

## Original Paper

# Research on the Reform and Innovation of International Student Training Mode-Bases on Textile Engineering Major

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### Abstract

*With the rapid development of world economy, international student cultivation will be facing new challenges. The article focuses on analyzing the overall development of international education in China and the practical problems and major challenges faced by universities in the process of cultivating and educating international students. And taking the textile engineering major as an example, combined with the current international situation and background, it tries to propose innovative measures and ideas in terms of platform construction, enrollment channels, and professional course construction, practical teaching and other aspects for the reform of international education, in order to provide reference for the training of international students in the future.*

### Keywords

*international education, training mode, innovation*

### 1. Introduction

Internationalization is one of the important symbols commonly possessed by world-class universities, including scientific research, teachers, students and other aspects. At the same time, it is also one of the important evaluation indicators for the construction of "Double First-class" universities in China. The cultivation of international students is an important part of the internationalization construction of various universities. High-level international students cultivation is not only an important direct reflection of a national comprehensive national strength, but also a direct and comprehensive reflection of the country's soft power, international image and its own international economic status. Besides, it is more conducive to the long-term political and economic and trade relations of various countries and the

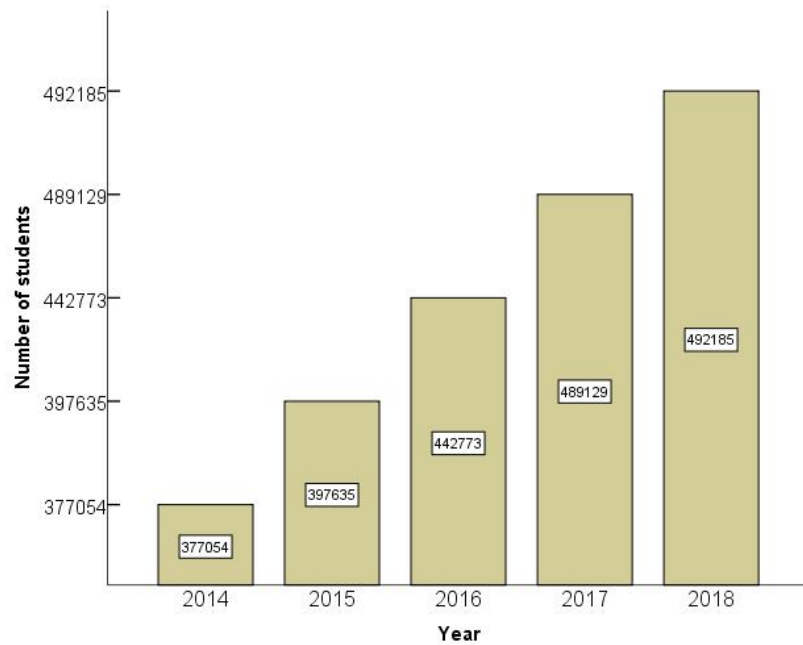
continuous improvement of the country's comprehensive competitiveness. In the early 1980s, China's national conditions determined that China's international student policy mainly played the role of "bringing in". However, in the 21st century, with the advancement of China's economic and technological strength, Chinese education has been gradually promoted to join the "going out" strategy and has gradually increased its efforts in cultivating international students. China's "Belt and Road" initiative is proposed with the core goal of reconstructing a community with a shared future for mankind (which also includes a community with a shared future for human higher education) to build a new international discourse system for higher education. Through the in-depth implementation of the "Belt and Road" initiative, China has completely changed the old strategic thinking pattern that mainly learned from Western countries in the development of higher education in modern times, accelerated the process of internationalization of contemporary China's higher education, and actively formed the scale of education based on quantity to promote the improvement of service quality and the internationalization of China's higher education industry into a new historical stage of high-speed development. At the same time, it also strives to implement Chinese plans and promote Chinese experience in the field of higher education.

At present, a significant rise in unilateralism and protectionism, and a marked slowdown in the pace of economic globalization. However, economic globalization is an inevitable requirement for the development of productive forces and a powerful driving force for world economic growth. Now the current new crown outbreak has ended worldwide, and opening up to the outside world is gradually recovering in many fields, including higher education. Taking Tiangong University's advantageous major-Textile Engineering as an example, this study proposes innovative measures and ideas for international student education, with a view to exploring the direction and path for the reform of international student training models under the current circumstances.

