Application of Multimedia Technology in Middle School Education Management

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Abstract

In today's era, the connection between science of technology and all aspects of social life is increasingly in-depth. Multimedia technology, particularly in the sphere of education and teaching, demonstrates its tremendous advantages, such as vast teaching resources and the ability to move between various teaching modalities at any moment. To a large extent, all of these have aided the successful execution of China's education reform. Teachers and students were continually adjusting to the dispersion of conventional roles, resulting in an increase in instructional efficacy. How to improve the significance of multimedia in middle school curriculum development and achieve our academic objectives of "fostering individuals" has now become a contentious issue among academicians. Aiming at the current situation of the development of middle school education management in China, this paper adopts the method of combining questionnaire survey with comparative experiment, proving the advanced nature of multimedia teaching mode. Meanwhile, with the help of questionnaire analysis, the author also understands some middle school students' real ideas about the application of multimedia technology to the classroom. The experimental results show that multimedia technology is very effective in middle school education management. The classroom quality has been effectively improved, and the enthusiasm of students in class has been improved by about 20%. Furthermore, such an improvement was obtained in only one month of testing, which is quite encouraging. Finally, the researcher provides a thorough review of the research, arguing that using multimedia technology should not only enhance the material's effectiveness, but also prevent overwhelming the viewers.

Keywords: Multimedia technology, Middle school education management, Questionnaire survey, Comparative experiment

1 Introduction

Today, the information age has come. Modern science and technology are often used in all walks of life, high-quality personnel training is the top priority of national education [1-2]. However, China's education industry seems to be less sensitive to new technologies [3]. Since the state vigorously implemented the new curriculum reform, the latest education concept has begun to spread widely, and the improvement of teachers' comprehensive quality has become an obstacle to the smooth progress of the new curriculum reform [4-5]. Of course, the education sector also needs the support and help of modern science and technology, and improving teachers' teaching methods is directly related to the quality of school teaching [6]. To boost active learning, interactive multimedia applications are used. A multimedia educational environment consists of a variety of components that enable the teaching process will take place. Texts, pictures, music, videos, motions, and user interaction are the six primary aspects in multimedia programmers for instructional purposes. Multimedia applications have a number of features that allow teachers and lecturers to deliver additional advice that is adapted to the needs of a specific set of students. Teachers and lecturers are always looking for new and better ways to engage their students while they are studying and to improve teaching and learning results. With the pace of the new middle school curriculum reform, multimedia technology has been widely used in middle school classrooms. The use of this auxiliary teaching method makes the middle school education take on a new look [7].

At this stage, the application of multimedia technology is popular, and it also shows its due style in secondary education in various countries [8]. Multimedia applications have been used in teaching to deliver computer-based training sessions and reference materials. Learners could go through a sequence of presentations and literature about something like a specific topic in numerous data formats with a computer-based management course. Teachers and students use multimedia programmers to provide data including such lecture notes, assessment materials, as well as other student services. Learners could also utilize it to master new knowledge and skills without any of the help of instructors.

Multimedia applications are increasingly shifting away from the previous Computer to a multi-user or customizable user experience. In foreign countries, from the perspective of the role transformation of teachers, adedokun proposed that the application of multimedia promotes the establishment of the identity of teachers' participants and increases the functionality of teachers' guides. In order to pursue a more modern educational goal, high school education must strengthen its integration into reality and enhance the function of middle school education [9]. At home, Sha Wenxia believes that with the help of multimedia technology, the extensive application of human-computer interaction and the continuous promotion of exploratory learning mode, students' autonomous learning ability has developed rapidly compared with the past. They pay more attention to the cultivation of unity research learning atmosphere and the improvement of their own research ability, which makes them gradually adapt to the trend of Technological Development in the new century from the inside to the outside, and deepen their understanding of the concept of lifelong learning [10].

