenship and Personal development (INCA North Ireland).

In Spain, the first stage of Formación Professional (the vocational part in the secondary education), or the FP1, caters for pupils who leave school at 14. It is compulsory for pupils who do not study BUP (academic secondary education) and it includes academic and **technical subjects**. Areas of specialization include **business studies, farming, art and design, motor engineering, building studies, home economics, travel and tourism, child care, wood work, metal work, fishing, mining, dressing, electronics, etc** (Esturla and Bragado 1995, p. 266). Meanwhile, a 1 year **vocational basic education** program, the so-called *special program for social (integration) guaranty*, are offered for those, who do not want to stay in general education system during the compulsory education years and those, who could not achieve the requirements necessary for graduation from the compulsory education after 12 years (Alvarez et al. 1995, p. 39).

In Vietnam, the pupils at the eighth and ninth school year participate since 1991 in a general vocational training with the major called "applied technique". This course is carried out in the framework of **vocational orientation** and is from 2 to 5 h per week. The course includes vocational contents from discipline fields like agriculture, forestry, fishing, handwork, services, etc. In order to realise the task of vocational orientation, many *centres for polytechnic education, vocational orientation, vocational education* are established. In 2000, there were 750 of this centre, which could cover 30 % of all the pupils in lower-secondary education (Schmeer and Nguyen Duc Tri 1995, p. 37).

Summary of pre-vocational curriculum worldwide

From the information outlined above, it could be seen that pre-vocational education takes varied forms and names in different education systems. Despite some differences in contents involved among the programs, the majority of them share a few common subjects and methods of teaching.

Basically all the pre-vocational programs are embedded in the general education system and formed an important component of the general education; meanwhile, most of the programs mentioned above take clear orientation into the vocational world. Many of them are carried out partly outside classroom or even school and in partnership with companies etc. It is common in these programs for the pupils to take part in some kind of work or internship activities and pupils are offered opportunities to get in touch with different vocational fields.

The methods that repeatedly appear in several countries' curricular are: vocational orientation/counselling, career guidance, workplace experiences, contacts with the professional world and practical/technical training. In some programs knowledge is also taught in the traditional sense of school subjects and the common subjects involved in the curricular include technology, economics, and in some countries subjects such as home economics, business, etc. are also included into the pre-vocational education program.

3.2 Selection and Development of the Curriculum Analysis Theory

3.2.1 Relationship between Vocational Education and General Education

Before selecting and/or developing a curriculum theory for the analysis of curricula in this research, it is useful to first give a double check of the institutional settings of the pre-vocational curricula.

As could be seen from its definition, the description of the middle school curricula in chapter two, as well as the above introduction to various pre-vocational education programs in the world, pre-vocational education is a component of middle school compulsory education which helps the students with their future vocation. On the one hand, a middle school compulsory education program for youth between 12 and 16 is normally regarded as a part of general education; on the other hand it certainly also have some characteristics of being vocational-oriented. But which features of these two kinds of education should be addressed more, or put it another way, how should this issue be dealt with in pre-vocational education?

In the history of education a dichotomy of general education and vocational education/training has always existed. Educational arrangements in many parts of the world have been powerfully shaped by a series of related and overlapping dichotomies inspired by the ancient Greeks, for instance, hand vs. head, manual vs. mental, skills vs. knowledge, practice vs. theory and training vs. education (Hager and Hyland 2003, p. 272). Also in the Chinese history a distinction has always been

made between practical knowledge and liberal knowledge. Education was for a very long time only regarded as teaching and learning of the Confucius knowledge and its related literacy abilities. This could be seen very well in the Keju examination system which serves for about a 1,000 years as the official selection system, in which only knowledge about Confucius classics and doctrines and nothing else are tested (Zhu and Zheng 2000).

Despite many criticisms against this dichotomy of general/vocational education, the separation of the two could still be seen in many aspects of the current education.

But how should the relationship between manual and mental, between knowledge and skills, between practice and theory, in pre-vocational education be handled with? What kinds of knowledge and competencies should be addressed in pre-vocational education? Should pre-vocational education attach more importance to subject knowledge or practical skills?

This question is deeply intertwined with some more fundamental questions, namely, what educational goals and contents are most meaningful in pre-vocational education? In the education reality, what kinds of principles are applied in the determinations and selections of education objectives and contents?

Before answering these questions, it is helpful to get some insights into the basic dimensions that a pre-vocational education may cover. For this purpose, a very simple introduction to the career development theory and the middle school curriculum is of great value.

3.2.2 Career Development Theory

As a means to facilitate the STW transition of young people, pre-vocational education could only function well, when its basic arrangements of contents and methods are in accordance with young people's psychological developments, especially in the vocational aspect. Career development theories could offer good perspective in this respect.

Savickas (1999) believes that youth cope better with the STW transition if as high school students they have developed awareness of the choices to be made and of the information and planning that bear on these choices.

Super (1957, pp. 90–91) argues that the vocational development of a person "is a dynamic process of compromise or synthesis", involving "the interaction and integration of many psychological and social factors". He also emphasized the importance of the development of self-concept during middle school years, "adolescence provides a period of exploratory experiences in which the concept of self is elaborated and clarified" and that "interests, values, and capacities are integrated and

attain vocational meaning through the development of self-concept and through testing it against reality" (ibid., pp. 90–91).

Although some disagreements exist among the different schools of the career development theory, the majority of them believe that the career development process could be seen as a compromise between personal characteristics, such as interest and abilities, and external factors, such as the work involved (Ireh 2000). More concretely, any vocational behavior, in the career development process, is generally identified by a match between a person's trait and the demands of the work environment (Chen 2003). Therefore, it is of critical importance for pre-vocational education to deal with the relationship between the personal characteristics and external factors, namely demands of the work environment appropriately.

Meanwhile, as mentioned above, pre-vocational education is still a part of secondary general education. As has been described in chapter two, except the language learning (mother language and foreign language), the majority of the middle school courses in both Germany and China are currently still academic-oriented or knowledge-based subjects, such as mathematics, physics, biology etc. As Künzli (2006, p. 16) put it, discipline is the thematic structure of school learning. Subject knowledge therefore plays a central role in the overall middle school curricula in both Germany and China. What position and status should subject knowledge have in pre-vocational education is of central value for the understanding and comparison of the curricula and therefore definitely deserves investigating.

From the arguments above, three dimensions that should be taken into account in the pre-vocational education curriculum are thus:

- subject knowledge,
- personal characteristics of the learner,
- demands from the work environment.

Putting these three dimensions together with the fundamental questions raised earlier, it can be argued that the curriculum theory this research needs should be concerned with the fundamental question of the ultimate goal and guiding principles of the curriculum on the one hand, pay attention to all the three dimensions mentioned above on the other hand. Only on this basis can the selection and development of an appropriate curriculum theory be carried out.

3.2.3 Curriculum Theories

Despite numerous publications the field of curriculum inquiry has remained for decades a field with conceptual disputes and debates, a "lack of substantive agree-

ment" among curriculum scholars about the meanings of the concept curriculum has been a persistent problem for a rather long period of time (Beauchamp 1982, p. 24). Curriculum theory, which itself is "an integrated cluster of sets of analyses, interpretations, and understandings of curricular phenomena", has absorbed ideas, concepts and constructs from a broad spectrum of scientific disciplines and taken on many different forms and presentations during its development (McCutcheon 1982, p. 19). The field of curriculum theory has due to this reason also been shaped by various discourses that compete with each other, such as the "technical-rational model" of Dewey and Tyler, and the post-colonialism, post-structuralism, post-modernism, etc. (Weenie 2008).

Notwithstanding this apparent diversity of curriculum theories, scholars have attempted constantly to group them into different categories. Walker (1982) has categorized the curriculum theories into mainly four types, according to their "sources of contentiousness": namely the curriculum theories that rationalizes curriculum programs, or rationalizes curriculum determination, or rationalize curricular phenomena, as well as curriculum that explain curricular phenomena.

Hameyer (1991) distinguished the curriculum theories into the subsequent models: the conceptual models of curriculum, the theories of curriculum legitimization, the process theories of curriculum, as well as the structural curriculum theories.

The conceptual model is a referential system for curriculum planning and regards curriculum as an interaction process, during which the structure of a curriculum system, its context and setting, the dynamics of self-renewal are the major concern (Hameyer 1991, p. 20). The second model within this typology, the theories of curriculum legitimization, discusses the question of "how to identify what is worthwhile to be taught in school" and "how to reveal the rationale behind a curriculum in school" (ibid., p. 21). The process theory of curriculum "conceptualize the curriculum as a process of reflective interaction and development" and pays attention to the improvement and adaptation processes of the curriculum (ibid., p. 22). The last group of this typology, the structural curriculum theories, deal with two basic questions: "how to select and justify worthwhile education knowledge" and "how to organize educational knowledge within a curriculum" (ibid., p. 23).

A sub-group of the last model of the Hameyer (1991, p. 23) typology, which draws upon principles of education, differentiates three aspects of competencies to be obtained in school: subject and interdisciplinary knowledge, human/social learning demand, and development of personality. This distinction among of the three kinds of competencies is of special interests to this investigation, because these three domains of learning objectives correspond the three dimensions of pre-vocational curriculum, namely subject knowledge, personal characteristics of the learner, demands from the work environment.

Reetz (cf. 1984, 2003) differentiated in his curriculum development theory three different principles of selecting and determining curriculum objectives:

- Discipline principle (in German: Wissenschaftsprinzip)
- Situation principle (in German: Situationsprinzip)
- Personality principle (in German: Persönlichkeitsprinzip).

These three principles capture and match very well the three dimensions mentioned above and therefore his theory provides an appropriate theoretical basis for curriculum analysis which takes into account these three dimensions (more details will be introduced in the following paragraphs).

Kelly (2009) also developed a somewhat similar category of curriculum planning model, which are inevitably intertwined with certain concept of curriculum objectives and viewpoint of education; these models respectively view

- Curriculum as content and education as transmission, or
- Curriculum as product and education as instrumental, or
- Curriculum as process and education as development.

Some clear commonalities can be found between the theories of Reetz and Kelly. However the second model, namely the "curriculum as product" model does not correspond directly the aspect of requirements from the life situation, which is a logical dimension of pre-vocational education and important component of the Reetz theory.

On the basis of the summary and argumentations above the Reetz's curriculum development theory will be chosen as the foundation of curriculum analysis in this research. This decision is made while taking into considerations the suitability of Reetz's theory and perspective in the Chinese context (more details in Sect. 3.4.8).

3.3 Description of Reetz's Curriculum Development Theory

3.3.1 Basic Description of the Reetz Theory

Reetz argues that the curriculum analysis is a necessary step in the curriculum development, during which a new curriculum is normally not completely newly constructed, but rather established through the improvement of the existing curriculum. During the curriculum development process, the curriculum objectives and contents in the old curriculum are selected and determined according to cer-

tain criteria and principle. In this process the so-called "relevance problem" is the core issue (Reetz 2003).

The "relevance problem" here deals with the question, whether certain curriculum form, together with its curriculum objects and contents are meaningful, that is, whether this certain curriculum form is relevant to the corresponding theme and educational goals. To solve this "relevance problem" different recommendations are given, applying different principles in the selection and determination of curriculum objects and contents, etc.

According to Reetz, these recommendations could be categorized into three major groups: the discipline (science) principle as a part of the broad cultural realm principle, situation principle and personality principle.

3.3.1.1 Cultural Realm Principle

The major idea of cultural realm principle is, the task of education is to establish an educational relationship between the educated individual and the cultural realm that is historically-traditionally passed down, is to actualize the education value of the cultural property in human being. It argues that the educated individual acquires the "individual essence formation (in German: individualle Wesensformung)" through this education (Reetz 2003). The purpose of education is for individual to succeed the cultural heritage. According to this principle all cultural possessions are potentially education resources.

3.3.1.2 Discipline Principle

The discipline principle is understood as an aspect of the cultural realm principle. The logic is consistent, in that the scientification of constitution of the work and daily life is a one of the most important cultural reality of current world. This is also the major justification of cultural realm principle: the scientification of the entire life realm. Two other assumptions that support this justification is the improvement of life and thinking through scientific knowledge and equal opportunity for everyone- with the help of discipline oriented and scientifically controlled learning in all school level and all school form (Reetz 1984, p. 86; 2003, p. 108). It is therefore required according to this principle that the learning contents and their structure are scientific disciplineoriented, in the same way knowledge itself is organized. Under this principle the curriculum object should thus be systematic knowledge.

3.3.1.3 Situation Principle

The situation principle argues that the reality of (pupil's) life should be the benchmark and center of reference in the curriculum development and that the supply of learning should be based on the contemporary and future life situation (Reetz 2003,

p. 117). The knowledge, skills, abilities, competencies which are required in the life situation would be the objects and contents of the curriculum. The life situation should be interpreted as the objective education condition and job requirements of the society and economy (Reetz 1984, p. 100). According to the theory of situations, some of the major situations and conditions that young people need to face nowadays are technological developments, globalization of markets, social value change and individualization of vocational and social life form. Therefore the qualifications which are essential in these situations are required from the perspective of situation principle. But the qualifications should not be interpreted as universally transferrable. It is the problem solving skill and action competence in the concrete situation that is emphasized here.

3.3.1.4 Personality Principle

The two major arguments of personality principle are: the curriculum development should orient towards the demands of individuals, and curriculum should develop certain personality characteristics (Reetz 1984, p. 93). Basically it emphasizes the rights and demands of pupils instead that of the adult world and society. It argues that certain personality characteristics should be the educational goal of the curriculum. Here key qualifications are also given major attentions, but different from the ones mentioned in situation principle. In personality principle the key qualifications could be implemented in varied situations and should be personality related. This curriculum theoretical approach emphasizes certain personality aspects in the form of abilities and competencies, such as maturity, criticism ability, decision making ability, creativity, problem solving ability, etc., as required by the curriculum development work (Reetz 1984, p. 96). Reetz argues that, to a certain degree, the personality principle could be viewed as mainly having amendatory and supplementary meaning compared to discipline principle and situation principle (Reetz 2003, p. 112).

From the above description and analysis of Reetz's "relevance principle" some major characteristics could be seen in Table 3.1:

3.3.2 The Relationship Among the Three Principles

According to these descriptions some differences among them could be seen and also different kinds of curriculums be categorized accordingly. For example, the physics taught in the physics department in a university usually applied a discipline principle; a course teaching car driving is normally organized in a situation principle. However the relationship is not always that simple and clear, instead, it

Table 3.1 Description of Reetz's curriculum principles

	Discipline principle	Situation principle	Personality principle
Curriculum objectives	Systematic subject knowledge (for cultural realm principle, to succeed the cultural heritage)	Anything that is relevant to the future life situation (current problem solving skill and action competence in the concrete situation are emphasized)	Universally transferrable key competencies and certain personalities or stressing of learner's need and demand

could be quite complicated sometimes. The connection and relatedness of the three principles is actually identified and characterized through their interdependence (Reetz 1984, pp. 77–78).

One curriculum under the same title could be established according to different principles in different contexts and situations. A Chinese course in elementary school probably applies the cultural realm principle, whereas the same course in a doctoral seminar in a university may use the personality or discipline principle as the guideline.

On the other hand, these principles are surely not completely separated with each other. The application of one principle could by no means exclude the significance of other principles (Reetz 1984, p. 106). A certain curriculum could apply two or even three different principles simultaneously. For example, the principle used in the teaching of electrical engineering in a University of Applied Science is normally situation principle, because all that is taught there is the skills and knowledge that is useful in the future working situations, but it usually also applies the discipline principle, because systematic knowledge of certain scientific discipline is also taught so that the students could fully understand the problems in the future working situations and to solve them properly. This curriculum could thus be viewed as a combination of discipline principle (academic theory learning) and situation discipline.

Meanwhile, a convergent consideration of the situation and personality principles is also possible. The situation could be defined from the perspective of the learner. The learner is the constitutive attribute of the situation. The situations of his life (objective and subjective, inner and outer, psycho and social, spacious and timely) are all the relative constant components, which are subject to changes (Reetz 1984, p. 107). Under this circumstance, the border line between the personality principle and situation principle could be very vague.

The above explanations shows, these principles are not real types that match the curriculum principles in reality, but rather ideal types that do not necessar-

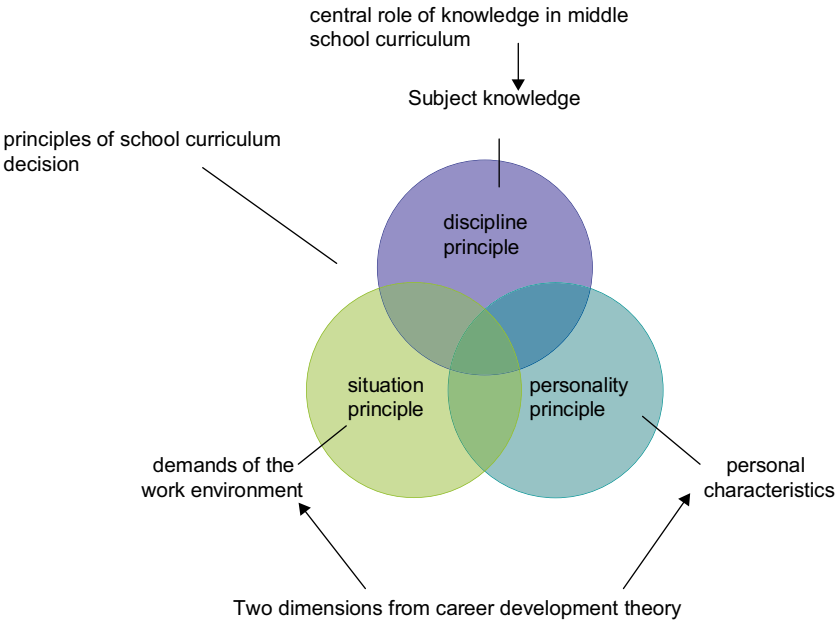

Fig. 3.1 Relationship among the Reetz's principles

ily correspond to all of the characteristics of any one particular case. In this study the curricula of pre-vocational education in Germany and China will be examined compared with the ideal types listed above, and by doing so some similarities and differences between the two curriculums could be better explored.

The three principles of curriculum confirm well to the three dimensions that a pre-vocational education curriculum should content, namely subject knowledge, personal characteristics and demands of the work environment. Their relationship could be seen in Fig. 3.1.

The three principles could represent correspondingly the three dimensions that should be addressed in the pre-vocational education curriculum. The fact that a curriculum applies certain principle(s) implies that it attaches the greatest importance to the relevant dimension(s). The emphasis of personal characteristics opponent to that of demands from the labour market represents the stressing of subjective situation opponent to objective situation, and thus meaning the emphasis of personality principle compared to situation principle.

3.4 Development of the Analysis Criteria

3.4.1 Adjustment of the Reetz's Theory

After the description of the basic features of each of the three principles in Reetz' theory the concrete criterion for each of them should also be developed, so that the analysis of the curriculum is really operational. In this part the three principles is further elaborated and then operationalized into criteria.

However in order to carry out the curriculum analysis, the theory and the concrete criteria should be applicable, which inevitably leads to a simplification of the curriculum theory of Reetz. Under this circumstance a conscious decision is made here that the main characteristics or elements of each of the principles is extracted and elaborated into the criteria, whereas some non-essential elements and features which are embedded within the original Reetz's explanation are neglected, so that the most significant attributes and properties of the principles can be represented in the criteria and the criteria are more unequivocal and definite. In a way, the actual guiding theoretical basis for the curriculum analysis is a revised version of Reetz's theory.

The adjustment is done during the elaboration process below. Before that, it is necessary to introduce the basic structure and the method of the analysis.

3.4.2 The Structure and Method of Analysis

The analysis of the curricula will apply the method of content analysis and follows some of its basic procedures. As a very common utilized approach, Mayring's (2007, pp. 46–58) processes for general content analysis offers a good standard for this investigation. However, in order to maintain a high level of clarity of the structure and consistency of the logics, the sequence of presentation of analysis procedures in this chapter is not exactly the same because some parts have been introduced above (for example the theoretical differentiation of questions).

There are several documents about a certain curriculum in both China and Germany, among them the textbook and curriculum plan are the major ones that are most relevant to the research question in this investigation.

Textbook is used by both teachers and pupils and includes the major contents of the curriculum. Although it presents the learning and teaching content in a logic sequence, it says little about the overall objective and rationale about the curriculum.

As a organising document of curriculum rationale, learning objectives and learning contents, curriculum plan (or syllabus) includes also the aims and objectives,

methodology and evaluation of a curriculum (Eash 1991). Due to the more comprehensive information about different aspects and dimensions of a curriculum, the curriculum plan is chosen as the main body of content analysis in this research.

Normally, a curriculum plan consists of two parts: a guideline or main idea of the curriculum and the concrete learning objectives and contents. Sometimes it also contains a part giving some suggestions concerning the pedagogic aspect and teaching methods. The pre-vocational education curriculum plans in Germany and China are also similar in this aspect.

The guideline of the curriculum plan narrates the general aim and purpose of the curriculum, it explain curriculum's rationale and value and thus justifies the very existence of the curriculum. It sometimes explicitly expresses the basic principle of the curriculum development. The concrete learning objectives usually contains much more detailed information. It precisely outlines the learning outcomes and contents.

During the coding process, both the guideline and the curriculum main body would be coded according to the criteria deduced from the Reetz's principles. This deduction process from the abstract principle to the concrete criteria is based mainly on further elaboration and analysis of the Reetz's principles together with help from other disciplines (cf. Sects. 3.4.5–3.4.8). This would be done on the one hand according to the basic theoretical meanings of Reetz's theory, on the other hand also serving to the feasibility of accomplishing the analysis. The concrete codes and their generating process will be explained in the following parts.

During the coding process, codes will be given to each analysis unit; this process will be strictly based on the correspondence of the meaning of the codes and the unit. Some criteria may have certain implicit meanings and are therefore attached some sub-criteria of the codes, which can potentially make the coding process more reasonable and logically sound (cf. Appendix part 2). These sub-criteria are usually deduced from and therefore can be found in the texts from which the criteria are developed, namely corresponding textbooks and original documents.

3.4.3 Selection of the Analysed Materials

As has been stated in chapter two, the pre-vocational education in the four investigated regions take very different forms (cf. Sects. 2.2.1 and 2.2.2). The LTC program in most provinces in China, including province Hubei, is a component of the synthesized praxis activity course since 2001; whereas the corresponding program in Shanghai still remains in the old framework of LTC, however the curriculum plan was also reformed in 2004. In the Hauptschule in BW the pre-vocational program

is mainly carried out in the framework of the WAG (in German: Wirtschaft-Arbeit-Gesundheit, which means economy-work-health) and is also partly embedded in or integrated with the teaching in German and some other subjects; in NRW the main corresponding subject is still Arbeitslehre which includes economics, home economics and study of technology. In all the investigated regions the forms of pre-vocational education can be flexible and the teaching can take place in both inside and outsied classroom or even outside schools.

In this context of relative complexity of the investigated subjects, for the consistency and comparability of the analysis, in all four regions, only one curriculum plan is to be selected as the subject of analysis. In China although the LTC program is integrated in a larger framework, its curriculum plan is basically independent from the other components and remains the same as the old LTC curriculum plan before the curriculum reform in 2001. In BW the parts and learning objectives that are relevant to the pre-vocational education and fits the definition of pre-vocational education in this research are selected as the analysed parts. In NRW, only the curriculum plan of economics is chosen as the analysed part, the decision is made on the one hand to serve the comparability with the other three curriculum plans, on the other hand is because of the limited resources and time. Only the economics part of the NRW Arbeitslehre curriculum plan is already of much greater volume than the other three curriculum plans (this can clearly be seen in the volume of coding tables in Appendix part 2), the inclusion of all three subjects of the Arbeitslehre (economics, home economics and study of technology) would make the NRW pre-vocational curriculum plan too incomparable to the other three curriculum plans. The results of coding can under this condition be difficult to analyze and compare between the four curricula.

Thus WAG in BW, Wirtschaft (economics) in NRW, LTC as a part of the synthesized praxis activity course in China as well as LTC in Shanghai, are chosen as the analysed and compared curriculum plans in this part of the research (cf. Kultusministerium des Landes Nordrhein-Westfalen 1989; Ministerium für Kultus, Jugend und Sport Baden-Württemberg 2004; MOE 2002b; Shanghai Municipal Education Commission 2004).

All the four to be analysed curriculum plans consist of two parts, namely the guiding ideas and concrete learning objectives (together with contents). In the guideline part, all the narratives that claim clearly about the learning outcomes of the curriculum are picked out and analyzed and given a code individually. The narratives in the guideline part are coded, because (1) as a part of the official regulation documents concerning the curriculum they are also mandatory to be carried out in all relevant schools; (2) they directly illustrate the intention of curriculum designer in terms of education goals and contents and thus should also be taken into account.

The same rule also applies to the concrete learning objectives, which are more apparently presented in the curriculum plan in the form of many parallel items. These items are also analyzed individually while a code would be given. In the BW curriculum plan, the concrete learning objectives are divided into mainly four parts: market, work-production-technology, paths to find a job, and family-leisure-household. But not all items in these four parts are a part of pre-vocational education; only some of them could be regarded as a part of it, according to the definition of pre-vocational education in this study. Therefore, only those which are considered components of pre-vocational education would be taken into account. The part family-leisure-household concentrates mainly on preparing pupils for their future family lives and most of the learning objectives in it have nothing to do with their future school to work transition. So those items which are found irrelevant would not be picked as the object of analysis.

3.4.4 Explanation Concerning the Coding Process

During the analysis process, each item would all be judged carefully with the assistance of the analysis criteria that have been developed in the earlier steps. Efforts are made to maintain the objectiveness of the analysis process. Nonetheless, this process involves inevitably certain degree of interpretation, especially when the wording of the individual item could not be clearly linked with certain principle. At this point, the author tries to find out the hidden meaning or inclination of the item and interpret them against the background of the entire curriculum plan. In the following two situations explanations would also be given, in the form of the "implicit meaning", namely (1) when the meaning expressed by the item is not very clear, but rather very implicit, then a short explanation will be given to illustrate why certain codes are given instead of other codes; this serves also as a justification of the analysis process, based on which the coding procedure can be double-checked; (2) when the wording in certain items cannot be matched with any single concrete code, but rather just the principle in general, an explanation will be given, to declare why this sentence means directly the application of one of the three principles.

Of course there are just limited amount of items can be categorized into the second case; the author tries to find the concrete codes to make the coding objective and easy to check for another time. Take one item in the Chinese curriculum as an example: the original sentence goes, "pay attention to students' lifelong development". None of the concrete codes in all the domains developed cannot perfectly matches with this item, but the meaning it expresses is consistent with the personality principle. Thus the item including this sentence is coded as P, namely personality principle.

The concrete coding tables, namely the documentation of content analysis can be seen in the Appendix.

3.4.5 Discipline Principle

The main rationale in determining the curriculum objectives and contents according to this principle is that the scientification of the area of life makes it necessary, that the learning content together with its structure should orient on scientific discipline (Reetz 2003, p. 106). More concretely speaking:

In terms of curriculum objectives, the discipline principles give great emphasis to systematic subject knowledge, and the cognitive domain of the learning objectives plays a centre role compared to affective domain and psychomotor domain.

