Research on the Integration of Modern Educational Information Technology and Advanced Mathematics Teaching

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Abstract: The development and wide application of modern information technology have led to the improvement of the level of mathematics education in colleges and universities, and the new teaching mode of advanced mathematics teaching becomes more and more diversified and modern, which can not only enable students to experience information technology better, but also enable them to improve active consciousness at the same time when they participate in learning, and it also promotes the improvement of teachers’ teaching efficiency. Based on this situation, the author mainly takes modern educational information technology as the starting point in this paper, focusing on the integration and application of advanced mathematics teaching and modern educational technology in China.

1. Introduction
In the process of integrating modern information technology and advanced mathematics teaching, it mainly uses the application of multimedia technology as the center to transfer the knowledge of experts and teachers, and then to form a higher quality teaching mode, so as to promote the better realization of the effect of resource sharing. In addition, in the process of applying this kind of integration, not only the link of classroom teaching can be improved, but also the quality of teaching and students’ active participation can be improved, and students’ innovation and creative ability in colleges and universities can be improved. At the same time, under the background of the rapid improvement of the level of modern educational information technology, it plays a certain role in promoting the growth and development of mathematics in colleges and universities, and it can create a new learning environment and learning atmosphere for students.

2. the Influence of Modern Educational Information Technology on Advanced Mathematics Teaching
Teachers, students and teaching materials are three important factors in traditional teaching. Among them, teachers are the leading factor during the entire teaching process, they use some medium to teach the students the knowledge in the textbook, and then the students can accept and understand. The teachers instil knowledge into the students in the entire process and provide some targeted external help for the students, and the students only accept some external help and stimulation, but they don’t take part in the actual study, based on this situation, we often call traditional teaching indoctrination teaching. Although teachers’ control and management to the classroom is relatively effective in traditional teaching, not enough attention is paid to the cultivation of students’ creativity and subjectivity. Based on this situation, the emergence and application of modern educational information technology also show a very high value. The application of modern information technology can make not only the problems existing in the traditional teaching change, but also the students’ learning style change, and then can form a new learning mode which is completely different from the traditional
teaching.

We can even think that the emergence of modern teaching information technology not only makes the students' learning style change, but also can have a profound impact on the development of mathematics teaching. The continuous development of mathematical technology has led to the continuous improvement of the function of mathematical computers and software, and the solution, symbol hydrochloric acid and factorization and other aspects can also be proved by using a number of easier methods, so that programming and calculation can become more powerful, and it can obviously improve the reality and authenticity of mathematics. And no matter how difficult the equation is and how complex the geometry is, the results can be extracted from the computer's image presentation. Based on this situation, it is inevitable to promote the transformation of advanced mathematics teaching in the process of applying modern educational information technology. However, we need to realize that the purpose of the emergence of modern educational information technology is not to replace the traditional teaching work, but to make the previous teaching work better and more perfect, and can better organize and utilize the teaching resources to construct a teaching mode and teaching environment with diversified characteristics. In addition, the application of modern educational information technology can also help students to have a deeper understanding of the mathematics, so that mathematical knowledge is no longer confined to books, but more concrete and authentic.

3. Advantages of Advanced Mathematics Teaching to the Application of Modern Educational Information Technology

3.1. the Play of Subjectivity

The application of modern educational information technology in the teaching process of advanced mathematics can make the subjectivity of students play out better. In traditional mathematics classroom teaching, teachers often apply the teaching methods of "one-size-fits-all" and "one word", this situation will seriously affect the enthusiasm of students to participate, and cause contradictions and differences between the teaching model used in colleges and universities and the participation and the needs of students, modern educational information technology, based on this situation, has just made amends for this shortcoming. The utilization of modern educational information technology can be an effective improvement of students' initiative, and promote the formation of an interactive classroom atmosphere in mathematics classroom teaching in colleges and universities, it will also help students to effectively mobilize their enthusiasm, and thus enable students to participate in classroom teaching more active and willing. In the process of teaching mathematics, teachers need to carefully design some words or videos, so that students can better feel the joy and happiness like in game in learning, and the fun in mathematics teaching can be strengthened, this is also of great benefit to the cultivation of students' learning habits and enthusiasm.

