

Research on Current Situation and Characteristics of International Students in China's Vocational Education

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Abstract: As a petroleum industry university, China University of Petroleum, Beijing, has been carrying out education for foreign students for 25 years, and has accumulated rich experience in this aspect. This paper analyzes and summarizes the international students studying at China University of Petroleum (Beijing) in the past 25 years from six characteristics: number, source countries, native language background, types of learning, major selection, and funding sources. Finally, for the sustainable development of international students' education, four suggestions are put forward: respond to the Belt and Road Initiative and give full play to the school and professional characteristics; enrich scholarship projects to attract high-quality talents; build interdisciplinary faculty team and training compound talents; broaden the propagandistic channels to expand the international influence. This paper provides a reference for realizing the internationalization of education at China University of Petroleum, Beijing, exploring subject features, strengthening the internationalization faculty team, and improving the sustainable development of industry colleges and universities.

1. Introduction

“Industry colleges and universities are a special type of universities in China, which are higher education providing education services for the development of industries” (D.R. Bie, 2020). It has become an integral part of the national higher education system by virtue of disciplinary advantages and close integration with the development of the industry. Today, based on the background that the world's higher education is developing towards internationalization, popularization, and informatization, the education of international students in industry colleges and universities is about to become one of the most important indicators to measure the internationalization of universities.[1]

From the first foreign students from Eastern Europe who came to China in 1950, to when it is the largest academic mobility destination in Asia nowadays, the development of international students in China has reached a climax. Many scholars have conducted research on this in various aspects, mainly divided into the following three aspects. The first category is for research on education for international students in China as a type of higher education in the national education system. This includes research on the internationalization of education for international students in China in universities (W. Zhu, H. Zhang, 2017) and research on trade as a type of higher education service (H. Li, M.B., 2012). The second category is the study of the management of international students in

China. It is mainly about the needs and manners of international students studying and living in China (R. An, S.H. Zhang, 2008), the structure and quality of education (Y.Y. Ji, 2016), and the intercultural adaptation competence (G.H. Zhu, 2011). The third category of research focuses on the teaching and learning of Chinese for international students. The main focus is on the learning of specific language elements of Chinese (R. Li, Y.X. Wang, 2021), and learning strategies by region or country (Y.L. Qian, Y.N. Liu, 2016).

At present, there is abundant research on international students in China, but little research on the current situation of education of international students in China in industry colleges and universities, so the situation of international students in industry colleges and universities are further studied in depth. Because data involves students' privacy and each university has its own confidentiality rules, the data of international students in China from universities in similar kinds of industry colleges and universities could not be collected. Taking China University of Petroleum, Beijing, (refer to simply as CUPB) as an example, this paper makes a detailed analysis of the distribution of international students' number, types of learning, major selections, source countries, native language background and funding sources of study abroad in the past 25 years (from 1996 to 2020), and summarizes the characteristics of them. Finally, it is a reflection on the sustainable development of international student education at CUPB, Beijing, hoping to provide a reference for the internationalization development of industry colleges and universities.[2]

2. International Students in China at CUPB

In response to the trend of internationalization of higher education, CUPB has enrolled a rapidly growing number of international students since 1997. Today, the number of international students in China at CUPB is as high as 3,460 with a record 371 new students enrolled in 2019. Now, this paper analyzes six aspects of the distribution of international students in China in the past 25 years, including number, source countries, native language background, types of studying, major selection, and changes in funding sources at CUPB.

