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Application of Information Technologies in Pedagogy

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Abstract: In contemporary education, the application of information technology has become an indispensable part. This article explores the application of information technology in education and emphasizes the importance of teachers learning and updating information technology knowledge. By using information technology, teachers can expand their teaching ideas and space, and change the way they prepare and teach. The article also mentions some relevant research, including "The Impact of Information Technology on Education Concepts in the 21st Century" and the application of information technology in education by UNESCO. In summary, this article aims to encourage teachers to actively learn and apply information technology to improve their teaching effectiveness.

Keywords: Information technologies, Educational technology, Teachers'concept.

1. Introduction

On the basis of continuous improvement of educational technology hardware facilities, teachers should insist on learning information technology knowledge in "use", update educational concepts in "use", and improve operation level in "use", and "use" is more expensive than "precision". Retain the specialties of traditional teaching tools in teaching, give play to the unique advantages of information technology, and highlight teaching elements. In addition, information technology is bound to change the way students learn, the way teachers prepare lessons, and the way of teaching and research activities.

Facing the application of information technology in recent years, most teachers can clearly realize that advanced educational information technology, especially information technology, has brought milestone changes to the reform and development of pedagogy. But at the same time, we should also see that the application of educational technology in teaching classrooms still has shortcomings. Some teachers still have many misunderstandings when using them, and they have not really played the role of advanced educational technology. Many issues need to be discussed together. Work requires us to continuously improve. In view of this, combined with what I have seen and thought, let me talk about my nine practical problems in the application of educational technology to teaching.

The object of research are the application of information technology in pedagogy.

The subject of the research is the application of information technology in pedagogy.

The purpose of this work to analyze the possibility and effectiveness of the application of information technology in pedagogy.

In the process of achieving this goal, the following tasks have been solved:

1) the lack of information technology hardware facilities is the biggest obstacle to the popularization and application of advanced educational technology.

2) the key to updating teachers' concept is "Use".

3) in the information technology environment, the way teachers prepare lessons should also change.

4) the use of information technology to teach, it is easy to broaden the teaching ideas and space.

This article mainly uses the literature research method, the investigation method, the action research method, the observation method, the experience summary method, the case analysis method and so on to carry on the research to this topic comprehensively.

2. The Lack of Information Technology Hardware Facilities Is the Biggest Obstacle to The Popularization and Application of Advanced Educational Technology

When it comes to the application of information technology, everyone always likes to discuss about the updating of teachers' ideas and the cultivation of information technology capabilities, but I think that more basic issues than the updating of ideas and ability training have not been completely resolved, that is, the information technology hardware facilities. Construction. At this stage, there are still a large number of rural schools that do not have multimedia classrooms at all, or even computers to access the Internet. For most rural teachers, they of course also know the benefits of using multimedia. Many of them have mastered certain information technology knowledge through their computers. However, there is no multimedia classroom in the school and they can only wait for the school's Further developed. Even in urban schools, most teaching schools have only one multimedia classroom. Everyone knows that most of them serve teaching and research activities at all levels. If you usually take your students to multimedia classrooms, you will inevitably crash.

Therefore, increasing investment in educational technology hardware facilities is the basis for the further development of the integration of information technology and disciplines, and it is an important project that is urgent. This requires government departments to increase investment in education. For example, a network terminal display system is set up in each classroom, and the required teaching information resources can be ordered autonomously from the school server according to the needs of the course.

3. The Key to Updating Teachers' Concept Is "Use"

3.1. The key to strengthening the training of teachers' information technology ability is also "use"

In fact, most teachers still rarely use multimedia technology when teaching. Ordinary teachers only use audio-visual equipment when they are open classes in the school; key teachers will take students to the multimedia classroom when they are presenting and communicating classes; even many students I also realized that once I was led to the multimedia classroom, there must be many teachers coming to listen to the class! The reason for this situation is that I think the main reason for the integration of information technology into education is not too long, and there are many tasks that need to be improved. First, the limited number of information technology hardware facilities mentioned above objectively limits the frequency of teachers' use. Second, teachers are not proficient in using information technology. Some teachers have to ask computer teachers or other technically skilled teachers to help them make courseware in the last public class. Even teachers who have a certain degree of skill need to do the courseware. How can it be possible to take students to the multimedia classroom for a long time? Third, teachers have not really changed their minds and have not really realized the benefits of advanced educational technology with information technology as the core for students. Not to mention multimedia technology, it is just normal Some teachers are too lazy to use the slideshow, afraid of trouble, and even feel that it is the same effect whether it is used or not.