Content of instruction should be drawn from the organised scholarly disciplines; content should be chosen so as to exemplify the representative ideas of the disciplines; content should be selected so as to exemplify the methods of inquiry in the disciplines.

The form of the curriculum content should follow the widely acceptable form and structure of the discipline in the academic world. Normally this widely acceptable form and structure of the discipline could be seen in the common textbook for university students who study the discipline as a major.

The evaluation of the curriculum according to discipline principle should be the common discipline assessment, that is, in most cases the written exam which tests the degree to which the subject knowledge has been attained by the learner.

As could be seen from the introduction of the pre-vocational education in several countries, the major subjects that are normally included into the pre-vocational curriculum are **economics, business, technology, and household (home economics)**. Therefore the criteria for analysis would be derived from university textbooks on the respective subjects.

But it should be stressed here that the following criteria do not automatically mean applying the corresponding principle, but rather just a possibility or tendency. As has been stated above, whether certain principles are applied, depends not only on the amount of the criterion items, but also on how they are arranged. This is especially important for the discipline principle, because this principle requires intrinsically the scientific structure of discipline knowledge. Therefore after the coding process it will be first examined which criteria appear in the curriculum plan and how they are organized, and then decided if this principle is applied.

As for home economics, it mainly deals with the future family life of the pupils, and is not closely related to their future school to work transition. Some aspects of

Table 3.2 Basic list of contents of Principles of economics (cf. Mankiw 2001)

Basic principles of economics	Thinking like an economist	Interdependence and the gains from trade
The market forces of supply and demand	Elasticity and its application	Supply, demand, and government policies
Consumers, producers, and the efficiency of markets	The costs of taxation	International trade
Measuring a nation's income (GDP)	Measuring the cost of living (CPI)	Production and growth
Saving, investment, and the financial system	Unemployment and its national rate	The monetary system
Money growth and inflation	Open-economy macroeconomics: basic concepts	A macroeconomic theory of the open economy
Aggregate demand and aggregate supply	The influence of the monetary and fiscal policy on aggregate demand	The short-run tradeoff between inflation and unemployment

it would be considered and analyzed in the analysis process, but most parts of it would be abandoned in terms of pre-vocational education.

3.4.5.1 Criteria for Economics

Some textbooks are chosen as the sources of the category concerning economics, as follows. The selection of the textbooks/academic works has been based on a basic investigation of the economics textbooks in some universities in a few English speaking countries; although it is difficult to cover a very wide range of universities across the globe the selected books have been found widely used in a broad context (cf. Tables 3.2, 3.3, 3.4, 3.5, 3.6). This selection process also applies to the criteria for business. Certain terms have been slightly changed so that they could be more widely applied in the international context, for example the term the Federal Reserve is replaced by central bank. In order to have a clear overview of the aspects these books include, the basic lists of contents or the major themes of the books, as the author originally put them, are made into the following tables (Table 3.2).

The last chapter "five debate about macroeconomic policy" in the book will not be used as a criterion because this chapter just deepens the topics that are already covered by the chapters earlier, such as monetary policy and tax, etc, and therefore does not represent new knowledge items.

Putting these different perspectives in the following graphic, it is obvious that they all share several same or similar themes and the basic structure is also similar:

As could be seen from the chart, all four economics books handle with the same economic concepts and cover a similar range of topics in economics. In order to

Table 3.3 Basic list of contents of Economics Principles and policy (cf. Baumol and Blinder 1991)

What is economics?	Scarcity and choice	Supply and demand
The realm of macroeconomics	Income and spending	Demand-side equilibrium
Supply-side equilibrium	Fiscal policy and supply-side economics	Money and the banking system
Monetary policy and the national economy	Consumer choice and the individual's demand curve	Market demand and elasticity
Input decisions and production costs	Output-price decisions: the importance of marginal analysis	The firm and the industry under perfect competition
The price system	Monopoly	Between competition and monopoly
The market mechanism: shortcomings and remedies	Pricing the factors of production	Labor: the human input
Comparative economic systems		

Table 3.4 Basic list of contents of Economics of Lipsey and Chrystal (cf. Lipsey and Chrystal 2007)

Economic concepts	Demand, supply and price	Elasticity of demand and supply
Consumer choice: indifference theory	The cost structure of firms	Perfect competition
Monopoly	Imperfect competition	Demand and supply of inputs
The labour market	Capital, investment and new technology	Market failure
The role of government	A basic model of the determination of GDP in the short term	GDP in an open economy with government
GDP and the price level in the short and long run	Money and monetary institutions	The role of money in macroeconomics
The balance of payments and exchange rates	Macroeconomic policy in an open economy	Inflation
Unemployment	Economic growth	International trade

Table 3.5 Basic list of contents of Economics of Stiglitz and Walsh (cf. Stiglitz and Walsh 2006)

Modern economics	Demand, supply and price	The consumption decision
The firm's costs	The competitive firm	Labour markets
Capital markets	The efficiency of competitive markets	Imperfect markets
Monopoly, monopolistic competitions and oligopoly	Government policy toward competition	Strategic behaviour
Imperfect information in the product market	Imperfections in the labour market	The public sector
Environmental economics	International trade and trade policy	Technological change
Macroeconomics and the economic perspective	Measuring output and unemployment	The cost of living and inflation
The full-employment model	Government finance/ the open economy at full employment	Growth and productivity
Money and the price level and the central bank	Introduction to macroeconomics fluctuations	Aggregate expenditures and income
Aggregate demand and inflation	Central bank and interest rates	The role of macroeconomic policy
The international financial system	Policy in the open economy	Development and transition
Inflation and unemployment	Controversies in macroeconomic policy	

maintain a certain degree of theoretical consistency, only one of these works will be chosen as the source of the codes for discipline principle in economics; since the work written by Mankiw is translated into many languages and widely applied across the globe, his work will be used as the major source.

The terms are coded as **e** because it is related to **e**conomics. The other codes are also named according to the same logic so they would not be explained individually.

However the items and aspects by Mankiw have to be reduced into a shorter list. On the one hand some of the themes are logicly closely connected to one another and can therefore be integrated into some broader categories; on the other hand. Thus, based on the intrinsic logic and scientific interrelationship among the themes, with the help of specialists in economics theory, the themes are reduced to the following categories, which are in this research used as codes for curriculum analysis (Table 3.7):

Table 3.6 Comparison of elements of economics from different academic works

Mankiw	Baumol and Blinder	Lipsey and Chrystal	Stiglitz and Walsh
Basic principles of economics	What is economics?	Economic concepts	Modern economics
think like an economist	Scarcity and choice	Demand, supply and price	Demand, supply and price
Interdependence and the gains from trade	Supply and demand	Elasticity of demand and supply	The consumption decision
The market forces of supply and demand	The realm of macroeconomics	Consumer choice: indifference theory	The firm's costs
Elasticity and its application	Income and spending	The cost structure of firms	The competitive firm
Supply, demand, and government policies	Demand-side equilibrium	Perfect competition	Labour markets
Consumers, producers, and the efficiency of markets	Supply-side equilibrium	Monopoly	Capital markets
The costs of taxation	Fiscal policy and supply-side economics	Imperfect competition	The efficiency of competitive markets
International trade	Money and the banking system	Demand and supply of inputs	Imperfect markets
Externalities	Monetary policy and the national economy	The labour market	Monopoly, monopolistic competitions and oligopoly
Public goods and common resources	Consumer choice and the individual's demand curve	Capital, investment and new technology	Government policy toward competition
The design of the tax system	Market demand and elasticity	Market failure	Strategic behaviour
The costs of production	Input decisions and production costs	The role of government	Imperfect information in the product market
Firms in competitive market	Output-price decisions: the importance of marginal analysis	A basic model of the determination of GDP in the short term	Imperfections in the labour market
Monopoly	The firm and the industry under perfect competition	GDP in an open economy with government	The public sector

Table 3.6 (continued)

Mankiw	Baumol and Blinder	Lipsey and Chrystal	Stiglitz and Walsh
Oligopoly	The price system	GDP and the price level in the short and long run	Environmental economics
Monopolistic competition	Monopoly	Money and monetary institutions	International trade and trade policy
The markets for the factors of production	Between competition and monopoly	The role of money in macroeconomics	Technological change
Earnings and discrimination	The market mechanism: shortcomings and remedies	The balance of payments and exchange rates	Macroeconomics and the economic perspective
Income inequality and poverty	Pricing the factors of production	Macroeconomic policy in an open economy	Measuring output and unemployment
The theory of consumer choice	Labor: the human input	Inflation	The cost of living and inflation
Measuring a nation's income (GDP)	Comparative economic systems	Unemployment	The full-employment model
Measuring the cost of living (CPI)		Economic growth	Government finance/the open economy at full employment
Production and growth		International trade	Growth and productivity
Saving, investment, and the financial system			Money and the price level and the central bank
Unemployment and its national rate			Introduction to macroeconomics
The monetary system			fluctuations
Money growth and inflation			Aggregate expenditures and income
Open-economy macroeconomics: basic concepts			Aggregate demand and inflation
A macroeconomic theory of the open economy			Central bank and interest rates
Aggregate demand and aggregate supply			The role of macroeconomic policy
The influence of the monetary and fiscal policy on aggregate demand			The international financial system

Table 3.6 (continued)

Mankiw	Baumol and Blinder	Lipsey and Chrystal	Stiglitz and Walsh
The short-run tradeoff between inflation and unemployment			Policy in the open economy
			Development and transition
			Inflation and unemployment

Table 3.7 Criteria for economics

Basic principles of economics	e 1
Thinking like an economist	e 2
The market forces of supply and demand	e 3
Trade and globalization	e 4
Actors in the market	e 5
The monetary system (the role of money in the economy)	e 6
Government policies and its influences	e 7
Market forms	e 8
Firms in the market	e 9
Income	e 10
Indicators of economy	e 11
Labour market	e 12

3.4.5.2 Criteria for Business

Business knowledge is found in some countries' curriculum of pre-vocational education. To examine how the relevant knowledge is organized in the curriculum plan, the normal structure and system of business knowledge should be used as the benchmark. In the international context, the business knowledge is to be seen in business administration, for instance Appleby's work on business administration (cf. Appleby 1994) (Table 3.8):

In the German context, the business knowledge is usually included in the subject "Betriebswirtschaftslehre", the most commonly used one is Wöhe's "Einführung in die Allgemeine Betriebswirtschaftslehre", of which the contents include (originally in German, translated by the author of this dissertation in English) (cf. Wöhe 1996) (Table 3.9):

In the Chinese context, the comprehensive business knowledge is commonly found in the subject (cf. Sheng 2002) (Table 3.10).

As could be seen from the comparison, the main topics covered by business subjects in three contexts are basically the same; the English text is therefore chosen

Table 3.8 Basic list of contents of business of Appleby

Nature of management	Business and its external environment	Corporate strategy and planning
Organizing	Directing	Controlling
Marketing and sales management	Production and operation management	Human resource management
Administrative management		

Table 3.9 Basic list of contents of business of Wöhe

Object, methods and history of management	Structure of a company	Production
Marketing	Investment and finance	Accounting

Table 3.10 Basic list of contents of business of Sheng

Introduction to the business administration	Company strategy management	Marketing
Production operation	Accounting	Financial and capital management
Human resource management	Organization structure and design	Technical innovation management
Tendency in management		

Table 3.11 Criteria for business

Nature of management	b 1
Business and its external environment	b 2
Corporate strategy and planning	b 3
Organizing	b 4
Directing	b 5
Controlling	b 6
Marketing and sales management	b 7
Production and operation management	b 8
Human resource management	b 9
Administrative management	b 10

as the source of criteria in business knowledge, for the sake of international comparability (Table 3.11).

3.4.5.3 Criteria for Technology

Technology itself covers an extremely wide range of subjects. Here a process of simplification has to take place which is necessary for the generation of the criteria.

Table 3.12 Basic list of contents of Encyclopaedia of twentieth-century technology (cf. Hempstead and Worthington 2005)

Biotechnology	Chemistry	Communications
Computers	Construction	Electronics and Electrical Engineering
Energy and Power	Environment	Film, Cinema, Photography
Food and agriculture	Health and medicine	Homes (technology)
Leisure and Entertainment	Materials	Scientific research/ Measurement
Space	Transportation	Television, Radio, Audio recording
Warfare		

Table 3.13 Basic list of contents of Lueger Lexikon der Technik (cf. Lueger et al. 1972) (translated by the author from German)

Engineering (machine building)	Electric and nuclear technology	Material and its testing
Mining	Metallurgy	Energy technology and power
Manufacturing technology and work machine	Construction technology	Automotive engineering
Precision engineering	Factory organization and materials handling	Process engineering (chemical engineering)

Table 3.14 Basic list of contents of Das große Buch der Technik (cf. Scherl 1962) (translated by the author from German)

Energy	Electric technology	Communication engineering
Measurement and control engineering	Automation	Metal
Non-metal	Machine building	Architecture
Transportation	Technology of the economy (food industry, textile technology, etc)	Technology in culture and art (photo technology, film technology, etc)
Technology in science		

Basically a field/domain of technology is chosen as a criterion and the determination of the fields involved in is based on certain encyclopedia or lexicon on technology, which represent comprehensively the field of technology (Table 3.12, 3.13, 3.14, 3.15).

Table 3.15 Comparison of elements of technology/technique from different Encyclopaedia

Biotechnology	Engineering (machine building)	Energy
Chemistry	Electric and nuclear technology	Electric technology
Communications	Material and its testing	Communication engineering
Computers	Mining	Measurement and control engineering
Construction	Metallurgy	Automation
Electronics and Electrical Engineering	Energy technology and power	Metal
Energy and Power	Manufacturing technology and work machine	Non-metal
Environment	Construction technology	Machine building
Film, Cinema, Photography	Automotive engineering	Architecture
Food and agriculture	Precision engineering	Transportation
Health and medicine	Factory organization and materials handling	Technology of the economy (food industry, textile technology, etc)
Homes (technology)	Process engineering (chemical engineering)	Technology in culture and art (photo technology, film technology, etc)
Leisure and Entertainment		Technology in science
Materials		
Scientific research/Measurement		
Space		
Transportation		
Television, Radio, Audio recording		
Warfare		

A comparison of the items above can be seen above (Table 3.15):

As could be seen from the table, the technology domains covered by different encyclopaedias are similar with one another, but with different terms. For the purpose of international comparability, the English category is chosen as the source of criteria (Table 3.16):

Table 3.16 Criteria for technology

Biotechnology	t 1
Chemistry	t 2
Communications	t 3
Computers	t 4
Construction	t 5
Electronics and Electrical Engineering	t 6
Energy and Power	t 7
Environment	t 8
Film, Cinema, Photography	t 9
Food and agriculture	t 10
Health and medicine	t 11
Homes (technology)	t 12
Leisure and Entertainment	t 13
Materials	t 14
Scientific research/Measurement	t 15
Space	t 16
Transportation	t 17
Television, Radio, Audio recording	t 18
Warfare	t 19

3.4.6 The Overlapping Problem between Personality Principle and Situation Principle and Its Resolution

If the subject knowledge is of no specific importance or only in a relatively periphery position in the curriculum analysed, then it is to be decided if one of the other two principles is applied.

However, some items could be found in criteria for both situation principle and personality principle. This overlapping is to a certain degree unavoidable because of the interdependent relationship of the three principles, as mentioned earlier. It is normal that some personality characteristics and key competencies that enable a person's long term career development are also the requirements of the current labour market.

To put it another way, certain learning objectives present in the curriculum plan could be interpreted as applying both personality principle and situation principle, for instance, the ability to cooperate, depending on the perspective of interpretation. If it refers only to cooperate without certain circumstances, it could be understood as promoting pupil's cooperative ability in general and therefore applying personality principle; on the contrary, if the ability to cooperate is mentioned in

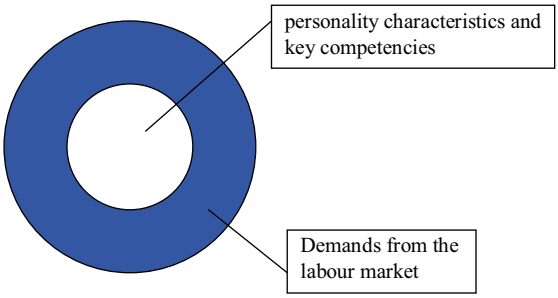

Fig. 3.2 Solution to overlapping of personality and situation principle

certain work situation, for example in achieving certain job tasks with colleagues, it could be understood as the requirements of a typical work situation and therefore applying the situation principle.

In choosing the criteria for the principle, this overlapping and controversy has to be avoided. Those items that have been chosen as criteria for the personality principle would not be used as the criteria for situation principle, the reasons are as follows:

The demands from the labour market normally contain different kinds of (knowledge, skill, attitude) requirements for individual, including not only the ones that could play key role throughout one's career and even in some other domains of life (key competencies), but also the ones that could be only helpful for the accomplishment of certain occupations.

So the competencies and values embedded in personality principle have a more fundamental status in the overall personal development and therefore occupy a core position in its relationship with the ones addressed by situation principle. The situation principle implies a more all-embracing category compared to the personality principle, which suggests only a few key attributes that are critical in varied situations (Fig. 3.2).

3.4.7 Personality Principle

The justification of education aim argued in the personality principle stems mainly from one of the following two sources: (1) the consideration of the rights and demands of learners; (2) the development of certain competencies (especially key competency) and personality aspects (Reetz 2003, p. 116).

If a curriculum in both curriculum document and teaching reality explicitly gives the rights and demands of learner a higher priority than that of the society, than it could be argued that this curriculum applies the personality principle.

Two critical points are emphasized in the second variant of personality principle, namely the development of (at least certain aspects of) personality and the foster of key competencies.

However both of these two concepts are so widely used that simply mentioning the terms may create misunderstanding in certain settings. Thus, in this study only the concepts and definitions that correspond well to Reetz's concept of personality principle will be applied as the source of criteria for curriculum analysis.

The key competence concept is widely and hotly discussed in the past years in boh the academic world and in the education political discussion (cf. OECD 2005; European Union 2006; Winterton 2009; etc.). Many different approaches and theoretical models have been adopted using knowledge and insights from different disciplines. Although many researches in this topic show that there is no universal definition of the notion of "key competence", some basic common features could be agreed by the majority of the relevant experts, that is, key competence

> must enable an individual to successfully integrate into a number of social networks while remaining independent and personally effective in familiar as well as new and unpredictable settings", and "must enable people to constantly update their knowledge and skills in order to keep abreast of fresh developments (Eurydice 2002, p. 13).

From the viewpoint of Reetz, the key competencies stressed in this category of principles are not productivity-and competitiveness-oriented, nor are they from purely the economic perspective. Thus, in selecting and determining the criteria for personality principle, only those items that are generally recognized as important in major domain of life will be chosen.

In OECD's concept three categories of competencies are marked as the key competence: using tools interactively, interacting in heterogeneous groups and acting autonomously; more concretely, these concepts mean (OECD 2005):

Competency Category 1: Using Tools Interactively
COMPETENCY 1-A The ability to use language, symbols and text interactively
COMPETENCY 1-B The ability to use knowledge and information interactively

- Recognise and determine what is not known;
- Identify, locate and access appropriate information sources (including assembling knowledge and information in cyberspace);
- Evaluate the quality, appropriateness and value of that information, as well as its sources;
- Organise knowledge and information

COMPETENCY 1-C The ability to use technology interactively

Competency Category 2: Interacting in Heterogeneous Groups
COMPETENCY 2-A The ability to relate well to others

- Empathy – taking the role of the other person and imagining the situation from his or her perspective

This leads to self-reflection, when, upon considering a wide range of opinions and beliefs, individuals recognize that what they take for granted in a situation is not necessarily shared by others.

- Effective management of emotions – being self-aware and able to interpret effectively one's own underlying emotional and motivational states and those of others

COMPETENCY 2-B The ability to cooperate

- The ability to present ideas and listen to those of others;
- An understanding of the dynamics of debate and following an agenda;
- The ability to construct tactical or sustainable alliances;
- The ability to negotiate;
- The capacity to make decisions that allow for different shades of opinion

COMPETENCY 2-C The ability to manage and resolve conflicts

- Analyse the issues and interests at stake (e.g. power, recognition of merit, division of work, equity), the origins of the conflict and the reasoning of all sides, recognising that there are different possible positions;
- Identify areas of agreement and disagreement;
- Reframe the problem;
- Prioritise needs and goals, deciding what they are willing to give up and under what circumstances

Competency Category 3: Acting Autonomously
COMPETENCY 3-A the ability to act within the big picture

- Understand patterns;
- Have an idea of the system in which they exist (i.e. understand its structures, culture, practices, and formal and informal rules and expectations and the roles they play within it, including understanding laws and regulations, but also un-

Table 3.17 Criteria for personality principle

The ability to use language, symbols and text interactively	p 1
The ability to use knowledge and information interactively	p 2
The ability to use technology interactively	p 3
The ability to relate well to others	p 4
The ability to cooperate	p 5
The ability to manage and resolve conflicts	p 6
The ability to act within the big picture	p 7
The ability to form and conduct life plans and personal projects	p 8
The ability to assert rights, interests, limits and needs	p 9

written social norms, moral codes, manners and protocol. It complements an understanding of rights with knowledge of the constraints on actions;
- Identify the direct and indirect consequences of their actions; and
- Choose between different courses of action by reflecting on their potential consequences in relation to individual and shared norms and goals

COMPETENCY 3-B The ability to form and conduct life plans and personal projects

- Define a project and set a goal;
- Identify and evaluate both the resources to which they have access and the resources they needs (e.g. time and money);
- Prioritise and refine goals;
- Balance the resources needed to meet multiple goals;
- Learn from past actions, projecting future outcomes;
- Monitor progress, making necessary adjustments as a project unfolds

COMPETENCY 3-C The ability to assert rights, interests, limits and needs

- Understand one's own interests (e.g. in an election);
- Know written rules and principles on which to base a case;
- Construct arguments in order to have needs and rights recognised;
- Suggest arrangements or alternative solutions

Thus the criteria for personality principle should be as follows (Table 3.17)

3.4.8 Situation Principle

The situation principle argues a pragmatic purpose as the justification of curriculum aim and content selection. It attaches great importance to the demands and requirements of contemporary economic and social condition and life situation of learner, especially the labour market conditions. The curriculum development under this principle has the mission and task, in a given situation, to allocate and provide functional curriculum elements and learning processes planning (Reetz 1984, p. 100). To put it another way, the curriculum from this perspective should be functional in pupil's (future) life situation.

In the context of pre-vocational education, the life situation that the curriculum may orient toward is mainly the vocational world students need to face in the near future. So if a curriculum applies situation principle, then the introduction of vocational information, the vocational guidance and counselling, the training of basic skills will be of great importance. The curriculum applying situation principle should prepare the students for the future labour market entry and students should have enough opportunities, to gain contacts with the real world of work and then develop awareness and understanding concerning their potential future vocational choices. According to this principle the students should be equipped with knowledge, skills and competencies necessary for the labour market.

In the international context, despite the diverse definitions, the concept employability skill is widely used to represent the requirements of the labour market for school leavers or anyone who looks for a job in the labour market (Forrier and Sels 2003; McQuaid and Lindsay 2005). Certain degree of commonalities could be seen in the skills addressed by different countries. Competencies concerning communication, problem solving, using technology, teamwork (or social skills), mathematical abilities, etc. exist in the common requirements of the employers in Australia, United Kingdom, Canada, New Zealand and United States (Werner 1995). However, the common emphasis of these competencies in these countries stresses not only the current state of labour market, but also the long-term developments of it. There's a tendency to regard employability skills not just as skills required to gain employment, but also skills to succeed in other domains of life.

Based on the reasons mentioned above, the concept employability skills would not be used as criterion for situation principle in this research, and some other concepts would be developed.

Since the compared curricular are situated in two different economic and social settings, the situations towards which the curricular orient are also different from each other. The requirements and demands from the different labour market would thus be considered separately. However, as an international comparative study, the

criteria should remain internationally consistent. To achieve this goal of consistency, the criteria for situation principle will be developed on the basis of the German context, due to more accessible materials, and then supplemented with some items in the Chinese context, which represent to a certain degree the Chinese characteristics in labour market requirements.

In the German context, the concept "apprenticeship entry maturity" (Ausbildungsreife) is a concept applied to describe if a youth achieve the general attributes of education and working ability and requirements of training in dual system.

Originally, Ausbildungsreife stood for certificated abilities of a certain company which offers training; but gradually the meaning has shifted and right now there's no generally accepted definition (Eberhard 2006, p. 17).

Ausbildungsreife consists mainly of two parts, namely general attributes of education and working ability and basic school knowledge as well as fundamental cognitive, social and personal characters and psychological and physical capacity (Bundesagentur für Arbeit 2008, pp. 12–14). Therefore it could best represent the requirements of labour market and employer and thus be used as the standards and benchmark in analyzing the curriculum in pre-vocational education in Germany.

In 2006, the federal labour agency (Bundesagentur für Arbeit), the service provider in labour market, published a criterion catalogue for "apprenticeship entry maturity", as a part of National Pact for Training and Skilled Young Worker (Nationaler Pakt für Ausbildung und Fachkräftenachwuchs). It gives a very concrete list of criteria, according to which young people could be measured, whether they possess enough "training maturity" after leaving school, could therefore serve as the criterion also for the curriculum analysis. Here are these criteria (Bundesagentur für Arbeit 2008):

Some of the items would not be coded, because it belongs to some other categories. The basic school knowledge, although also required by the labour market, is actually the basic objectives of the general education and there are some other independent subjects that teach the knowledge and skill. Physical characteristics are regarded as a result of natural physical development of a person instead of an outcome of education and the subject physical education deals with it.

- Basic school knowledge
  - Correct writing
  - Reading- deal with text and media
  - Speaking (oral expression) and listening
  - Basic mathematical knowledge
  - Basic economic knowledge

- Psychological capability characteristics
  - Language fluency (same as correct writing, reading and speaking and listening in basic school knowledge)
  - Calculative thinking (same as basic mathematical knowledge in basic school knowledge)
  - Logic thinking (*Logisches Denken*) (ability to think stepwise and deductively): s 1
  - Spacious imagination (*Räumliches Vorstellungsvermögen*) (ability to imagine certain space based on graphs and charts and recognize the interrelationship in figures): s 2
  - Retentiveness (*Merkfähigkeit*) (ability to remember facts that are perceived in written or oral forms): s 3
  - Speed of operation (*Bearbeitungsgeschwindigkeit*) (ability to accomplish simple routine tasks): s 4
  - Capability of long term concentration (*Bfähigung zu Daueraufmerksamkeit*) (ability to perform an action or tasks without being distracted): s 5
- Physical characteristics
  - Age-based development condition and requirements in health
- Characteristics of working and social behaviour
  - Stamina and tolerance of frustration (*Durchhaltevermögen und Frustrationstoleranz*) (ability to pursue a goal or a task, even against inner and outer resistance and in the case of failure and disappointment): s 6
  - Communication ability (coded as a criterion in personality principle)
  - Conflict ability (*Konfliktfähigkeit*) … (coded as a criterion in personality principle)
  - Criticizing ability (*Kritikfähigkeit*) (ability to treat other people's mistake constructively and fairly, and also to perceive and correct one's own mistake): s 7
  - Motivation (*Leistungsbereitschaft*) (willingness to perform): s 8
  - Self-organisation and independence (*Selbstorganisation und Selbstständigkeit*) (ability to structure the daily situation independently and accomplish the assigned tasks by oneself): s 9
  - Carefulness (*Sorgfalt*) (perform the tasks faithfully and accurately with the purpose of a work result without mistakes): s10
  - Team ability (coded as a criterion in personality principle)
  - Manners (*Umfangsformen*) (ability to behaviour in each situation politely, with respect and considerately): s 11
  - Sense of responsibility (*Verantwortungsbewusstsein*) (ability and readiness to take responsibility for one's own activities): s 12

  - Dependability (*Zuverlässigkeit*) (take agreement seriously and comply with it): s 13
- Vocational maturity: s 14
  - Vocational maturity (*Berufswahlreife*) (self-evaluation and information competence)

In China, there has been no such publication in Chinese reporting the general requirements for employee by the employer association or the related government sector. But most of the companies have a written form of employee regulations which gives clear statements about the requirements for the employees in working conditions. Twenty companies of different sizes in different industrial sectors and regions are chosen and their employee regulations are selected, compared and analysed. Through the analysis some common items are found to appear repeatedly. The consistence found in these regulations shows certain commonality of requirements for employee. Therefore these common items in the regulations could be used as the basis for the criteria of situation principle when analyzing the Chinese curriculum.