2.1 Distribution of the number of international students in China in the past 25 years

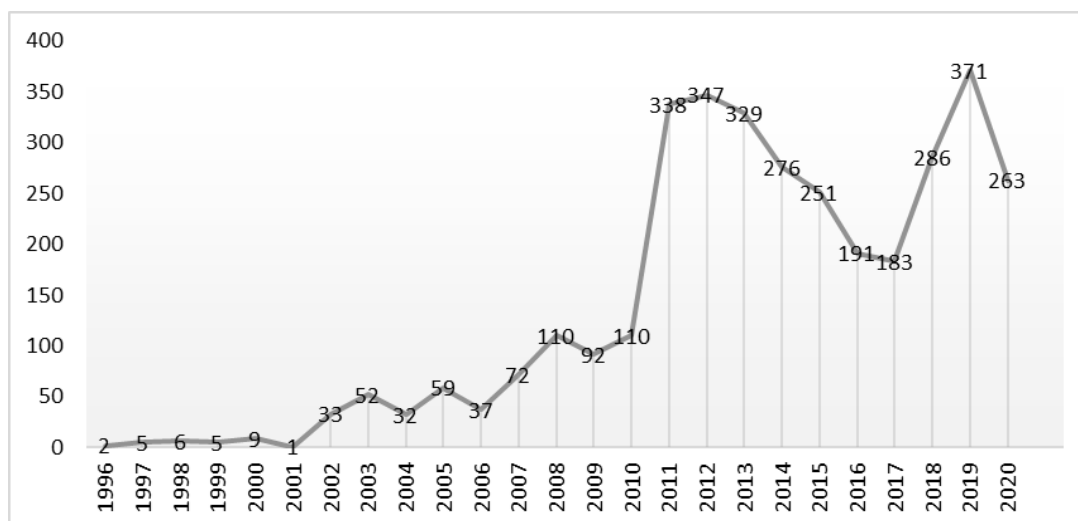


Figure 1: Distribution of International Students at CUPB from 1996 to 2020

The number of international students from CUPB has been on an overall increasing trend in the past 25 years. There are three stages according to the annual change in the number of international students. In the first stage, from 1996 to 2001, the number of international students was single digits

with an annual average of about 5 students and only one international student in 2001.[3] In the second stage, from 2002 to 2010, the number of international students broke 10 digits with a fluctuating upward trend and an annual average of 66 students. Even from 2006 to 2008, the number had a larger increase to 110 students. In the third stage, from 2011 to 2020, there was an overall fluctuating upward trend and a large change in numbers with an annual average of approximately 283 international students. In this period from 2012 to 2017, the number of international students dropped continuously from 347 to 183. Then rose sharply in the following two years, with the number increasing to 371 in 2019. See Fig. 1.

2.2 Distribution of source countries of international students in China

Between 1996 and 2020, the total number of international students from Asia to China far exceeded the total number from the other six continents. In the past 25 years, the total number of international students in China from all over the world was 3,471, of which 2,661 came from Asia which accounted for 76.66% of the total number of students from all continents and ranks first among them. Secondly, Africa accounted for 15.98% with 555 students. Thirdly, South America accounted for 3.28% with 114 students. Fourthly, Europe accounted for 3.22% with 112 students. North America and Oceania were too small compared to the total number of students from other continents, with a total of 20 and 9 students respectively. See Fig. 2.

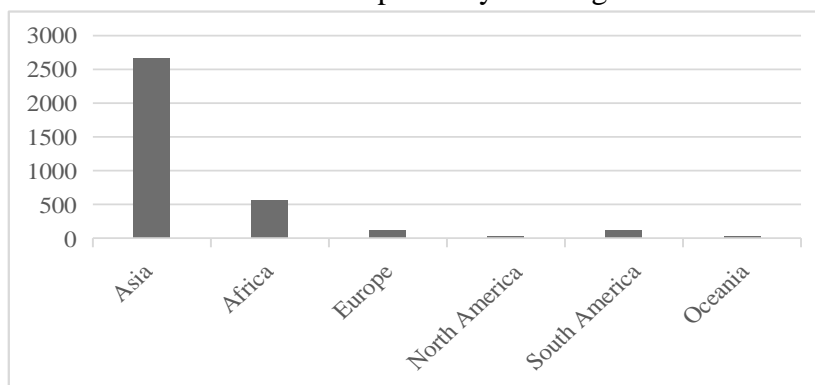


Figure 2: Total number of students in China by continent between 1996 and 2020

According to the data, the source countries of international students in China are mainly in Asia and Africa, with a smaller number in North America and Oceania. The number of international students in descending order is Asia (2,657), Africa (548), South America (114), Europe (112), North America (20) and Oceania (9). See Fig. 2. The four main source countries for international students are Kazakhstan (1282), Turkmenistan (699), Sudan (197) and Mongolia (197). The total number of students from these four countries is 2375, accounting for about 70% of the total number of students coming to China.