The Ministry of Education issued the "Notice on Starting the Implementation of the National Educational Technology Capability Building Plan for Primary and Secondary School Teachers", officially launching the implementation of the educational technology capability building plan for primary and secondary school teachers. The "Plan" is oriented to teaching application, aims to realize the integration of information technology and subject teaching, significantly improve the ability and level of the majority of primary and middle school teachers to apply educational technology, promote the effective use of technology in teaching, improve teacher teaching methods, and improve education Quality and teaching efficiency, in turn, lay a solid foundation for the advancement of education informatization and the development of basic education curriculum reform.

The guiding role of "use" has been clarified in the "plan". Intensive training can only impart basic knowledge to teachers, and many specific methods can only be proficient in continuous application, and many specific skills can only be explored, discovered, communicated and improved in continuous application. You cannot rely on lectures alone. Only after contact and application can teachers' ideas truly renew themselves; they cannot rely solely on reports. Only after proficiency can teachers' ideas slowly become more profound.

Here I would like to mention the first question above: the construction of facilities. If there are no multimedia classrooms and no computers connected to the Internet in the school, then there will be no follow-up "second phase" project-"use" for the training of all teachers' information technology abilities in a mere ten days. Teachers' information technology knowledge still stays at the blunt "knowledge" stage, and some teachers who have learned only a little bit even show fear of difficulty. The construction of facilities is the foundation, and "use" is the key.

3.2. Teachers' "use" of information technology lies in "precision"

"Using" does not mean using the whole class and every day. Before using information technology, teachers must be clear about the needs of teaching and teaching, and try to find out where information technology can improve the learning effect, so that students can complete those using other methods. What can't be done or done badly. Therefore, "use" is more valuable in "precision".

"Essence" includes two points: First, due to the limited number of multimedia classrooms and computer rooms in schools at this stage, it is impossible for every class to use multimedia or computer rooms for teaching every day. Therefore, for teachers, they must know what lessons are used. Multimedia courseware will play a role in greatly improving the efficiency of the classroom. What kind of lessons can use traditional teaching tools to achieve good results, this is the "precision" of "use" in terms of quantity.

For teaching disciplines, generally speaking, the basic knowledge of spatial location, direction and geometric figures, understanding of lower grades, etc., generally using multimedia courseware to demonstrate students will have a more intuitive impression; related formula derivation, quantitative relationship analysis In general, multimedia courseware can help students understand the formula derivation process and quantitative relationship analysis methods more deeply. For calculation exercises and elementary number theory concept teaching (such as divisible, prime numbers, composite numbers, etc.), it is of course more convenient to use multimedia courseware for these courses, but if you only use traditional teaching tools, I think it will not affect the teaching effect.

In a lesson, teachers must understand what part of the teaching multimedia courseware can break through the difficulties and highlight the key points, and what part of the teaching can be supplemented by traditional teaching tools that can play a role in teacher-student interaction and timely feedback. This is the qualitative "fineness" of "use", which is commonly referred to as integration.

Second, the integration of information technology and teaching is conducive to cultivating students' lifelong learning ability. Use digital tools such as word processing, image processing, and information integration to reorganize and produce teaching and teaching content, so that the integration of information technology and teaching and teaching is not only to impart knowledge to students, and to allow students to acquire knowledge, but also to enable students to reconstruct and reconstruct knowledge. create. Students can consciously plan and manage themselves (such as using teaching software to study at their own pace), work independently, and innovate consciously according to their learning goals.

Informatization provides students with multi-channel evaluation methods. In addition to traditional school and teacher evaluation methods, students can also use remote communication technology to cooperate with each other, express their opinions, and communicate with peers, experts or educational websites to obtain Evaluations from peers, experts, or educational websites on the Internet.

4. In the Information Technology Environment, The Way Teachers Prepare Lessons Should Also Change

4.1. Under the environment of information technology, the way teachers prepare lessons should also change

In the information age, teachers' lesson preparation tools are not just textbooks, teacher's books, and lesson preparation notes under the traditional lesson preparation method. The rich Internet resources provide teachers with a large number of teaching design references, teaching content background materials, picture materials and courseware materials. Compared with other subjects, teachers should pay special attention to two points when preparing lessons:

First, the teaching cultural background of the teaching content. As long as you enter the name of the teaching content in the search website, you can check a large number of related teaching cultures, which not only enriches your professional knowledge, but also does some subtle basic work for improving students' teaching and cultural literacy.

