

## Retraction

# Retracted: Application of Data Fusion and Image Video Teaching Mode in Physical Education Course Teaching and Evaluation of Teaching Effect

### Security and Communication Networks

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

### References

- [1] W. Zou, Y. Li, X. Shan, and X. Wu, "Application of Data Fusion and Image Video Teaching Mode in Physical Education Course Teaching and Evaluation of Teaching Effect," *Security and Communication Networks*, vol. 2022, Article ID 8584350, 11 pages, 2022.

## Research Article

# Application of Data Fusion and Image Video Teaching Mode in Physical Education Course Teaching and Evaluation of Teaching Effect

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The technology and functions of data fusion and image teaching are constantly improving with the development of society and are gradually produced in life in order to adapt to the progress of science and technology. Data fusion technology refers to the information processing technology that uses computer to automatically analyze and synthesize several observation information obtained in time series under certain criteria to complete the required decision-making and evaluation tasks. In this paper, the traditional teaching mode on students' learning and other aspects of help is not very obvious, and video teaching method can not only increase students' interest in learning, but also help their learning is very huge. Teaching video is to make the knowledge, skills, and other content that teachers want to impart to students into video form to assist modern multimedia teaching. In this paper, two classes with the same number and similar average test scores were selected as the experimental objects. The test results are evaluated by f-s-o algorithm, f-s-o matrix, variance proportion method, and teaching evaluation, so as to get more accurate results. In the experiment, two classes with 30 students were selected, and different teaching methods were adopted for the two classes. One class adopted the traditional teaching mode, and the other class used the video teaching method. During the 4-month experiment, there was no significant difference in test scores and comprehension between the two classes in the first month. The ratio of the two classes was 5:3 in the second month, 10:5 in the third month, and 20:7 in the fourth month. Through the comparative evaluation of the test results of four months, the experimental results show that the video teaching method can not only mobilize the enthusiasm of students but also plays a very important role in promoting students' performance.

## 1. Introduction

With the development of computer network technology, video resources have become an important part of network information. The video teaching method can really improve the effect of many physical education teaching. It mainly attracts the attention of young players by presenting images, animations, and sounds. At the same time, video teaching is also widely recognized by project coaches, teachers, and students. Its appearance constantly changes people's life style and thinking method. The teaching mode using images and videos not only improves the convenience of teaching but also makes it more convenient. This is also an effective way for employees who are far from school or who are

restricted by time. At the same time, using data fusion technology to comprehensively analyze the activity of teachers and students in video teaching methods, teaching and learning results, etc., after obtaining these analysis results, targeted improvements can be made, which greatly improves the efficiency of teaching and learning. Data fusion technology, including the collection, transmission, synthesis, filtering, correlation, and synthesis of useful information from various information sources, in order to assist people in situation/environment determination, planning, detection, verification, and diagnosis. The data fusion center fuses the information from multiple sensors, and can also fuse the information from multiple sensors and the observation facts of the human-machine interface.

At present, image and video teaching technology has been widely used in every corner of people's daily life; video monitoring, live network, video chat, etc. Among them, in the course teaching, most of them use the distance video learning system - online class. Compared with the traditional video teaching mode, the video teaching mode not only visualizes and visualizes the abstract, raw and unfamiliar knowledge, but also stimulates students' interest in learning and arouses their initiative learning enthusiasm. Video teaching has been widely used in the teaching of other subjects. In the teaching of some sports items, it has also been tried gradually, and good teaching results have been achieved.