2.3 Native language backgrounds of international students in China

The proportion of international students' native language backgrounds at CUPB is in descending order. The first one is Kazakh, with the number of speakers accounting for about 37%. The second language is Turkmen, accounting for about 20%. These two languages are the most important components of the native language of international students at CUPB with a total of 57% of speakers. Thirdly, Arabic is spoken by approximately 9% of the students. The fourth is English with a share of about 7%. The fifth language is Mongolian with approximately 6%. Sixthly, Spanish and Vietnamese are both with a share of around 4%. Other languages spoken in descending order of

native language are Russian, French, Urdu, Portuguese, Indonesian, Korean and Uzbek. See Fig. 3.

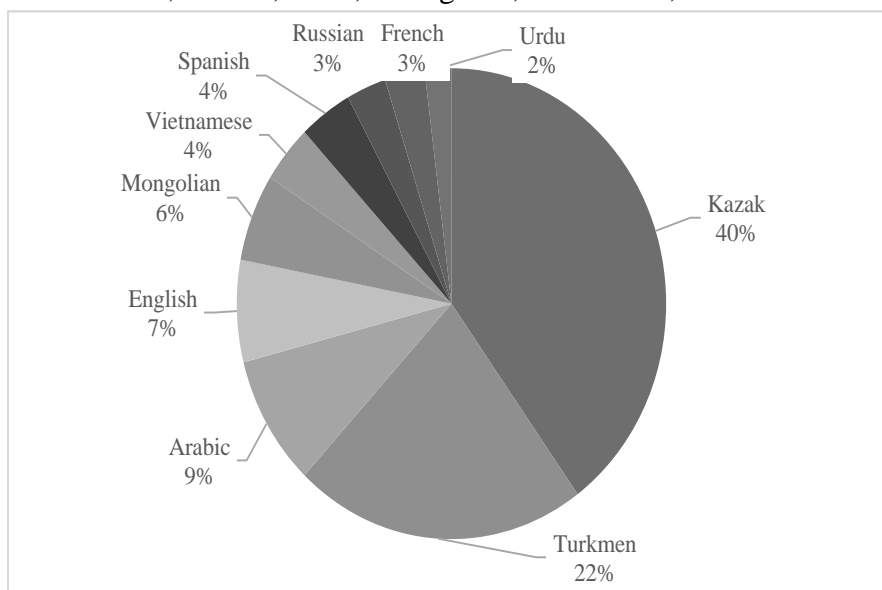


Figure 3: Native language of International Students

2.4 Types of learning for international students

Diploma education and non-diploma education are two types of education for international students. Diploma education includes undergraduates, postgraduates and doctoral graduates and specialist education. Non-diploma education includes general advanced students, senior advanced students, language trainees and short-term overseas students. There are significant differences between the above two types of education for international students. For example, the duration of education for non-diploma students is short and most of them focus on language majors, while the duration of study for diploma students is long and majors are widely distributed.[4]

The number of international students at CUPB accounts for a relatively large number of diploma students and a relatively small number of non-diploma students. The total number of diploma students was 100% and the total number of non-diploma students was zero in the first stage from 1996 to 2010. The number of international students at CUPB is relatively large for diploma students and relatively small for non-diploma students.[5] In the first stage, from 1996 to 2010, the total number of diploma students was 100% and the total number of non-diploma students was zero. In the second stage, from 2011 to 2020, the proportion of diploma students dropped significantly compared with the previous stage, from 100% in the first stage to 44.38% in 2011, and the proportion of diploma students was relatively low in the following nine years.