3.2. Improve the Teaching Quality Effectively

In the teaching process of the subject of colleges and universities, using the modern educational information technology can make the quality of teaching be effectively improved. Because there are relatively many logical thinking and abstract knowledge in mathematics classrooms in colleges and universities, and the knowledge points contained in them are more and more miscellaneous. Based on this situation, traditional mathematical methods are difficult to rise and improve more effectively. And because the teaching way in traditional mathematics teaching process in colleges and universities is the board book, this situation also causes the course content and the rhythm to be delayed, and affects the teaching activity two good-looking station. After the application of modern educational information technology, it is possible to accommodate a large number of teaching contents, and it has the advantage of being illustrated, this enables students to acquire and understand mathematics knowledge points more quickly. In addition, teachers can also have a timely understanding and mastery of the situation in the classroom, it can not only help students to remember and grasp the knowledge they have learned through feedback and adjustment on information and changing the
teaching forms, but also benefit the effective implementation of learning activities.

3.3. Help to Implement the Concept of Aptitude
During the teaching process of advanced mathematics, the use of modern educational technology can promote the achievement of the idea of teaching by aptitude, compared with this textbook in traditional teaching, the courseware needed in modern educational information technology is more advanced, the teaching method of board books in traditional teaching requires students to waste a lot of time taking notes, this situation wastes classroom time and affects students' learning efficiency. In the process of applying modern information technology, students only need to download courseware to be able to read and understand at any time, and the cases of incomplete notes are effectively avoided. In addition, teachers can also further extend and improve the courseware, so that students can combine their own actual situation to understand and learn the courseware. Students are also able to get rid of the limitations in the classroom and really combine their own reality to develop a suitable learning plan. In this way, it can not only improve the relevance of mathematics teaching in colleges and universities, but also promote the development and implementation of the concept of aptitude, so as to strengthen and improve the meaning of teaching ideas.

4. the Contents and Methods of Integrating Modern Educational Information Technology and Advanced Mathematics Teaching

4.1. Integrated Contents

4.1.1. Increase Series of Classes
Combined with the requirements and standards in the syllabus, "advanced mathematics" can be set up in 10 specific classes, the content of teaching materials and classes need to be closely linked, and the mathematics experiment course needs to be opened. The meaning of mathematics experiment is to help students to gain a deeper understanding and clear understanding of some abstract thinking, and to strive to improve students' interest in mathematics, and to develop their independent ability to work and a good sense of innovation, in turn, students can have a deep understanding of the meaning and role of mathematics. In the process of carrying out the mathematics experiment courses, students can have a comprehensive experience on the application of computing software such as calculation and drawing function, they clearly realized that the Ministry of Information Technology might leave mathematics and exist independently, and that mathematics is not only as simple as book knowledge, but also belongs to some of the operations that appeared in life. Under the background of the increasing popularity of informationization, there is a certain involvement in mathematics in every corner of society. In addition, the application of mathematics is unlikely to be divorced from technology, students can use some mathematical software to better understand the principles of mathematics, and experience the fun of the mathematical discipline and potential mysteries.

4.1.2. Integration of Teaching Modes
After the integration of advanced mathematics teaching and modern educational information technology, teachers should not only ensure that students have enough time to carry out autonomous learning and participation activities, but also need to build a better interactive relationship with students, students are able to form a relatively novel mode of interaction with teachers by this way. Through the integration of teaching mode, teachers can make students truly realize the charm of mathematics discipline, so as to promote their good and effective completion of learning tasks. In fact, the integration between advanced mathematics and modern educational information technology is not only the reflection and perfection of traditional teaching, but also the application and integration of various teaching modes and teaching resources.
4.1.3. Integration of Cognitive Tools

In most mathematics courses, information cognitive tools are divided into two types, teaching type and mathematical type. In mathematical cognitive tools, some professional mathematical software can be used to increase the representation of multiple connections, and then to form a unique image, in the end the mathematical discipline has more obvious reality and concretization characteristics. We need to pay attention to the fact that after completing the integration of cognitive tools, students can understand the dynamics of mathematics more intuitively and graphically, so that the foundation of mathematical reality can be increased, at the same time, students can deal with reasoning ability and logical thinking better.