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DOI: 10.53106/160792642022012301012

Multimedia technology can only be regarded as a qualified technology if it achieves the desired effect in application. Otherwise, it will simply stay at the level of imagination. For a long time, China's education is faced with the problem of low efficiency. Teachers talk on the platform and students can be absent-minded below. This paper starts from the reality, discusses the current situation of the application of multimedia technology in middle school education management, as well as the relevant views and suggestions of teachers and students. The innovation of this paper lies in the redefinition of multimedia technology from the perspective of middle school education, which not only helps both sides to achieve good chemical reaction, but also can effectively strengthen the internal relationship, making it more efficient development and utilization. Multimedia technology makes the traditional middle school classroom glow with new vitality. Middle school classroom, also let multimedia technology has a broader space for development. Secondary school education management, to achieve better progress, all parties involved in a large extent to enhance the will, this is a very valuable exploration.

2 The definition of the application of multimedia technology in middle school education management

2.1 Multimedia technology

From the traditional point of view, multimedia technology is based on the computer and other terminal equipment, using a variety of software to reprocess text and images and other materials, transforming these original materials into materials that people need. The higher the accuracy of material conversion, the higher the technical ability requirements for users. At the present stage, secondary education mainly integrates five types of media, text, graphics, images, video and audio technology, controlled by computer. In addition, for different types of raw materials, the operator can also use the corresponding means according to their own needs, so as to present a unique composite material, so that the classroom presents a richer level. With the emergence of many special services for multimedia content, such as multimedia retrieval, sharing, advertising, editing, streaming media and other physical information services. How to make multimedia information serve more customers and maximize the value is becoming the focus of all user groups. Visual images are more effective than words alone during teaching. As a result, educational technological tools incorporate elements of visual aids to communicate and underline specific topics, making them more successful than fixed traditional lesson plans because individuals are more likely to pay close attention to them. During the learning experience, multimedia apps are employed to capture students' interest and inspire enthusiasm. It has the potential to boost a students' attitudes about learning and subject. When compared to conventional teaching methods used by teachers and students, multimedia applications allow pupils to retain more information and stimulate knowledge acquisition.

The function of multimedia technology is not limited to learning aids, it also has a very important function - storage. The intellect is stimulated when visuals, audio, and simulations are used in conjunction with text. The memory and attentiveness of students improves. In these conditions, learners can recognize and solve difficulties more quickly in a multimedia educational environment than in a situation whereby instruction is solely feasible through textbooks. Teachers generally demand opportunities for learning tools that may help learner's formation theory in a number of different ways to fit their specific learning demands. The advancement of blended learning technology has opened up new avenues for studying in school and in the community. Providing educators with accessibility to multimedia educational materials that promote upgradable [11-14]. Moreover, this kind of storage is not a simple "loading", but a convenient interface to collect the relevant information of each linked database and organize it into a user's demand topic. End users can directly complete the data query, analysis and decision-making. The related algorithms are as follows.

Let K be the training sample data set, and there are m independent values for the class identification attribute in K, that is, m classes are defined, $\mathrm{i}=1,\cdots,\mathrm{m}$. R_i is the subset of the data set s belonging to the $\mathrm{C_i}$ class, and the number of tuples in the subset R_i is expressed by π_i. The expected information amount of set s in classification can be given by the following formula.

$$\mathrm{F}(\pi_1,\pi_2,\cdots,\pi_n)=-\sum_{i=1}^{m}\mathrm{G_i}\log_e(G_i) \tag{1}$$

Where $\mathrm{G_i}$ is the probability that any sample belongs to $\mathrm{C_i}$ class, $\mathrm{G}_i=\pi_i/|K|$, where $|\mathrm{K}|$ is the number of tuples in the training sample data set.