In order to explore the effect of digital teaching practice, Zhan selected 50 students of the same major in a university and randomly divided them into control group and experimental group. The teachers in the control group wrote PowerPoint courseware, combined with blackboard writing, and used projector to focus on the traditional teaching mode of image and video related technology in the classroom. The experimental group of students in the traditional teaching mode on the basis of the introduction of digital teaching methods for research. At the end of the semester, the final exam scores of the two groups were compared with the self-administered questionnaire. Results the final examination results showed that the average score, passing rate and proficiency of the experimental group were better than those of the control group. The self-administered questionnaire survey showed that the students' interest, self-confidence and practical ability of the experimental group were better than those of the control group. In the teaching mode of college students, the digital teaching practice effect is good, which can improve the teaching quality. The data sample of Zhan's research method is accidental and needs to be improved [1]. Griswold used to combine heuristic teaching mode with video viewing mode and mind map mode, integrating thinking into the teaching process and exploring new teaching methods. In the process of explaining the lecture, the teacher will divide the article into three parts, which are curriculum background, teaching process and practice proof. And, at the end of the learning process, this part of the students was tested. Griswold's research method is innovative, but the sample is too small to explain the problem [2]. In view of the low accuracy and slow speed of the traditional teaching effect evaluation system, Guerrero proposed a reform scheme of the intelligent effect evaluation system (riees) to reform the teaching method of Ideological and political theory course in Colleges and universities. On the basis of learning from the teaching methods of Ideological and political theory course in Colleges and universities, this system adds an intelligent effect evaluation system after the teaching link, which transforms the evaluation of teaching methods of Ideological and political theory course into the evaluation of linear function effect. Guerrero used foreny function to verify the effectiveness of riees system. The research results show that the intelligent effect evaluation system significantly improves the accuracy and speed of the evaluation of teaching methods of Ideological and political theory course in Colleges and universities, and

verifies the feasibility and effectiveness of the system. However, there is a little lack of practicability, which needs to be improved [3].

The innovations of this paper are as follows: (1) the f-s-o algorithm is combined to reduce errors caused by individual differences. (2) It is compared with the actual case. (3) Combine the f-s-o matrix, the variance proportional weight method and the individual global stability method to analyze the data. (4) Test the data results to achieve the most realistic effect [4].

## 2. Algorithm and Teaching Evaluation of Image Video Mode

### 2.1. Image and Video Teaching

*2.1.1. Traditional Teaching Mode.* Traditional teaching is a teaching method in which teachers explain on the blackboard and write on the blackboard, and students listen and practice in their seats. Its main activity is that the teacher explains the contents of the textbook to the whole class in order according to the teaching progress; the students are proficient in the knowledge content taught by the textbook and the teacher through listening attentively in class, practicing and reviewing after class. If necessary, the teacher can supplement many teaching materials or increase many opportunities for practice through examination. Traditional teaching is characterized by "transfer and acceptance," which mainly has the following characteristics: first, teachers are the imparter of knowledge and the master of the whole teaching process; second, students are the object of knowledge transmission and passive recipients of external stimulation; third, textbooks are the only learning content of students and the main source of students' knowledge. The advantages of traditional teaching include: it is conducive to the exchange of emotion between teachers and students; it is conducive to the cultivation of students' thinking ability, it is conducive to teachers' teaching innovation; at the same time, this teaching mode is also the crystallization of the essence of thousands of years teaching mode. However, traditional teaching media has obvious disadvantages in terms of image and information display. Restricted by the level of technology, traditional teaching media cannot create a trend of vivid situational teaching for the classroom; in addition, traditional teaching media is limited by time and space, and there is very little information that can be disseminated in classroom teaching. The general flow chart of the traditional teaching mode is shown in Figure 1:

### 2.1.2. Image Video Teaching

*(1) Definition of Image Video Teaching.* The image video teaching mode is single, focusing on video teaching in images. From the development of video teaching, our teaching mode will change from single teaching to diversified teaching mode in the future [5, 6]. We can estimate the depth of single images according to the number of images. Stereo vision is a typical method for cameras to obtain

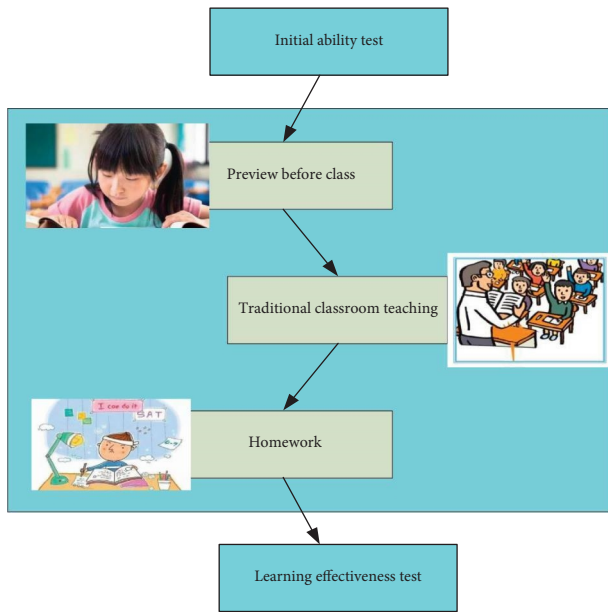


FIGURE 1: Flow chart of traditional teaching methods.