The teaching cognitive tool mainly uses the mathematics question bank and the mathematics courseware and other learning medium and the learning tool. At present, the Internet application main and basic, and the multimedia curriculum is a supplement. There are great differences between teaching type and mathematical cognitive tool. Teaching cognitive tools require learners to have a certain level of cognition, and only need to play the role of teaching assistants, can be interactive to the deeper content of the expression.

4.2. Integration Methods between Modern Educational Technology and Advanced Mathematics Teaching

4.2.1. Ensure the Harmonious Relationship between Teaching Objectives and Means

In the new curriculum standard of our country, it is clearly required that advanced mathematics teaching should help students to establish correct values, and strive to make students have a high level of education and good spiritual accomplishment, so that students maintain a good spirit of innovation and a high degree of thinking ability. Based on this situation, in the process of making use of modern educational information technology, the main thing is to make the development of advanced mathematics teaching activities become smoother, and it makes students’ intelligence and thinking develop well. However, due to incorrect methods, a large part of the application of information technology often create the effect of half the effort. In fact, in the process of applying modern educational information technology, some regulations and principles need to be followed. First of all, teachers are required to make clear the teaching objectives, so that modern educational information technology can better play the auxiliary function, so as to make the teacher's established teaching goals complete. If there are conflicts and contradictions in the actual use of the process, it is necessary to abandon the teaching means, and the main teaching purposes leads. Secondly, it is necessary to make reasonable teaching demand in combination with the actual situation.

4.2.2. Ensure the Harmonious Relationship between Teacher Teaching and Educational Information Technology

The application of modern educational information technology in advanced mathematics teaching does occupy a more obvious advantage. For example, students can be independent of the students to cooperate and explore, and the creation of a good learning atmosphere is also of great benefit, the shape of the classroom scene become more alive. However, teachers can not abandon the interaction between teachers and students, and the good relationship between teachers and students is helpful to improve the efficiency of classroom teaching. Based on this situation, it is necessary to guarantee the stable and harmonious relationship between modern educational information technology and teacher teaching. Teachers still play the main role of teaching activities in modern mathematics teaching theory, and information technology only plays the role of auxiliary tools from the side. And no matter how the teaching mode changes, teachers are the main part of the teaching activities, teachers need to teach knowledge in the exchange of students, and the moral quality and comprehensive literacy of students will be improved. And in the process of making use of information technology, teachers control mainly, which means that the leading role played by teachers has not changed a lot.
5. Conclusion
In the process of integrating mathematics teaching and modern educational information technology in colleges and universities, it is inevitable that the traditional mathematics teaching mode will change in a certain way, and a new mathematics teaching method will be created, so that the quality and efficiency of teaching work have also been effectively improved. Based on this situation, it is necessary to actively promote the development and modernization of education, so as not only to help students to have a deep understanding of the mathematics discipline, but also to enable their practical awareness and innovative spirit to be effectively cultivated.

Reference
[1] Chai Ruishuai. Integration and Analysis of Modern Educational Technology and Mathematics Education in Colleges and Universities [J]. Modernization of Education, 2018, 5 (03): 190-191.
[2] Yang Peng. on the Integration of Advanced mathematics and Modern Information Technology [J]. Journal of Huaibei Vocational and Technical College, 2016, 15 (05): 65-66.
[3] Huang Haiping. on the Basic Accomplishment of Mathematics Teachers in Colleges and Universities under the Network Environment [J]. Education and Occupation, 2010 (14): 61-62.
[4] Chen Hesheng. the Application of Higher Mathematics Teaching and Modern Educational Technology [J]. Adult education in China, 2010 (07): 173-174.
[5] Wang Xiuyan. Application of modern educational technology in advanced mathematics teaching [J]. Journal of Jiamus Vocational College, 2018 (09): 277-278.