If K_{ij} indicates the number of tuples belonging to K_j class in subset $\mathrm{C_i}$, the entropy of attribute A for classification $\mathrm{C}_i(i=1,2,\cdots,m)$ can be calculated by the following formula.

$$\mathrm{H}(A)=\sum_{j=1}^{v}\frac{K_{ij}+\cdots+K_{mj}}{|K|}F(K_{1j},\cdots,K_{mj}) \tag{2}$$

Let $\mathrm{N}_j=\dfrac{K_{1j}+\cdots+K_{mj}}{|K|}$, then N_j be the weight of K_j subset, which indicates the proportion of K_j subset in data set S, and the expected information amount of classification C_j for each value of attribute A can be calculated by the following formula.

$$\mathrm{F}(K_{1j},\cdots,K_{mj})=-\sum_{i=1}^{m}G_{ij}\log_{\mathrm{e}}(G_{ij}) \tag{3}$$

Where $\mathrm{G}_{ij}=K_{ij}/|K_j|$ indicates the proportion of K_j belonging to C_i class in the subset.

2.2 The analysis of the feasibility of combination in both sides

(1) It is helpful to improve the Enlightenment of classroom teaching

Teaching materials are the most authoritative helper and the most powerful weapon for teachers in their work. How to highlight the focus of teaching materials and overcome the difficulties is very important. Teachers' understanding of teaching materials directly determines the effect of classroom teaching, and in recent years, with the advancement of curriculum reform, the change of teaching materials is relatively large, which makes teachers can no longer rely solely on the accumulation of knowledge and experience to deal with classroom difficulties perfectly. Combined with the characteristics of students' active thinking and self-consciousness, the scientific use of multimedia technology in teaching is more precious. With the help of multimedia technology, teachers can present the key and difficult points of this lesson to students in a visualized and three-dimensional way. Where conditions permit, teachers can also ask students to search for information and sort out opinions about the relevant content of the classroom, so that they can understand the students' teaching expectations, and the education process will have a goal. Then you can adjust your lecture focus according to their feedback. We should weaken the inculcation of knowledge and focus on the guidance of thinking mode and aesthetic appreciation. Multimedia technology means that students can receive text information from the sound and visual scene in textbooks, thus solving the problem that students can not receive information due to the lack of cognitive level.

(2) It is helpful to improve the value of extracurricular teaching

As we all know, although the classroom is the main position for students to improve themselves, it is not the only place. Because learning is a dynamic chain process, in class and out of class is a complete chain, both of them serve the main goal of learning. Without the process of review and reflection of extracurricular study, students can not really digest the teaching achievements of teachers. But the traditional extracurricular learning, in essence, is the students' self-study after class, teachers can't grasp the students' learning situation, the latter can't carry out communication with teachers in view of the difficulties in learning, the teaching and learning of both sides are separated in the traditional mode. With the blessing of multimedia technology, teachers can control the students' after-school learning to a great extent. Although this increases the workload of teachers, on the whole, it reduces their classroom workload.

(3) It is helpful to change students' learning style

In the previous classroom teaching, students are always in the position of passive reception, which is one of the most criticized problems. No matter what the teacher says on the stage, only a few students can keep up with the teacher in thinking. Most students are "in two different service areas" with the teacher, and only a small part of the signals sent by the teacher can be received by them. With the advent of multimedia technology, audio, video, animation and other materials are integrated into an organic set. In the classroom, teachers can get rid of the shackles of knowledge point inculcation, and grasp the excitement of learners in the form of pictures, gifs and even video clips. According to several research findings, students whose multimedia habits and styles of learning complemented the way that information was delivered in such an online fashion class scored much higher than those who did not. People who are in the process of learning. The capacity of intelligence training systems to modify the representation of information to the students' needs is a key characteristic. They have the opportunity to actively modify lessons to various indicators of academic expertise. These enhancing students' knowledge and ability to adapt by following philosophical norms for teaching and by employing data from students. In the review after class, students can also explore independently according to the teaching situation created by the teacher, and they can also use network tools for autonomous learning before and after class to find their own exciting points and improve the efficiency of learning.