## **2. The Overall Status of International Students Training in China**

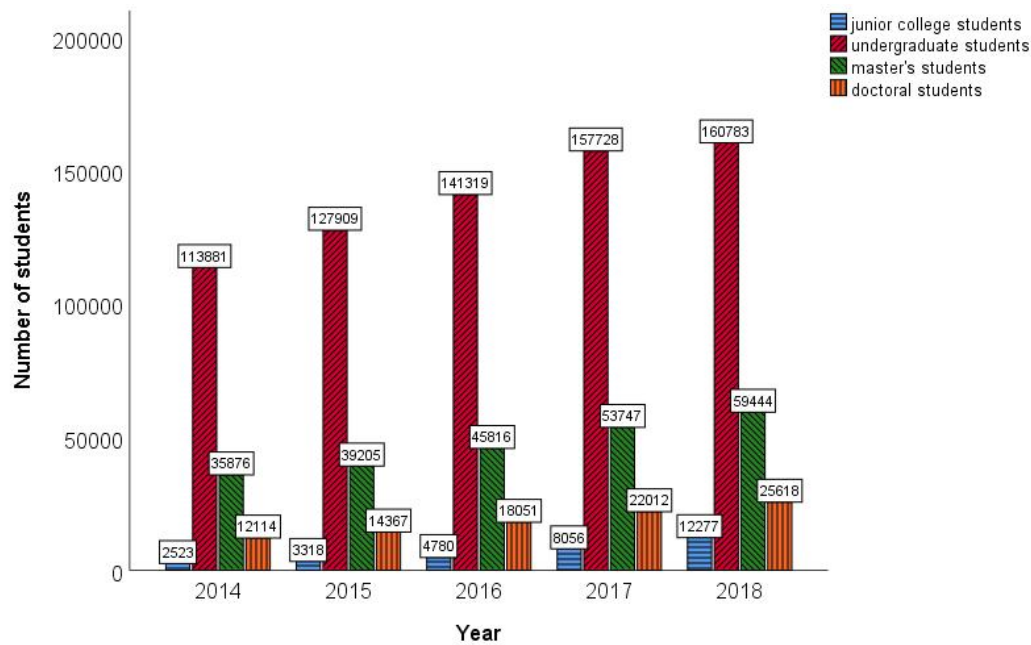
Since the official "Study in China" plan of the Chinese Ministry of Education was put forward, the number of international students in China has been expanding year by year, especially during the "Thirteenth Five-Year Plan" period. There has been a significant increase in the total number of international students, the number of degree students, the number of visiting students, the number of short-term students, the number of scholarships, and the number of institutions accepting international students.

The total number of international students increased from approximately 377,000 during the 12th Five-Year Plan period to approximately 492,000 at the end of the 13th Five-Year Plan, with an average annual growth rate of about 7%, as shown in Figure 1. The coverage of source countries for international students has remained stable at around 200. The number of teaching institutions for foreign students of all types increased from 775 to 1,004.