Second, the connection between the teaching content and the knowledge that students will learn later (especially middle school teaching knowledge). These higher-level knowledge points do not need to borrow books to read, and the online electronic textbooks provide us with convenience. These higher-level knowledge points are referred to when preparing lessons, so that teachers have a deeper understanding of the teaching objectives of the content taught, and can be targeted for more meaningful discussions and exercises in teaching, and truly improve classroom efficiency.

Figure 1. The change of teachers' way of preparing lessons

4.2. Use multimedia to create classroom situations and stimulate interest in learning

Psychological research shows that: "A person's emotional experience is often determined by specific situations." A vivid and good teaching situation has great appeal and appeal to students. All the time, the majority of teaching teachers have been working hard to explore, in order to create a good teaching situation through effective ways, so that students can accompany the whole process of teaching and learning with active emotional experience.

Multimedia enters the teaching classroom, bringing us bright colors, beautiful sounds and changeable images, which are conducive to stimulating students' multiple senses, creating various teaching situations, arousing students' emotional activities, and prompting them to take the initiative in learning And positivity. As a teaching teacher, you should study how to use multimedia to help your teaching from the perspective of your own subject, and integrate multimedia technology into the teaching of teaching subjects, just as natural and smooth as using blackboard, chalk, paper and pen, making the original abstract Teaching knowledge is visualized and life-oriented, so that students not only master the teaching knowledge, but also like this subject.

4.2.1. Show the situation with "life" as the source

"Teaching comes from life and is higher than life!" We should start from the reality of life that students are interested in, and use multimedia to "fit them" to arrange a beginning, provide a pleasant and useful lens, and appropriately use multimedia The combination of sound, light, color, and pictures plus an ingenious problem design by the teacher to create an attractive learning situation, make students feel immersive, and then generate a strong learning motivation, inspiring them to learn new knowledge Exploring the mystery of teaching. For example: when teaching the lesson "Scale", you can use multimedia (video playback) to introduce a new lesson with the successful launch of "Shenzhou" 6 as the background. When the spacecraft draws a beautiful arc in the blue sky The line, rushing to space, the teacher asks students to draw this beautiful arc on paper; when the spacecraft is flying in space about 300 kilometers away from the earth. Looking down on our earth in space, this blue planet is beautiful. The teacher asks students to draw the 300-kilometer distance on paper. Some students can't draw it, which causes cognitive conflicts, and naturally leads to concepts such as distance and actual distance on the map.

Aristotle once said: "Thinking starts with questions and surprises." The questions we set up through multimedia are like "a single stone hits a thousand waves", causing students to have conflicts of understanding. They feel confused psychologically, and their interest in exploration suddenly arises. This has laid a foundation for students' desire to acquire teaching knowledge and active participation. At the same time, multimedia can easily bring them into a learning situation of active thinking and active exploration.

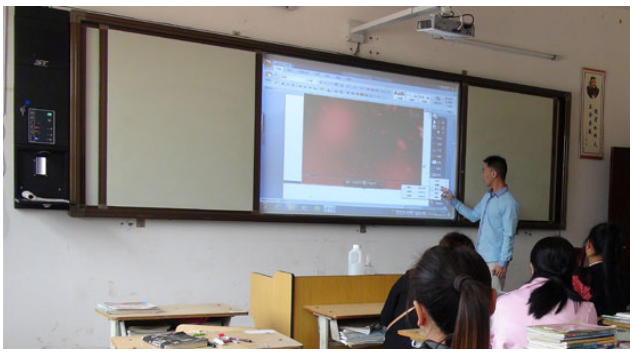

Figure 2. Multimedia teaching

4.2.2. Using "graphics" as a means to demonstrate the situation

In teaching, there are mainly two aspects of "number" and "shape" knowledge, and the knowledge itself is relatively abstract and boring. Because of the contradiction between the concrete and vivid thinking of elementary school students and the abstraction of concepts, they are often not easy to master knowledge, and it is more difficult to distinguish concepts that are easy to be mistaken. If according to the content of the

textbook, the dynamic and static are combined, and the static knowledge is made dynamic through vivid and interesting pictures, then students can effectively grasp the knowledge by visualizing abstract concepts through the context of computer demonstrations. For example: when teaching the "Line Segments, Rays, Straight Lines" lesson, you can design it like this: first flash a bright spot on the screen, and then shoot a horizontal line from one end of the bright spot, and students can immediately understand how the "ray" is formed after looking at it. ; Then through the expansion and contraction of this end to let students understand the characteristics of the rays. Then, a bright spot appeared below it, and its two ends projected a horizontal line, which stretched freely, so as to let students understand the generation of straight lines and the characteristics of "infinite extension, immeasurable, and no endpoints. Next, two bright spots appear on the screen, which are connected by a horizontal line. Students realize that this is a line segment, which has two ends, is not scalable, has a length, and is measurable.