These are in accordance with the collaborative research done by International labour Office (ILO), the Chinese enterprise confederation, and the Centre for Labour Market Studies at the University of Leicester in the UK (cf. Venter et al. 2002). According to this report, although some differences exist among different types of employers in China, some skills and qualities are believed by almost all of the employers to be important (Venter et al. 2002, p. 20, 41):

Honesty	Integrity
Obedience	Ability to follow instructions
Compliance	Initiative
Loyalty	Problem solving skills

The common items found in the company regulations are then integrated together with the ILO investigation results, considerations are taken into account as to develop a rather comprehensive framework that cover the different requirements of the companies. Therefore the concrete criteria for situation principle in the Chinese context are as follows:

- Strict compliance with rules and regulations: s 15
- Obeying the leadership/management: s 16
- Subject to the overall situation: s 17
- Accomplishing the task on time: s 18

- Operate strictly according to the procedures: s 19
- Dedication to the job: s 20
- Honest and trustworthy: s 21
- Truth-seeking and pragmatics: s 22
- Loyalty: s 23
- Innovation: s 24
- Love and respect the job: s 25
- Proficiency: s 26
- Dress clean: s 27
- Civilized behaviour and being polite to clients (already exist in the German criteria "manners")
- Caring for public property: s 28
- Teamwork/working with other people in a team (coded as a criterion in personality principle)

3.4.8.1 Cultural/Country Specific Aspects in Situation Principle

The criteria in discipline principle should represent the corresponding subject knowledge contents and structure; therefore this principle and the relevant criteria are to a certain to degree cultural-neutral and not country-specific. As for personality principle, the selection of OECD framework of key competence, which was developed in an intercultural context and already take into account of the possible international adaptability, could naturally overcome the cultural characteristics and specialness. This however does not apply to the situation principle, where the criteria must reflect the requirements of each labour market, which are country-specific and closely related to the cultural and social backgrounds of a certain country.

In this investigation, because the criteria for situation principle in the German context derive from the Ausbildungsreife, namely the apprenticeship entry maturity, which is developed jointly by different interest groups and has taken into considerations of various demands from different social actors, the criteria contain in themselves the German concept and understanding of vocation (in German: Beruf) (cf. Greinert 2007; Pilz 2009), as well as the relationship between education and Beruf.

As for the Chinese context, because the criteria are developed by the author himself, although different factors such as the property nature of the company (state or private), and the domain of business of the company etc. are already taken into account, the investigation results from ILO are integrated, the criteria may still not perfectly cover the country-specific conditions.

In order to re-examine the suitability of these criteria in the Chinese context, as well as the overall feasibility of methodology and criteria, an interview is held between the author and a respectful Chinese scholar in the field of VET as well as international comparative education, Prof. Dr. Weiping Shi from East China Normal University. The main points and suggestion of Prof. Shi from this interview are as follows (the interview was held in Chinese, but transcribed and translated into English by the author):

- Overall the methodology is applicable in the Chinese context. In the past curriculum development processes in Chinese education, be it general education or vocational education, the overwhelming emphasis was on the subject matter, little attention was paid to the requirements from labour market and the development of personality of the learners. This distribution of the three principles offer an interesting perspective to look at the curriculum plan and development in China.
- In considering the demands from the labour market and the companies, attention should be paid to whether the companies are representative and diverse. Big companies like the Bao Steel and Haier may not have very high demands for the graduates on hard skills at the beginning, they want people with good soft skills, whereas the small companies may expect the newly recruited to start working immediately and therefore require better practical skills. The domain of industry also has important influence on the demands of the company and therefore shall also be taken into account when collecting criteria.
- Certain characteristics of the state-owned companies, the private companies and the foreign invested companies should be integrated. But the overall trend in the training culture inside companies are led by the big and/or foreign firms among the Chinese companies.
- The criteria for situation principle in Chinese context could basically represent some major requirements in labour market in Shanghai. But at the same time an even bigger sample size will be helpful.

Based on the points above, the revised version of Reetz's theory is suitable in the Chinese context and can therefore also be used as the framework for the curriculum analysis in this research. Suggestions are taken in the revision of the criteria, which are also based on the double blind check and its results in the following part.

Put the criteria in both German and Chinese settings together and the complete table for criteria and code for situation principle is as follows (Table 3.18).

It can be clearly observed that the criteria vary from each other considerably in terms of scale and focus. Some criteria, especially the criteria of discipline

Table 3.18 Criteria for situation principle

German context	
Logic thinking	s 1
Spacious imagination	s 2
Retentiveness	s 3
Speed of operation	s 4
Capability of long term concentration	s 5
Stamina and tolerance of frustration	s 6
Criticizing ability	s 7
Motivation	s 8
Self-organisation and independence	s 9
Carefulness	s 10
Manners	s 11
Sense of responsibility	s 12
Dependability	s 13
Vocational maturity	s 14
Chinese context	
Strict compliance with rules and regulations	s 15
Obeying the leadership/management	s 16
Subject to the overall situation	s 17
Accomplishing the task on time	s 18
Operate strictly according to the procedures	s 19
Dedication to the job	s 20
Honest and trustworthy	s 21
Truth-seeking and pragmatics	s 22
Loyalty	s 23
Innovation	s 24
Love and respect the job	s 25
Proficiency	s 26
Dress clean	s 27
Caring for public property	s 28

principle, concern more about the actual content aspects of the curriculum plan and its certain learning objectives; whereas some criteria, such as the criteria of personality principle and situation principle, are of more abstract nature and relate more to the characteristics of the learning outcomes. Their scales differ from each other too, some criteria may include a relative broad domain of knowledge or competence, and some citeria are very specific concerning the abilities to be attained.

These different focuses and scales inevitably makes the matching between the criteria and the coded items more difficult and therefore makes the coding process more complicated. Thus great attention is to be paid on the possible differences in terms of matching between the coded items and the criteria.

To achieve a higher comparability and make the coding logicaly valid, while coding different curriculum plans, the different scales and focuses of each criterion are taken into consideration; efforts are made so that the coding with the same criteria always follow the same logic to make the coding more coherent and consistent.

3.5 Double Blind Check of the Analysis Criteria

3.5.1 Processes and Results of the Double-blind-check

In order to test the objectivity of the coding and the validity of the codes as well as the coding process, double blind check were carried out among three coders, one of them being the author himself (coder B), the other two being German university student or research assistant (coder A and coder C)with the necessary background knowledge about the curriculum analysis theory and basic understanding of the topic, such as economics and business management. Under the supervision of a neutral manager the coding was carried out independently by each coder, the results were then presented and collected together by the manager. The author compared all the results and held two independent interviews with the two other coders. Analysis and interpretations are made on the basis of coding as well as the interviews. Further adjustments of the codes are made based on information gained in this process.

For this blind double check, the WAG (Wirtschaft-Arbeit-Gesundheit, means economy-work-health) curriculum is chosen as the object of comparison, based on two reasons: on the one hand as a German curriculum plan it is easier for the two other coders (who are German) to understand whereas the Chinese curriculum plans may contain some specific cultural expressions which are not so understandable for them, on the other hand the WAG curriculum plan is relatively short, which makes the double blind check and the monitoring process less time consuming and more doable.

During the blind double check process, two coders each analyze the curriculum plan individually, find out the learning objectives (later also referred to as units) given by the curriculum plan, and give them a certain code if they could find one that matches the nature of the description of the learning objective. One learning objective can be given more than one code if the coder finds that this learning objective contains more than one characteristic that can be coded. But in the results

and their comparison, the learning objective which are coded with more than one code will still be counted as one unit, with the purpose of comparability among results; this means, that if one learning objective is coded as, for example "e 1" and "e 2", then later on the number of "e" codes coded at this unit is still one, instead of two. So if one learning objective is coded as (for example) both "p 1" and "s 1", then the number of "p" code at this unit is 0.5 and "s" code also 0.5. The overall numbers of some codes are therefore not always an integer.

The findings from the comparison among the coding-results of the three coders reveals a rather complicated picture. On the one hand, the agreement among the coders concerning each individual code/criterion is low; the degree of agreement measured through Cohen Kapa among the three coders is **0.41**, this percentage of agreement between random two coders is **0.91** (among all the common coded items, the percentage of those which are agreed by two coders), and the agreement between the coder A and B, B and C, C and A is respectively 0.65, 0.59, and 0.64 (cf. Cohen 1960); on the other hand, the agreement concerning the overall distribution of the three principles of the tested curriculum is high among the coders. All coders agree to a certain degree that the curriculum is strongly discipline principle oriented, and the distributions of personality and situation principle are lower.

3.5.2 Interview with the Coders and the Findings

In order to better understand the strengths and weaknesses of the curriculum analysis methods in this research, as well as to make improvements concerning the criteria and their applications, an interview was held between the two coders.

Before the interview, some guidelines are developed, mainly based on the basic comparison of the results. The guideline contains mainly the following as aspects:

- To discover the differences between the competencies chosen by the two coders;
- To obtain some general information about the coding process;
- To discover the differences between the coding;
- To discover the potential problems with the criteria;
- To discover the reasons of multiple coding;

Through the interview, some further discoveries are made concerning the outlined aspects:

Coder A finds all the codes have clear meaning and well explained. Except some difficulties to code certain units with the existing codes, most of the units can be matched with code(s) that have been outlined without ambiguity. Some units are not coded, because the existing codes cannot cover the meanings expressed in the units,

especially some units related to knowledge about finance. The coding process gets easier when the coder gets more familiar with the criteria as well as the curriculum plan. However, it is easier to pick out the units relevant to economic and management knowledge, namely discipline principle, because the meanings of these criteria are clearer compared to the meanings of criteria in personality and situation principles.

From the perspective of the coder A, the boundaries among the criteria under one principle are largely also quite clear, although with some exceptions. Meanwhile, coder A finds it possible to code a unit with criteria from different principle categories.

Coder C finds some of the criteria are ambiguous and the meanings are overlapping. For coder C the most difficult part is the situation principle, which includes some very ambiguous criteria. Problems also exist with certain competencies/learning objectives, such as reflection ability, which appears a few times in the curriculum plan, can however not be found in the criteria and their explanations.

3.5.3 Analysis of the Findings and Adjustment

As has been mentioned above, the distributions of the Reetz's principles are more or less similar among the three coders, especially between that of A and another coder. This shows the relatively high consensus among them about the basic relationship of the three principles, namely the WAG curriculum in Baden-Württemberg is rather discipline-oriented and also takes into consideration of personality development and orientation towards life-situation.

Nevertheless, certain inconsistency concerning the individual codes among the coders also exists. The meanings of some of the individual codes are ambiguous and not clearly separated from each other. Clearly some criteria need to be adjusted and improved.

Basically, it can be argued that, the differences among the coders come mainly from different understanding of the individual criteria; through the double check and interviews with the coders, some of the criteria are proved to be too ambiguous and therefore need to be adjusted and improved.

From the detailed comparison and analysis of the coding results, some problematic criteria are sorted out, this is largely consistent with the problems revealed by the other two coders during the interviews. These criteria include:

"The monetary system" under discipline principle (e 6): the explanations to this criterion shall give stronger emphases on the understanding of financial system in the economy as well as its application in the daily life situation.

"Self-organisation and independence" under the situation principle (s 9) (5 times inconsistently coded): this criterion delivers a rather vague meaning and its application shall be restricted to the (simulated) work conditions that explicitly ex-

press the requirements on self-organisation or independence, otherwise any vocational or even daily activities may concern certain degree of self-organisation or independence.

"Vocational maturity" under the situation principle" (s 14) (7 times inconsistently coded): this criterion shall be given more detailed sub-criteria and/or explanations which cover different learning activities that directly help pupils to know more about the possible future occupations as well as vocational trainings.

"The ability to form and conduct life plans and personal projects" (p 8) (7 times inconsistently coded): this criterion shall be strictly constrained in the circumstances that applies to not just the vocation-finding situation, but rather different life situations, so that it can be clearly differentiated with the criterion "vocational maturity".

"Dedication to the job" (s 20) is similar with the criterion "love and respect the job" (s 25); therefore these two criteria can be integrated into one.

"Honest and trustworthy" (s 21) is similar with the criterion "loyalty" (s 23) and therefore can be integrated into one.

"Proficiency" (s 26) is related to the criteria "speed of operation" (s 4), "motivation" (s 8) and "carefulness" (s 10) and therefore can be canceled.

Besides the adjustments made to some of the relevant criteria, a clear instruction shall be given concerning the coding process, namely, in coding the individual units, coding with the multiple codes under different principle categories shall be avoided, unless absolutely necessary to do so.

3.6 Results of Curriculum Analysis

It should be emphasized here, as has been explained earlier, because of the potential overlapping problems and difficulties in interpreting some of the items, the analysis results are most valuable in a comparative setting, namely when they are compared with each other.

Since all four curricula are coded and interpreted with the same set of criteria, the comparison is therefore based on a consistent basis and the commonalities and differences among them are valid.

The concrete coding of all curriculum plans can be seen in the appendix (cf. appendix), here a summary of results is introduced and elaborated (Table 3.19).

3.6.1 BW WAG Curriculum

As can be seen in Fig. 3.3, the application of all three principles could be found in the curriculum plan. Different perspectives are given different degree of impor-

Table 3.19 Number of codes for each Reetz principles for BW WAG curriculum

	Discipline principle	Personality principle	Situation principle
Total 76	40.5	20	15.5

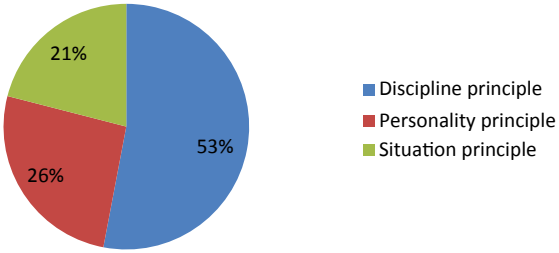

Fig. 3.3 Percentage of Reetz principles BW WAG curriculum

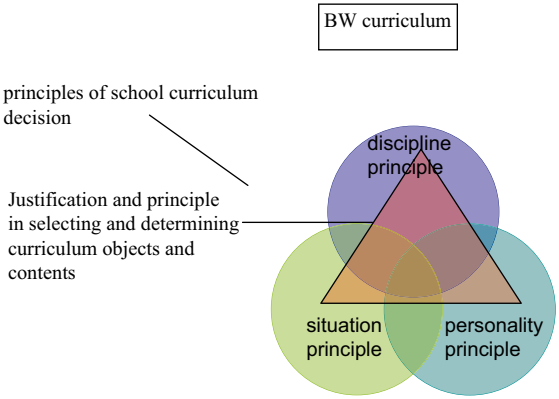

Fig. 3.4 Distribution of Reetz principles for BW WAG curriculum

tance. But since relatively bigger amount of items reflect the discipline principle, it could be argued that the curriculum applies a discipline principle in its curriculum design, but also takes into account of situation principle and personality principle.

Here it has to be mentioned that Fig. 3.4, together with the similar figures in the following part, is not based on the accurate mathematic calculation; the relative positioning of the triangle in the three circles is rather a representation of the relative significance of each principle in the curriculum, the bigger certain circle is occupied by the triangle, the more important that corresponding principle is in the decision of the curriculum plan.

Table 3.20 Number of codes for each Reetz principles for NRW Wirtschaft curriculum

	Discipline principle	Personality principle	Situation principle
Total 221	167	6	48

Table 3.21 Number of codes for each Reetz principles for Shanghai LTC curriculum

	Discipline principle	Personality principle	Situation principle
Total 38	14	19	5

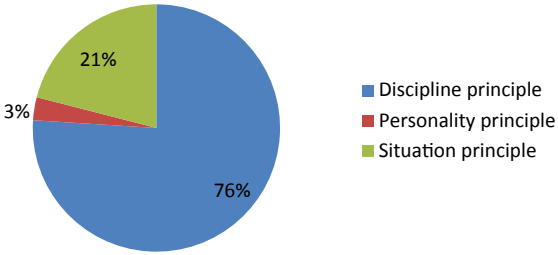

Fig. 3.5 Percentage of Reetz principles NRW Wirtschaft curriculum

3.6.2 NRW Wirtschaft Curriculum

Among all 221 coded items, 98 items are coded as economics, 69 as business management, 6 as personality, 4 item is coded as technology, but 3 of them are included in other criteria and 47 as situation principle. The only item coded as just technology concerns machinery, considering that machinery itself does not form a scientific structure but rather represents the typical work situation in contemporary world, this item is therefore coded as applying situation principle (Table 3.20).

As it is apparently shown in Fig. 3.5, the curriculum applies discipline principle in its curriculum design, but also takes into account of situation principle, whereas the personality aspect is given little emphasis (Fig. 3.6).

3.6.3 Shanghai LTC Curriculum

Among all 38 coded items, 11 as business management, 14 as personality, 9 item is coded as technology, but 3 of them are included in other criteria and 5 as situation principle.

Following the normal logic, the distribution of the three principles should be as follows (Table 3.21, Fig. 3.7):

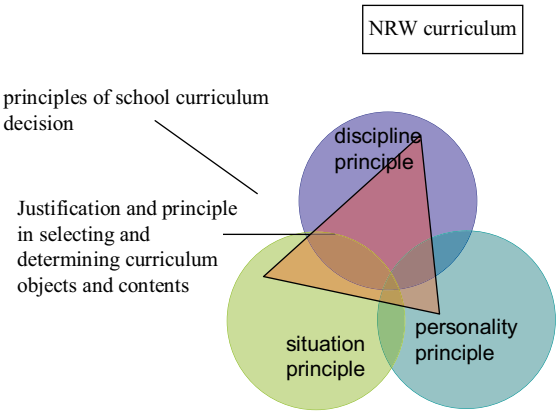

Fig. 3.6 Distribution of Reetz principles for NRW Wirtschaft curriculum

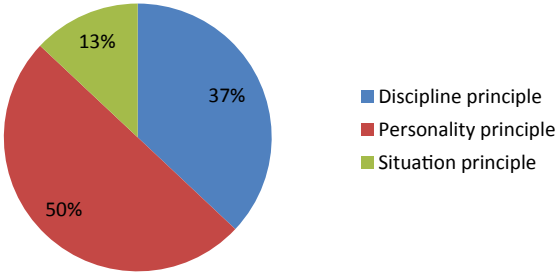

Fig. 3.7 Percentage of Reetz principles Shanghai LTC curriculum

Apparently, the curriculum applies a combination of personality and discipline principle in its curriculum design, whereas the orientation toward situation plays only a marginal role. (Fig. 3.8)

3.6.4 Chinese LTC Curriculum

Among all 32 coded items, 2 items are coded as business management, 14 as personality, 1 item is coded as technology, and 17 as situation principle.

Since only two items are coded as business management and they only cover the production aspect of the business management; meanwhile, no scientific structure exists in curriculum applying the same logic that has been discussed in the Shanghai curriculum, they cannot be regarded as applying the discipline principle, but

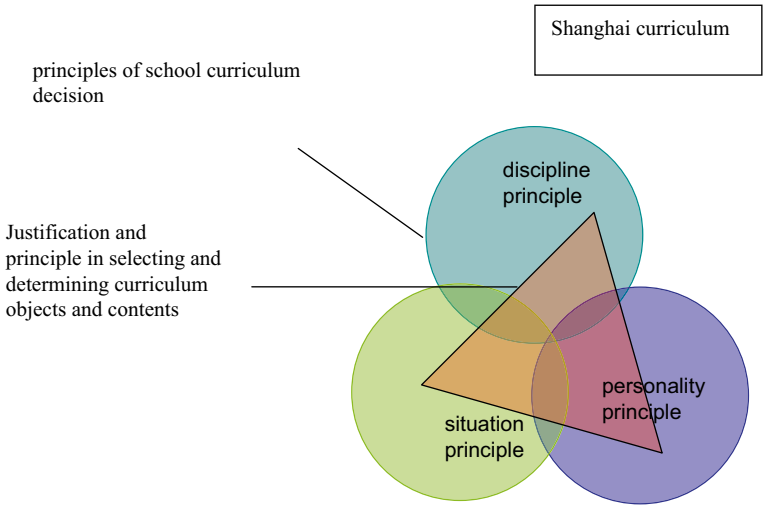

Fig. 3.8 Distribution of Reetz principles for Shanghai LTC curriculum

Table 3.22 Number of codes for each Reetz principles for China LTC curriculum

	Discipline principle	Personality principle	Situation principle
Total 34	3	14	17

rather situation principle; the same logic applies also to the only technology item in this curriculum (Table 3.22, Fig. 3.9).

Apparently, the curriculum applies a combination of situation principle and personality in its curriculum design, whereas the subject knowledge is almost neglected (Fig. 3.10).

3.7 Comparison and Interpretation of the Analysis Results

3.7.1 Basic Comparisons

Based on the findings from the analysis of each curriculum, some commonalities and differences can be found. The more detailed analysis and interpretation will be done in chapter 5 in combination with the findings revealed from the investigation on the praxis level.

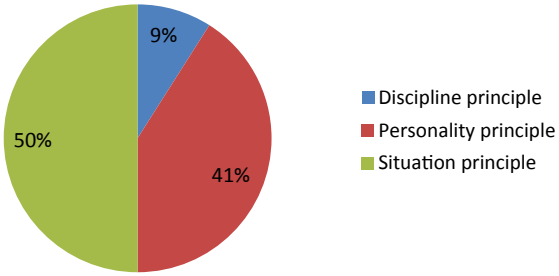

Fig. 3.9 Percentage of Reetz principles China LTC curriculum

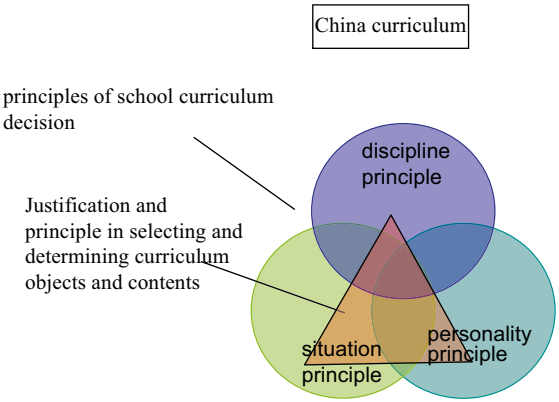

Fig. 3.10 Distribution of Reetz principles for China LTC curriculum

3.7.1.1 Differences

On a basic level the criteria that are coded in the curricula are very different, which is reflected in the codes appeared in each coding Table (cf. Appendix part 2). Figure 3.11 illustrates the overall coded items in each curricula (Table 3.20).

As can be seen from this figure, the differences among the curricula are very evident; they mainly lie in the following aspects:

The differences in the ranges that different curricula cover are huge. While the curriculum in NRW covers more than two hundred items, which include a wider range of knowledge, skills and abilities, the curriculum in most provinces in China contains only 32 items, which include much smaller amount of learning objectives.

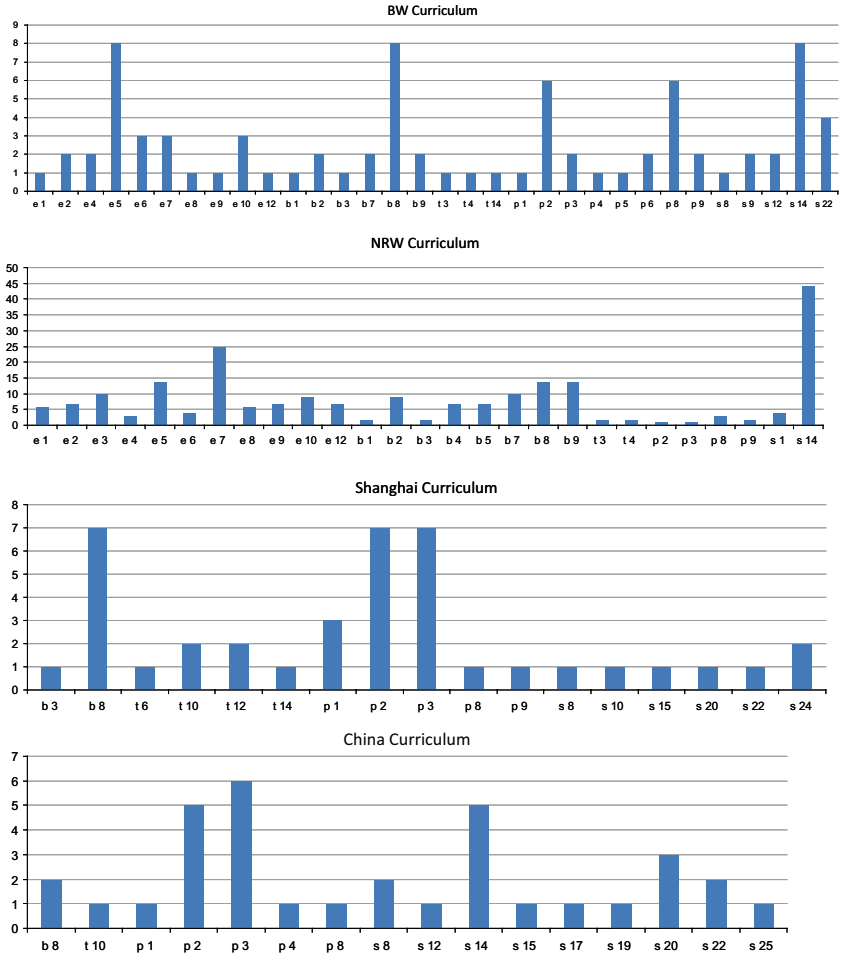

Fig. 3.11 Occurance of individual items per curriculum (meaning of the criteria can be seen in Tables 3.7, 3.11, 3.16, 3.17, 3.18)

The emphases of the curricula also differ with each other greatly, especially between the two countries. While the German curricula stress subject knowledge, most importantly economics and business management as the most important learning objectives, such systematic knowledge in economics and business man-

Table 3.23 The most frequent items/criteria coded in each curriculum plan

	BW	NRW	China	Shanghai
Discipline principle	e 5, b 8	e 5, e 7, b 8, b 9		b 8
Personality principle	p 8		p 2, p 3	p 2, p 3
Situation principle	s 14	s 14	s 14	

agement can hardly be found in the Chinese curricula, except some rather isolated knowledge about the production process. Nevertheless, the Chinese emphasis on the personality aspect is much weaker in the German curricula, especially in NRW, where the personality aspects account for only 3 % of the entire curriculum.