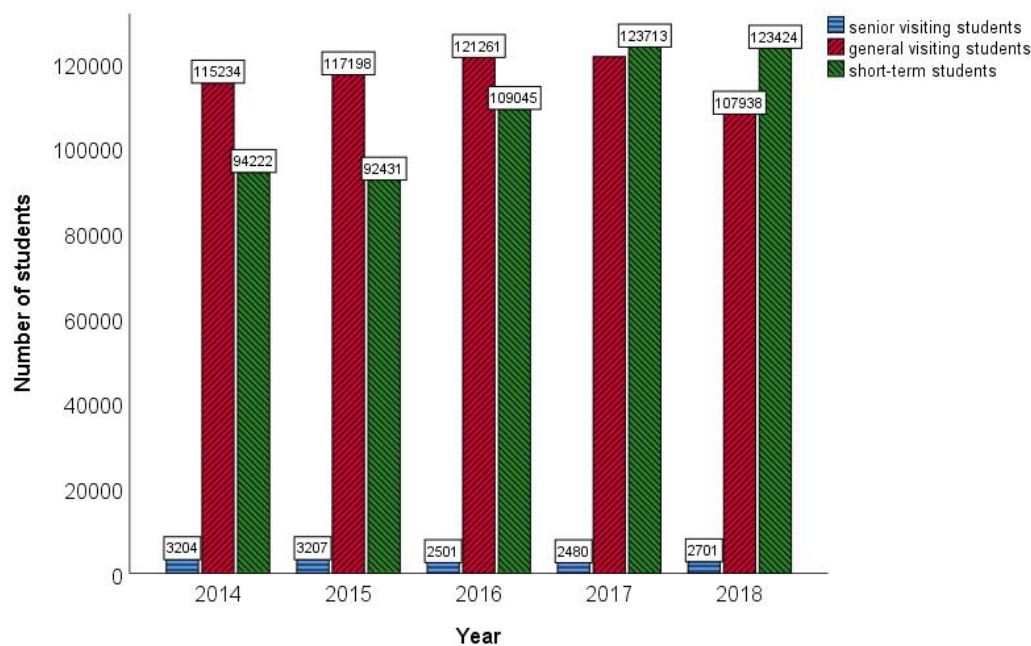


**Figure 1. Total Number of International Students in 2014-2018**

As can be seen from Figure 2, during the "13th Five-Year Plan" period, international students with academic degrees were mainly undergraduates, accounting for more than 60% of the total number of academic students, and the growth rate was the fastest, reaching an average annual growth of 66.7%. Followed by master's students, with the average annual growth rate of 21.4%, then 8.6% for doctoral students and 2.7% for junior college students. Non-academic students are mainly general visiting students (foreign students with a bachelor's degree who have come to China to study for more than 180 days) and short-term students (who have come to China to study for less than 180 days), as shown in Figure 3.



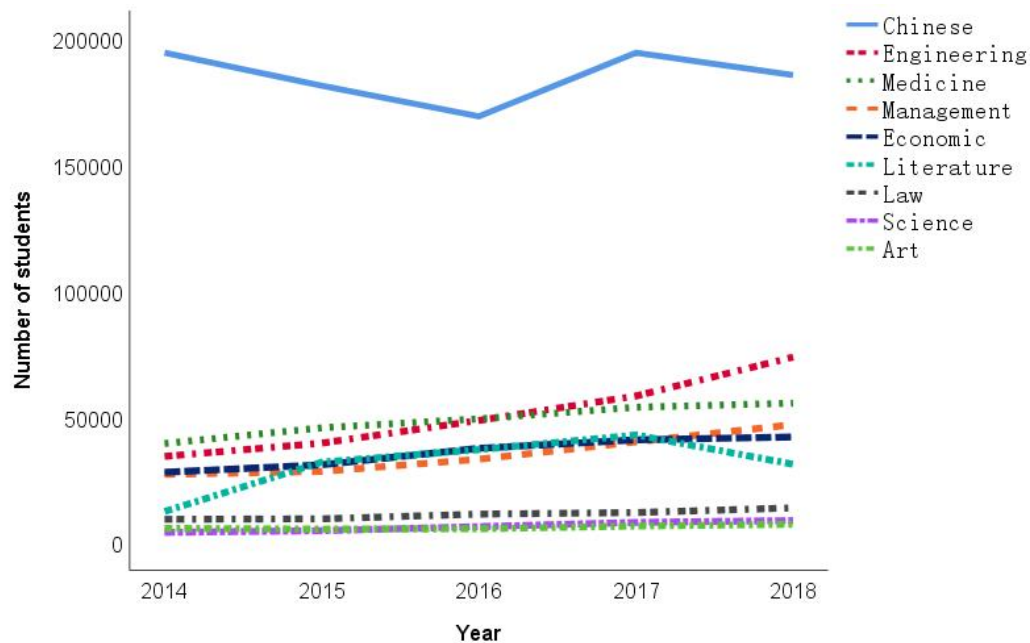
**Figure 2. Changes in the Scale of International Students from 2014 to 2018**



**Figure 3. Situation of International Students with Non-academic Degree**

From the perspective of the distribution of the total number of international student majors, Chinese language, Western medicine, and engineering are always ranked in the top three, which are closely related to the continuous development of China's economy and science and technology, see Figure 4. From this picture we can clearly see that due to the uniqueness and charm of the traditional Chinese language and culture, the study of Chinese language has great appeal to many foreigners and

international students, with the number of learners ranking first among all majors. Due to the popularity of the “The Belt and Road” initiative, major of engineering, Western medicine, management, and economics ranked 2-5 by 2018.



**Figure 4. Major Distribution of International Student from 2014 to 2018**

Compared with the international education level of the world well-known top universities, according to the ranking of the world's 172 top international universities released by Times Higher Education in the UK in 2021, the top three universities are respectively ranked as the University of Hong Kong (the number of international students accounts for 35%, the foreign teachers account for 70% of the school's total faculty), ETH Zurich (at least 22,000 students from 120 different countries and regions study here every year), the Chinese University of Hong Kong (cooperating with 282 institutions in 36 countries and regions, and annually 6,000 students studying abroad or participating in international exchange programs every year). At present, there is still a large gap for Chinese universities to achieve the goal of building a world-class university between the number of international students and the structure of source students. In terms of student proportion alone, international students in most double-first-class universities account for less than 10% of the total student population. In the meantime, in order to attract more high-quality international students, many developed countries have also issued various preferential policies for study visas. For example, Canada has greatly relaxed the visa application policy and newly established a visa processing center, which has greatly improved the speed of visa processing for study visa applicants and thus improved the efficiency of study application. France has not only simplified the application process of “start-up” visa“ for international students, but also makes it easier to apply for a 12-month temporary residence permit for those who want to find a job in France

