



Research on the Construction and Development of General Education Curriculum in German Universities Under the Background of Information Education

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Abstract. With the development of society, it is an era of globalization, information and resource sharing. Under the mode of Sino foreign cooperation in running schools in the field of teaching, with the emergence of German, it has realized the integration of new educational methods and elements into the West under the Chinese educational system, and refined a set of development mode that is suitable for the development of Chinese education, suitable for Chinese students to absorb, and can be combined with foreign educational concepts. So as to improve the quality of German teaching in major schools in our country, and improve the development mode of students' open thinking..

Keywords: German teaching · Cross cultural awareness · General education · Practical exploration

1 Introduction

The term “general education” is translated from “general education”. It was first proposed by nine Ivy League schools in the United States. At the beginning, it was called “liberal arts education”. Its main subjects were seven arts (culture, logic, rhetoric, geometry, astronomy, mathematics, music) and liberal arts. It was mainly used to train lawyers and teachers [1]. After that, Harvard University added Chinese, humanities, society, natural science and other disciplines on this basis, and gradually developed into what we call general education today [2].

General education in higher education should be regarded as a kind of educational thought and idea, which should run through the whole process of higher education. If higher education is a person, then general education is the blood of a person, and professional education is the skeleton of a person. General education should flow in all the muscles of higher education, so as to provide reasonable nourishment and correct guidance for higher education. In order to adapt to the development trend of the times, the education system is constantly updated, and new education models are springing into teaching. The development of German classroom teaching in China is bound to be the integration of new elements in China's original education system. The school

running mode of Sino foreign cooperation will realize the integration and innovation of teaching models, and extract a set of teaching methods that are suitable for Chinese and foreign education Chinese students, including German advanced teaching philosophy and German teaching mode with rich experience, are of great significance to improve the teaching quality of German professional knowledge and cultivate excellent students with leapfrog thinking [3].

2 The Development Trend of German Classroom Teaching

With the increasingly close cooperation and exchanges between China and Germany in various fields, those with good German expression ability and a deep understanding of German culture and economy have become the resources that enterprises in Huade and other enterprises closely cooperate with Germany, and the international talent demand is increasing. Many universities in China actively integrate with the advanced education mode in Germany, and run schools in combination with German universities, and implement the international talent training mode. The graduates who run a school in cooperation have good German language ability and are interdisciplinary and complex talents. For them, language is both a goal and a medium for acquiring professional knowledge. Therefore, the establishment of German classroom teaching is in line with the needs of the times and economic development, and is a teaching project with great potential for development [4].

3 The Mode of Chinese Foreign Cooperation in Running a School

The establishment of any foreign language major in China is closely related to the inherent educational model of the school. The teaching management mode of Chinese foreign cooperative German course mainly includes demonstration class, mutual listening and collective listening system [5].

The demonstration class mainly invites some senior German majors or senior lecturers to attend lectures, or completes the teaching tasks in the form of demonstration class within the prescribed teaching time. Through this mode, the latest teaching tasks and advanced teaching methods are introduced into German class to achieve the teaching objectives [6–8].

The main purpose of listening to each other is to let one German teacher attend another German teacher's curriculum, and then discuss the teaching method and teaching method. Then the teacher will attend the course of another German teacher. The main purpose of this is that teachers can learn from each other in this way, learn from each other and make up for each other, so as to improve the teaching quality.

Listening to a group of teachers is to listen to a German teacher's teaching, and then discuss the teacher's classroom, summarize the advantages and disadvantages, and finally let each teacher express his own feelings, and extract the essence of his own harvest, so as to create a good teaching atmosphere and improve the quality of teaching. Figure 1 shows the pattern of Sino foreign cooperation.