In terms of diploma students, the number of undergraduates increased from 1996 to 2012 and continued to decrease between 2013 and 2020. The number of master's students was low from 1996 to 2006 and increased between 2007 and 2020. The number of doctoral students was generally low, with a single-digit number of doctoral students between 1996 and 2019, increasing to 10 in 2020.

In terms of non-diploma students, the number was zero from 1996 to 2010. The number grew rapidly between 2011 and 2020, even reaching a peak of 188 students in 2011.

2.5 Distribution of international students' major selection in China

From 1996 to 2020, a total of 3,460 international students studied at CUPB. Among them, 825 international students chose the major of petroleum engineering accounting for 24%. 163 students

chose the major of oil and gas storage and transportation engineering accounting for 5%; 118 students chose the major of oil and gas well development engineering, accounting for 3%; 87 students chose the major of oil and gas engineering, accounting for 3%. The total number of international students choosing petroleum-related majors was 1,193, accounting for approximately 35% of the total number of international students. See Fig 4. In addition to the oil-related majors mentioned above, international economy and trade were also popular among international students at CUPB. The other majors, in descending order of the number of international students choosing them, are chemical engineering and technology, geological engineering, business administration, and business management.[6]

1,251 students chose Chinese as their language of choice among international students studying at CUPB, accounting for 36%. The high number of students choosing this major is due to the fact that this group needs to take Chinese language before receiving a diploma education, that is they should first enter the language preparatory course or Chinese language major. Therefore, this paper does not classify Chinese as the most popular choice for international students at CUPB.

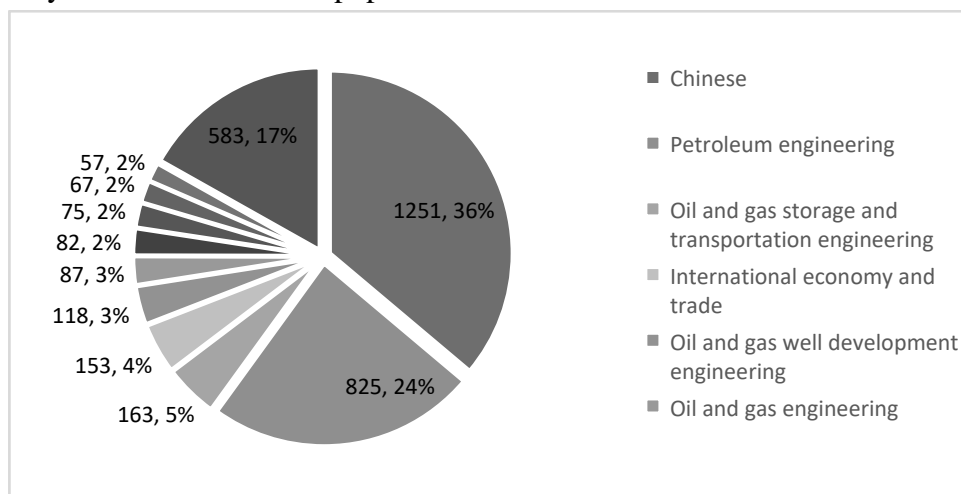


Figure 4: Distribution of major selection of international students in China

2.6 Funding sources for international students

Students with scholarships and self-funded students are the two types of international students at CUPB.

There are two main stages of funding. The first was from 1996 to 2004, when the number of self-funded students was higher than that of students with scholarships; the second was from 2005 to 2011, when the number of foreign students coming to China to study increased rapidly, but the number of students relying on scholarships to study began to gradually increase more than that of self-funded students. It was not until 2011 that the number of students with scholarships coming to China was continuously higher than the number of self-funded students, reaching a high of 299 in 2019, about four times the number of self-funded students in that year. The number of self-funded students exceeded the number of students with scholarships until 2001, but after 2002, the number of students with scholarships increased rapidly and far exceeded the number of self-funded students. The number of students with scholarships for 2020 reached 191, with only 72 self-funded students. See Fig. 5