The different orientation and emphases of each curriculum plan are also reflected in the items/criteria that are most frequently coded in the analysis process. A table is made to demonstrate the criteria that are coded in more than 10 % of all the coded learning objectives in the corresponding curriculum plan; as mentioned above, one learning objective can be coded with more than one criterion/code, so this table does not mean the exclusion of other codes, but rather shows the relative importance of the aspects these codes represent in the curriculum plan (cf. Table 3.23).

This table can very well demonstrate the different emphases of each curriculum plan. In BW curriculum economic knowledge about actors in the market (e 5), business knowledge about production and operation (b 8) as well as the ability to form and conduct plans and projects (p 8) are most repeatedly emphasized; in NRW curriculum similar economic knowledge as in BW curriculum (e 5, b 8) is stressed, meanwhile other economic and business knowledge points as government policies and externality, human resource management etc (e 7, b 9). are attached great importance; while curricula in both Germany and China give emphasis on quality such as vocational maturity (s 14), curricula in China, including Shanghai tend to regard the ability to use knowledge, information and technology (p2, p3) as highly important. Similar as what the overall results present, the most frequently coded items have shown the general orientation of each curriculum and the most important principle in them.

Although the coding process shows that all curricula attach certain degree of importance to the labor market situation, their emphases are different. The Chinese curricula put labor market situation on a higher priority (over 50 % of the curriculum contents) compared to the German counterparts (around 20 %). In the NRW curriculum, the vocational maturity is almost the single important aspect relevant to the situation principle; whereas the Chinese curricula cover a wider range of qualities that are potentially required by the labor market.

Different certain aspects of technology, such as IT abilities and utilization of computer, can also be seen in the NRW curricula, but not so much in the other three curricula, maybe partly due to the differences in time of curriculum development. Meanwhile, in the German curricula, technology elements are found in together with teaching of other knowledge, for example production, whereas in the Chinese curricula the technology elements are taught relatively independently.

3.7.1.2 Commonalities

Despite all the differences mentioned above, some common points can still be found among the curricula, which raise potentially interesting questions concerning the tendency in the field of pre-vocational education.

Business knowledge concerning production (coded as b8) plays an important role in BW, NRW and Shanghai curricula; the Chinese national curricula stresses the aspect of vocational maturity of the pupils (s14), which is a feature of situation-oriented curriculum developed in the German context and also an evident element in both of the German curricula; in the BW curriculum the ability to use knowledge and information interactively (p2) is attached certain significant, a domain of competence that stays in a prominent position in both of the Chinese curricula too.

In the guidelines of all four curricula, the emphasis on orientation towards situation can also be seen. Although majority of the curriculum objectives are about subject knowledge in BW and NRW, they all stress the idea that preparing the students for future life situation is the most important task, similar to the Chinese ones.

With a certain degree of exceptions (mainly curriculum in NRW), all curricula address similar series of qualities in terms of both personality and situation principle. Key competencies like ability to use language, knowledge and technology interactively, ability to form and conduct life plans, the ability to assert personal interests and needs, qualities like motivation, dedication to and love for job, pragmatics can be found in almost all curricula. Some qualities that are developed in the German context can be found in the Chinese curricula, and vice versa.

3.7.2 Interpretation of the Analysis Results

Firstly some points about the Shanghai LTC curriculum can be made.

When the Shanghai LTC curriculum is investigated closer, some other features can be found. Most importantly, the business knowledge this curriculum covers is only about production. All other aspects of the business management cannot be found in the curriculum. The structure of systematic business knowledge does not

exist, but rather the isolated pieces of knowledge about production. This means that even though certain knowledge about the production process and sector of a company is taught, it is not taught in the framework of business management. This does not fit the requirement of discipline principle, according to which the teaching of knowledge in a scientific and systematic way is one of the basic characteristics and preconditions.

On the other hand, the emphasis on production knowledge demonstrates a very strong technology-application orientation. The abilities to handle materials, to use instruments, to accomplish a technical task appear repeatedly in the curriculum. This reflects the status of practical technical skills in the curriculum, as the curriculum guideline puts it, "the purpose (of LTC in Shanghai) is to improve the basic technical attainment of students comprehensively, train a new generation with technical knowledge, innovative thinking and practical competencies". This is consistent with the demands from employers in China on the technical workers or newly-recruited staff; Venter (2002, p. 20, 41) finds out that the employers in China attach greatest importance to technical skills for technical work, compared to other abilities and qualities.

The interpretation of the comparison on the theoretical level at this stage should be very careful, because the more hidden reasons for differences or commonalities are yet to be discovered by the investigation on the praxis level.

Obviously one of the most substantial difference between the curricula in two countries is that the German curricula are largely discipline oriented whereas the Chinese ones are not. In a way the German curricula are closer to the "standard image" of the middle school curricula in both countries, since in the lower-secondary education in both countries teaching subject knowledge based on disciplines are the major form (cf. Sect. 2.1). Therefore what needs to be interpreted is rather the Chinese condition, why, in a school system which is so oriented toward examinations and teaching of subject knowledge, the pre-vocational curriculum is clearly not so subject-knowledge oriented?

The generally strong orientation toward personality and situation principle in the Chinese curricula can be partly traced back to and understood in the conext of its historical dvelopments, as narrated in Sect. 2.2.2 of this dissertation. The development of education of technical and vocational content and nature during lower-secondary school in China a political aspect has always played a role, and the socialism political education inevitably involves the education of character, including the attitude toward work (cf. Zhang 2001). From the 1980s to 2004, the LTC curriculum objectives have always included elements such as foster and develop attitudes toward work (cf. Sect. 2.2.2; MOE 2004b). To a certain degree, some element and mentality of what Mao advocated, "the reeducation of intellec-

tual youth by the farmers and workers", can still be seen in the current LTC. Here the formation of attitude and character or even personality is clearly a significant reference point.

Another important reference point of the Chinese curricula, as can be seen in the curriculum plans (cf. Appendix, part 2), is the utilization of the course. The curriculum should offer them abilities, qualities and knowledge which can prepare the pupils for different working contexts. These different working tasks and contexts are expressed as one common goal for everyone, the Chinese "modernization" process (cf. Sect. 2.2.2). Pupils are regarded as the future and potential constructors and workers of the modernization process and their motivation and professional preparation for that goal are of vital importance. The development of personality and learning of subject knowledge should all serve it.

Further interpretations can only be drawn after the investigation on the praxis level is finished, when more information, knowledge and understanding is gained about the teaching reality of the curricula in both countries.

Teacher Interview

4

This chapter includes three parts: firstly some critical methodological issues are discussed as the foundation of choosing and determining methods for investigation of teaching reality in the praxis level; secondly the guideline for teacher interviews in both countries are developed; thirdly the major findings of the teachers interviews are presented and interpreted.

4.1 Development of Interview Questions and Preparation of Interviews

4.1.1 Critical Methodological Issues in Study of Curriculum Implementation

As has been stated in the chapters above, the central aim of this research is to investigate how pre-vocational education is documented in the curriculum plan on the one hand, and implemented in the teaching reality on the other hand. After analyzing comparing the curriculum plans in both countries applying the content analysis method, the reality aspects of the curricula need to be investigated.

The importance of research on curriculum implementation was however to a certain degree neglected or underestimated by education researchers before 1970s, partly due to the underlying assumptions that the process of carrying out an educational plan into the practice is unproblematic and fidelity of implementation would be high during program adoption and that implementers would copy or imitate the innovation exactly as earlier adopters had used it (Fullan and Pomfret 1977, p. 337; O'Donnell 2008, p. 34). Researchers later found out that translating the proposal into a curriculum in reality is not as simple as has been imagined and the outcomes were not always as good as intended earlier (Fullan and Pomfret 1977, p. 337; Snyder et al. 1996, p. 404). Curriculum implementation itself is a subject

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that deserves scientific investigation, as Fullan and Pomfret (1977, p. 336) put it, "implementation is not simply an extension of planning and adoption processes. It is a phenomenon in its own right".

According to Snyder et al. (1996, pp. 404–427), mainly three approaches can be found in the curriculum implementation researches, namely the "fidelity perspective", "mutual adaptation", and "curriculum enactment".

Fidelity of implementation is defined mainly as "the determination of how well an intervention is implemented in comparison with the original program design during an efficacy and/or effectiveness study" (O'Donnell 2008, p. 33). According to this perspective, the focus of curriculum implementation lies in two aspects: (1) measuring the degree to which a particular innovation is implemented as planned and (2) identifying the factors which facilitate or hinder implementation as planned; certain assumptions can be found underlying this perspective: curriculum knowledge is created outside the classroom by the experts who design and develop the curriculum, curriculum change is a linear process with teachers implementing the designed program, etc. (Snyder et al. 1996, p. 404).

With the fidelity perspective be the mainstream methodology during the 1960s and 1970s, the mutual adaption perspective as an alternative already emerged in the 1970s (Fullan and Pomfret 1977, pp. 340–342).

Unlike the fidelity perspective which regards the curriculum knowledge created outside the school, the mutual adaption perspective sees the curriculum knowledge as an aspect of a "larger complex social system that cannot be taken for granted" (Snyder et al. 1996, p. 412). The mutual adaption approach assumes that the implementation should be subject to some adjustments according to the interests, needs of participants and have certain degree of flexibility on project goals and targets (Snyder et al. 1996, p. 412).

Mutual adaption researchers are committed to another way of studying educational problems, as Snyder et al. (1996, p. 411) put it, "using new methodologies and theories to discover what intensive, descriptive data will yield about the various problems of education and identifying factors which facilitate or hinder implementation as planned, especially organizational variables".

Snyder et al. (1996, p. 412) also divide two orientations in the mutual adaption perspective, namely the practical orientation and the critical orientation. A more practical orientation is concerned with the process of implementation itself and the kind of supports adopters need and the minimum integrity of a program design; whereas researchers with a more critical orientation pay more attention to the issues related to the meaning of perceptions and actions of those involved in the implementation process (Snyder et al. 1996, p. 412).

Compared with the mutual adaption perspective, the curriculum enactment perspective attaches more importance to the experienced curriculum instead the

official curriculum. It sees curriculum as "the educational experiences jointly created by student and teacher" (Snyder et al. 1996, p. 418). According to Snyder et al. (1996, p. 418), the externally created curricular materials and programmed instructional strategies which play a central role in fidelity and mutual adaption perspectives are just regarded "as tools for students and teacher to use as they construct the enacted experience of the classroom".

Curriculum knowledge is, from the perspective of curriculum enactment, "a personal construct which must answer to both personal and external standards"; the role of teacher is seen as "a curriculum developer who, together with his or her students, grows ever more competent in constructing positive educational experiences" (Snyder et al. 1996, p. 418).

Three major research questions relevant to this perspective are: (1) What are the enacted experiences and how do students and teachers create them? (2) What effects do outside factors have on the curriculum as enacted? (3) What are the effects on students of curriculum as actually enacted? (Snyder et al. 1996, p. 418).

4.1.2 The Perspective This Research Takes

The results the double-blind check of the curriculum analyses has made explicit that, despite the overall consistency in terms of the distribution of the three principles, the same curriculum plan (in this case the BW WAG curriculum plan) could be interpreted differently by different people. It is therefore logic to speculate that different teachers may also have variant understanding of the curricula.

Curriculum plan is subject to the interpretation and individual application of the teacher, therefore the way teachers implement the curricula inevitably have an influence on the actual effects they have on the pupils; and what happens in the teaching reality is an "outcome of the original, creative, thinking-on-your-feet efforts of the teacher" (Shkedi 1998; Schwartz 2006). Kirk and Macdonald mentioned in their research that teacher's **positionality** plays an important role in interpretation of the curriculum materials and their "attempts to understand what they required of them"; this positionality includes two aspects, namely teacher's "personal discursive history" or their "accumulated professional and personal expereinces", as well as teacher's "prefessional identity" and their "subject allegiances" (Kirk and Macdonald 2001). Drake and Sherin (2006) found that teachers' early memory of learning the subjects, their current perceptions of themselves as learners, as well as their corresponding interaction with other members all may lead to distinctive ways of implementations of the curricula.

Since the focus of the curriculum analysis is the principles of curriculum development, when investigating the implementation process it makes more sense if the focus

is consistent with that of the curriculum analysis, not only the results of curriculum analysis could be double checked against the teaching reality, but also to remain consistency in the research process so that the results of the investigations in both parts could be more comparable and therefore be discussed and explained on the same basis.

Based on the results revealed in the curriculum analysis, the intention of this research is therefore not to investigate the overall implementation of the curriculum, but rather to **concentrate on what principles the curriculum plans apply** on the one hand and **how they are understood by teachers and therefore manifested in the teaching reality** on the other hand.

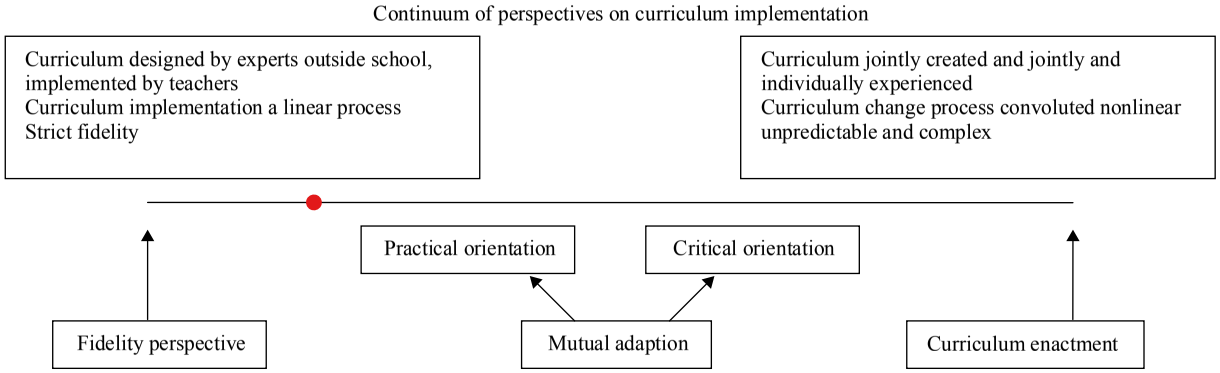
Among the three perspectives in studying curriculum implementation mentioned above, the fidelity perspective is mostly used by curriculum researchers, whereas the curriculum enactment perspective is least used (Pinar 2004, p. 701; Snyder et al. 1996, p. 404, 418). The fidelity perspective, as Fullan and Pomfret (1977, p. 368) put it, "with consequent specific instruments, is most applicable when studying the implementation of pre-packaged, relatively explicit innovations". More operationally defined concepts, valid and reliable measures, technically sophisticated methods all offer researches from the fidelity perspective a stronger methodological basis (Snyder et al. 1996, p. 430).

However, the fidelity approach to curriculum implementation takes a rather mechanical understanding of teaching and "tends to limit our appreciation for teaching as a creative and autonomous sphere of activity" (Pinar 2004, p. 699).

Meanwhile, in the curricula analyzed, the role of teacher is given certain degree of flexibility, as could be seen in the education plans or curriculum plans: "the teachers do not teach 'something finished' and 'something final', but rather something, which make them worry, something they experience, how one solve them" (von Hentig 2004, p. 16. translated from the original German text by the author); "the teachers should be the partner, advisor and helper of the pupils and introduce the scientific theories and pattern of explanation necessary for the solution of a problem" (Der Kultusminister des Landes Nordrhein-Westfalen 2003, p. 64); "teachers should guide the activities of the students effectively, design guidance plan according to the needs of the students" (quoted from the curriculum plan for Chinese Labor and Technical Education).

The perspective and understanding of the curriculum and its implementation of pre-vocational education in both countries go beyond the pure fidelity approach. Thus it is appropriate to take into consideration the mutual adaption perspective in this investigation.

This research therefore takes a perspective mainly based on the fidelity perspective but also taking into account the mutual adaption model, as could be seen in the following graphic, the red point represents somewhat the theoretical standpoint of this research (Fig. 4.1).



Adapted from the model described by Snyder, Bolin, and Zumwalt (1996, P. 404-427)

Fig. 4.1 Continuum of perspectives on curriculum implementation and standpoint of this research

Thus the questions most relevant to the investigation of curriculum implementation in this research are the questions that are also central to the fidelity perspective and practical oriented mutual adaption perspective, namely:

To what degree has a curriculum been implemented?

What factors facilitate or inhibit the implementation of a curriculum?

4.1.3 Choice of Teacher Interview

The methods which were used measuring fidelity varied from self-report survey and interviews to analysis of student artifacts (O'Donnell 2008, p. 49); whereas the methods applied when investigating the implementation as a whole include observation techniques, focused interviews, questionnaires, and content analysis (Fullan and Pomfret 1977, p. 365).

Since the investigation attempts to find out both (1) to what extent is the curriculum implemented and (2) which factors may affect the implementation process, method(s) that can cover both of the two aspects shall be chosen as the major method in this stage. Meanwhile the specific aspects such as the principles of curriculum development should be reflected in the investigation process. But each of the above methods has its own strengths and weaknesses.

Although the use of observation represents "the most rigorous measurement of behavioral fidelity or degree of implementation if the innovation is reasonably specified" (Fullan and Pomfret 1977, p. 365), it could be very time-consuming and therefore could hardly cover a wide range of schools unless big amount of observers could participate. It is also criticized because that it is normally based on overall judgment and lack of specific dimensions or criteria; and meanwhile some dimensions of the implementation (such as teacher's perceptions and understanding of the curriculum) are more difficult to assess than others; the potential effect the observer has on the performance of users is not clear (Fullan and Pomfret 1977, p. 365).

Questionnaire has the advantage of reaching large samples of users and is also effective in "assessing users' knowledge and understanding of the philosophy and basic strategies of an innovation program, provided that both specific questions are asked and open-ended questions are used to assess various aspects of respondents' thinking and approaches to the innovation"; the effect of this method at measuring degree of implementation is also proved by other researches (Fullan and Pomfret 1977, p. 366). Nevertheless, its effect is at best only when it reaches enough amounts of samples.

According to the degree of the structuring of an interview, it could be divided into different categories, structured and unstructured interview: the difference

between the two forms of interview is whether a questionnaire is applied in the interview or not (Atteslander and Kopp 1993, pp. 152–153). They both have certain advantages and disadvantages: on the one hand, structured interview can guarantee a certain degree of structure and construction of the interview, whereas the unstructured interview gives the interviewee more free space for their own explanations of the subjects; on the other hand, because the questionnaire could restrain the range and scope of interviewees' answers, structured interview has very high requirements on the questionnaire, including the design of its process and each question; the unstructured interview, on the other hand, due to its lack of control in advance, demands that the interviewer shall be able to fully in charger of the interview process, and therefore a higher level of interview skills and language abilities (Atteslander and Kopp 1993, pp. 153–154).

Due to the fact that the interview in this research will be done in both Germany and China, if an unstructured interview is to be carried out, a high level of both interview skills and language abilities of the interviewer would be necessary. To reduce the difficulties and therefore the possibilities of making mistakes during interview process, meanwhile also remain a high comparability, a questionnaire/guideline will be applied in this interview.

Nonetheless, since a certain degree of mutual adaption perspective is taken into account, interviewees' perceptions and understanding of the curriculum shall be given stronger emphasis. Thus the interview shall also offer some more free space for the interviewees, so that their perceptions, understanding and interpretations of the curriculum can be reflected.

In order to maintain a certain level of comparability, some of the questions will offer a frame of answers, from which the interviewees make their own choices; some of the answers will be left open, so that the interviewees are not constrained by the possibilities offered to them, and more hidden meanings can therefore be revealed.

Thus, a **semi-structured interview**, which contains both structured questionnaire and open space for questions and explanations, will be chosen as the major data-collection method in this research. But different groups of people are all involved in or have influences on the actual teaching process: teachers, students, administrative staff at school and district level and principal of the schools. Which group(s) shall be chosen as the target of interview? It depends mainly on the purpose and content of this research and its feasibility.

The psychological developments of most students at this age (13–16) determines that they are still too young to grasp the overall objective and principle of the curriculum individually; to gain the data of the general conceptions and understanding of the students about the curriculum and its implementation, a large scale

is then necessary. This is not quite realistic to be done by one person in a research of this latitude.

The principals, despite their vantage point in understanding the overall situation and mission of lower-secondary school, has relatively little knowledge about the actual situation taking place in the classroom in each discipline. To know the degree of the implementation and the influencing factors it is not enough to ask the principals only. This situation can also apply to the relevant administrative staff.

Teacher is for this research the ideal interviewee: they are the ones involved in the teaching process on a daily basis and therefore perfectly aware of the realities happening in the classroom; they are mostly trained professionals and therefore are able to grasp to a certain extent the basic objectives of a curriculum and the principles it may apply; their own perceptions could somewhat reflect the degree of implementation when compared with the official curriculum.

Thus a semi-structured teacher interview is chosen as the major form of the investigation of the curriculum implementation.

4.1.4 Structure of Teacher Interview

As has been mentioned above, the central questions to be studied at this stage are as follows and the major method of data collection is teacher interview:

To what degree has a curriculum been implemented?

What factors facilitate or inhibit the implementation of a curriculum?

The interview therefore consists of two parts: (1) the evaluation of degree of fidelity, and (2) investigation of the influencing factors. Here the main aspects of the teacher interview are further elaborated.

4.1.4.1 The Evaluation of Degree of Fidelity of Implementation

In order to measure the fidelity of curriculum implementation, the essential characteristics and the critical components of the intervention should be clarified; when taken into consideration the mutual adaption perspective, acceptable adaptations and an indication of the range of variations should also be outlined (Snyder et al. 1996, p. 429; O'Donnell 2008, p. 49).

In this comparative study, the essential characteristics of the curricula are identified as the principles applied under the theoretical framework of Reetz (e.g. 1984, 2003). The measurement of the degree of fidelity will therefore be partly based on these criteria. Teachers will be asked questions which orient towards the Reetz's principles. However the concrete questions to be asked during the interview are

designed as not cultural-specific (this is realized through the question design in the following part).

Questions, such as, what takes place in the classroom, what contents are really taught, what do teacher actually teach in the reality will be asked; the answers, which represent to a certain degree teachers' understanding of the curriculum as well as the orientation and principles of the curriculum in use, will be compared with that of the curriculum analysis. Through this comparison, commonalities, similarities, and differences between the curriculum plan and the teaching reality can be found; basic degree of curriculum implementation fidelity can be therefore revealed; equally importantly, teachers' attitude towards and understanding of the curriculum, which is one of the major indicators of the curriculum implementation (Posner 2004, pp. 212–213), are directly manifested. Whether the teachers hold similar understanding of the curriculum, determine to a certain extent whether the curriculum can be implemented.

The first question to be answered in the teacher interview is therefore:

To what degree are teachers' understandings of the curriculum in pre-vocational education consistent with the curriculum plan?

Questions concerning the characteristics of each of the three principles will be raised. Based on the explanations of Reetz's theory mentioned in the last chapter, these features are, for discipline principle, the existence of systematic structured knowledge; for situation principle, the relatedness of the learning contents to pupils' future vocational choice and situation; for personality principle, the consideration of learner's needs and interest as well as the degree of help the course has for pupil's overall personality development.

Since this research takes into account the mutual adaption perspective on curriculum implementation, some flexibility in terms of teacher's understanding of the curriculum will be allowed.

However, in order to find out the degree of implementation fidelity more comprehensively, the measurement shall cover some broader aspects. Based on the literature review done by O'Donnell (2008, p. 34), some objective criteria, according to which the degree of fidelity of implementation could be measured, are as follows:

> (a) adherence—whether the components of the intervention are being delivered as designed; (b) duration—the number, length, or frequency of sessions implemented; (c) quality of delivery—the manner in which the implementer delivers the program using the techniques, processes, or methods prescribed; (d) participant responsiveness—the extent to which participants are engaged by and involved in the activities and content of the program; and (e) program differentiation—whether critical features that distinguish the program from the comparison condition are present or absent during implementation.

These criteria will be applied in the interview questions, in order to measure from a more direct and comprehensive perspective. The results of these questions, together with the questions relevant to teachers' understanding of the curriculum, can offer a basic answer concerning the degree of implementation fidelity.

The second question is therefore:

How well are the pre-vocational education curricula implemented in the teaching reality, as intended in the curriculum plan?

4.1.4.2 Investigation of the Influencing Factors

As Fullan and Pomfret (1977, p. 390) put it, "implementation is a highly complex process involving relationships between users and managers, and among various groups of users, in a process characterized by inevitable conflict and by anticipated and unanticipated problems…". Due to this complexity of the phenomenon of implementation, the number of the influencing factors could be enormous (Fullan and Pomfret 1977, p. 367). Previous studies have offered rich information about the influencing factors of curriculum implementation.

For Lundgren (1972, pp. 12–13), the most important frame factors which influence the teaching process are (1) factors given in the curriculum-goals and contents, (2) time available for instruction, and (3) the composition of the class according to the time different pupils need to reach a certain goal; the interrelations among the three are of great importance to the actual teaching.

Loucks (1983, quoted in Snyder et al. 1996, p. 409) argues that, the most important contributors to successful implementation includes: commitment of teachers which developed through the actual use of materials; curricular or instructional practices that was carefully developed, well-defined and determined to be effective; training by credible people, and follow-up support activities through the first 3 years; assistance and support by an array of players, including other teachers, principals, district staff, external trainers, and linkers; attention to factors contributing to institutionalization, including line items on budgets, orienting new or resigned staff, and writing the changes into curriculum guidelines.

According to Romberg and Price (1999, pp. 206–213), curriculum change should take into account three institutional dimensions-work, knowledge, and professionalism because they "direct attention to the social assumptions and values that underlie school practices and constrain the implementation of innovations"; put it more concretely, a certain curriculum implementation inevitably influences and is influenced by the way teachers and students in the school work, the way in which knowledge is distributed in school, as well as the professional position of teachers (Table 4.1).

Fullan and Pomfret (1977, pp. 367–368) categorize the influencing factors into the following four groups, each containing a number of specific variables:

Table 4.1 Category of influencing factors according to Fullan and Pomfret

Characteristics of the innovation	Explicitness (what, who, when, how)
	Complexity
Strategies	In-service training
	Resource support (time and materials)
	Feedback mechanisms
	Participation
Characteristics of the Adopting Unit	Adoption process
	Organizational climate
	Environmental support
	Demographic factors
Characteristics of Macro Sociopolitical Units	Design questions
	Incentive system
	Evaluation
	Political complexity

Table 4.2 Posner's influencing factors on curriculum implementation

Factor	Description
Temporal	Time: quantity, frequency, duration, scheduling
Physical	Natural and built environment; materials and equipment
Political-legal	State and federal mandates, limits, requirements
Organizational	Administrative factors, including size, groupings, policies
Personal	Backgrounds, abilities, interests of students, staff, and parents
Economic	Costs and benefits broadly conceived
Cultural	Values and beliefs of school and community

Posner (2004, p. 201) offers another perspective on the frame factors by putting them into seven categories, their names and meanings as follows (Table 4.2):

Central questions related to different aspects of this theory are, for example, "Is the time teachers will need to prepare for their teaching of this curriculum realistic (temporal factor)"; "Will the curriculum require any special outdoor or indoor facilities? Is it likely to work well in school facilities as they typically exist (physical factor)"; "What kind of competencies and knowledge are necessary to implement the curriculum successfully? Are teachers likely to have these competencies and this knowledge (personal factor)", etc. (Posner 2004, pp. 211–213).