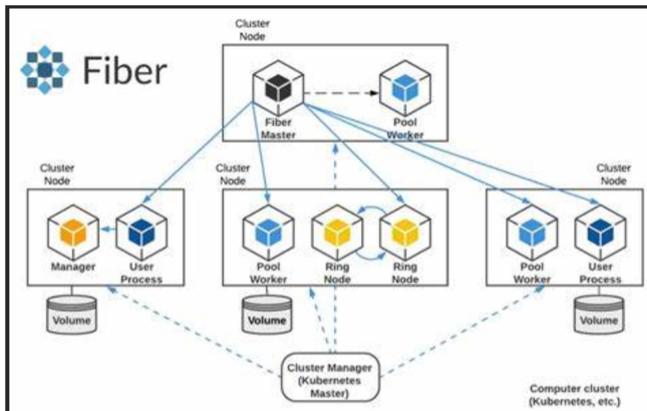


Fig. 1. Pattern of Sino foreign cooperation

3.1 The Curriculum Setting of German Class

Generally speaking, our German teaching course is divided into three stages: learning stage, reinforcement stage, professional training stage.

When we first came into contact with German courses, it must have started from the simplest listening, speaking, reading and writing stage, and it is the cultivation of interest and hobbies. We will often have a basic introduction to study through some German films, TV, songs or plays. Then, it is the strengthening stage. Through the training of listening, speaking, reading and writing in the early stage, what we should achieve at this stage is to strengthen and improve the language on the basis of the previous people, so as to prepare for the use of the later language [9]. Finally, it is the professional training stage. German application is not only a simple understanding in our life development, but also needs us to apply it as a professional skill to the future life and work. The school will improve and train the language specialization degree of students by exchanging students and interviews between schools. And will use the way of assessment to get the students' final results in the German course, complete the credit of the course [10].

3.2 Problems in the Sino German Cooperative School Running Project

German learning is to adapt to the development of the whole social globalization, and is a course to improve the overall quality of students. In the current degree of completion of the course, students generally respond to the heavy task of learning. The three courses of German learning are a gradual process from primary to advanced, from basic to professional. Students mostly stay in the primary stage of listening, speaking, reading and writing, and then to a deeper level, they need to make up for their own shortcomings [11].

In the classroom, teachers and students communicate poorly and knowledge is broken. According to the teaching in books, the knowledge that is taught is generally written, and can not be expressed as the skills needed for daily work and life. Besides, the better way to learn German is to really understand the life habits and daily life of Germany as

exchange students abroad. However, the school resources are limited and can not give all the students who study German a favorable learning condition.

Not professional. Although the last stage of German learning is specialized training, only a few can really go to this stage, then enter professional training and finally use German vocabulary professionally. Here, the misunderstanding of students is to be familiar with the first two stages, and the third stage is often ignored, and the formation of professional vocabulary is inadvertently generated or understood. In fact, in different contexts, different writers' writing will have a word polysemy. It is difficult to read a work with strong professionalism only by the previous basic vocabulary [12–14].

3.3 The Reform of German Education Mode

In the basic German teaching class, besides the explanation of basic German vocabulary, the daily German listening, speaking, reading and writing should be completed, and the explanation of professional vocabulary should be appropriately increased on the basis of the basic vocabulary. It is not enough to study through the third stage of students, and it is difficult for students to complete the transformation of their major. This requires teachers to help students in the early teaching tasks, guide students to understand professional vocabulary, and finally improve their professional literacy [15].

We can also understand the learning effect of students through the communication between the two sides, and enhance the interaction between teachers and students [16].

In the third stage, the teacher can make the classroom teaching easier, strengthen the communication and discussion between students, summarize and put forward suggestions on the problems in the application and specialization of German, and deepen the students' understanding of the professional terms in a relaxed and pleasant learning atmosphere.

In a word, the German teaching in the mode of Chinese foreign cooperation is a foreign language teaching in such a large environment in China. It needs a strong integration and plasticity between the two. The audience group is the group of students in the Chinese education system. We can neither abandon the original teaching mode nor admire the foreign language. We should combine the two better and achieve "Chinese and western use", and do not worry too fast, so as to create a strong and professional German talent.