or start their own business after obtaining a university diploma in the same year. In response to the outbreak, the United States has opened visas for international students; universities in the UK have opened distance online courses, and some universities have also expanded their acceptance of language scores. The implementation of these foreign study policies has intensified the competition for international students and brought greater competitive pressure to the training and enrollment of international students in China.

The vigorous development of the international student market has provided new ideas and development space for the education of international students. At the same time, the intensified competition in the international student market has also brought a series of difficulties to the training of international students in China.

### **3. Problems and Challenges of International Student Work**

#### *3.1 Problems Faced by the Recruitment Work*

Enrollment work is the source of the entire student training work. The quality of students directly affects the development of education opening to the outside world. At present, China has become a major country in education, the third largest destination country for studying abroad in the world, and the largest destination country for studying abroad in Asia. However, it is not yet a powerful country in education. There are still large gaps between western developed countries in terms of the overall scale of international students, student levels, and international scientific research cooperation, etc. The following problems are common in current enrollment work:

##### **3.1.1 The Admission Criteria Are not Strict Enough, and There Is no Unified Entrance Examination**

Currently, most universities will set task requirements for international student scale indicators. In order to expand the number of international students, it is easy to lower the admission standards for international students. Most schools adopt an audit system for international students' enrollment and do not have entrance examinations. This also further highlights the issue of lowering admission standards. The result will inevitably lead to uneven quality of recruited students, making it impossible to guarantee the quality of subsequent education and teaching for international students.

##### **3.1.2 Disorderly Competition Based on Various Scholarships**

At present, the source countries of international students are still mainly in developing countries. In 2018, students accounted for 76.52% of the total number of international students. Due to local financial restrictions, different provinces, cities and universities offer scholarships vary widely. Colleges and universities in economically developed areas tend to attract more students to study. According to the cumulative data from 2014 to 2019, the provinces and cities with the highest number of international students are all economically developed regions in eastern China. Colleges and universities often attract students mainly by providing scholarships, while ignoring the construction of their own education and teaching quality. At the same time, it is easy to form comparisons with each other.

### *3.2 The Impact of the Normalization of the Epidemic on the Training of International Students*

The world is currently being greatly affected by the COVID-19 epidemic, which has blocked normal international exchanges. Although the domestic epidemic in China has been effectively controlled and production and life have basically returned to normal, the epidemic abroad has become increasingly serious and recurring, and the epidemic has entered a stage of normalization. As a result, international student work has been greatly adversely affected, mainly as follows:

#### *3.2.1 The Difficulty of Students Learning Chinese Increases, and the Proportion of Students Teaching Chinese Decreases*

Affected by the epidemic, foreign Chinese language schools and institutions, including Confucius Institutes, have adopted online teaching. Students in some countries, especially less developed countries, are restricted by many aspects such as economy, family, and personal conditions, making it difficult for them to carry out online learning on a sustained basis. It is undeniable that the learning environment is very important for language learning. Pure online learning, lack of offline environment and teacher guidance, makes it difficult to effectively learn language. These difficulties have reduced students' Chinese proficiency. According to statistics from a certain university, the proportion of freshmen admitted in 2021 who passed HSK Level 5 is 1.8%, and the proportion who passed HSK Level 4 is 7.0%, which is far lower than the 4.3% and 10.6% in 2020, and also lower than the 2.1% and 9% in 2019.

#### *3.2.2 Uneven Students' Academic Background and Basic Knowledge*

Due to the uneven level of development, educational background and teaching quality in different countries and regions, and as well as the impact of the epidemic, there are huge differences in academic background and basic knowledge mastery among students. Therefore, the teaching content and teaching model of international students need to consider the differences with domestic students, and new methods and planning are needed.

## **4. Innovative Measures and Ideas for International Student Work in the Post-Epidemic Era**

After the epidemic is over, under the new situation, the traditional international student training and international student work models are no longer suitable for China's new era and new stage of development. It is necessary to further innovate the model, emancipate the mind, and deepen reforms. Relying on its traditional dominant major-Textile Engineering, Tiangong University has carried out reforms and innovations in platform construction, admissions pathways, professional course construction, practical teaching and other aspects for the training of international students, and has achieved certain results.