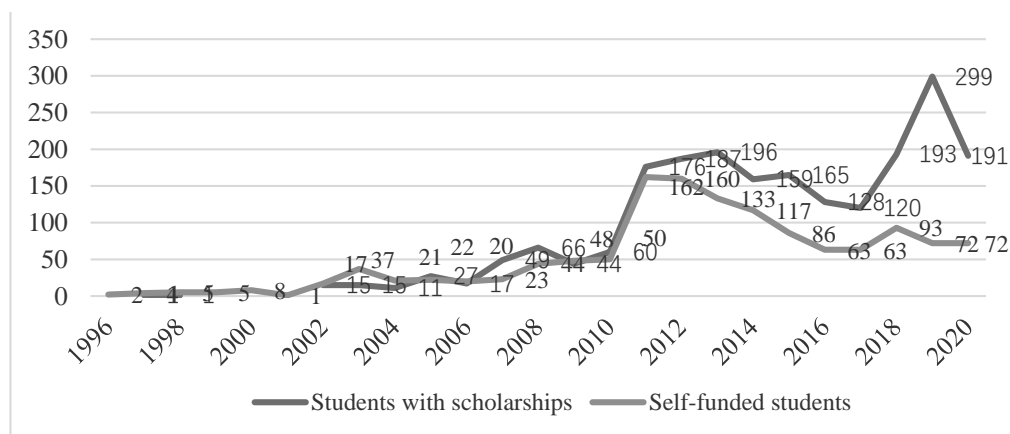


Figure 5: Trends in funding sources for international students in China from 1996 to 2020

International students are mainly funded by both self-funding and scholarships, with individual self-funding accounting for 52% and scholarships accounting for 48%. Among them, government scholarships and corporate scholarships are the main sources of scholarships for international students. Foreign corporate scholarships account for 30% of the total source of funding and are the most heavily represented in scholarships. Scholarships from Chinese government departments and foreign governments account for 13% of the total source of funding. Other scholarships in descending order of percentage are Chinese school scholarships, Chinese government scholarships, and Chinese local government scholarships.

3. Characteristics of international students in China

3.1 Characteristics of the distribution of the source countries of international students

The distribution of the source countries of international students in China is mainly concentrated in individual regions. The number of international students in China from CUPB has generally shown an upward trend between 1996 and 2020, with an uneven distribution of countries of origin across continents and most students coming from Asian countries.[7]

The number of international students in China is increasing, especially in Asia, and the four main countries of origin of international students in China are Kazakhstan, Turkmenistan, Sudan and Mongolia, which have become the main force. In contrast, the number of international students from North America and Oceania is relatively small, even in single digits. The steady growth in the number of international students from Central Asia and Africa is basically in line with the oil and gas resource cooperation projects between countries.[8] At present, the oil and gas resource cooperation projects of petroleum and petrochemical enterprises in China abroad are mainly located in Africa, Central Asia, South America and Southeast Asia (Zhang Laibin, 2009). These cooperation projects promote mutual exchanges and attract international students from these places to study at our university. However, it is also evident that fewer international students from South America and Southeast Asia come to our university for specialization, with the majority of students coming from Asia. Therefore, CUPB also needs to pay attention to this aspect, not only to attract talents from Asia and Africa but also to attract high-quality talents from North America and Oceania.

3.2 Characteristics of the native language background of international students in China

3.2.1 Native language is various

The native language of international students at CUPB are Kazakh, Turkmen, Arabic, English, Mongolian, Vietnamese, Spanish, Russian, French, Urdu, Portuguese, Indonesian and so on. Kazakh is the most spoken native language.[9] The second to sixth positions belong to Turkmen, Arabic, English, Mongolian and Vietnamese respectively. More than half of them use Kazakh and Turkmen as their native language, while the number of speakers of others is still far from Kazakh and Turkmen.