As can be seen clearly, the influencing factors on curriculum implementation are very comprehensive and their interactions complex. Some of the factors are addressed by almost all the theories mentioned, such as time available for

instruction, (degree of) support from the principal, training of the teachers etc. But the differences among them are also apparent: while the factors in the theory by Romberg and Price (1999, pp. 206–213) are rather abstract, Posner identifies in his theory a more concrete set of factors; Lundgren put more emphasis on the factors in the teaching process, whereas Fullan and Pomfret (1977, pp. 367–368) take wider range of factors in different spheres of education into consideration.

During the teacher interview in this research, Posner's theory will be chosen as the frame, according to which the interview questions be developed, because (1) it covers a wide range of factors which could possibly have effects on curriculum implementation, (2) it addresses the factors that are relatively more concrete comparing with those addressed by other theories, and this would facilitate teachers' understanding of the questions.

The third question is therefore:

Which factors have the most significant influences on the curriculum implementation in pre-vocational education, and why?

4.1.5 Development of Interview Guideline

This interview guideline serves as the practical guideline of the interview to be carried out in China and Germany. The Chinese and German versions might be slightly adjusted (mainly concerns the linguistic formulations) to better fit in the local settings. At the same time, as mentioned above, the questions are not cultural-specific to assure the comparability of the answers.

Here only the development process of the interviewing guideline is presented. The guideline itself with the full interview questions in three languages (English, German and Chinese is in the Appendix).

As can be seen in the theoretical introduction of the interview, the central questions to be investigated at this stage are as follows:

- To what degree has a curriculum been implemented?
- What factors facilitate or inhibit the implementation of a curriculum?

In order to answer these two central questions, the interviewer plan to take a five-step semi-structured interview. The concrete steps are as follows:

4.1.5.1 Introduction to the Interview

Suitable location and time (quiet, difficult to interrupt, etc.) will be chosen before the interview is held. This could hopefully make sure that all the interviews will be carried out in a smooth manner and good atmosphere (Helfferich 2005, p. 150).

At the beginning part of the interview there will be a "warming up" phase, during which the interviewer will introduce himself briefly and then explain to the interviewee some basic information concerning the interview, including: for what purpose this interview serves, how and in which setting this interview will be used, how long it may take etc. Simultaneously, the interviewer shall guarantee the interviewee the anonymity of the interviewee and the corresponding school as well as the non-profitability of the interview. The permission to use audio recorder shall also be given before the rest parts of the interview take place.

This introduction phase is an indispensable and therefore very important part in both the German and Chinese circumstances. In the German context the teachers may still have doubts concerning the nature and the goal of the interview at the beginning, especially when the interviewer is from a cultural background that is very different from their own; in China the middle school teachers may still have worry about the real background of the interviewer and it is necessary to openly and frankly inform the teachers again about the academic nature of the interview so that their possible unrealistic fear of the government inspection could disappear and they can therefore talk more freely.

An agreement shall be agreed between the interviewer and interviewee concerning the application of the data gained from the interview.

At the end of this stage the interviewee will be given a chance to ask questions about the interview, in order to eliminate their doubts and puzzles.

4.1.5.2 Basic Information about the Teacher

After the introduction some questions relevant to the interviewee will be asked. Here teacher's teaching subjects (could be more than one in both countries), their education backgrounds (study major and the kind of degree they hold), vocational background, further education, on the job training or off the job training, etc. will be the focus of the questions. However, too personal information will not be asked; meanwhile, if due to cultural or some other reasons the teacher have problems answering some questions concerning personal backgrounds, the questioning on these aspects shall be immediately ceased and moved on to some other aspects that do not cause any uncomfortable feelings.

Two purposes can be achieved in this stage:

1. to get the interviewee relaxed and (psychologically and physically) prepared to talk;
2. this is a way to obtain information about teacher's own background, which has significant influences on the curriculum implementation; extra findings could potentially be made based on this.

Interview questions are as follows:

- What major have you studied before becoming a teacher (before and during college, if possible)? What kind of degree do you have right now? When did you get them?
- Which major(s) do you teach currently? Which major(s) have you taught in your career?
- Have you done some other jobs before becoming a teacher? If yes, what are they?
- What kind of training or further education program have you received which is related to this course?
- Welches Fach haben Sie in Ihrem Studium studiert? Welche Hochschulabschlüsse/welches Hochschulabschluss haben Sie erworben?
- Welche Fächer/welches Fach unterrichten Sie zurzeit? Welche Fächer/ welches Fach haben Sie in Ihre Karriere unterrichtet?
- Haben Sie anderen Beruf vor Ihre Lehrerkarriere? Wenn ja, was ist es?
- Welche Ausbildung oder Weiterbildung haben Sie bekommen, die für dieses Curriculum relevant sind?

By explaining some information and asking simple questions the interviewer attempts to establish at the first two stages a relaxed atmosphere which is suitable for the interview and helps the interviewee to talk freely.

After the warming-up stage the essential questions relevant to the central research questions shall be asked. The first question to be answered concerns the fidelity of the curriculum implementation.

In order to measure the fidelity of curriculum implementation, the essential characteristics and the critical components of the intervention should be clarified; when taken into consideration the mutual adaption perspective, acceptable adaptations and an indication of the range of variations should also be outlined (Snyder et al. 1996, p. 429; O'Donnell 2008, p. 49).

In this comparative study, the essential characteristics of the curricula are identified as the principles applied under the theoretical framework of Reetz (e.g. 1984, 2003). The measurement of the degree of fidelity will therefore be partly based on these criteria. Teachers will be asked questions which orient towards the Reetz's principles. These questions then form the third stage of the interview.

4.1.5.3 Questions to the Reetz's Curriculum Principles

Based on the arguments above, the questions to be asked in this stage shall be closely related to the curriculum analysis results. On the one hand, the interview questions shall cover the same aspects that have been investigated in the curriculum analysis, namely which curriculum development principles the pre-vocational curricula in

Germany and China apply, so that the comparisons and analysis of both stages can be carried out on the same basis; on the other hand, despite through an implicite way, the interview questions should reveal teachers' understanding of the same question, therefore disclose this question from the praxis perspective (other than the perspective on the theoretical level).

The results of the curriculum analysis have demonstrated that,

- the principles, according to which the curricula of pre-vocational education are developed, are different in Germany and China;
- the curricula in Germany and China, at the theoretical level (curriculum plan), attach different degree of importances to scientific knowledge, direct relevance to the life/work situations of pupils as well as the overall development of personality;
- (as can be seen from the double blind check of the WAG curriculum analysis results,) different people may have varied understanding of the same curriculum plan and therefore interprete them in different ways

Thus, at this stage it shall be measured how the teachers perceive and understand the curriculum, what principle(s) according to their perspectives the curriculum applies. Through the interview the following research question can be answered at this stage:

To what degree are teachers' understandings of the curriculum in pre-vocational education consistent with the curriculum plan and with each other?

In order to avoid any constraint on the interviewee's perspectives, open questions will be asked first (Atteslander and Kopp 1993, p. 163). Only when teachers have difficulties offering answers to the general questions, would more advice be given which reveal the possible aspects.

Curriculum plan is subject to the interpretation and individual application of the teacher, therefore the way teachers implement the curricula inevitably have an influence on the actual effects they have on the pupils; and what happens in the teaching reality is an "outcome of the original, creative, thinking-on-your-feet efforts of the teacher" (Shkedi 1998; Schwartz 2006). Kirk and Macdonald mentioned in their research that teacher's positionality plays an important role in interpretation of the curriculum materials and their "attempts to understand what they required of them"; this positionality includes two aspects, namely teacher's "personal discursive history" or their "accumulated professional and personal expereinces", as well as teacher's "prefessional identity" and their "subject allegiances" (Kirk and Macdonald 2001). Drake and Sherin (2006) found that teachers' early memory of learning the subjects, their current perceptions of themselves as learners, as well as their corresponding interaction with other members all may lead to distinctive ways of implementations of the curricula.

It is not the intention of this research to determine clearly which factors concerning teacher themselves have influences on the curriculum implementation and how, but rather, through asking several teachers teaching this same subject, to find out to what degree their understandings of the curriculum plan are consistent with what haven been revealed in curriculum analysis of this study as well as consistent with each other.

Interview questions as follows:

- What, according to your understanding of the curriculum, is the overall purpose of this course? What are the most important learning objectives of this course (in order to achieve the purpose mentioned above)? What (kind of) contents play the most important role in the curriculum?
- Where do you think does/do this purpose/learning objectives/learning contents come from?
- Was ist, nach Ihrem Verständnis des Curriculums, das allgemeine Oberziel des Unterrichts? Was sind die wichtigsten Lernziele des Unterrichts (um das allgemeine Oberziel zu erreichen)? Welche Inhalte spielen die wichtigste Rolle im Curriculum?
- Woher kommen/kommt, nach Ihrer Meinung, das allgemeine Oberziel/die Lernziele/die Lerninhalte? Oder Wer/Welche Faktoren bestimmt/bestimmen, nach Ihrer Meinung, das allgemeine Oberziel/die Lernziele/die Lerninhalte (Wirtschaft, Industrie, Kultur)?

At this stage of the interview, on the one hand, the contexts in which the questions are raised, such as different possibilities/aspects of curriculum objective (not the concrete principles) of the curriculum, will be given to the interviewee, so that the questions are not too isolated and the interviewee can therefore better understand them (Atteslander and Kopp 1993, p. 153); on the other hand, it shall also be avoided that too many concepts are given to the interviewee at a short time, leading to the disruption of and constraints on the interviewees' perceptions. A balance shall be established between offering background of questions and maintaining the openness of the answers.

If the interviewee due to any reasons has difficulties answering these questions directly, the following further indications can be given, in order to help them understand and therefore answer the interview questions:

- Is any subject knowledge taught in the curriculum? Which subject(s)? To what degree are/is these subjects/this subject systematically structured and organized?

- Welches Fachwissen wird unterrichtet? Welche Fächer/welches Fach? In wie weit werden/wird diese Fächer/das Fach wissenschaftlich und strukturiert im Unterricht vermittelt? Bis zu welchem Grad? (Skala?)
- Are the contents taught in the course directly related to pupils' future vocational situations?
- Haben die unterrichteten Inhalte einen direkten Bezug auf die zukünftige Berufssituation der Schüler?
- Could pupils learn much about the possible occupations they would have in the future?
- Können die Schüler viel über ihre zukünftigen Berufsmöglichkeiten lernen?
- To what degree could the course offer pupils help in searching for a job/training position after leaving school?
- Wie hilfreich ist der Unterricht bezüglich Berufsfindung der Schüler nach der Schule?
- To what degree does the course take into consideration the needs and interests of the pupils?
- In wie weit berücksichtigt der Unterricht die Bedürfnisse und Interessen der Schüler?
- Could the course enable/strengthen the overall development of pupil's personality?
- Kann der Unterricht die allgemeine Persönlichkeitsentwicklung der Schüler fördern?

During the preliminary study, it has been found out that certain percentage of teachers teaching pre-vocational education in both countries actually teach more than one subjects at the same time. This implies that the teachers who are doing this have experiences and understandings concerning more than one subject. It is therefore meaningful to investigate how pre-vocational education curriculum and its implementation differ with the other subjects. The interview questions are as follows (only to the teachers who teach another subject other than this one):

- According to your understanding, which differences exist between this course (pre-vocational education) and the other one(s)?
- Welche Unterschiede existieren, nach Ihrem Verständnis, zwischen den Fächern (WAG oder Arbeitslehre und den anderen)?

If the interviewee due to any reasons has difficulties answering this question, some suggestions will be given concerning the differences among the courses with respect to the following aspects:

- The amount of time teaching scientific knowledge
- Contacts with companies and other institutions outside school
- The evaluation of pupils' performances
- Teaching methods
- Die Menge des Fachwissen
- Außerschulische Kontakte (mit Betrieben usw.)
- Bewertung der Schülerleistung
- Lehrmethode

During the questioning special attention will be paid to the wording/terms used. Special terms that are not commonly used by teachers shall be avoided, while the ones with which teachers are familiar with will be applied, with the purpose of avoiding misunderstanding (Patton 2002, p. 361).

4.1.5.4 Questions Measuring the Fidelity of Curriculum Implementation

In order to strengthen the comparability of the data obtained, the form of spectrum will be applied. Teachers will under the guidance of the interviewer fill in a small from during the interview. Interview questions as follows.

A chart of one to five is used as the measurement of curriculum implementation in this stage. During the interviews questions will be asked concerning to what degree the statements are true. The interviewee can answer the question with one to five or 0–100 %. Important is, it will be explained, the degree of implementation in the certain aspect need to be approximated by the teacher, and there are five degrees, namely one to five or 0–100 %.

Adherence

- Are the contents taught in the classroom same as the ones outlined in the curriculum plan?
- Entsprechen die Lehrinhalte im Unterrichtspraxis denen im Lehrplan?/Werden die Inhalte aus dem Lehrplan suggestiv im Unterricht ganz/vollständig umgesetzt?

1 2 3 4 5

Duration

- Is the number of the courses taking place each week consistent with that outlined in the curriculum plan?

- Ist die wöchentliche Anzahl des Unterrichts vereinbar mit der vorgegebenen im Lehrplan?

1 2 3 4 5

Quality of delivery

- Is the length of each course same as what the curriculum plan intends?
- Ist die Dauer/ Länge des einzelnen Unterrichts vereinbar mit der vorgegebenen im Lehrplan?

1 2 3 4 5

- Are the course taught in the same way (using same techniques, processes, and methods etc.) as the curriculum plan intends?
- Wird der Unterricht ebenso (gleich Technik, Prozess, und Methode usw.) gelehrt wie im Lehrplan beabsichtigt?

1 2 3 4 5

Participant responsiveness

- Are the pupils engaged and involved in the activities of the program?
- Beteiligen die Schüler sich aktiv im Unterricht?

1 2 3 4 5

Program differentiation

- Are the most important characteristics of this course represented in the ordinary teaching?
- Werden/ Sind die typischen Eigenschaften des Faches im alltäglichen Unterricht deutlich?

1 2 3 4 5

4.1.5.5 Questions Concerning the Influencing Factors of Curriculum Implementation

As has been mentioned above, the research question to be addressed here is

Which factors have the most significant influences on the curriculum implementation in pre-vocational education, and why?

To use Posner's (2004, p. 201) framework the interview question are as follows:

> What, according to your own teaching experiences and professional knowledge, are the most essential influencing factors on the implementation of pre-vocational education program (the name of the original language in the context will be applied)? Why are they important? How do they affect on the implementation of the curriculum?
>
> Welche Einflussfaktoren sind, laut Ihrer Erfahrungen und Ihres Fachwissens, für die Umsetzungen des WAG/Arbeitslehre-Curriculums am Wichtigsten? Warum? Wie beeinflussen sie die Umsetzung des Curriculums?

Because this is an open question and open to a variety of interpretations, the possibility that the interviewee talks too much about the irrelevant contents exist; if that happens, feedbacks shall be given (in special situations even interruptions), so that the interviewer can manage the process of the interview (Patton 2002, p. 376). However, this shall be done with great carefulness, not only as to avoid damaging the interview atmosphere, but also to avoid missing interesting aspects which can be crucial to the curriculum implementation.

If some of the teachers do have difficulties answering this general question, some suggestions will be given, using the frame set up by Posner (2004, p. 201), because (1) it covers a wide range of factors which could possibly have effects on curriculum implementation, (2) it addresses the factors that are relatively more concrete comparing with those addressed by other theories, and this would facilitate teachers' understanding of the questions.

The suggestions concern mainly the following aspects:

> Temporal
> Does curriculum have any special scheduling requirements? Is the time arranged for teaching normally enough to finish the tasks?
> Hat das Curriculum eine bestimmte Zeitanforderung? Ist die vorgegebene Zeit für das Lehren ausreichend?
>
> Physical
> Does the school have the corresponding equipments and facilities, which are necessary for the implementation of the curriculum?
> Hat die Schule die entsprechenden Ausrüstungen und Anlagen, die für die Umsetzung des Curriculums notwendig sind?

Political-legal
What kind of significance do the state requirements attach to this curriculum?
Wie bedeutend ist das Fach im Kontext zum Schulprogramm/Schulziel/Schulphilosophie?
Wie bedeutend ist das Fach im Kontext zum Bildungsplan des Landes?

Organizational
What are the organizational requirements of the curriculum? Does it require special organizational provisions or can it flourish in schools as they are now?
Erfordert das Curriculum zusätzliche Organisationsaufwand? Oder funktioniert es reibungslos in der bestehenden Organisationsstruktur?

Personal
What kind of competencies and knowledge are necessary to implement the curriculum successfully? Have you learned these competencies and knowledge in your education and training?
Welche Kompetenzen und Fachwissen sind für die erfolgreiche Umsetzung des Curriculums notwendig? Haben Sie diese Kompetenzen und Fachwissen in Ihrer Bildungs- und Karrierelaufbahn erworben?

Economic
Are the costs required by the course bearable within school's budget?
Sind die erforderte Kosten für die Umsetzung des Curriculums durch die Schulbudget tragbar?
Who is likely to bear the major burden of the costs, and who is likely to experience the benefits of implementing the curriculum?
Welche Einrichtung(en) werden die Kosten tragen? Staatliche Finanzierung oder Schulgebühren?

Cultural
Do you agree with the values and ideas embedded in the curriculum?
Befürworten Sie die Werte und Ideologie, die unterschwellig im Curriculumplan existieren?

4.1.5.6 Open Questions

The open question serves as an instrument to find out deeper and richer information about the interviewees' understanding of the issue, with the purpose of enriching our knowledge about the curriculum of pre-vocational education:

What is, from your perspective, the most important learning objective of pre-vocational education: systematic subject knowledge, preparation for future vocational life, or development of personality?

Was ist aus Ihrer Perspektive das wichtigste Lernziel der vor-beruflichen Bildung (WAG/Arbeitslehre): systematisches Fachwissen, Vorbereitungen für zukünftige Berufsleben, oder Entwicklung der Persönlichkeit?

4.1.6 Interview Preparation and Process

4.1.6.1 The Selection of and Contact with Schools and Teachers

Germany

As mentioned before two regions/Länder are chosen as the location of investigation from which schools and teachers are chosen. In both Baden-Württemberg and Nordrhein-Westfalen the schools are chosen more or less randomly from the internet. In both BW and NRW eight teachers from three different schools in each region approved the interview request.

Before the interviews a letter asking for permission was sent to all the schools where interviews were carried out. Normally it was the rector of the school or the vice-rector who is responsible for the outside school contacts gave feedback and make arrangements, if they accepted my request for interviews.

Due to the reason that the letter sent to schools already contain the intention and nature of the interview as well as my background, the teachers normally already had some idea about what the interviews deal with. However concrete questions and the theoretical concern related to this research itself is not given in the letter, therefore the teachers do not have the possibility of preparing for the questions concretely. Hence the answers given by the teachers during the interviews are spontaneous and have a high probability of representing what their own understandings instead of memorizing some lines from the curriculum plan or textbooks. Meanwhile since they can identify my intention as scientific investigation, the teachers generally do not have worry about the consequence of the answers, so they can give the answers directly and honestly.

China

Basically in China the schools are reluctant to work with people from outside school especially if they are not familiar with the people or agencies. It is therefore extremely important to have personal contacts or official connections to have access to the schools.

In Shanghai contact was made with a researcher in the education research institute of one district through personal relations. This institute is afflicted to the education administration in the government and this researcher's job is to offer assistance in teaching-related research in the field of LTC (pre-vocational education) and implementing it. Therefore she has regular contacts with almost all the middle school teachers in the district who teach the subject. A list of these teachers with the contact info is provided by the researcher and nine teachers of different teaching background, age and gender from four schools were chosen as the interviewees.

Table 4.3 Number of interviewees in each region

BW	8
NRW	8
Shanghai	9
Hubei	8

Similar as in the German context, through this researcher the teachers have been informed about the nature and intention of the interviews and did not give concrete research questions, so the interviewees can't prepare them beforehand. Due to the reason that the local researcher knows all the interviewees personally, the interviewed teachers normally do not worry about the consequences of their answers too.

In Hubei province in middle China, it was also through the personal relationships contact was made to an official in the bureau of education in the local government on the township level. He offered help in contacting the schools and even accompanied some of the visits to schools. But after talking to some teachers it was very soon realized that basically the corresponding course is not implemented and no specific teacher in the field can be found. Therefore attempts were made to contact the teaching director (who is responsible for the teaching in general in school) or the rector of the middle schools and talk to them about the issue, still through this personal contacts. There are however some who do not even have the time or patience to sit down and have a real conversation. Fortunately several persons were found who were willing to talk and their information concerning the implementation of the curriculum was very relevant, partly due to their better understanding of the operation of the entire school, and therefore also very helpful.

Meanwhile one researcher was found who works in the corresponding institute of education afflicted to the government and is responsible for this and other courses. Through talking to her it was possible to discover information from another perspective. A former teacher who used to teach in the middle school but is now retired since 2004 also accepted the interview request and provided valuable information on the course of LTC before it is integrated into the current synthesized praxis activity course. In the end eight interviewees were found in Hubei province. Therefore the number of interviewees in each regions are as follows (Table 4.3):

4.1.6.2 Interview Processes and the Interaction Situations

From January to February 2010 interviews with the teachers in Shanghai and Hubei were carried out. In April 2010 interviews in BW took place and interviews in NRW were finished from June to July 2010. All interviews were finished within 1 hour, with most of the interviews taking 20–40 min.

Basically the processes of the interviews are as planned and outlined in the research guideline development. After the basic introduction of the interviewer himself and the nature and purpose of the interview, guaranteeing of the anonymity of the interviewed persons and schools, the interview is carried out, covering: interviewee's understanding of the corresponding curriculum, the implementation of the curriculum as well as its influence factors.

However in the interview reality, very often the interviewees still asked further questions concerning the nature of the interview and the intention of the interviewer. In the German circumstances some interviewees are curious and interested in some foreigner carrying out a research about German secondary curriculum; whereas in the China case some of the interviewees still distrust the explanations such as anonymity and the interview serving only academic purpose and they worry that their answers may have some consequences on the reputation of their schools and therefore jeopardize their own career. Generally speaking, the interviewees in Germany are more relaxed and more willing to talk compared to their Chinese counterparts.

The interaction and communication processes during the interview were running smoothly almost every time in both countries. The teacher could normally find a separate room with just the interviewer and interviewee. Two interviews in Hubei China had to take place in the office of the interviewee where some interruptions took place because they were the rectors. In most of the situations teacher could understand the questions very well, except for a couple of times in Germany where it was necessary to repeat the questions another time or present them in another way, probably due to the relatively weaker German language abilities.

4.1.6.3 Method of Analysis

The analysis process of the interview results is a process of content analysis and therefore the analysis in this research will strictly apply the content analysis procedure and the corresponding methodologies. Meanwhile the objects of the analysis is originally audio material, so the methods of data processing and selection is also to a certain degree different from that of originally written information.

Following the standard procedure of content analysis, the analysis of interview results consists of six components of data making: ***unitizing, sampling, recording/coding, reducing, inferring and narrating*** (Krippendorff 2007, p. 83). In the following the application of each of these components of analysis in this research will be briefly introduced. But these procedures do not have to be in a linear sequence, instead they sometimes overlap and repeat in this research (ibid., p. 85).

- Unitizing
  Unitizing, namely "the systematic distinguishing of segments of text" (ibid., p. 83) is to a certain degree already done through the interview design. By designing the interview structure and choosing the interview questions an instrument of systematic selection of the materials is developed. All the questions are decided and formulated in a way that the answers to them could serve the purpose of this investigation. A form of semi-structured interview is taken so that the information attained is to a certain extent already organized and structured. Teacher is chosen as the objective of interview so that the information attained is from professional views relevant to the topics of this dissertation. During the interview, open questions are also asked and the answers very often add valuable information and perspectives to the investigation and therefore help the analysis and interpretation of the results.

- Sampling
  Sampling, namely limiting the materials to manageable subset of units and "conceptually representative of the set of all possible units" (ibid., p. 84), is mainly done in two aspects: the selection of interviewed teachers and the transcription of the audio information.
  On the selection of interviewed teachers attempts have been made to interview teachers with different gender, age and different teaching experiences (years of teaching, subjects of study at the university, etc.), schools are chosen that locate in more industrial as well as more rural areas so that the influences of these factors can be reduced. However at the same time because of availability and feasibility reasons and limit of time and resources, not many teachers and schools from wide variety of regions can be reached (like in China one has to rely on the arrangements of persons who has the power and therefore the relevant contacts, otherwise an interview would be difficult). Under this circumstances the method of convenience sample is applied to a certain degree (Riffe et al. 2005, p. 99).
  On transcription of the audio information. Basically the audio information is not 100 % transcribed; a careful and conscious selection process took place before and during the transcription and only the information that is relevant for the research questions in this part is transcribed. Since the key questions to be dealt with in teach interviews are the degree of implementation of the studied curriculum, teachers' understanding of the curricula as well as the influencing factors on that implementation, only the information offered in the answers that concerns these two aspects is relevant. Therefore the physical condition of the interview place, the speed of interviewee's talking during the interview, the tones in which they are speaking, and the accent of the interviewees, etc. are in general not of great importance, as long as they do not affect the smooth advance of the interview. Rather, the

content of the answers, the paragraphs and sentences that the interviewed teachers expressed relevant to the research questions as well as the meaning of them are most significant and are therefore sampled and selected during transcription.

- Recording/coding
  The recording in this research concerns the both the transcription of audio material and the translation of these materials into English, so that the information attained can be presented in the dissertation. Basically during the transcription both sampling and recording take place. By transcribing the audio into texts it is automatically transforming the original information into an analyzable form. By the translation of German and Chinese texts into English, efforts are made on the one hand to maintain their meanings which arose out of the original circumstances, on the other hand to be understood by neutral readers who are not familiar with the teacher phrases in two different cultures.

- Reducing
  Basically the reducing part is no longer very necessary since the transcribed texts of the interview results are not of huge volume and selections have been carried out to obtain the most crucial and relevant information. But in this qualitative study of the interview results some rearticulating and summaries are made when the transcribed texts are of a "chaotic" nature due to its original oral form, so that the results are more readable and analyzable (Krippendorff 2007, p. 85).

- Inferring and narrating
  The inferring process is carried out while linking the expressions of the teachers to the broader context of research question in this study.
  In the description of the teacher interviews, the statements of the teachers are not only selected and structured according to the themes (aspects of the research questions) they concern, but also maintained in a way that the complete sentences or even paragraphs said by the teachers are kept intact, so that their contexts are clear and their holistic meanings better represented.
  The meanings of the individual statements can thus be understood under the comparison with, the supplementations by the statements of other teachers on the same topics. The narrations of all teachers then present an integral picture of the understandings of teachers on the aim of the curricula, the principle of the curriculum developments, the degree of implementation as well as the relevant influencing factors. A summary is given at the end of the description and basic analysis of the findings. Further interpretation and analysis is done in the final chapter in comparison with the results of the curriculum analysis while taking into considerations of the overall education system or even cultural and social factors.