4 Research Status of Ant Colony Optimization Algorithm

Thirdly, the negative feedback mechanism is introduced. Every time an ant moves from one node to another, the pheromones on the path are eliminated according to the following formula, so as to realize the local adjustment of pheromones, so as to reduce the probability of the selected path being selected again.

$$\tau_{ij} = (1 - \varsigma) \cdot \tau_{ij} + \varsigma \cdot \tau_0 \quad (1)$$

Another improved algorithm for as is rank based version as. Similar to "elite strategy", the pheromone on the better process is always updated in this algorithm, and the

selection criterion is its travel length, ($L^1(t) \leq L^2(t) \leq L^m(t)$), and the intensity of pheromone placement for each ant is determined by the ranking weighting in the following formula, where W is the total number of ants placing pheromones after each iteration.

$$\tau_{ij}(t+1) = (1 - \rho) \cdot \tau_{ij}(t) + \sum_{r=1}^w (w - r) \quad (2)$$

5 The Importance of General Courses in German Teaching in Universities

5.1 To Meet the Needs of Globalization

In recent years, the development of global economy and trade, science and technology is more and more rapid, and close ties have been formed between countries [17]. The awareness of global coordinated development is widely recognized, especially the cultural exchanges are more and more frequent. The spread and development of culture has already exceeded the boundaries of regions and countries [18]. The formation of cross-cultural awareness is a necessity for the development of globalization. Cross cultural communication can not only promote the wide spread of excellent culture, but also provide spiritual support for national development and strengthen the close ties between countries. College German teaching must conform to the development trend of the times, change teaching concepts, and integrate German teaching with the spirit of the times. This integration is not limited to teaching German, but also allows students to indirectly learn the history and national conditions of Germany through German learning, so that students can truly understand German culture and the differences between Chinese and German cultures, so as to cultivate students' cross-cultural awareness. To train a large number of cross-cultural language workers for the development of the country [19–21].

5.2 Basic Principle of Ant Colony Algorithm

The essence of College German teaching is to let students learn to use the language, form a dialectical thinking of cultural differences, and improve students' ability of cross-cultural communication, rather than simply teaching words and grammar. In the process of German teaching, teachers should cultivate students' language ability from four aspects: listening, speaking, reading and writing. Cross cultural awareness in this process reflects its role. The traditional teaching mode and exam oriented education mode seriously restrict the German teaching. Most students study German with a utilitarian exam oriented attitude. Their goal is to test rather than to achieve a deep understanding of culture through language learning, which runs counter to the essence of German teaching [22].

6 General Education

According to the purpose of general education and the goal to be achieved, the curriculum and its process are designed. In undergraduate colleges and universities, it generally refers to all courses except professional courses. (see Table 1).

Table 1. Undergraduate general education curriculum

Formal courses	Basic skills	Political morality course
		Language, writing
		Computer
Hidden curriculum	Core curriculum	It is to promote the construction of students' personality and balance their knowledge structure. To social sciences, etc
		Social investigation, practice, campus culture, environment, campus landscape, campus tradition, school spirit, school motto, community environment, etc

(1) General education model and core curriculum plan of Harvard University

The general education model and core curriculum plan of Harvard University the core curriculum of Buddha university is divided into 70 fields, including foreign culture, historical research a, historical research B, literature and art a, literature and art B, literature and art C, ethical speculation, quantitative analysis, science a, Science B, social analysis, etc. [23]. The above core courses are mainly arranged in the first and second year of the University. From the listed courses, Harvard's core courses are widely distributed in content, which can be used to describe and describe astronomy, geography, science and humanities from ancient times to the present. In addition to quantitative analysis and science, the others belong to humanities and social sciences. From this, we can understand Harvard's educational philosophy and innovative talent training philosophy. First, regardless of whether students major in science or arts, all students must have a knowledge base across the two fields of Arts and science [24]. For example, the more they major in classical literature, history, anthropology and other majors that seem to have nothing to do with science, the more they are required to take science courses as a compulsory course, The organic unity of humanity and science, ethical speculation and pragmatic verification embodies the basic purpose of Harvard's human cultivation and education, that is, to cultivate people's comprehensive quality and comprehensive innovation ability in the multi-disciplinary knowledge synthesis. Second, the content of the course covers a wide range, each field contains a large number of specific courses, even its content only involves a certain country, a certain historical fragment, for students to choose freely. Obviously, here, we can understand the obvious flexible or flexible characteristics of Harvard's rigid core curriculum plan. Therefore, it takes care of the interests of different students and reflects the personalized and

diversified characteristics of general education. Third, the curriculum covers a wide range of regions. Although it is difficult to determine whether a specific curriculum has the tendency of western centralism, the overall distribution structure and framework of the curriculum undoubtedly contain the civilizations of all countries, regions and nationalities in the world. Therefore, the core curriculum plan has a strong international color (see Fig. 2).

