

Research on Advanced Mathematics Teaching for International Students in China Based on "Internet +" Era

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Keywords: "Internet+"era, International Student in China, Teaching Research

Abstract. With the coming of "Internet +" era, the education of international students in China is an important part of the international construction of colleges and universities. It is also an important way for China to spread Chinese culture, to realize reform and opening up and to communicate with other countries. Taking Xi'an Petroleum University as an example, the paper analyzes the current situation of advanced mathematics teaching, and discusses the teaching mode and method of advanced mathematics course for international students in the "Internet +" era. It can be used as reference for future teaching and other basic courses for international students in China, and to improve the teaching quality of advanced mathematics courses at present.

1. Introduction

The combination of the Internet and university teaching has been vigorously promoted in big data era. With the rapid development of teaching information, teachers should effectively infiltrate the Internet into mathematics teaching, and adopt the "Internet" teaching mode, which is mainly based on the traditional classroom teaching method and supplemented by extracurricular Internet learning. The "Advanced Mathematics I" taught in Xi'an Petroleum University is mainly for students who are studying in petroleum engineering and geology. After years of hard work, the school was approved as a university of "demonstration Base for studying abroad in China" by the Ministry of Education in 2014. At the same time, the scale of students is also expanding, the structure is increasingly optimized, and the number of students is increasing year by year. There are 488 students in 2014, 606 in 2015 and 524 in 2016. The number of students from all over the world has reached 52 since 2008. will give full play to the three major advantages of discipline, culture and location, and establish the development orientation on the education of international students in our school with the focus on oil and gas engineering majors and the development direction of "facing Asia, developing Africa and expanding the Middle East", which based on strategic analysis and demand analysis. Students will have the mathematics knowledge and ideas required by petroleum engineering and geology majors, and can solve some practical application problems after several years of study. New teaching methods and means are explored in "internet +" era based on the experience of studying abroad, teaching and the feedback information of communicating with the overseas students.

2. Current Situation and Difficulties of Advanced Mathematics Teaching for International Students

2.1 Great Cultural Differences and Weak Mathematical Foundation of International Students

Board teaching and multimedia assistance are mainly used in advanced mathematics teaching of international students in China currently, the students also can use some internet tools to ask questions such as WeChat group and QQ group, etc after class. During the teaching, the author found that students from Sudan, Ghana, Yemen, Cameroon and some other countries would know factor the decomposition, while some students in Pakistan could not, and only rely on the root formula. In the course of the class, the solving of one-dimensional linear equation is easier for

Chinese students, but some international students didn't know that, then they will ask the process. Coupled with the abstract definitions of limit and continuous in advanced mathematics, it is difficult for international students with weak mathematical foundations to master.

2.2 Poor Self-Control and Strong Performance

The author found that some students are more casual, late for the class, or even absent, loud speaking, free walking and other phenomena are more serious, and teachers need to spend some energy to maintain class order. Some international students' desire to learn actively and complete their homework is not strong. However, the normal class atmosphere of international students is better, students are confident, and they think positively about some interesting questions. They like asking questions at any time, posing their opinions, and strong performance in the class. For example, if teacher requires some students to practice on the blackboard during class, there will be more than a dozen raising their hands, such phenomenon is impossible in the domestic college students' classroom. In addition, the habit of taking notes in international students is worthy of praise.

2.3 Differences in Learning Habits

Mathematics calculates ability of some international students is generally weak because of incomplete mathematical knowledge system in junior school. such as $1/2+1/3$, $\arctan 3 - \arctan 2$ etc, the teachers will give the results directly, but most international students need to use calculator, it is undoubtedly difficult to keep up with the progress; In addition, they always ask the questions and interrupt the normal process at any time, which cannot meet the high requirements for the teaching progress.

3. Diversity Assessment Method for International Students in China

It isn't scientific for the traditional assessment methods, which are mainly based on attendance or homework performance. Since some students attend the class but do not listen to the teacher, copy homework; while other students who are doing their homework seriously, but scribbled handwriting, grades of former is higher than latter. Students' enthusiasm for learning will be affected in such assessment methods. Therefore, diversified assessment method must be adopted.

1. For example, the grades will be given according to the degree of innovation in solving the problem, the students who can actively answer questions or ask questions have higher grades. Such assessment is more authenticity and objectivity, which taking the ability and learning attitude as an important basis, and can also stimulate students to work harder.

2. The author adjusted the percentage of grades, which is 20%, including attendance, performance in the class and homework. In addition, there will be five tests in every semester according to the progress of the contents, which is 50%, and final exam take 30%. After several years of teaching practice, it is proved to be effective for international students to master the content of each part. Meanwhile, significant increase in attendance, the number of students who are late, leave early, not disciplined in the class and the class order has improved in some extent.