4.2 Findings of the Teacher Interview

4.2.1 Findings in Germany

4.2.1.1 Baden-Württemberg

The curriculum analysis shows that on the theoretical level the curriculum plan is very discipline-oriented; in general it attaches great importance to the subject knowledge in the field of economics and business. But the teacher interviews will reveal a more complicated picture on this issue. In the following part some center themes that are most frequently mentioned by the teachers will be demonstrated and discussed.

Teachers' understanding of the curriculum

- Subject knowledge
  The economic knowledge certainly plays an important role in the WAG curriculum. quite a few teachers mentioned in their answers the importance of teaching economic and business knowledge to the pupils.
  One of the teachers said that the general aim of the curriculum is to let the pupils

> know the basic concepts of the economic life and be able to use them…, how the market economy works, supply and demand, price, how is price formed, the mechanism, these are the basic knowledge that are taught.

A teacher explained the aim of the curriculum as the teaching of knowledge as well as the logic behind it, saying that

> the teaching of economics has the intention to prepare the pupils for their social roles as consumer and employee. The learning objective is in the first place to explain how economy works, to know the economic relationships, how our economic system, how market social economy works. The market economy itself, with supply and demand etc. and social insurance system. Not very academically, but they are subject knowledge. One can teach this subject knowledge, not only in class presented as teaching content, but also in the form of simulations. Not only cognitive, but also something that can be experienced.

One teacher also mentioned both economic and business knowledge by showing examples how they teach business knowledge and competences:

> In the class 9 we will talk about youth employment protection legislation. There's also this open day at the vocational schools and the pupils can go there for a day and see how it works there. In the class 8 we have a project where the student can consider an idea of a product or service, and this consideration should last throughout the entire

project, that is to say the calculation will be considered, what kind of material I shall need, how does the advertisement look like, the things that he has to pay attention to when he goes to a market with an idea. Economic and business things are considered. This is already quite high level. There's a competition, because we will invite representatives of a couple of companies and they will be a jury there. The pupils will introduce their ideas in front of them. The jury will then evaluate, how realistic it is, how good the idea is.

One teacher gave another example of how they teach business knowledge through role playing:

We have for example a fixed component in class 6. The class 6 organizes a Christmas market selling, namely we make a market analysis in the beginning, the pupils develop a questionnaire to the topic "what product would you like to buy?", then they produce something according to this questionnaire, for example cookies or wooden things. And then they sell them on the Christmas market… they then obtain a consciousness for the general nature of trade. In the class 7 we make something similar with the Easter market on Easter.

Some teachers offered a more complete picture:

It (the knowledge) is also structured. From grade 5 we begin to show, what the job descriptions are like, which vocations do parents have, to know them. And then in the grade 6 and 7, and then 8 and 9. For instance in the grade 9 it is about the labor legislation and these things. Theoretical aspects are also mentioned.

Economics also plays a role. Economy is an important topic, it's about market economy, how does our market economy works, what is social market economy, these are concerned in the curriculum.

In this example it can be clearly seen that in the form of school project, aspects of business knowledge is taught and transferred to the pupils.

Some teacher expresses explicitly the necessity of teaching theory and knowledge besides the more practical course:

It is also my own demand to pick some theory up in the class, to work on it. Everyone can do the practice, like some cooking or so, but it is much more about just the cooking itself.

- Combination of subject knowledge and situation principle
  Some teachers, when addressing the significance of teaching subject knowledge, also stress the equal importance of linking these knowledge to the vocational choice making that the pupils need to face in the near future.

One teacher said that

> they will obtain knowledge, but at the same time always with a practical connection. Like knowledge about the job is already subject knowledge, but always related to vocational fields.

> One teacher mentioned, "the economy surely has a reference here (in the curriculum). It has to be like this, because they will all work in the economy later on. But one shall not underestimate the academic aspects too much."

- Tension between situation and discipline principle
  While some teachers are stressing the importance of combining the teaching of subject knowledge with relating that knowledge to the life situation of the pupils, some teachers think it is difficult to do so and regard the relationship between the two a tension instead of a harmony. One of the teachers express clearly that

> In the school we don't teach much subject knowledge. We teach them in the class 8 the application, to write CV for internship. We practice role play, how to introduce oneself, the politeness, etc.

- Situation principle
  Preparation for later life situation, especially the training after graduation, is according to the majority of the teachers in the interview one of the most important goals of the pre-vocational education in Hauptschule, if not the most important one. Like one teacher put it,

> In Realschule and Gymnasium there are also similar form of this kind of vocational path planning, but for the Hauptschule it is important that we tight relation with the companies, including the local companies to produce, so that our pupils can have quick direct access to the companies, where they can do internship and can show what they could there. The pupils do a lot of internship, especially since grade 8 and 9. And the possibility exist and the chances are high, that they can find a training position directly after the 8th grade. This is our goal. The highest aim is therefore that our pupils can directly get a (training) vocation, can participate in training, that's why contact with companies are very important.

Another teacher expressed similar ideas and attached greater importance to the preparation for life situation when comparing it with knowledge learning:

> We want to prepare (the pupils) for life through this course. It is very important, more so today than many years ago, that after the school years, how it goes on further. Whether to visit other schools, whether they enter training directly. Some no longer has anything to do with school, they work directly. But whatever they choose,

they must know, this is our aim, that it goes further seamlessly, that they will not be unemployed.

I would say, that not so much subject knowledge. Preparation for life means that we attempt to have lots of internship; not just one, not two; in the 8th class we have done three and we are doing the fourth.

- Contacts with social partners
  An important part of prepare for future life situation, for training is to have various contacts with companies which will potentially be the future work/training places of pupils. Several teachers described how this took place, explaining the way pupils get acquainted with vocations and companies.
  One teacher said,

there's a company visit. We, the entire class go to a company and observe from the beginning to the end. Then there's competence analysis. The teachers from outside will look at the class 7. The pupil groups will obtain certain tasks and given feedback about their strengths and weaknesses, not those things in the classes, but rather competence, as well as skills, group work, team work, how the pupils behave. The teachers who are not teaching the class will do the job to maintain certain objectivity. Sometimes the teacher from outside school, who know very little or nothing about the pupils. Then the topics such as honor, … which unpaid/honored job are there? Expert interview, then the experts from outside school come and be asked about vocations. My 8th class had in Autumn a week of internship and right now in May two weeks, namely three weeks altogether. This is of gold value to the pupils because they can already have some contacts and many companies say that 'ok I can imagine you as a trainee'.

- Personality development
  The teachers interviewed frequently mentioned the function of the curriculum to help the pupils develop some characteristics in personality and get involved in society. They either explicitly expressed the necessity of personality development or imply implicitly the value of it for future life in general.
  One teacher said,

hopefully they (the pupils) can realize, this is the aim of the curriculum, that they are a part of a community, that they have duties, that they are dependent on other people, that there are rules to follow, that there's interdependence. When you for example have problem with health insurance, you don't need to have angst.

- Combination of personality development and orientation towards training
  The discovery of one's own strengths and weaknesses, interests and dislikes, etc. as an important part of personality development, is frequently mentioned by the teachers interviewed as a facilitator of vocational explorations.

One teacher said, "from the beginning they are prepared for that (future jobs) and collect the qualifications in this program (Qualipass), so that they can orient themselves for what they like and what they are good at."

- Hauptschule as a special education institute
  Almost each interviewed teacher emphasize the Hauptschule as a special education institute, either when talking about the aim of the curriculum, or referring to the influencing factors of the curriculum implementation. The difficult situation of Hauptschule today, as well as that of the pupils studying there, presents the most predominant challenge all teacher need to face and the framework under which all the educational tasks have to be carried out. This can be perfectly reflected in the expressions the teachers had.

  One teacher said, "the general aim is the orientation in the world of work, is to let the pupils become self-dependent and self-conscious. They are actually frustrated because they come to the Hauptschule. They are more good at working with hands and they have difficulty to concentrate. (we should) send the pupils to the internship earlier. They are proud of what they have done there in the internship, and can tell very well by the end of class 8 what they really want. Even I was surprised by that."

- Degree of implementation
  Generally the curriculum is well implemented. Some aspects such as the teaching hours in the reality differ from what the curriculum plan requires and teachers have also given the reasons for that.
  Out of eight teachers interviewed, all teachers believe that their curricula are in general well implemented but two of them explicitly express that the contents of the curriculum are not completely in accordance with the curriculum plan, the reasons, as will be shown below, are that the pupils are no longer competent to carry out some of the tasks assigned in school. Two teachers out eight regard the quality of delivery in the teaching is bad, because the "requirement in curriculum is so high that it is difficult to realize them". Four teachers mentioned that the arrangement of 45 min. for each course is not appropriate so they normally teach two courses in one block. Six teachers think that the pupils participate in the course actively, despite their weaknesses in cognitive learning. Pupils however behave quite differently when different teachers teach them the subject, namely they are more cooperative when the class teacher who is generally responsible for class and teach the majority of the courses come, whilst when teachers with whom they are not familiar with come they tend to behave negatively in the course, as some teachers said.

Influencing Factors

The interviews show that two factors are of the greatest importance to the curriculum implementation: the pupils and the status of the Hauptschule and the curriculum.

- Pupils as the most significant factor
  Pupils are, according to the majority of the teachers interviewed, the most significant influencing factor in the curriculum implementation.

  A teacher stated in the interview,

  > There are pupils who sit long time by computer and do not concentrate in school. They have lots of media stuff, computer, telephone, and these are important parts of their lives. They will chat and send short text messages with their friends all day long. They are in a time of adolescence and this is a difficulty we have. They are not oriented and we want to bring them on the road.

  One teacher even expressed some ideas regarding the education of young people in the phase of adolescence,

  > here I would like to quote Hartmut von Henting, the writer of the foreword of the curriculum plan of Baden-W. He said, when the pupils in the phase of adolescence come, they should all get out of school for a year. They should all go to the farm. The farm is decorated and they should be self-responsible. They have to take care of their food, take care of each other. These are the projects which shall be carried out in the adolescence. There they have the possibility to let their energy go, which they have too much, and they come back and learn why they should learn.

  Sometimes the effect of curriculum implementation is also indirectly influenced by pupils' parents, as one teacher said,

  > The pupils are more willing to go to the small companies. We told them that, try this company x, they tried and we also tried to build a partnership, but it was very difficult. For our pupils the company was too big. Their parents work in a small company, a bakery or something similar.

  One teacher explicitly said the attitudes of the pupils, which have a significant influence on the implementation of the curriculum, are to a certain extent influenced by the special status of Hauptschule.

  > they feel very distressed when they come to this school (Hauptschule), because the parents want their kids to go to Realschule at least. However they come to Hauptschule and it takes half year to accept this.

- Physical difficulty
  The location of a school may have a remarkable influence on the contacts school could have with outside school partners and therefore affect the implementation of the curriculum.

  One teacher said, "we have a difficulty in this place here. We are living on an island, the drive/way to here is too far. There are of course some companies here but too few commercial/trading ones. We have technical companies, lots of them in the domain of woodwork but otherwise the pupils have to go further to XY city (another city) (for internships of other kinds). This is the problem. We have worked quite hard and also have many contacts with the companies already, but the time of journey is a problem."

- Personal difficulty

  Some teachers mentioned the shortage of teachers in the school, one said, "actually there's not enough teacher. In the hauptschule one teaches the subjects which he/she does not study at the university. In our school me and two other teachers are responsible for the subject-combination, no more."

- Status of the curriculum
  Three teachers in the interview addresses the importance of the curriculum to the pupils and school curriculum as a whole.

  We attach great value to this course. The pupils also take exam in the main majors German, Math and English. But it is important for us, that through vocational path planning, through our teaching, these pupils, who are weak in reading or correct writing, can also have big chances on the labor market.

  The value of this curriculum is also appreciated by the parents of the pupils, as one teacher mentioned,

  The parents are standing behind us. They advocate this also due to the reason that their kids otherwise would not be in the Hauptschule. They have academic weakness, correct writing weakness or calculating weakness. Therefore they are not in the Realschule or Gymnasium. We try to promote the other strengths of the pupils which very often appear in the practical domain. Therefore the parents support us. They often praise the internship and say that their kids are totally different in the internships.

  However it is not always the case, one teacher interviewed also complain about the lack of support from the parents' side, or even the negative effects the parents can have on the pupils.

  But it is difficult to bring these aspects in the hauptschule. We are working alone here. The parents tell their kids, "what do you want from the school? You will learn nothing there". This is the situation for many families. The pupils learn only when they notice that it can bring them something, that it is beneficial to them or it amuses them.

Another teacher said that the situation of the course has been improved lately, but at the same time stressing that the Hauptschule remains in a very bad situation,

> In all the Hauptschule this program (vocational path planning) is operated. The government has noticed, the parents have stood up, they don't want their kids to go there, so they help the Hauptschule to develop new concept. They informed the economic sector that they should take the pupils from Hauptschule to training. Suddenly we get supports from every aspect. No one was interested in this earlier. This type of school has no reputation any more, no kudos.

4.2.1.2 Nordrhein-Westfalen

Generally speaking the teacher interview in NRW reveals a rather similar picture as that of BW. The balance or tension between subject knowledge and practical relevance is one the center themes in teaching that almost each teacher mentioned. Generally the curriculum is well implemented which is also similarly influenced by the overall status of Hauptschule and its pupils.

- Combination of subject knowledge and situation principle
  A teacher emphasized the importance of both knowledge teaching and relating this teaching to the life situation of the pupils,

  > The general aim is to know the economic relationships, and specifically also to make clear the problem of capitalism system, by all means free market economy. A big part in the Hauptschule area is the interrelation among consumer, advertisement, excess indebtedness in holiday and consumer good, client at cell phone company. As basis get to know the overall economic relations of a country.
  >
  > We make it pure practical, we search the themes that are related to daily life. We take one example, the football championship, everyone wants to have a big TV, there are promotions everywhere, but it is very important to know that the marked "original price" is much higher, compared to the prices if one buy it not during this time. Like written in the curriculum plan, a close reference to today's world. Without this it is impossible, no matter in which subject. To extract this to science, of course we need a subject knowledge basis. But in order to make it easier for the youths, we have to offer current up-to-date concrete examples.

  One other teacher mentioned that the course contain parts that are more subject knowledge oriented and parts that are more training preparatory,

  > Teaching of work and economics is rather theoretical course. They are divided into two parts. One of them is done through vocational guidance, we talk about different vocations, what it is about vocation, we prepare for the applications, namely how the applications are written, how does a resume look like. We prepare the pupils concretely

for the vocational life, simulate the possible vocations, visit internet with them, show them which possibilities they can find. We make a competence test in the framework of this course since 8th grade. … There we carry out small tests from the internet, so that the pupils can find certain direction, where they can actually enter, what is interesting for them, for example technical domain or social domain. Internship is carried out. These are carried out in the frame of teaching of work. And the second part of the course is to show the development of the economy, for example the industrialization, or price forming, everything that is related to market economy.

The first part, the vocational orientation is not so academic-oriented, the second part however is, because it is about market economy, but I also try to make it practical. The (text)book offers the guideline and I look for the topics that are relevant for the pupils in vocation, for example wage, tax or insurance. I try to make it based on the life and vocational field of the pupils.

A teacher took other disciplines as examples to demonstrate the importance of teaching knowledge for practical purposes,

the German teacher does not just teach German and the English teacher not just English, rather it is about conversation, it is also about that English should be useful in our today's economy and for our vocation. Always under this background, even in sport.

One teacher stated the elements inside knowledge which takes the form of discipline, which again shows the combination of subject knowledge and situation principle,

We give the pupils cognitive knowledge based on the disciplines, but we also work together with the employment agency. Therefore they have much knowledge about the profession and practical experience. One of our priorities is to offer the pupils as much own practical experiences as possible.

- Practical relevance over subject knowledge
  Four teachers put more emphasis on the practical relevance and usefulness than the subject knowledge, the Hauptschule as a special learning location is also stated,

The overall objective is that children at the end of the 10th class have been brought to the extent that they can independently comprehend the important things of their economic life, because they need these in applying for insurance, signing a training contract, as well as simple things such as budget accounts, executing a bank transferring, set up a standing order for their rent, the things that they actually need on a daily basis, the things that might be small things for (pupils in) other schools, but for our pupils they should note carefully.

> Scientific knowledge is rather periphery, I think that it is the capability that is required. These are demanded so that the children learn to manage their incomes, this is the most important, because many young people are indeed very early in debt, for example in the mobile phone contracts. There's knowledge in it, but our goal is rather practical.

Another teacher mentioned a similar point when he talked about the teaching of knowledge,

> that of course has something to do with the theoretical background and science, but I don't go deep and look at the scientific standards. I work according to my understanding of how they can accomplish a training.

- Development of personality
  The course can contribute to the development of pupils' personalities, through offering chances to let them know more about themselves, as one teacher put it,

> I am very aimed to this, that the pupils can find out, 'how should it go, what kind of person I am, which vocations is suitable for me'. Many of these are carried out outside classroom, like in the internship they can learn a lot. We have pupils who do not come to the class regularly but show up punctually at internship. These are the praxis people who are willing to get up early but are not willing to learn (at school).
>
> In the class of the Arbeitslehre I cannot tell each kid how he will develop. But with these extra activities one would know. We also have vocational consulter, who also offers support. All of these together can hopefully help the pupils develop their life and personalities. This is what we want to do.

A teacher mentioned the overall role of a school as a whole and the individualized teaching and learning, which is the original features of Reetz's personality principle in curriculum development,

> The philosophy of our school is that school should be a tutor of the pupil. In the 9th and 10th grade there's internship. The general principle is to lead the pupils to apprenticeship entry maturity (Ausbildungsreife). But we want a greatest possible individualization, namely that the pupils, through the praxis experience and the knowledge gained, can make decisions on their own, according to their own understanding. Of course the personality development should come into that (process). The student should say what he wants to do, not the teacher.

- Degree of implementation
  As in BW, the curriculum is also well implemented in NRW, even with similar influencing factors on it. Seven teachers think that the content and overall duration of the teaching is basically consistent with the curriculum plan, but five teachers mentioned that their actual teaching is more praxis-related and less academic, as one teacher explicitly put it, "*the learning contents are too theoreti-*

cal, the vocations and learning of vocations are too short". As their colleagues in BW, the teachers in NRW also tend to teach the courses in block. They stated that the concrete learning contents have an influence on the participation of pupils.

Influencing Factors

- Pupils competencies
  Three teachers stated that pupils are no longer competent in accomplishing tasks, which was a relatively new phenomena and closely related to the status of Hauptschule. The situation for Hauptschule as well as the pupils levels have been decreased in the past decades,

  > First and foremost my purpose is to bring to the pupils what can really be fostered, to help them acquire a job in business. I think that the pupils in the Hauptschule are not competent to work in the office. In the past it was like this: the pupils leave the school and start get training in craft. For this purpose I tried to teach them the competencies which mainly concerns the craft domain. But now I see, that this has fundamentally changed. When we take a look at our school, we see the question, whether the majority of the pupil are able to make it (the training). What used to be the special school (Sonderschule) is today the Hauptschule, what used to be Realschule is today Gymnasium.

- Finance
  A teacher mentioned the difficulties in financial aspects, which is seldom mentioned by the other teachers,

  > it is about financing. We have to get the finance from the school account here. and every subject domain has a certain amount of money. When something is broken, than we have to pay from this account; and when it is expansive, for example more than a thousand Euro, than I have to first apply for that and it takes simply too long, half a year or a year. But we need that equipment. And the budget does not have money. Thus the financing plays a very important role.

- Parents as a negative factor
  Two teachers mentioned the difficulties of convincing the pupils of the importance of learning and school especially due to the fact that pupils obtain another set of values and perceptions about knowledge and schooling from the parents,

  > I think the main problem in Germany is that our pupils have got this feeling, that they are no longer an important part or even part of the society. The increasing stigmatization of the Hauptschule with the confirmation from the parents. Pupils are taught the learning contents, which are according to their ideas not relevant to them. 'I don't have

> a chance anyway and I will always earn so little money.' This is not only a problem of the economics teaching but 1 h teaching of economics can show the pupils, which importance it is, namely none. … we are fighting against the approaches and attitudes of the parents…. I said this, because I used to be a pupil in Hauptschule myself, the problem did not exist, because for a pupil at Hauptschule it was very clear back then, we were told at home, that 'young man, finish your school and get a certificate, go into training, learn a craft'. This has changed greatly, the meaning of school, the degree and training, they don't have the same value as they used to have.

Meanwhile this teacher also mentioned that despite the relatively low status of Hauptschule as a school type the curriculum's importance inside the school curricula has been improving lately,

> I had the impression, that after the development of about ten, the parents now gradually realize that the project of vocational choice is an important aspect of Hauptschule.

- Organizational factor
  The value of the course is generally appreciated and the school normally offer support in implementing the course, as one teacher put it,

> from the school administration I can always get support, I don't need to struggle (for that).

From the quotations of the teachers above it can be observed that the curriculum implementations in BW and NRW are to a large extent in a similar situation, they are in general well implemented in both states while also face similar difficulties and challenges.

4.2.2 Findings in China

4.2.2.1 Shanghai

Teachers think that curriculum attach more importance to the promotion of certain characteristics and personality features in students than to knowledge teaching, similar as the results illustrated from the curriculum analysis.

At the schools where teachers were interviewed, the curriculum is to a certain degree implemented, but teachers clearly stated that their schools are somehow "exceptional" in terms of teaching LTC. Other information sources, such as dialogue with school teachers in other district and majors have demonstrated a similar pic-

ture: the curriculum in general is not well implemented in Shanghai. More details are as follows.

- Status of subject knowledge
  Most teachers interviewed do not regard subject knowledge as the fundamental task of the course, they tend to emphasize the skills, abilities and competencies that are not directly related to subject knowledge. As one teacher said,

  the course mainly foster pupils' ability to use hand, to operate, and to practice, learning to do is the major focus, theory is in the second place.

- Practical skills
  A teacher who used to teach politics believes that

  the major objective of the curriculum is to teach pupils labor skills and operating methods, so that pupils can develop their technical and aesthetic abilities". She explained that "pupils would like to make their products look good". A teacher who mainly teach physics says that the purpose of the part of the course she teaches (relates to electrics) is "to let the pupils understand family electric circuit, mainly the simple electric problems in the family", that "the pupils know how to find the reasons of the problems and tackle them.

  Another teacher put this point in an exemplary way,

  something goes broken in the family and you can't always get a worker and even if you can they don't come immediately after you call them, so you shall be able to handle it yourself; if you can do it yourself, when you have a decoration in the family, those workers can't fool you anymore.

  A teacher used the term "standard skills" when she talked about the aim of the curriculum, implying that the skills learned in this course are not merely daily life related, but also contains certain scientific or professional orientation.

  One teacher, when asked about the "ideal purpose" of the curriculum if it could be implemented well in the reality, said that

  the ideal situation is that (the course can) let the pupils grasp some skills, that they can keep these skills in the future, including the skills in daily life; so no matter they keep on studying in school or they go work, they will have a better foundation.

- Personality/learning in affective domain
  Besides obtaining skills, learning in affective domain, such as altering of attitudes, learning of personality characteristics etc. is repeatedly mentioned by the teachers interviewed.

  A teacher said,

  the process of skill learning is helpful, it can contribute to change their learning attitude and to enhance their ability of self-control. I don't expect their products to be perfect, but just hope that they can do their best, I always tell them that 'your mentality and attitude will decide where you will be heading in the future'. In doing these projects they may get tired and encounter some difficulties, and I will encourage them to hold on and tell them 'after finishing this thing you will change your mind'. I try to strengthen their consciousness of holding on, and let them persist accomplishing one thing.

  Another teacher mentioned this aspect when talking about the evaluation of students' performance in the course,

  generally speaking I don't have a very rigid standard when giving them notes. As long as they do it seriously and on time, they will pass the course. What I emphasize is their attitudes.

  This way of assessment is totally different from the evaluation of examination that is solely dependent on the results and therefore foster to a larger degree the learning in attitudes.

- Comprehensive ability
  Some teachers stress that the purpose of the course is to train some form of comprehensive ability in students that refers to and combine both intellectual and physical aspects.
  One teacher mentioned,

  the overall aim (of the curriculum) is rather high, to use hands, to use brain and to design.

- Complexity and ambiguity of the curriculum plan
  Some teachers regard the curriculum plan itself as a failure work, as a teacher said in the interview,

  it is difficult to comprehend it (curriculum plan). There's not enough degree of coherence throughout the text books, the contents are dispersed; the old text book follows

a cognitive progressive approach of going from easy to hard, whereas the new ones is 'a piece at east and a piece at west'. Their main intention, I guess, is to come from the daily reality. But there're problems in the plan and text books as well as materials, it is not so easy to teach and depends too much on the personal interests and abilities of the teachers. Some teachers mainly teach electrics because they studied physics before. Some teachers are good at knitting and can do very well in teaching these contents but they may do badly in wood work.

This teacher went on and said,

I actually don't know what kind of aims the curriculum plan tries to get, their starting point is wrong, the educational orientation is not correct. It says 'promoting ability to use hands', but what is the definition of 'ability to use hands'? isn't that too summarized? What could pupils do with it? What are the next steps? Workers? In which fields? Are we talking about their future vocations or their interests? The teaching is not about either one of them (vocations and interets). Like they mentioned in the curriculum plan that 'to integrate patriotism into the labor and technical education', so it means that this patriotism is auxiliary, but what is the key element?

- Discovery of interests
  Several teachers in the interview believe that the course can make the pupils discover some abilities and interests that have yet been found by the student before. One teacher says,

  not everyone can do well in learning, some pupils is just average in knowledge learning, but once they start doing some manual work, they show their strong competencies. This course mainly teach them some initial skills, to make them interested in doing technical things, and then they may start doing more of these things and investigate them, in the future they may find a job that is related to this.

- Supplementation to knowledge learning
  Several teachers in Shanghai think that due to the fact this course is not among the examination contents, this course actually offer an alternative way of learning in pupils' somehow boring learning life in school.
  One teacher said,

  the pupils get numb after coming to school every day, they have little perception about life itself. Pupils just come here to learn and do homework and then go back and sleep, they do whatever the teachers ask them to do, they don't have feelings towards the outside world anymore, no emotions. … But this course can relate to their lives and add some flavor to their lives.

- Degree of implementations of the curricula
  In short the LTC curriculum is to a certain degree implemented in Shanghai, with the degree of implementation depending on various factors. More detail can be seen in the following part.

- The frequency and duration of teaching
  As has been mentioned earlier, the course do not take place in the last year of middle school according to the regulations from education administration. So the question in the Chinese context would be, in which degree the curriculum is implemented in grade 7 and 8.
  Several teachers in Shanghai said that it is difficult to fulfill the teaching hours for the 8th grade because of the examination pressure. Teachers at some schools teach one time each week during most of the semester instead of twice and do not teach at all when the examination is near. Some of them can normally fulfill their weekly tasks according to requirements from overall curriculum plan but have to give the hours to the examination subjects two or three weeks before the examination. Meanwhile, through some personal contacts it was known for sure that many of the junior middle schools in Shanghai do not actually carry out the LTC in their teaching.

- Pupils' participation
  The teachers in Shanghai all report that their courses are welcome by the pupils. They mention that pupils have fun in preparing and doing small manufacturing projects and making some products using their own hand and skills. They find these things more interesting and even entertaining compared to some other subjects where they have to memorize many things or doing lots of mathematical calculations. Gender differences are evident in certain projects. Girls are more active in activities such as knit and sew, whereas boys find wood work and electric projects much more attractive.