1) The school actively applies for various international joint training projects, such as the CSC's International Joint Training Program for Innovative Talents, the Russian-Ukrainian-Belarus International Joint Training Project, Regional and National Talent Support Plans, and the promotion of scientific research cooperation and high-level talent training with Canada, Australia, and New Zealand,

to build an international talent training platform. Promoting the introduction of various high-end experts and be selected into the “School Innovation and Talent Introduction Program” of the Ministry of Education and the State Administration of Foreign Experts Affairs, to build an international teaching platform. Strengthen international scientific and technological cooperation, increase influence, create and hold the International Textile Forum for Graduate Students (IFTGS), and join powerful academic associations such as the European Textile University Alliance, the Eurasian Pacific Association, the China-Central and Eastern European University Association and the “Belt and Road” World Textile University Alliance. Through various measures, the school promotes the intersection and integration of international textile disciplines, builds an international academic cooperation platform, enhances its international influence in the field of textiles, and lays a foundation for the cooperation between international textile universities and attracting high-quality students.

2) The university has established overseas school-running institution projects, co-launch oversea school-running programs in textile engineering with textile universities in friendly countries, and jointly carried out cooperative education at the undergraduate level, adopting a “3+1” cooperation model, that is, studying in foreign universities for the first three years, and those who pass the examination and meet the requirements can study in China in the fourth year. The Chinese side is responsible for offering all Chinese language and Chinese culture courses and some professional courses. The teaching method adopts a combination of online and offline methods. By running schools overseas, it can cultivate textile technical talents for the local area, which is beneficial to the opening up of textile education to the outside world, and is conducive to further optimizing the structure of international students and improving the quality of international student sources.

3) The university has implemented the “Three-Year Action Plan for All-English Teaching Majors and Course Construction” for international students, and has established 18 all-English majors including the textile engineering and 45 high-quality all-English courses. The Textile Engineering major caters to international students from different sources and offers a variety of professional formats. In addition to the Textile Engineering major taught in English, this major also offers Chinese teaching, enabling mixed class teaching for Chinese and foreign students. At the same time, the “Textiles and Clothing” micro major is opened for exchange students from Germany, Poland, Sweden and other countries. Relying on the textile major, the school has scientifically constructed four major platform golden courses: “engineering, liberal arts, general education, language, culture and art”, and formulated platform curriculum construction standards, sharing mechanisms, operation models and evaluation systems.

4) During the epidemic, information technology promoted great changes in traditional teaching, including practical teaching. After the epidemic normalized, the university’s textile engineering major continued to use mature online course resources to supplement offline teaching. At the same time, for some process equipment where machine operation is difficult, the experimental process is irreversible, and the inside of the equipment is difficult to observe in detail, virtual simulation technology is used to



conduct online and offline simultaneous textile experimental teaching. For example, spinning technology involves the basic principles and practical operations of many spinning equipment. Through the simulation of the process flow and the simulation adjustment of process parameters of each process, students can understand the entire production process and parameter settings. Through virtual simulation, students can adjust experimental parameters and simulate equipment operation, so that they can integrate theoretical knowledge and master the essence of each parameter and process production rules, etc. thus greatly improve the technical operation level and teaching quality. The application of virtual simulation technology and teaching models in experimental teaching not only realizes remote assisted teaching, but also solves problems such as insufficient laboratory hardware resources, which can effectively improve the practical enthusiasm, innovation and experimental efficiency of international students, and can also improve students' ability of independent learning, experimental reflection and problem solving.

Through the implementation of various reforms in international education, the number of international students in the school has not been affected by the epidemic. The number has nearly doubled that before the epidemic, with an increase of nearly 80%. Students actively participate in various discipline competitions. In the 6th China International "Internet +" College Student Innovation and Entrepreneurship Competition, the international student team majoring in textile engineering was the only team in Tianjin to enter the national international track and won the national silver medal, achieving a breakthrough for the school's silver medal.

## 5. Discussion

Under the background of the internationalization of education and education management, the education and teaching of international students will face new challenges and new opportunities. The cultivation of international students is not only a simple study of professional knowledge, but also one of the goals of promoting the traditional Chinese culture. It has put forward new requirements for the training of international students to comprehensively strengthen the cultural quality, integrity and legal education of international students, promote cross-cultural exchanges, and cultivate high-quality international talents with both integrity and ability who "know China and are friendly to China". Colleges and universities should take the initiative to adapt to the national requirements, adjust their thinking, constantly innovate the working mode, and promote the internationalization of schools to continuously develop towards high efficiency and high quality.

## Acknowledgments

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