3.2.2 The number of native speakers is relatively concentrated

According to the characteristics of the university's petroleum profession, most of the international students who study at CUPB are located in countries or regions rich in oil and gas resources. They are mainly located in Central Asia, and their native language is mainly Kazakh and Turkmen. As a result of the Belt and Road Initiative, exchanges with these countries have become more frequent. Students from these countries are encouraged to study in China, particularly in the five countries in Central Asia (Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan and Kyrgyzstan). It is therefore not surprising that the largest proportion of native speakers is Kazakh.[10]

3.3 Characteristics of types of learning of international students in China

In general, the number of international students at CUPB is larger than that of diploma students, and the change in the number is generally decreasing. The number of non-diploma students is smaller, and the change in the number is generally increasing.

3.3.1 The difference between the number of diploma and non-diploma students is obvious.

A comparative analysis of diploma and non-diploma students over time shows that the proportion of diploma students between 2011 and 2020 is generally fluctuating and increasing, but the total number of diploma students is decreasing compared with the past 15 years (1996-2010). The proportion of non-diploma students is generally fluctuating and decreasing, and the total number of non-diploma students is decreasing compared with the past 15 years (1996-2010). The proportion of non-diploma students has been fluctuating and decreasing, but the total number of non-diploma students has been increasing and the proportion of non-diploma students has been increasing compared with the past 15 years (1996-2010).

According to the number of students at different stages of diploma education, the number of undergraduates, master's and doctoral students is generally on the rise. The number of undergraduate students continued to increase between 1996 and 2012 but continued to decrease between 2013 and 2020. The number of master's students was at a low stage from 1996 to 2006 and increased from 2007 to 2020. The number of doctoral students has been at the lowest level.

For non-diploma education, the number of international students in China was relatively stable from 1996 to 2010. From 2011 to 2020, the number increased rapidly, even once surpassing the number of diploma students. The year 2011 in particular represents a peak in numbers, but the overall share is on a downward trend.

3.3.2 The degree structure is continuously optimized

In terms of the proportion of international students with a diploma, except for 2011 and 2012 when the proportion of non-diploma students was slightly higher than the proportion of students with diploma qualifications, international students with diploma qualifications have always occupied the main position in the rest of the years. At the same time, the degree structure of international students in China is constantly being optimized. As a result of the development and maturity of international classes for master's degree programs taught in full-English teaching and the qualification for independent enrollment of postgraduate students on Chinese government scholarships, the number of foreign postgraduate students has been increasing and the degree structure has been optimized. Undergraduates are mainly the number of international students enrolled at CUPB for diploma education, followed by master's degree students, while the number of doctoral students is relatively small, but the overall trend of postgraduate degree enrolment is increasing.

3.4 Characteristics of the distribution of international students' major selection

The distribution of international students' major selection is related to university characteristics. International students' major selections are mainly related to oil and gas exploration and management, which is in line with the close integration of the university's majors with the development of the oil industry. In addition, the coordinated development of multiple disciplines with a focus on engineering is also a feature of CUPB. Therefore, chemical engineering and technology, geological engineering, business administration and business management are also popular major options for international students at CUPB.

3.5 Characteristics of funding sources for international students in China

3.5.1 The proportion of students with scholarships increases while the proportion of self-funded students decreases.

The funding sources for international students at CUPB have changed greatly, and the proportion of students with scholarships is gradually higher than that of self-funded students. Self-funded and scholarships are two main sources of funding for international students, among which government and corporate scholarships are the main sources of scholarships for international students. Since the country has liberalized its restrictions on the independent enrollment of international students in universities, it has attracted a large number of students from Western countries and the number of self-funded students has increased dramatically. However, the proportion of self-funded students at CUPB is relatively low and gradually decreasing. Since 2002, the proportion of self-funded students has been lower than the proportion of students with scholarships, and the gap has gradually become larger.[11]