Influencing Factors

- The course itself
  Some teachers in Shanghai complained about the course itself, saying that the design, structure, and arrangements of the course itself become a negative factor in implementing the curriculum. As mentioned above, one teacher thought that

  > I actually don't know what kind of aims the curriculum plan tries to get, their starting point is wrong, the educational orientation is not correct.

- Organizational factor
  Most of the interviewed teachers in Shanghai mentioned that the very reason they are arranged to teach the course is actually organizational. A very common situation in those schools is that the number of teachers in Chinese, politics, and physics etc. is more than enough, to fulfill the "required standard working hours" these teachers are assigned the task of teaching some "extra" courses, very commonly the courses that are not in the examinations, such as computer course and this course.

- Time
  Some teachers mentioned the constraints brought by inflexible time frame set for the teaching,

  > To have the two courses in a block will facilitate the accomplishment of the tasks, but that is not very possible. The consequence (of not being able to have a block) is that the teaching is lack of continuity. Like for pottery class, after the course there's not even enough time for the pupils to watch their hands, so many schools do not teach (this part) at all.

  Some teachers said they can fulfill the teaching hours as required with some small difficulties,

  > Basically we teach the same hours as the curriculum plan requires each week. The teaching content include most of the those stated in the curriculum plan, basically we can make it but it takes time. Wood work is what is missing here because we don't have the equipment.

- Physical conditions
  One teacher talked about both teachers and the equipment as influencing factor:

  > It is required that it is taught twice a week, but we actually teach once a week. Many schools cannot even deliver once a week. It is related to the teachers and equipments in school. The contents are taught basically according to the curriculum plan and text books, but those are more or less just a guideline, we have to make adjustments on ourselves. Many things in the text books, it's not that we don't want to teach them, but we just can't. It concerns the field. Like in our school, we have, as the standard equipment, one labor and technical classroom. But it is impossible for all the teachers to enter this room because some classes take place at the same time. So our method now is to let the grade 8th have the priority and try to guarantee their use of the classroom. Like for pottery, it actually needs a specific room for it, but we don't have it and many of the contents on text books simply can't be done without this specific classroom. But it is unrealistic for each school to have such a classroom.

  Another teacher expressed similar problem which reflect that shortage in equipment or field present to a certain extent some difficulties but their consequences

do not lead to the serious damage to the quality of teaching in several schools in Shanghai:

> The equipment in this school is ok. But there's only one specific classroom (for this course), and there ought to be three. But we cannot blame the school because the education administration and institute of design (who are in charge of the building of the school) only construct one such classroom.

- Teacher training
  The low status of the course is also reflected in the teacher training, as one teacher said,

> There's Chinese department and mathematics department at East China Normal University (one of the biggest teacher training universities in Shanghai), but there's not department for labor and technical education. Also from the viewpoint of professional development, there no single physics teacher is willing to transfer to the labor and technical course permanently. So even if we have such a major in the university, how many students will choose it, among say physics, chemistry and labor and technical education?

Some teachers are more optimistic about this low status of the course and making efforts to make the situation better, they said in the interview,

> The people up there (education administration) don't give enough importance to it, but we need to attach importance to it ourselves, to be a happy teacher in this subject. Improve our charm and charisma, to "steal" the students to this course.

- "The pressure of examination" (political-legal + cultural factors)
  Every single interviewed teacher in both Hubei and Shanghai in China mentioned "the pressure of examination" and most regarded it as the most influential factor on the implementation of the curriculum.
  Teachers have to face the pressure of examination while at the same time try to implement the courses that are not in the examinations but are compulsory to carry out. A teacher expressed this dilemma situation explicitly in the interview:

> It is a part of the quality education, the teachers who actually work in the "front line" regard it difficult to implement, because the pressure is big. On the one hand there's this pressure for examinations, on the other hand this course has to be carried out. There's constantly inspections on it. People from above come and do sample study regularly (on the implementation of the course), they talk to the students, they give them questionnaire. They will listens to your teaching, those who are experienced in this can judge it in just a second, between those who actually teach the course regularly and those who teach it for the first time, they can tell from the reaction of the

students and so on. We have been talking about the comprehensive developments of the pupils for a while, but it is actually very difficult.

4.2.2.2 Hubei

While in Shanghai the curriculum plan can be somehow implemented in some schools, in Hubei province in middle China the curriculum is basically not implemented, the information attained from teacher interviews in one city revealed. Although both regions interviewed face some similar problems, some evident divergences also exist between them, most notably the financial difficulties and material and field shortages the schools in Hubei have.

- Physical difficulties
  A teacher emphatically mentioned the differences between a small cities and schools and the big ones:

  There's no material for the course. Those big cities got them. The school has no special budget, no specific classroom for the course. It's really difficult. We have the wishes to teach this course too, especially because that it could be helpful for them(the pupils) after leaving the school. But even the students weren't very active taking part in the course because they have to deal with the exams each year.

- Personal factor
  Another teacher from another school described the similar situation, also stated the lack of teachers:

  It is difficult to implement the course. We are lack of specific equipments and classrooms, as well as well-trained teachers and professionals. The actual place to carry out the course is rather difficult for a small school like us. To ask the teachers of other majors to do the job, they are normally busy and therefore do not want to do the job.

  A head of the dean's office at one school said,

  To carry it out we need financial supports and we don't have any special funds for it here at the dean's office. The last time we attended meeting in the district, some other schools have reported similar problems as we do- no money.

- Security issue
  Although the education administration has established some facilities in the city that serve as the training center for middle school students to carry out learning activities such as those in the labor and technical education, schools actually have difficulties making use of them. One big constraint factor is the distance: since

there's only one center for many schools in a certain city area, the distances between this center and most schools are rather far. As one vice director in a school said,

> When we go out and do field study and investigations, security is one very important factor in our organizational work, meanwhile only those teachers who teach this subject full-time have enough time and energy to do these things (organization etc.).

> Security is so important that the teachers have pressures. If something bad happens, the teachers have to be responsible for it. And it is even more possible to have some accident outside school, on the road, also when you take into account the number of students.

> We don't have a school bus and therefore have to use public transportations. Thus pupils have to cross the street at some point, it's just not possible to go out of the school gate and take the bus immediately. (so the basic dilemma is): Our school doesn't have the necessary equipments and materials and such things can be found outside school, but we don't have a school bus. How can we afford this?

- Pressure on examinations
  One director of the school interviewed mentioned that they carried out very few courses in a semester, emphasizing that the pressure for examination is the biggest reason for that. He said,

> The implementation of the course? We'd just arrange a couple of classes per semester and assign the pupils some work. As for the quality of their accomplishments, it is another topic.

> The teachers in our school or in a school of the similar or smaller size can only concentrate on the examination subjects.

> Labor and technical course is just for the inspections from above. Big schools would be more serious on this, because the inspections are more rigid for them, so they have to.

> The current education institution pays attention only to the exams. The self-evaluation of schools does exist, but the main criterion is the performance of the pupils in the exams. After advocating the quality education for years, in reality, it is enough to just implement the non-exam-subjects on an occasional basis without caring about their actual quality.

- Financial difficulties
  But this director also addressed the difficulties in finance and material:

> We surely have difficulties in places and space (to carry out the curriculum). The good schools can charge extra-paid fees/sponsorship fees. But this school is such a school just for those, whose parents are from rural areas but temporarily working near the

city suburbs. Most of the kids here are the so-called "the unattended children (home-alone children or even left-over children), whose family are not as wealthy as those in the city center.

The charging of this school follows the "one uniform fee rule", namely we only charge the fees for textbooks and exercise books which range from 75 ¥ to 95 ¥ according to the grade. The finance we have come from specific funding which is used exclusive for school improvements, like we just built our old soil playground into a cement one.

We used to be entitled to charge the sponsorship fees, but not anymore because we are a school specific for those the unattended children (home-alone children or even left-over children). But the government funding is less than the extra fees we used to charge and therefore does not compensate. We are lack of many facilities, like a music room, dancing room. Meanwhile the location of the school is not good and we are lack to professional teachers.

Some of the schools, as the people who're in charge said, do not face regulative and administrative pressure from the education bureau concerning examinations, but the expectations from the parents of the pupils put them into such a similar situation as the other schools, that they also have to concentrate all their energies on preparing the pupils for examinations. As one head of school remarked,

The majority of the courses in this school is the so-called basic general courses, such as math and English. There's not much administrative standard for performance of the students in the exam, the pressure for advancing to a higher level of schools are from society and parents. Despite different conditions of the family, the parents have expectations for their kids.

- Divergences with other non-examination subjects

Nevertheless, despite that subjects such as music and art are not among the examination subjects either, it is noticed in the interviews that they are somehow implemented in schools, even in those with not so good financial conditions. Questions are asked additionally concerning the divergent "treatments" labor and technical education get from subjects like music and art.

The existing curriculum structure in the overall basic education system surely plays a role, as the teachers suggested. One of them said,

The music and art courses are not among the exam courses, but they have been carried out since elementary schools, whereas this course not.

The state advocates this course ostensibly, but the administration up there in the local level does not give much emphasis to it. Actually both the teachers and the students like it.

Another teacher identified other reasons, including the social ones,

As for music and art, there has always been some kind of activities or presentations, such as music performance, competition for painting, singing, etc. Schools are active in participating in them, so that the reputation of the school can be further developed and expanded. If they win a good price in them, it would be even more so.

Not only that, social reasons could be important too. Currently, most families have just one kid and parents have very high expectations on them. As long as they (the parents) have the financial ability, they would send their kids to some kind of tutorial or interest classes. Music and art training are among the most popular subjects in those classes. Meanwhile the activities held in or outside school could produce pressures on the pupils too. If all the other classmates, because they can play certain instruments, participate in some of the activities, whereas they themselves could not because they are not able to play any instrument, this could be a big problem for them. Sometimes the parents also have the intention of competing with each other. They want their kids to stand out.

- Answers from two special interviewees

  Although at the time of the teacher interviews the prevocational education curriculum is rarely carried out in the middle China city, it was informed by the interviewed teachers that the curriculum was carried out a few years ago, at least before 2000. Efforts were made to find someone who knew the situation back then when the curriculum is to a certain degree implemented. Fortunately a teacher who used to teach the subject as well as a researcher who is responsible for the curriculum research and teacher developments in this subject in the district level (administratively lower than a city, with a population of over 230,000) were found. Some interesting results were discovered regarding both the basic purpose of the subject before the major curriculum reform and the influencing factors.

  The researcher believed that,

  the main objective of the course is to inspire pupil's intelligence and interests, train their abilities in different aspects, such as communication abilities and problem solving abilities. The course does not emphasize the disciplinary knowledge, but is helpful for the development of their personalities.

  The retired teacher thought that

  This course has aspects that are closely related to the daily life. The little production in the course is related to subjects such as physics and chemistry. … But the knowledge this course deliver itself is not systematic if you ask me. Instead it delivers attitude, view of value. … It is useful, for example for those who will study and work in the field of art, advertisements and decorating business. It is empirical and relate to life and helps the development of the mind.

Both of them attach certain importance to the contribution of this course has on the overall developments of the pupils, and meanwhile they both think that transferring subject knowledge is not the ultimate goal of this course. This understanding is similar with what the teachers in Shanghai have concerning the basic function and aim of the curriculum.

The influencing factors identified by the researcher confirmed several aspects that have been mentioned by the teachers and directors interviewed earlier, such as lack of financial support, security issue.
She said,

> the implementation of LDK concerns so many factors, including personal, materialistic as well as financial ones. Besides the pressure of exams, the considerations of finance and security are undoubtedly also very important. All the schools have to implement this "one fee" policy (author note: this means that for all the schools during compulsory education, the fees charged are determined on the basis of costs of text books and exercise books which are strictly regulated. The fees would be summed and the overall fee should be charged only once a year), therefore they don't have specific financial support just for this LDK course.

> Even if they do have a school bus, and when there's an accident happening to the bus, they (the school) will have to be responsible for it. Once there's a problem, nobody is dare to take the responsibility for it, not even the head of the school. This also concerns the fact that most families only have one child right now, the parents all love their kids, they would bother the school even in case of very small incident.

When asked about the possible solution to the financial shortage, she stressed the necessity of direct funding from higher education administrative level to the schools, which is almost impossible to realize for the vast majority of the schools:

> If you want to do it (curriculum implementation) well, the money has to be sent to the school directly, even (assigning the money) to the county level won't work, because the local education administration may spend the money on the things that they think is 'more important', be it county education bureau or the town education bureau.

The answer of the former teacher reveal some other aspects, such as the lack of trained personnel:

> During the training of the professional teachers in the subject in 2004, in the entire city there were only 7 people who participated.

(in the city there are over 200 general junior and senior middle schools, so the number of junior middle school is probably more than 100).

4.3 Summary of the Interview Results and Comparison

4.3.1 Summary of the Interview Results

4.3.1.1 Germany

According to the understanding of the teachers interviewed, the pre-vocational curricula in Germany mainly serve the purpose of preparing students for future life situation, especially for the vocational training after lower-secondary school. The school curriculum offer them possibility to get in touch with different vocations and by doing this help them make vocational choices. Subject knowledge is taught in the school in the field of economics, business and technique, but the aim of this knowledge teaching is practical, namely that the knowledge, for instance the understanding of market economy etc. shall enable the pupils to make proper decisions in economic and vocational domain. The majority of the teachers interviewed believe that knowledge itself is not the purpose of the curriculum, rather the usefulness of this knowledge is the point. Aspects of personality development are taken into account in the teaching reality, some teachers believe, but these are also closely related to the preparation for life situation and making vocational decisions; pupils are given opportunity and are taught to evaluate one's own interests and dislikes, strengths and weakness in terms of vocational choice, in this process their general personality is also developed (knowing oneself better as one of the key competences).

Overall the pre-vocational curriculum in both investigated states in Germany is well implemented. Both the teachers and the parents attach great importance to this curriculum because it can help the pupils practically. Most teachers think that no great difficulties exist in the implementation of the curriculum concerning finance, equipment, support from other partners, organization structure, etc. The major influencing factor that negatively affect the implementation of the course is the pupils. Majority of the teachers mention in the interview that factors such as the bad learning and life habits, the weakness in reading and understanding, the inability to concentrate and lack of interests in learning in general damage the quality of the delivery of the teaching contents to a certain degree. Some other factors are also mentioned by individual teachers but not the majority, for instance the location of the school, lack of financial support, social status of Hauptschule as a whole, the political importance of education and so on.

4.3.1.2 China

The majority of the teachers in Shanghai relate the purpose of the curriculum to the promotion of practical skills, which according to most of the teachers interviewed should either come from the daily life situation of the pupils or to a cer-

tain degree help them solving the problems in daily life. However majority of the teachers do not regard those practical skills directly related to the future vocations or vocational choices of the pupils. Subject knowledge itself is seldom the main objective of the curriculum, but some knowledge may need to be taught to fulfill the accomplishments of certain pedagogic tasks. This curriculum can help the overall development of the pupils, including that of the personality, the majority of the teachers interviewed believe, because that the teaching of the skills is a very good supplement of their learning in school which is generally too knowledge-based and the some manual work can be very good balance to that somewhat boring and tiring knowledge learning. Some teachers also mentioned the aspect of attitude formation in terms of work and labor, which can be regarded as element of personality development. It is mainly through this fostering and promotion of attitude towards and perception of technical work that pupils are guided into the world of work.

The curriculum implementation vary according to different regions. In the interviewed schools in Hubei province the curriculum is barely implemented, whereas in economically more prosperous Shanghai the curriculum is implemented in some schools, but even in Shanghai the uniform implementation in all lower-secondary schools is not realized. In both regions in China the implementation of the curriculum suffer greatly from the relatively low status of the corresponding curriculum in the entire middle school program, namely the course is not among the examination subjects and in an education system that is so examination-oriented a subject that are not tested in the entrance examinations for the next level of school is deemed to be a less important one. The direct consequence is that both education administration and schools are not willing to spend much time, energy, financial resources which are all already limited on this course, if they spend some at all. Beside this low status inside the school system the course and its implementation is also negatively influenced by the lack of financial support and equipments, which can be clearly seen in the case of Hubei province. Compared to Shanghai where some schools can find resource and teachers to implement the curriculum to a certain degree, schools in Hubei province in middle China have almost no teachers doing this job and have greater difficulties in financing it.

4.3.2 Comparison of the Curriculum Implementation in Germany and China

As the summary above separately stated, the curriculum implementations of pre-vocational education in Germany and China differ greatly from each other.

Firstly the degree of curriculum implementation differ substantially. While in both BW and NRW the curriculum is generally well implemented, the degree of implementation in China is not so positive; in Shanghai the curriculum is to a certain degree implemented, with the degree of implementation depending largely on the leadership, resources available and other factors; in Hubei the curriculum is basically not implemented due to the institutional limits as well as difficulties in finance and material.

Secondly the major influencing factors on the implementations in the two countries differ considerably. In Germany no real external obstacle exist in the implementation of the curriculum and the status of Hauptschule does not have negative effect of it. On the contrary, due to the relatively low status and weaknesses of Hauptschule as a school type in the education system, and because of the instrumental function of pre-vocational curricula to facilitate the school-to-work transition, the curriculum can actually benefit from the special status of the school. In China the teachers however mentioned repeatedly about the status of the curriculum in the school system and its negative influence. Because the main assessment of the schools, namely the entrance examinations for the next level, does not include the pre-vocational education, the administration as well as schools tend to regard this curriculum as of lesser importance.

In the Chinese settings, besides the institutional constraints, difficulties also exist in the field of finance, material, time arrangement, etc.; this can partly be seen in Shanghai and is well reflected in the interview results in Hubei. In Germany one of the major difficulties in the implementation mentioned by the teachers is the pupils themselves; the directors as well as the teachers have to give a large portion of their attentions to the adjustments, redesigning and implementation of the curriculum, so that it could have a direct and immediate positive effect on the processes of training places searching and applying by the pupils.

Despite these differences above the teachers in both countries have expressed some similar views and understanding concerning the pre-vocational education.

A general tendency that can be observed in teachers from both countries is that in the teaching reality, the curriculum should be close to the life situation of the pupils, should relate to the pupils somehow so that the pupils can make sense of the contents that are taught and therefore possibly accept them. No matter whether much subject knowledge ought to be taught according to the curriculum plan, the teaching itself should not be too theoretical and too deep, but rather understandable to the pupils.

The interpretation of the interview results will be carried out in relation to the results from curriculum analysis in the next chapter, so that a full picture and perspective on the curriculum which integrate theoretical analysis and investigation of the praxis can form a better basis for the comprehensive analysis and interpretation.

Analysis of the Overall Results and Conclusions

5

In this final chapter the results of curriculum analysis in Chap. 3 and the results derived from teacher interview in Chap. 4 will be put together and compared; the results between the two countries will also be compared and investigated.

Because the comparison and analysis here concern two dimensions (geographic: Germany and China and the inland differences, educational: curriculum plan in theory and teaching reality in praxis), a sequence has to be chosen to carry out the analytical comparison, namely to carry out the comparison in the geographic dimension first or in the educational dimension first. It is decided that a comparison inside one country between the two levels of investigation (theory and praxis) will be carried out first, because on the one hand the comparison on the geographic dimension can tell little about both of the systems without linking to other parts if the school system, on the other hand the comparison on the educational dimension can offer in-depth information and therefore interesting impulse into and possibilities of explanation of the comparison between the two countries.

5.1 Comparison Between the Results of Curriculum Analysis and Teacher Interview

5.1.1 Germany

The curricula are largely discipline-oriented, as the curriculum analysis demonstrates. Personality development and relevance for future life situation are taken into account, but not the main body of the learning objectives in curriculum plan. However the teachers have a different understanding, or at least a different interpretation of the subject/subject combination they teach. They believe that their main task and aim in teaching the corresponding course is to prepare the pupils for the training, to enable them for and increase the chances of finding a training

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place and sign training contract after leaving school, which is for most of the pupils in Hauptschule a very optimal choice. The knowledge that are present in the curriculum plan, such as understanding of market economy, awareness of financing in personal life, etc. is taught in school, but the teachers think that this knowledge is not the purpose itself. The knowledge taught in school, the attitude and habits they attain in school, according to teachers' perception, are the instruments for the pupils to find their way after graduating, a way that is suitable for them.

The teachers' understanding has certain reasons and roots in the current situation of the school type Hauptschule. As the chapter two described, the low social status and disadvantageous conditions of Hauptschule are having predominant effect on its everyday functioning. Pupils felt unmotivated to learn any knowledge that they regard irrelevant to them and the teachers have to deal with this situation. The teachers' choice, as they themselves stated in the interviews, is to attempt to make the teaching contents relevant and make sense to the pupils, regardless of what subject it is. It is a pedagogic choice that has an immediate positive influence on the school as well as the pupils. But the long-term effects remain uncertain.

In a way, the curriculum plan is in accordance with this choice of the teachers, it has certain openness in terms of the role of knowledge learning in the curriculum: although in the concrete learning objectives knowledge plays a central role in both BW and NRW, the guideline of both of the curriculum plans state explicitly the function of knowledge as "practical" to a certain degree; the pupils shall "obtain the knowledge, abilities and skills necessary for accomplishment of everyday life and responsible art of living" (Ministerium für Kultus, Jugend und Sport Baden-Württemberg 2004), and "the starting basis for school learning process is the different life situations and daily experiences of the pupils" (Kultusministerium des Landes Nordrhein-Westfalen 1989, p. 23) are just two examples.

5.1.2 China

The curriculum plan of LTC explicitly orient itself towards the life situation of pupils and their personality developments. The teacher interviews confirmed this. The teachers' understanding of the curriculum is very close to what the curriculum analysis reveals. But what the teachers are doing in the praxis, or what they can do in the teaching reality, are different from what the curriculum plan requires. In some regions in China, teachers in some schools can still get some support and implement the curriculum, whereas in other regions most schools do not intend to or do not have the resources to carry it out.

The difficulties or failure in the implementation of the pre-vocational curriculum attribute clearly to the overall role of middle school or, in a broader sense,

the social function and expectations of general education. As described in Chap. 2, families expect the pupils to get through the education system as high as possible and obtain the certificates that can provide them with good career and life opportunities. The point or intention of attending schools, especially the schools during the lower-stage of the educational hierarchy, is no longer just about learning knowledge, develop personality or prepare for real life situation, but rather about preparing for the examinations that determine one's possibility of entering a good university. Under this circumstance, as the teachers in both Shanghai and Hubei repeatedly state, the "living space" for LTC curriculum is getting very limited.

This is, from an institutional perspective, an issue of legitimating inside a given institutional setting. The overall legitimacy of middle school curricula in China, for the parents and pupils stem actually from its function as a preparatory instrument for examinations, any curriculum that does not fulfill this function is deemed to be marginalized within the system.

5.2 Comparison Between the Two Countries

As the results from curriculum analysis and teacher interview have independently demonstrated, the curricula in the two countries differ from each other on both theoretical and practical levels. Meanwhile certain commonalities and similarities can also be found in some concrete aspects. Here some comparisons are made on two broad aspects. Since a major part of the analysis of curriculum plan has been based on a revised version of Reetz' theory, the first part of the comparison therefore focus on the guiding principle of the corresponding curricula. The second part inevitably deals with the comparison of the curriculum implementation and its influencing factors, which are the focus of the teacher interviews in this research. Based on these comparisons, more general interpretations and conclusions are drawn.

5.2.1 Guiding Principles of Curricula

As demonstrated in the results of curriculum analysis, the guiding principles towards which curricula are oriented differ substantially between the two countries. On the theoretical level, the pre-vocational curricula in both states in Germany put great significance on the transferring of subject knowledge, whereas in China the systematic academic knowledge is basically absent in the corresponding curricula; in the teaching reality, however, the teachers in very different environments seem to have found some commonalities, namely that aspects such as orientation towards

real life, preparation for future situations, and personality development are commonly stressed and attached more importance than pure knowledge learning by the teachers in both countries.

But within these commonalities there are also some divergences. Although all curricula address the importance of linking teaching with the life situations of the pupils, the German ones lay particular stress on the aspects of preparing for future vocations or vocational trainings, whereas the Chinese ones regard the current daily life situation as a more important reference point of the course. More details are given below.

5.2.1.1 Knowledge Teaching and Learning

This is the aspect that the curricula in Germany and China differ most with each other on the theoretical level. As the curriculum analysis findings show, the most learning objectives in curriculum plans in Germany are subject knowledge in economics, business and technique, whereas in the Chinese curriculum plans knowledge plays just a marginal role.

There're different logics and sources of development and reforms behind this divergence in Germany and China. As Chap. 2 explained, some scholars in Germany argue that the economic education in schools which contain internship in companies and vocational guidance cannot even be counted as pre-vocational education (cf. Chap. 2). In China, because the middle school curriculum is so overwhelming knowledge-based and examination-oriented, the education and curriculum reformers endeavor to integrate something more life-relevant and practical into the curriculum.

However, as the teacher interviews in both countries have indicated, the attempts of reform in both countries have failed to a certain extent: in Germany the teaching of much subject knowledge in economics and business seems to be rather unpractical in the Hauptschule, whereas in China the integration of some non-examination elements in the curriculum has proved to be mission impossible, at least in some places.

5.2.1.2 Personality Development

In the curriculum analysis it is revealed that in both curricula in Germany and China certain aspects in the personality development of the pupils are taken into account are reflected in the curriculum plans. In the teaching reality, as have been illustrated in the teacher interviews, these aspects can also be observed, but in different fashions in the two countries.

In the German teaching circumstances, the pre-vocational courses help the pupils develop their personalities mainly through offering pupils opportunities of

getting in touch with different occupations and typical occupational activities, so that the pupils could get to know what their true interests, strengths, and dislikes are. By participating internship in the companies, communicating with professionals and doing some technical works the pupils can, according to the teachers interviewed, discover what they are good at, which cannot be easily obtained just through knowledge learning in the classroom. These discoveries of one's own talents and aptitude can then help the pupils develop a better self-understanding and consciousness and later on make better vocational (training) choices. Knowing more about oneself, recognizing one's own abilities and inclinations therefore compose the main part of personality development of pupils in the German context.

In the Chinese teaching circumstances, the pre-vocational courses provide the pupils a chance to carry out some tasks that are seldom found in the subject learning in most other courses. Pupils try out small projects that involve making plans, doing some technical works, evaluating materials available, estimating timeframe and workload, adjusting products, etc. In this process pupils are also taught and trained in a way very different from the traditional way of knowledge teaching and learning. Both the teachers and the pupils have different expectations on themselves and as the teachers expressed in the interviews, the pupils could potentially develop a more positive attitude towards learning as a whole and they become more curious and eager to learn. Due to the close connection between the daily life situation of the pupils and the contents in this course the pupils can learn things that could somehow decorate or improve aspects of their lives and therefore develop a stronger interests in life itself. Especially in Shanghai where most pupils are the single child in the family they normally have little chance doing any sort of hand work, the course offers a good chance for this and teachers believe that this could change the pupils' attitude towards these offering opportunities for alternative forms and contents of learning and therefore fostering a positive attitude towards work, learning skills and life itself are the main measures for personality development of pupils in the Chinese context.