Through such an intuitive demonstration, the seemingly static and isolated things are connected, and a knowledge generation situation is constructed, allowing students to easily find the differences and connections between things, so as to clearly obtain concepts.

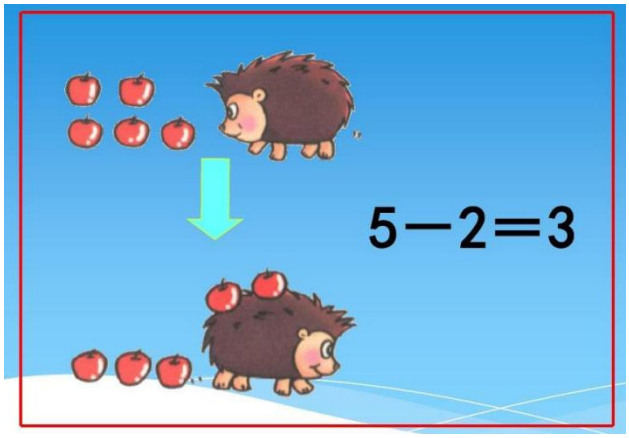

Figure 3. Combination of several lines

4.2.3. Take "beauty" as a breakthrough, create a pleasing scene

In teaching and teaching, use information technology to display beautiful pictures, charming scenes, dynamic images, supplemented by beautiful music, so that students can feel beauty, appreciate beauty, discover beauty, stimulate students' joy of learning, and then explore beauty. And in the process of exploring beauty, they learn knowledge, and in the process of learning knowledge, they will further inspire them to pursue the "emotion string" of "truth, goodness and beauty", cultivate temperament, and shape good personality. For example, in the lesson of "Axisymmetric Graphics", you can create situations to allow students to experience and appreciate beauty initially. The screen shows: the beautiful suburbs, colorful kites flutter in the wind; among the flowers, butterflies are flying; in the sky, a silver-white plane occasionally traverses, leaving a beautiful arc... Teacher inserts in time: classmates Guys, why are these graphics so beautiful? It is that their beauty has something in common: axis symmetry. This naturally leads to the teaching goal of this lesson: what is an axisymmetric figure. Multimedia, with its unique function, gives students a wonderful situation, skillfully combines students' cognitive activities and emotional activities, and solves the problem of the inconsistent development of logical thinking and image thinking caused by cognition and light emotion. The problem effectively improves the thinking quality of students. It uses the unconscious to guide the conscious, and the emotion to accompany the rationality, so that students can gradually enter a better learning environment in a relaxed and happy state, so as to achieve the established teaching goals.

4.3. Choose the right time to use to promote the active development of students.

The abstractness of teaching knowledge and the vividness of pupils' understanding of the law have caused contradictions in students' understanding. However, using multimedia teaching, as long as the punctuality can be assisted to the "wonderful" and "smart" places, it will have twice the result with half the effort.

4.3.1. Make the concept clear.

For example, when teaching "encounter problems", in order to let students understand the concept of "encounter", use computer multimedia to demonstrate the following scenario: two people walk opposite each other from two places at the same time, and the distance they travel makes it glow, flash, and then flash The distance between moving and moving until it becomes a point, so that students can experience the "encounter" scenario, pave the way for the next step to understand the connotation of the concept of "encounter", let students use the image of specific things to think, so as to establish a clear teaching concept .

4.3.2. Make the abstract visual.

The teaching of geometric figures, especially three-dimensional figures, should help students establish spatial concepts. For example: when teaching "the area of a circle", use multimedia to show students the whole process of the activity: draw a circle on the screen, and then divide the circle into two equal parts, a total of 16 parts, and then expand the circle through animation, The two parts are staggered together to form an approximate rectangle. Students feel and finally realize that the area of this approximate rectangle is exactly the same as the area of the original circle. Repeatedly demonstrate several times, the computer flashes the radius of the circle, one-half of the perimeter, and the length and width of the combined rectangle to guide students to discover the relationship between the length and width of this approximate rectangle and the circle, so as to derive the area formula of the circle . Students use multimedia image deduction, combining movement and static, to mobilize students' various sensory synergy. Students not only clarify the ins and outs of knowledge, understand and memorize the calculation formula of circle area, but also effectively cultivate students' observation ability and spatial imagination ability.