(4) It is helpful to stimulate students' interest in learning

The development of learning activities must be based on the stimulation and maintenance of learning interest. It is difficult for students to maintain long-term learning enthusiasm due to the lack of positive learning interest. On the contrary, under the stimulation of positive learning interest, students' learning enthusiasm can be retained for a long time. The learning atmosphere constructed by multimedia technology plays a very efficient role in stimulating students' excitement. Multimedia contains sound, color and text, which will have a significant impact on students' sense and vision. Students will be very active in class, they will give full play to their imagination and creativity, they will be eager to answer questions, they will actively cooperate with teachers. The students enthusiastically participate in the activities and communicate, forming a perfect closed loop between "teacher student" and "student student". The interaction and cooperation of the classroom make each student become an effective participant in the teaching process designed by the teacher. At the same time, through the use of multimedia technology in teaching, students can use network resources to collect information, visit learning sites, view information, and change the passive acceptance of learning into active knowledge exploration. This can not only expand students' horizons, increase their knowledge reserves, but also help to improve their information processing ability.

(5) It is conducive to enrich the teaching classroom

The construction of multimedia classroom teaching system is helpful for students to better understand and master the key points of the classroom with the help of more intuitive and vivid teaching resources. Multimedia mobilizes students' various consciousness and presents the teaching process more strongly. At the same time, it strengthens the interaction between teachers and students, arouses the enthusiasm of teachers and students, makes teaching an activity for teachers and students to participate, and greatly reduces the pressure and learning. Students from the passive position to the active position to explore the teaching content. This is very important for students to absorb what they have learned and deepen their understanding of the knowledge. At the same time, with the help of intuitive computer demonstration, teachers can explain the key and difficult points, teaching objectives and knowledge points of each class, so that students can obtain a harmonious and beautiful learning environment. Fully mobilize the ability of knowledge, vividly explain the original monotonous and rigid learning content with images and words, and show it to students carefully and effectively, so as to help students form enhanced memory and enhance classroom learning experience with the help of multiple senses in the shortest time.

3 Experimental research on the application of multimedia technology in middle school education management

3.1 Experimental data

This paper selects 200 middle school students as the research object, in order to ensure the effectiveness and representativeness of the research, to verify its activity. Based on the questionnaire research method, 200 questionnaires were issued to middle school students. With the support of relevant teachers, 200 questionnaires were collected, including 196 valid ones.

3.2 Experimental process

After the questionnaire is collected, the survey types represented by each question are statistically analyzed, and based on this, a columnar analysis chart is drawn. Thus analyzes each student regarding the multimedia technology application in the classroom as well as the traditional classroom view and the opinion. Then the students were randomly divided into two groups: group A and group B. In the two groups, multimedia equipment and traditional teaching methods were used to carry out the experiment. In a month's time record and statistics of students' enthusiasm in class, in order to analyze the real effect of multimedia technology applied to middle school education management.

4 Data analysis of the application of multimedia technology in middle school education management

4.1 The summary and analysis of students' views on classroom transformation

In order to study the current situation of middle school education management in China, this paper conducts a questionnaire survey on the selected representative students, and makes classification and statistics. The statistical results are shown in Table 1 and Figure 1.

Table 1. Questionnaire survey statistics

Survey items	Interesting	Rich content	Good quality	Attractive	Creative
Multimedia classroom	86%	88%	91%	85%	89%
Traditional classroom	64%	60%	58%	62%	63%