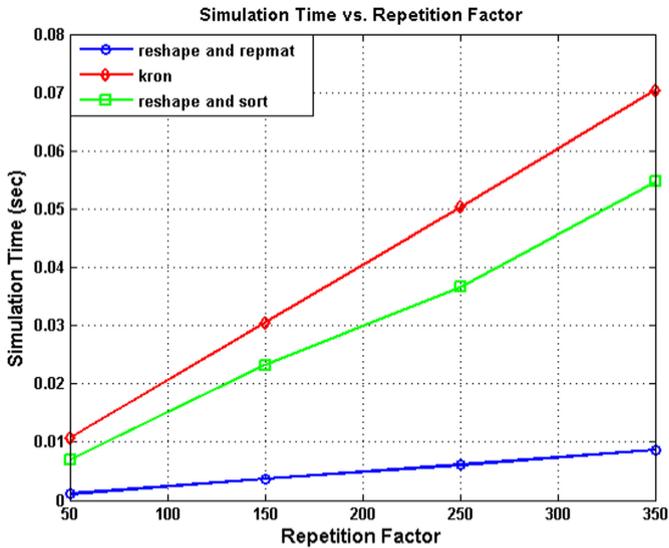


Fig. 2. Simulation time vs repetition factor.

7 Current Situation of General Education

7.1 Misunderstandings in Curriculum Understanding

- (1) Today, with the emphasis on marketization and commercialization, universities are facing the great challenge of utilitarianism. Undergraduate education falls into the trap of “professionalism” and “professionalism” [25]. General education courses are only additional courses besides the main courses for undergraduates, which are additional, secondary, dispensable and at most icing on the cake. Most of these courses do not have strict requirements and training, It is often a mixed credit course for students, or a course to increase extracurricular interest at most [26].
- (2) In terms of concept, the independent significance of undergraduate general education is not emphasized. Instead, the idea of graduate education is used to support the reform of undergraduate education. General education has become the preparatory stage of graduate education. I’m afraid that such a guiding ideology is still the continuation of the previous “professionalism” education thought and tradition, and

does not really regard the undergraduate education stage as having an independent purpose and goal.

7.2 On the Credit Allocation of General Education Courses

Take the undergraduate teaching plan of East China Normal University published in 2005 as an example. In this plan, the average total number of credits for four-year undergraduate students is 160, of which the average number of general education courses is about 57, accounting for 36% of the total credits [27]. In general education courses, the average number of general compulsory courses is 41 credits, accounting for 72% of the total number of general education courses, and the number of general education elective courses is 16 credits, accounting for 28% of the total number of general education courses. Other credits can be offset by professional elective courses. In addition, due to the school's curriculum resources, students have little autonomy in their choice of study (see Fig. 3).

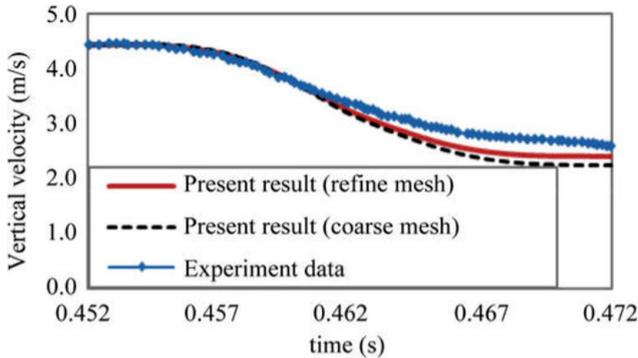


Fig. 3. Estimated results of general education courses

8 Epilogue

Learning German teaching must pay attention to the cultivation of students' cross-cultural awareness, which is a long-term and systematic process. We should strengthen the infiltration of cross-cultural awareness in German teaching by cultivating excellent German teachers, changing teaching methods and ideas, and strive to achieve the cultivation goal of cross-cultural awareness.

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