5. The Use of Information Technology to Teach, It Is Easy to Broaden the Teaching Ideas and Space

5.1. The use of multimedia assisted teaching can easily broaden students' problem-solving ideas

The formation of students' learning ability is closely related to the method of learning. The cultivation of ability is mainly formed through thinking and operation. Multimedia-assisted teaching can create a multi-directional thinking situation for

students. Because it has the characteristics of both sound and form, vivid and interesting, it often creates conflicts between the new knowledge and the students' curiosity after asking questions related to the new knowledge, which in turn stimulates the students' strong desire for knowledge. Students will actively think in this situation and actively participate in operations in activities.

For example: the picture on the right is a piece of grass. Think about it, how many algorithms are there to calculate its area? This is a polygon. How to use the knowledge learned to calculate? Let the students think first, and then draw a picture. After drawing, ask students to calculate the area of the grass according to their own drawing methods. Due to the differences in students' personalities, some students will come up with one approach, and some will come up with several approaches. At this time, use the computer to demonstrate the different methods one by one. After reading it, every student will think of some things he thought of, and some things he didn't think of. Students will pay attention to the solutions they didn't think of, and they will have a desire for knowledge. This kind of teaching method that combines visual presentation of multimedia and students' hands-on operation not only allows students' multiple senses to participate in the learning, but also takes care of students' individual differences, fully mobilizes students' subjective initiative, and greatly cultivates students' hands-on operation Ability and thinking ability.

5.2. The use of multimedia to provide multi-level exercises can effectively use the limited teaching space and increase the density of exercises.

Classroom exercises are an important link for students to consolidate what they have learned. Students' mastery of what they have learned is also reflected in classroom exercises. Teachers should carefully design classroom exercises, which can not only reduce the burden of students' homework, but also improve the quality of teaching. When designing classroom exercises, teachers should give full play to the advantages of multimedia graphics and texts, and design multi-level exercises so that every student can practice in a relaxed and happy situation. When designing exercises, to take care of all students, it is necessary to divide the exercises into multiple layers. Generally speaking, the first level is exercises similar to the sample questions, and the purpose is to take care of relatively poor students; the second level is the variant exercises of basic knowledge, the purpose is to solve difficult and difficult knowledge problems, and to take care of middle school students; the third level It is a little brainstorming exercise to take care of outstanding students. This kind of multi-level practice allows poor students to "eat well", middle students to "eat well", and top students to "eat well". When students do the questions, they will not only feel boring but will also have a strong interest in learning. The teacher also achieved the goal of cultivating the overall quality of the students.

5.3. With the support of information technology, teaching and research activities can be richer in content and more flexible in form

The teaching and research activities where teachers get together and speak freely are of course conducive to quick and rich exchanges. However, in rural areas, the distribution of schools has a wide range of problems. Some schools are even hundreds of miles apart. For teachers from all directions to participate in teaching and research activities, there are more difficulties to overcome. The first is the expenditure on transportation, and the second is that the transportation takes a long time. Teachers travel once on a business trip and miss more classes. This is undoubtedly a problem for schools where some people are already nervous.

Nowadays, with the support of information technology, compared with traditional content, the content of teaching and research activities should draw on rich network resources and discuss the production of courseware and the application of multimedia. The form of teaching and research activities can also use online interactive technology to communicate, such as live broadcast of public classes online, and then use instant interoperable network software for multi-endpoint video or audio communication. It is also possible to create teaching and research forums at all levels, so that teachers can enter relevant subject forums to ask questions, communicate, and upload valuable materials for sharing. Of course, these ideas require teacher training and early capital investment to build hardware facilities as a basis.

6. Conclusion

The introduction of information technology in pedagogy is a far-reaching reform, which will definitely affect students' learning methods and evaluation methods, teachers' preparation methods and teaching methods, and the organization of teaching and research activities of teachers and researchers. More practical problems require teachers to continuously summarize in practice, exchange their knowledge and experience in a timely manner, and work together to continuously deepen the reform of informatization education.

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