multiple images [7, 8]. Triangulation method is used to transform the matching information between left and right images of the same scene obtained by two pairs of dual cameras into depth information. This technology is relatively mature, but it needs expensive acquisition equipment and high shooting means, so it is not suitable for airport monitoring technology [9].

(2) *Advantages of Image Video Teaching.* The status quo of multimedia-assisted teaching: the integration of modern information technology education and junior high school physics is not a simple combination or passive integration. Instead, information technology should be integrated into the organic whole of the subject curriculum as a tool and become an integral part of the curriculum. Therefore, various teaching resources, various teaching elements and teaching links are sorted, combined and integrated with information technology tools to achieve overall optimization and achieve curriculum goals efficiently. Compared with traditional teaching, multimedia assisted teaching has the following advantages: it has changed the single and rigid form of chalk and blackboard in traditional teaching [10, 11], visualized and visualized the abstract, raw and unfamiliar knowledge [12, 13], and stimulated students' interest in learning, Mobilize their initiative learning enthusiasm [14, 15]. It can also make some process which is difficult to realize and observe under ordinary conditions, and show the way of image video feeding [16]. It can also increase the amount of information, effectively expand the capacity of class hours, and improve teaching efficiency. Secondly, in the active classroom atmosphere, deepen the consolidation of teaching content, so that students feel the joy of learning, learning in fun [17, 18]. At the same time, multimedia-assisted teaching can also optimize the teaching effect, control the teaching rhythm, set the situation, stimulate the interest and fun of learning, and achieve full participation

and real-time effect feedback. Therefore, the courseware made by the image and video teaching mode has stronger knowledge expression ability and will leave a more profound impression on students. In addition, the redundant information obtained in the video sequence, such as macroblock mode, is mapped and transformed to accelerate the mode selection process of the target video and achieve the purpose of fast transcoding [19, 20]. Macroblocks are often effective for flat regions, while small macroblock types are suitable for regions with complex space [21]. Because the RGB value of dark video is usually small, most areas are easy to be considered as flat and encoded as skip or  $16 \times 16$  mode. After image enhancement, with the enrichment of detail information, it is more likely to select complex macroblock types [22]. From life, we can see that the overall visual effect of the image will be significantly improved by coding. In the enhanced image, the athletes will be clearer and the color page will be richer. Figure 2 shows the current common image teaching equipment:

## 2.2. Establishment and Evaluation of f-s-o Relation Algorithm

2.2.1. *The Establishment of f-s-o Relation Algorithm.* The evaluation of video images in teaching is proved by f-s-o relationship [23, 24]. The establishment and quantification of f-s-o relationship has the following processes: teaching evaluation and detection—f-s-o analysis—Original Score Database—statistics of total score and average score; listing of original score matrix—calculation of normalized score; listing of original Boolean matrix; listing of f-s-q table, the quantitative analysis of S-line and q-line-p-s-q-digital problem prompt and warning [25]. It consists of the above steps. Firstly, the original database is established according to the test scores, and the original score matrix is listed, and the average score of each person and each test question is counted ( $X_{.j}$ ). Secondly, get the standardized score and score each test question ( $X_{ij}$ ) and average score ( $X_{.j}$ ). Comparison: when  $(X_{ij}) \geq (X_{.j})$  When the normalized score is 1, when  $(X_{ij}) \leq (X_{.j})$  the normalized score is 0. For dichotomous variable test questions, the standardized score can be directly obtained by multiple choice or yes no questions. The normalized score is 1 when positive answer and 0 when wrong answer. The original Boolean matrix is used to calculate the normalized score of each question for each student. Finally, the f-s-o matrix is listed and the S-line O line is obtained. According to the algorithm, the f-s-o matrix is quantitatively analyzed and evaluated to indicate the teaching problems [26]. The composition of f-s-o matrix is based on the original Boolean matrix. The sorting of the rows is adjusted according to the size of the normalized total score [27]. The new sequence number is renumbered and the corresponding old serial number is filled in according to the number of students' normalized total score [28, 29]. The new sequence number is renumbered and the corresponding old serial number is filled in according to the number of normalized total score of each problem. The total of each row and column will fill the sum of normalized scores of each column and column after adjustment into the matrix [30].