3.5.2 Scholarships, mainly corporate scholarships, are abundant.

CUPB has a wide range of scholarships and cooperates with enterprises to set up scholarships and grants. As of 2013, more than 30 companies have sponsored international students (Zhang Laibin, 2013), and nearly 76 petroleum and petrochemical companies have set up corporate scholarships on campus. Because of the increasing strength of scholarships, the more abundant types of scholarships and the high coverage rate, the number of scholarship international students becomes excessive. These scholarships attract talents to study in China which is an important way of international

cooperation and exchange. At the same time, the university is actively involved in the construction of the Belt and Road, and has established cooperation with more than 60 foreign universities, enterprises and institutions along the Belt and Road. Through the implementation of the internationalization strategy, the scope of international exchange and cooperation, and international influence has been broadened and expanded.

4. Reflections on the Sustainable Development of International Students' Education

4.1 Enriching scholarship programs to attract high-quality international students

Since the state liberalized the independent enrollment of international students in universities, it has attracted a large number of students from Western countries, and the number of self-funded students has increased dramatically. In contrast, the proportion of self-funded students at CUPB has gradually decreased, while the proportion of international students with scholarships has increased. To attract more international students and promote international cooperation, CUPB has increased the number of scholarships. In addition, the cooperation with enterprises to set up scholarships and grants is also a special feature of CUPB. As of 2013, more than 30 companies sponsoring international students, and nearly 76 petroleum and petrochemical companies have set up corporate scholarships and grants at the university. The scholarships are strong, varied and have a high coverage rate, attracting a large number of students with scholarships. Therefore, to attract more talents to the university and to promote international communication and cooperation, it is still necessary to enrich scholarship programs and improve the evaluation mechanism.[12]

4.2 Building an interdisciplinary teaching team and cultivating interdisciplinary talents

The importance of teachers as a bridge for international students to learn Chinese cannot be overstated. However, traditional teachers only teach a single discipline and are unable to meet the modern requirements for the cultivation of complex talents. In order to meet the demand for interdisciplinary talents in various industries, schools need to break down the existing obvious disciplinary boundaries, establish a comprehensive and multidisciplinary curriculum system, and build an interdisciplinary teaching team. Teachers should not only be proficient in their own specialties, but also be familiar with cross-disciplinary knowledge, integrating the knowledge of all disciplines, consciously cultivating complex talents and improving overall quality. For example, CUPB has developed subjects such as “Chinese for Petroleum” and “Chinese for Chemical Industry”, which combine Chinese with petroleum and other specialties, and provide “specialized languages” for learners of different specialties in a targeted manner. In the teaching process, attention should also be paid to the individual factors of the learners, and the teaching should be adapted to the local context.[13]

Universities should innovative integration and sharing of resources which include three aspects: sharing of resources will make it easier to access information and reduce internal information silos; manage study abroad programs efficiently; store information effectively and form an information resource base. They should actively carry out cross-school, cross-college, cross-disciplinary and cross-departmental collaboration. On 12th October 2021, the Opinions on Promoting the High-Quality Development of Modern Vocational Education issued by the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council states that by 2025. The scale of enrollment in vocational undergraduate education will not be less than 10% of the scale of enrollment in higher vocational education, and that applied undergraduate schools will be encouraged to develop vocational undergraduate education. The expansion of vocational education from the undergraduate level is not only a further unification of professional education and

vocational education but also means that the state is paying more and more attention to the cultivation of “Chinese + vocational skills” interdisciplinary talents, which is not only the need of economic and social development but also the direction that the industry needs to adhere to and strive for in the cultivation of Chinese talents.

5. Conclusion

To sum up, taking the international students from CUPB as an example, this paper analyzes the situation and characteristics from six aspects: number of international students, types of learning, distribution of major choices, distribution of source countries, native language background and funding sources. Then this gives in-depth consideration to the sustainable development of international student education. It suggests that the education of international students in industrial universities can make full use of the Belt and Road Initiative to examine the characteristics and trends of the development of education in China, and rely on the advantages of unique disciplines to continuously improve the comprehensive level of scientific internationalization of higher education for international students in industry colleges and universities.

Acknowledgements

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