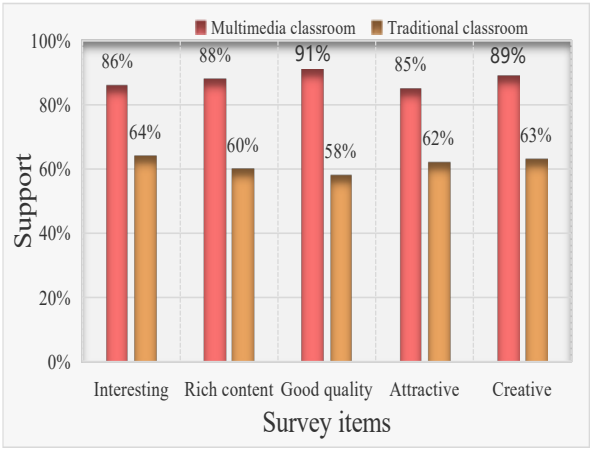

Figure 1. Questionnaire survey statistics

From the survey data, it can be seen that students are very much looking forward to the application of multimedia technology to the classroom, and the support for various survey items of multimedia classroom has reached more than 80%, even one has reached 91%. But the students' support for the traditional classroom survey items is only about 60%. The contrast shows that the multimedia classroom is deeply loved by students. This is because middle school students have strong perceptual knowledge of image thinking, and like vivid and vivid images. This is the advantage of multimedia technology. If teachers can combine this advantage with their own teaching, it will undoubtedly greatly improve the teaching efficiency and let students experience more learning fun.

4.2 The effect comparison of two kinds of classroom

In order to further verify the effect of applying multimedia technology to middle school education management, a group of students use multimedia equipment in class, B group of students use the traditional way of class. Record and count the enthusiasm of students in class in one month, judge the change of students' learning enthusiasm according to these statistical results, visualize them, and fit the curve according to the mean value. As shown in Table 2 and Figure 2.

Table 2. Comparison of the effects of the two classes

	Initial	After 5 days	After 10 days	After 15 days	After 20 days	After 25 days	After 30 days
Multimedia classroom	50%	55%	65%	71%	82%	86%	88%
Traditional classroom	50%	51%	54%	61%	59%	61%	59%

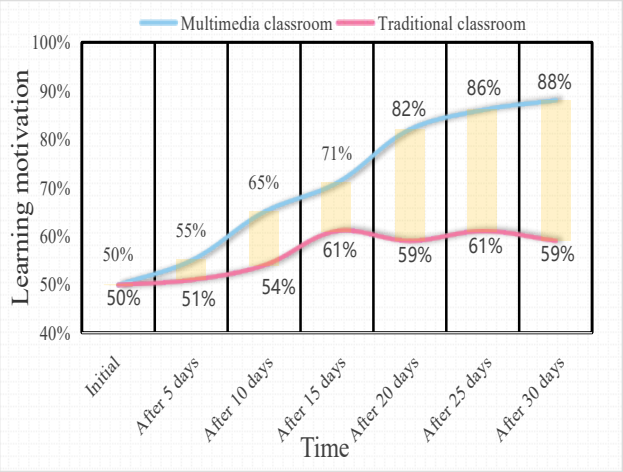

Figure 2. Comparison of the effects of the two classes

It can be seen from the experimental data that with the passage of time, the enthusiasm of students who use multimedia classroom has been improving, and the learning effect is very good. In contrast, the growth of students' learning enthusiasm in group B (traditional classroom) is not only very limited, but also shows a declining trend in some stages. This proves from the side that the application of multimedia technology has a positive effect on classroom teaching. Multimedia technology, with its attractive sound, color and text, has a great impact on students' sense and vision. To create a more suitable atmosphere for students to learn and communicate, students at all levels can better put forward their own questions, feel their progress and enjoy the charm of learning.

5. Conclusions

The efficient application of multimedia technology in middle school education is the focus of this paper. In this paper, through a questionnaire survey to understand some students' understanding and views on the application of multimedia technology in middle school education management. After that, this paper discusses the internal relationship between multimedia technology and high school teaching and how to use it in high school teaching. This paper also provides an in-depth analysis of the current problems in the use of multimedia technology in teaching, and proposes a problem-based solution. The application of multimedia technology in middle school education management is very effective, and the classroom quality has been effectively improved, which has important reference significance for the development of middle school education management. The future research takes part to improve friendly programming and user interface so that learners can participate and encompasses their involvement in maximum extend.

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