5.2.1.3 Practical Relevance/Orientation

This is an aspect that are attached the greatest importance on the praxis level in both Germany and China. In Germany, although on the theoretical level the majority of the learning objectives are rather cognitive and are coded as belonging to the domain of subject knowledge, the curriculum plans clearly stress the necessity of linking the learning processes and objectives to the real life situation in the guidelines, as BW curriculum plan put it, "*pupils are able to comprehend complex problems and tasks which are oriented towards the life world*", or in NRW, the course should "*contributes also to the preparation for vocational choices and thus for the*

transition from school to vocational education and training and other educational possibilities of the young people". In China, the importance of teaching practical skills and fostering working habits which is addressed in the curriculum plan is also confirmed repeatedly by the teachers in interview.

However, as mentioned above, under this seemingly similarity of emphasis on practical orientation there're considerable hidden differences among the two countries.

On the one hand, the life situation toward which the German curricula orient is the life situation after school. It contains a strong emphasis of the German-specific (or specific to the German speaking countries) concept of vocation (cf. Greinert 2007; Pilz 2009) and the curricula are explicitly preparing for the vocational developments of the pupils after their school career. In China the life situation toward which the Chinese curricula orient is the life situation that takes place now in pupils lives. It refers little to the vocational life and development after school, but rather the daily life situations that pupils encounter right now, for example making a small decoration for the bedroom or repair a broken light.

On the other hand, the German curricula attach importance to practical orientation and the corresponding curricula are in the reality indeed regarded important by the teachers and parents, as can be seen in the teacher interviews. However this practical orientation in the Chinese context is in the daily operation of schools actually regarded by the school in general as "unpractical", because as mentioned above the most practical thing for schools and pupils to do in middle school is to prepare for examinations. This dilemma situation, as has been mentioned above, comes from the divergence between the aim of this curriculum and the overall function and legitimacy of overall middle school curricula in China.

Of course these characteristics of the findings on the German side, namely the strong practical orientation, is to a large degree related to the school type of Hauptschule. It the comparable objects on the German side has been another school type, findings of this aspect could be substantially different.

5.2.2 Curriculum Implementation

As evidently presented in the results of the teacher interviews, the degrees of curriculum implementations differ greatly between Germany and China. In both investigated states in Germany the pre-vocational education, regardless of the various concrete forms, is generally well implemented; the analogous curricula in China are compared to the German ones relatively poorly implemented, especially in the economically less-developed regions. However the varied degrees of curriculum

implementation cannot be simply attributed to the different guiding principles of a curriculum mentioned earlier. Rather, the reasons for the success/failure of the curriculum implementation shall be discussed in a much broader context taking into considerations many different factors, which leads to the next point of difference.

Generally speaking the factors which influence, constrain, and help the implementation of pre-vocational curriculum in Germany and China vary greatly from each other. To use the concepts established by Posner (2004, pp. 211–213), the constraining factors in the German context are mainly personal and political-legal ones, whereas in the Chinese context they are more multifaceted.

5.2.2.1 Pupils

As the teachers stated in the interviews, the pupils' attitudes are generally active in both countries where the curricula are implemented (in Hubei it is basically not implemented). In China the LTC course offers the pupils an opportunity to get out of the very often stressful and heavy workload of knowledge learning and have activities that requires some other abilities, so the pupils are very happy to attend the course. In Germany the pupils have very often negative and frustrated experiences in knowledge learning and they find more confidence in the sometimes more manual and technical work in the course.

Some German teachers mentioned the lack of competencies of pupils in performing the tasks in the course but the Chinese teacher seldom mentioned this point but rather stress that the point of the course is not about accomplishing products but to develop positive attitude toward and good habits of working. Some German teachers even regard the lack of competencies of the pupils one of the main obstacles in implementing certain contents of the curriculum.

5.2.2.2 Institutional Setting

This is possibly the single most significant influencing factor that affect the differences mentioned above.

As Chap. 2 (cf. Chap. 2) described, due to the structural differences in lower-secondary school between the two countries, the pupils in the Hauptschule in Germany and junior middle school in China face very different perspectives after graduating and this difference is crucial for the status of the pre-vocational curriculum. The allocation or transition of pupils into different education pathways in Germany takes place before the lower-secondary school whereas that distribution in China first takes place after the lower-secondary education. Consequently, the majority of the pupils in Hauptschule Germany do not need to face another decision concerning the direction of schooling after leaving school (entering the transition stage is just a preparation for vocational school or training), whereas the pupils in Chinese

junior middle school need to decide where to go in the education system or to enter the labor market and this decision depends much on their performance in the final examinations and therefore their preparation for those exams.

Hence the pre-vocational curricula which are developed to help this school-to-work transition is helpful and important for the pupils in Hauptschule in Germany, but not so useful or even somewhat wasteful for the pupils in junior middle school in China. It is fair to say that the statuses and significance of pre-vocational curricula have been to a certain degree predetermined by the institutional settings.

5.2.2.3 Financing, Materials and Equipment

The financing schools have as well as the materials and equipment available have some apparent influences on the degree and effects of curriculum implementation, as teacher interviews has shown, especially the differences inside China. LTC in both Shanghai and Hubei suffer from the institutional constraints, but the different degrees of implementation attribute to a great extent to the different financial support and physical conditions the two regions have. In a way, the limited living space the LTC curriculum in China could have depend on the available physical conditions. If the schools can offer the required appliances the possibility of implementing the curriculum still exist, whereas if the critical financial and physical support is missing, the schools simply won't be able to carry out it.

The German schools normally have sufficient funding and physical conditions that are enough to support the curriculum implementation. But there are also individual teachers mentioning the lack of funding in education as a whole (in comparison to other domains) and the long and complex procedure it make take to get additional funding to repair things.

5.2.2.4 Teacher Background

Teacher is one of the determinant factors influencing the quality of curriculum delivery and implementation. During the interviews questions were asked concerning teachers' educational and professional backgrounds. Some noticeable differences exist between the two countries. While both the teachers in Germany and China all received college level teacher education, their professional backgrounds differ from each other. The professional backgrounds and developments of the teachers in Shanghai are rather simple, namely they seldom had professional experiences other than that of a teacher and majority of them teach relatively limited subjects after graduating from college; the teachers in both states in Germany have a more complicated professional backgrounds, namely some of them had vocational training or even worked as professionals in technical or engineering field for years before going to college.

The majors the teachers study also differ between the two countries. Teachers in Shanghai studied one subject as their major during their teacher education in the college, very often physics or Chinese or politics; whereas teachers in Germany studied two to three majors during their teacher education, the combination of which can be very different from each other.

The differences in both teacher education and professional backgrounds lead to the different contents that these teachers can offer their pupils. The teachers in Germany can teach pupils techniques and methods which are relevant to their future vocational contexts, whereas their Chinese counterparts normally do not have the profile and competencies to offer such contents. Instead, teachers in Shanghai teach mainly things that they learned from their daily experiences such as knit and sew, or things that are very closely related to certain scientific discipline, such as physics.

This important differences in teacher's possibility and capability in teaching has apparent consequences on the curriculum implementation, and possibly also the curriculum design, provided that the curriculum developers in both countries take into considerations the teachers' profile and competencies. Although both curriculum may attach great importance to the relevance to and preparation for pupils' life situations, influenced by the teachers' profiles, the Chinese curriculum can mainly focus on the aspects that are derived from daily life situation which do not involve complex work procedure; those teaching contents outlined in the curriculum plan which contain skills and techniques that are not very easy to learn in the daily life are likely to be neglected by the teachers, simply because they do not possess the training and capabilities to handle those domains; the German curriculum, on the contrary, has the potential to cover a wider field of teaching contents, including those that may closely related to the vocational activities in the future.

5.2.2.5 Contact with Partners Outside School

An apparent difference between the Chinese and the German curriculum implementation is that while the Chinese curriculum takes place inside the school, mainly inside the classroom (sometimes special classroom which is established for the course), a certain amount of the German curriculum takes place outside the school, an even greater part is carried out outside the classroom.

The differences in the location of the curriculum does not only represent the differences in terms of educational infrastructure, but also reflect the varied relationships between schools and its social partners in both countries. In Germany the schools can get constant help support from the local companies and industry in terms of both pupil internship and placements in the companies and company representatives coming into school giving the pupils information and lectures. In China this contact and support is however almost totally missing.

5.3 Hidden Patterns of Commonality and Its Meanings

Behind these differences as well as similarities between the two countries on the phenomena level, through a closer analysis some hidden patterns of commonality can also be seen. This is not only relevant to the implementation of curriculum in an international context, but also connected to some deeper theoretical issue. In the following part this hidden commonality and its meanings and implications will be analyzed and interpreted.

5.3.1 Inconsistencies in Both Contexts

As mentioned earlier, the results from teacher interviews in both of the investigated states in Germany reveal a rather different picture from the analysis of the curriculum. Given the condition that curriculum plans are analyzed on a solid scientific basis, the curriculum plans are therefore somehow "misunderstood" by the teachers. According to the curriculum analysis, both pre-vocational curriculum in BW and NRW, although to different degrees, are largely discipline-oriented and attach high importance to the teaching of subject knowledge; whereas the teachers interviewed generally think that the curriculum's fundamental aim and function is to bring the pupils into the world of work through direct contacts with companies such as internship and placements, and to prepare the pupils for their future vocational choices through those praxis experiences. Meanwhile many teachers find it difficult to teach subject knowledge to the pupils. Although the curriculum is regarded important by the schools and teachers and generally implemented well in teaching reality, an **inconsistency** between what the curriculum plan requires "*the aspired competencies include the acquirement of subject-structural knowledge and comprehension, the development of basic practical skills and abilities, to recognize and evaluate the individual and social meaning of the contents responsibly and to educe the action approaches*" (Ministerium für Kultus, Jugend und Sport Baden-Württemberg 2004), and what many teachers think, "*in the school we don't teach much subject knowledge. We teach them in the class 8 the application, to write CV for internship. We practice role play, how to introduce oneself, the politeness, etc.*" (a statement from a teacher in the interview, cf. Sect. 4.2.1 1, under the subtitle "Tension between situation and discipline principle") clearly exists. In the curriculum plan knowledge learning compose the main body, whilst the teachers said that practical relevance is their top priority and pupils' time is and should be spent on company internship and placement.

The results from teacher interviews and the results from curriculum analysis in China match each other quite well. Both results reveal that the curriculum is

situation-oriented and should teach practical skills to the pupils, that knowledge plays a rather marginal role in the curriculum plan, that development of personality is to a certain degree taken into consideration. However the curriculum is poorly implemented, even in a region where financial and equipment supports are not a problem. This is also a form of **inconsistency**, where what the education and curriculum plan requires, namely the implementation of the does not take place in the school praxis, namely the curriculum is actually not or poorly implemented.

5.3.2 Analysis of the Inconsistencies

The reasons for the inconsistency in the German case, as described and analyzed in the previous part, can be traced back to the general situation of the Hauptschule and the pupils there (cf. Sect. 2.1.1), which is perfectly reflected in what the teachers have expressed in interview. The pupils in Hauptschule, according to some of the teachers, are not very competent in learning academic subjects, their bad performance in learning language, mathematics, etc., which are exactly the reasons that they were arranged to the Hauptschule, the least academic-oriented school type among the lower-secondary school in Germany, also lead to the difficulties of teaching and learning academic subject knowledge such as economics and business, etc. The knowledge plays a central role here. It was knowledge, or success or failure of knowledge learning in the stratified education system that determines the allocation and stratification pattern of the school and therefore determines that certain pupils with a weaker ability to learn knowledge enter this type of school; it is also scientific knowledge that produce/present one of the biggest difficulties in learning for the pupils and therefore indirectly causes the inconsistency in the curriculum implementation in Germany.

In the Chinese case, the poor implementation of the curriculum, the inconsistency between curriculum requirement and teaching reality in school is, as mentioned earlier, a result of the examination-oriented school curriculum system. In this system where the success in the entrance examination for higher level of education institutes is the most important justification of entire curriculum, knowledge also plays a significant role. Through the classification and stratification of knowledge, and the selection of certain knowledge into curriculum, the school system inevitably rank those knowledge which are excluded from the examination as second class or inferior and thus causes the lower possibility and degree of implementation and the inconsistency between curriculum aim and teaching praxis.

As have been mentioned in Chap. 2, both education systems, the schools systems and the curriculum within it are organized and stratified on the basis of selection

and stratification of knowledge (cf. Sect. 2.1). At this point it can be seen with greater clarity, that in both systems, the difficulties in implementing the curriculum plan in the field of pre-vocational education relate to the **issue of knowledge**. Hence a closer and deeper investigation of knowledge would be necessary in understanding the similar difficulties and inconsistencies found in two very different cultural backgrounds education settings.

5.3.3 Knowledge as a Way of Educational Stratification

Since at least a few decades has education been regarded and analyzed as a socially constructed domain, where selection and organization of certain knowledge among others form the foundation of curricula choices (Young 1971, p. 24). In both the Chinese and German cases, this social nature of education is similarly recognizable. As mentioned earlier, mother language (Chinese and German correspondingly), mathematics and a foreign language (mainly English in these two countries) have always been selected as the core components of the curriculum throughout the education process from elementary school to lower secondary schools, and for some pupils in both countries even to the end of secondary education. Nature science subjects such as physics, chemistry and biology, and some social sciences subjects, such as social study (in the German case) or politics (in the Chinese case) also play important role in the school curricula. Pupils' performances on these subjects almost solely determine the education opportunities pupils will have and therefore to a large degree their future education trajectories and developments. A big variety of many other fields of activities or subjects, ranging from art and music to cooking, repairing and technology, etc., are either not included or have only a marginal status in the school curricula. Knowledge is evidently selected, stratified and organized into the curriculum according to some rules and processes.

This is by no means a new phenomenon. As early as the medieval period "two distinct differently specialized organizations of knowledge" already existed, one for mental practice and one for manual practices, with strong insulation between the two; manual practice was in the European tradition "never integrated into formal public systems of knowledge and transmission" and was relayed through the family and guild (Bernstein 2000, p. 8).

Power is regarded to have played a central role in this selection, stratification and organization of knowledge (cf. Young 1971). The dominant groups in a certain society, through the power of the state, could determine what constitutes as legitimate knowledge and impose that definition of knowledge on the school curriculum. Through the investigation of the degree of specialization, stratification and openness of knowledge, Young (1971, p. 38) has depicted the "dominant

characteristics of high-status knowledge" as abstract, literate, individualistic and unrelated to daily life and common experience.

These characteristics of the school knowledge, which can be observed in and representative of the main body of lower-secondary school curricula in both Germany and China, present difficulties and challenges for some pupils to learn effectively and perform well in schools. Pupils from the class-cultural communities where the codes of communication are incompatible with those that dominate the transmission of school knowledge, and are not recognized in school as legitimate, are almost deemed to encounter with great barriers in learning school subjects, and are therefore in a disadvantaged position in school (Roy 2004). Empirical studies in both Germany and China have confirmed the influences of family communication patterns on school performance by proving the positive correlation between the students' family socioeconomic status and academic performance, namely the higher the family's socioeconomic status is, the better pupil will perform in school (cf. Liu and Lu 2009; Groh-Samberg 2009, p. 268). Bowles and Gintis (1976) have demonstrated in their research the arrangements of different kinds of knowledge and qualities for different curricula, namely that the middle class children destined for professional and managerial jobs are delivered a curriculum emphasizing choice, flexibility and independent learning, whereas students who will join semi- or unskilled occupations are taught rote learning, punctuality and obedience.

From the analysis above it can be clearly seen that knowledge, by being selected, constructed, stratified and organized into the school curriculum, has functioned indirectly as a way of social stratification, through which pupils are allocated into different branches, levels and directions of education system and therefore potentially distributed different socioeconomic chances in the future. Through the selection, allocation and stratification functions of knowledge, education maintains or even reinforces the existing social and economic inequalities.

5.3.4 The Approaches to Knowledge Taken by the Middle Schools in the Two Countries

As can be seen in the previous chapters, middle schools in Germany and China have two extremely different approaches of dealing with and treating knowledge. In Germany the knowledge is carefully selected, divided and distributed to different groups of pupils, whereas in China pupils are provided with same knowledge in junior middle school regardless of what their competencies and interests are.

In Germany, as described in Chap. 2, pupils are divided into three types of school and different sets of knowledge and competencies are delivered and promoted in the different school types. In Gymnasium pupils are taught academic-oriented

knowledge which could enable them for the study in the universities, whereas in the Hauptschule pupils are given more practical knowledge which help them better prepared for vocational training afterwards. On a practical level, the teachers in Hauptschule tend to teach basically all the subjects in a feasible way. As the interviews demonstrated, they teach and explain any knowledge in a way that it makes sense to the pupils and the best way to do so is to relate the contents to the life situation of the pupils, to make them less abstract, to de-scientificate them. At the mean time, the teachers attempt to provide more practical experiences to the pupils, some try to relate them to the subject knowledge. The price of doing this, of making the curriculum more acceptable to the pupils, is that the academic nature of the subject, the scientific depth of this course has to be to a certain degree sacrificed.

However an even greater danger lies in this process. As has been mentioned earlier, subject knowledge which serves as the stratification instrument within the education system is reduced even further when teachers attempt to adapt the curriculum thoroughly to the pupils at Hauptschule. This could unintentionally lead to a reinforcement of the existing inequality in terms of knowledge learning and the pattern that students from different socioeconomic backgrounds are taught different sets of contents in education. As Bauer and Bittlingmayer (2007) shows, the competence gaps between different groups of students, which already existed because of differences in private support they get from family and their personal interests, are expanded through the demanded behavior which are dependent on school forms, even including the different types of soft skills that are required. In this so-called knowledge economy where higher level and broader range of knowledge become the prerequisite for sustainable career developments this differentiation in knowledge teaching among different groups will probably put those with less "knowledge capital" in even worse life and vocational situations.

In China another approach to knowledge is applied, namely all pupils are offered by the same set of knowledge and competencies which are actually most useful and valuable for further academic study and learning. Pupils with not very strong interest in the knowledge learning in an abstract way and/or who get limited support from the family find it difficult to succeed in school. Many pupils become bored and weary about learning in general because of the constant negative or even failure experiences they had in school (Tan 2007; Sun 2009). Apparently the danger also exists that certain groups of pupils are excluded from the learning process and their chances of higher level of education are potentially deprived.

Both of the approaches to knowledge, although extremely different from each other, may cause the same problem of educational and social discrimination and exclusion. If both the simple reduction of knowledge for some pupils and the uniform provision of knowledge for all pupils will lead to this problem, is there a

better possibility that reduce the degree of discrimination and exclusion? Behind this dilemma is the special characteristic of knowledge.

5.3.5 A Social Realism Approach to Knowledge and Implication for Curriculum Development

As mentioned earlier in this chapter, knowledge in school is selected, stratified and organized into the curriculum. But just realizing that learning in school is not just a bare reproduction of the existing knowledge, but rather requires an autonomous (re)organization of knowledge of the pupils is not enough for a systematic explanation of the curriculum plan (Künzli 1978, p. 16).

A perfect manifestation of this organization and stratification is the construction and distinction of knowledge in the school system as theoretical/practical, pure/applied etc. It is not a coincidence and by no means a new phenomenon. Bernstein (2000, p. 29–31) elaborated Durkheim's distinction between two classes of knowledge, the sacred and the profane, into esoteric and mundane knowledge; the meaning of mundane knowledge can only be understood in the context and material base in which it is generated and cannot be easily applied elsewhere and transferred to other contexts, whereas the meaning of esoteric knowledge have an indirect relation to a specific material base and therefore a gap exists between knowledge and its material base which is named as the "potential discursive gap". Although the power relations will attempt to regulate the realization of this potential, this gap can "become (not always) a site for alternative possibilities", because its meanings are not wholly consumed by the context (ibid., p. 30). Young (2003, p. 113) draws on Durkheim and Vygotsky to distinguish between theoretical and everyday knowledge, between scientific and everyday knowledge, and argues that since centuries knowledge has "transcended the contexts in which it was developed in ways which would have been inconceivable in earlier eras".

Hence, knowledge is not just a social product which inevitably has a social basis and character, it could also has the possibility of objectivity "in ways that transcend the immediate conditions of its production" (Moore and Young 2001, p. 454).

Since knowledge has a double character of being both socially constructed and transcending the production context, it shall not be treated and handled with one single logic in school curriculum.

Education and school curriculum should not only deliver subject knowledge, especially should not deliver it uniformly to all pupils. For those who do not have a strong academic interests, regardless of cultural backgrounds, pure knowledge learning can lead to failure experiences which can be a strong reason for lack of aspiration and efforts in learning (Wiezorek 2007; Tan 2007; Sun 2009).

Education and curriculum cannot be based pure everyday experience either, because "such a curriculum would only recycle that experience" (Young 2008, p. 89) and therefore reinforce the existing discrimination and patterns of exclusion. As Künzli (2006, p. 17) put it,

> the primary task of schools is not to deal with the present-day problems, not even those on the spot. The school is not made for that. Their constitutive aim is to increase human possibilities through the cultivation of the acquaintance with knowledge and ability, which was produced and developed elsewhere and by other people in order to acquire, evaluate them and use them in solving their own problems (original in German, translated by author of this dissertation).

School curriculum should therefore on the one hand deliver subject knowledge to pupils, because of its irreplaceable value and function in enabling the learner to understand the world in a systematic fashion and "take people beyond the everyday knowledge available to them through experience" (Young 2008, p. 85); on the other hand, it should deliver the knowledge in such a way and fashion that pupils whose codes of communication are incompatible with those that dominate the transmission of school knowledge, so that these pupils can also have access to knowledge (Roy 2004). As Gewirtz and Cribb (2009, p. 129) put it, the curriculum design shall strike a balance between enabling and validating student engagement with scientific reasoning process, on the one hand, and indiscriminately validating any and all models or claims about the nature of the world, on the other hand. In the context of pre-vocational education, the curriculum should have the character of facilitating young people's STW transition and being properly educative at the same time (Williams 1994).

Come back to the curriculum analysis theory by Reetz in this research, it can be seen that school curriculum, in this case the pre-vocational curriculum, should reach a balance among the three guiding principles of curriculum development: subject knowledge, life situation of the learners as well as their personality development, only in this way could a curriculum fulfill its aims and tasks in the complex reality in education practice.

5.4 Implications for Praxis

From the comparisons on both theoretical and praxis level it can be seen that the curricula in the two countries differ from each other in various ways. Also due to the huge differences between the two countries in aspects such as economy, society, culture and education system, as the comparative education studies in the past have repeatedly proved, it is impossible to transfer a system or entire curricula of one

country to another country-specific context. However, lessons can be learned from these comparisons, the social institutions and organizations can also learn from experiences of the others. Besides the findings and progress on the theoretical level this dissertation can potentially also offer some perspectives in the improvement on education practices, through the comparisons between experiences that each country or region has made. The following points are just some possibilities of insights.

5.4.1 The Integration of the German Concept "Vocation (Beruf)" in the Chinese Curriculum

From both the curriculum analysis and teacher interviews in Germany it can be observed that there are a strong orientation towards the vocational fields and vocational activities in the pre-vocational programs. The pupils in both BW and NRW are provided opportunities on a regular basis to get in touch with the local companies, to see how the firms carry out certain production or business activities, to participate in some training and operations in the enterprises. Although there's a strong German cultural and historical element in this vocation related learning, the concept of learning economics and understanding vocations has been integrated into the general education process (cf. Sect. 2.2.1). This could have some very interesting implications for the Chinese middle school curriculum, which to a large extent neglect this element.

As the previous parts demonstrated, although the Chinese LTC curricula are paying great attention to the life situation of the pupils, or it can be argued that the whole point of LTC curricula is to let the pupils get some "real life feeling" besides the enormous pressure on knowledge learning brought by other disciplines, the curriculum plan has taken little consideration of the possible vocational choices that many pupils would face immediately after leaving school, that many others would face in a few years. The entire school curriculum, despite some efforts in LTC to make the learning contents relevant to pupils, has little room for one of the most important aspect of each pupil's development, namely the development of vocational awareness. The consequence is that even when many of the pupils have finished twelve years of schooling they still have absolutely no idea of what field to work at. Many parents are determining the future of their children, and the school is not helping either.

It could be of great value, if the in both junior and senior middle school curricula in China, in the existing framework of LTC, to integrate some elements of career development and vocational guidance, as the German schools have done, to offer the pupils more chances to get to know the different vocations and vocation groups, to teach some knowledge about how labor market works and how to apply for jobs etc.

5.4.2 Knowledge Teaching

As the analysis above showed, the pre-vocational curriculum should deliver subject knowledge, but in a way that pupils can accept and understand them. Despite the enormous difficulties encountered by the teachers in Hauptschule, it is necessary to make it even more explicit to them that the knowledge teaching is necessary to prevent further enlargement of education discrimination. Of course, didactic and pedagogic efforts shall be made to help the teaching of subject knowledge realizable, while on the one hand taking consideration of pupils' academic competencies and on the other hand do not seriously reduce the objectivity and academic nature of the discipline.

Introduction of subject knowledge, such as in the field of economics and business management, could be valuable for the Chinese middle schools. This could on the one hand expand the possibility and perspective of LTC in China, on the other hand, because of the existence and status of subject knowledge in it, the chance of it being implemented increases. Here another possible implication is introduced:

5.4.3 Teaching of Economics/Business as Selective Course in China

Since the Chinese middle school attach great importance to subject knowledge, it would be greatly raise the status of pre-vocational education if it could integrate some elements of subject knowledge or even make them part of the examination subjects. A selective subject in the middle school could be an option. Sounding quite unrealistically at the moment, but the introduction of economics/business knowledge could potentially be beneficial to several parties.

On the one hand, of course the pupils could learn another domain of knowledge, which could considerably broaden their perspectives of the world. On the other hand, the status of pre-vocational programs can be strengthened in a institutional matter and the implementation may not face very strong institutional obstacles. Meanwhile the college graduates in the major economics and business management, the number of whom is already much more than the labour market requires, will have more employment possibilities in the education sector.

Of course the integration of economics/business, even just as a selective subject, could lead to systematic changes and therefore needs to be given serious considerations and experiments before put into praxis.

5.5 Perspectives

As mentioned above, based on the current research findings, implications for praxis can be drawn, where the experiences of one can become the treasure of both. Meanwhile, on this basis, some further comparative researches between the two countries can be carried out. More types of schools, bigger numbers of teachers and/or administrators/pupils can be involved in, samples can be extended and the developments over time can also be analysed.

As stated in the beginning of this research, education systems in two countries with substantial differences in society and culture face some similar challenges of the time. The results confirmed the difficulties that exist between the two sides in many aspects, while also reveal some difficulties shared by both.

This comparative research is not just an analysis of the curriculum and its implementation, it is also an attempt to deepen and broaden the existing comparative education researches, especially comparative vocational education researches between Germany and China. Just as the processes as well as the results of this study has demonstrated, the pre-vocational education, as a component in the general education with vocational education characteristics has very different guiding principles, goals, contents, and forms in Germany and China. In the teaching reality the teachers of the corresponding courses in the two countries also face different difficulties and challenges. However, as the interpretation of overall results shows, despite these various differences some common patterns can be found between the two countries. The inconsistency existing and the special and somewhat predicamental status of subject knowledge in both systems could imply some points of mutual learning for the two countries. Since some common patterns of difficulties exist, a potential for learning from each other is also possible.

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