4. Research on Teaching Methods of Advanced Mathematics in "Internet +"Era

It is not appropriate to copy the teaching model of Chinese students in view of the current status of international students. New teaching methods and means should be carried out for curriculum teaching of international students.

4.1 Implementation of PRE-CALCULUS

The international students in China are divided into two levels, beginning and middle according to the specific conditions of mastering the basic knowledge of mathematics. PRE-CALCULUS will be used as a supplementary course for junior level students in A&Q time, when they entering the school.

4.2 Improve the Level of Teachers

The original English textbook, which be written by Howard Anton, Irl Bivens, Stephen Davis, and English teaching method was selected for international students because of their language and cultural differences. Generally speaking, most of the students from African countries whose official language is English, even if the students whose English is not a native language have a certain level of English before entering the school. Therefore, as a teacher, you should be familiar with the pronunciation and expression habits of international students, familiar with terminology and common expressions. In addition, the teachers should also continue to enrich themselves, improve their professional knowledge, English expression ability and comprehensive quality, and learn from teaching concepts and methods of other countries. This is a good guarantee for teachers and international students to maintain good and effective communication in and out of the classroom, and then to improve the quality of international students' teaching.

4.3 Optimizing the Teaching Content

Taking into account the characteristics of international students, the differences in learning ability of Chinese students, the teachers should appropriately streamline and adjust the content, avoid too many complicated calculations, but the teaching ideas cannot be weakened.

For example, students can use Matlab to solve complex integrals, and use calculators to draw figures of parametric equations, etc, will not only increase the students' interest in learning, but also weaken their computing ability. In addition, the definition of integral, the main ideas, basic calculations and application problems are mainly introduced in integral part, some integrals with complex integrand functions can be obtained from integral tables. Some equations derived from practical or applied problems should be explained in the part of the differential equation.

4.4 Flexible Teaching Methods

The educator Comenius believes that teaching should consider the level of knowledge and individual differences of students. In view of the uneven mathematical foundation of international students, flexible teaching methods was adopted in the process of teaching according to the characteristics of students, such as: applying the task-driven method to the introduction of basic concepts, which emphasizes introducing practical problems or tasks into the learning activities of students, and exploring problems to guide and Maintain students' interest and motivation in learning, which can make students become passive learning for active learning; applying the geometric intuitive method to the understanding and promotion of the theorem, which can be seen by image relationship of the geometric image that is thought of produces a quantitative relationship and leads the students to discover the regularity behind the phenomenon; applying the attempted teaching method to the example explanation , which advocates that under the guidance of teachers, students "first practice, teachers talk then, from simply imparting knowledge to cultivating ability while imparting knowledge".

5. The “Internet +” Teaching Mode

With the coming of big data's time, a new model which combines the internet and mathematical teaching has been vigorously promoted. The Internet should be effectively applied to the teaching of advanced mathematics, the "Internet" teaching mode, which is based on the traditional classroom teaching method and supplemented by extracurricular Internet learning, should be adopted in "Internet +" Era. The international students can also learn from some difficult knowledge by “MOOC” and “micro-courses” of internet, for example, there are many open courses of world-renowned universities such as MIT in Internet, which has great benefits for students

Due to the limited time of classroom teaching, the use of multimedia for advanced mathematics has become a common method, but some students have difficulty in keeping up with the teacher's rhythm because of weak mathematics. Weichat Group and QQ Group play an important role in the teaching of international students; Teachers can help students solve problems with the help of these two kinds of Internet products after class.

6. Summary

With the increasing number of international students studying in China, the internationalization of higher education is the inevitable trend and requirement of the development of Chinese education. It is necessary to adopt a reasonable teaching model for teaching of advanced mathematics because of the particularity of international students. The teachers should keep pace with the times and continue to enrich the teaching models and methods in the era of big data, analyze the various feedbacks of international students on teaching, and actively explore a set of scientific, reasonable and appropriate teaching methods and modes. Only in this way can we ensure that the mathematics education of international students of China in the "Internet +" era move toward standardization, optimization, ensure the healthy and steady development of the education of international students in colleges and universities.

Acknowledgement

The paper was funded by Xi'an Petroleum University Teaching Reform Project, research on advanced mathematics curriculum system and teaching methods for international students. 0309-13105020;

Shaanxi Provincial Natural Science Basic Research Program Youth Project (2017JQ4005), Quantitative characterization of micro-scale pore throat heterogeneity in tight sandstone reservoirs;

National Natural Science Foundation of China, Youth Science Fund Project (51609201), Study on the punch-through failure mechanism and evaluation method for a Jack-up spudcan in complex strata

National Natural Science Foundation of China (41802166), the effect of full-scale pore-throat distribution and micro-scale heterogeneity on the occurrence of fluid in tight sandstone reservoirs.

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