The total of rows ( $S_i$ ) is the total standardized score of students, and the total of columns ( $q_i$ ) is the standardized total score of each test question. Because the system adopts dynamic criterion, it makes quantitative analysis on individual collective teaching problems, and draws a conclusion: digitization and personalization. Although the analysis process of this algorithm is complex, the teaching evaluation and detection system developed by computer technology makes the process automatic and simple. Its use is very extensive and reflects the students' understanding and application of knowledge and cognitive learning level. It is in line with the requirements of educational measurement and has practical feasibility.

**2.2.2. Evaluation of f-s-o Algorithm.** Quantitative analysis and evaluation of f-s-o algorithm. The distribution state and difference of S-line and q-line [31]. The score of each grade is divided into two levels, namely,  $s >$  level. The shift of S-line to the right indicates that the overall level of student achievement is higher, and the shift of  $s$  line to the left indicates that the overall level of student achievement is low. The S-line is the distribution curve of positive answers to questions. It is delimited by grades from left to right. Each grade with a difference is moved upward by one line. Its height (also known as  $Q$  range  $>$  shows the difficulty of the test. The upward shift of  $Q$  line indicates the difficulty of the test, while the downward shift of the  $Q$  line indicates that the test is in the most stable state, and the distribution of students' scores presents a typical normal distribution. The degree of separation between S-line and q-line is inversely proportional to the overall stability. The larger the separation, the more unstable the exam is. The students' linear distribution is skewed 0. As can be seen from Table 1, the separation between S-line and q-line is small, and some of them are overlapped, indicating that the overall stability of the test. When  $D$  is 0.2, it indicates that the students are generally stable. If  $d > 0.2$ , it should be analyzed to find the reasons. In this case, the difference  $d = 0.1$  indicates that the students are playing normally.

### 2.3. Effect and Evaluation Method of Video Mode

**2.3.1. Effect of Video Mode.** Video teaching mode is a teaching process in which learners participate highly. The traditional teaching method is to passively accept knowledge by listening to the class. Table 1 is a table of people's satisfaction with several common video teaching modes.

In the video teaching mode, learners should learn independently and acquire knowledge actively. The effect of passive and active transformation is quite different. Learners tend to put more effort into things that they can personally participate in. Many people regard this process as a challenge [32]. The challenge produces the motive force, thus arouses the study interest, the participation enthusiasm. The atmosphere of the course will no longer be dull, and the thinking will become more and more active. However, it is difficult to achieve the ideal classroom effect with the unified teaching methods and boring textbooks. The retention rate of online education is significantly lower than that of

traditional education. This indicator is often used to measure the satisfaction of students to the educational institution. The higher the retention rate, the higher the satisfaction of students. Some studies have shown that the retention rate of online education is 10%–20% lower than that of traditional education. Some studies have found that the retention rate of online education is 8% lower than that of traditional education. Lack of contact with schools, technical difficulties and lack of personal motivation may be the reasons for the low retention rate of online education [33]. The low retention rate of online education has also aroused the continuous attention of leaders of higher education institutions. According to the data, 73.5% of the respondents believed that the low retention rate was an "important or very important" barrier to the development of online education.

**2.3.2. Evaluation Methods of Video Mode.** The teaching means of computer science should be different from other subjects. In order to improve the teaching effect fundamentally, modern teaching methods must be introduced. In fact, the current level of hardware has provided enough platform for software use. For example, the student computer (CPU Celeron 433, memory 160 MB, old isa10mbps network card) using topdomaln software can run smoothly. Moreover, most of the computers in school computer rooms have exceeded such configurations. The development direction of today's computer teaching mode should become the basic standard of computer room construction, and it is a beneficial and necessary supplement to classroom teaching. Therefore, computer teaching staff in various schools should strengthen the construction of teaching software and website, so as to better serve teaching and further improve teaching effect and teaching quality. We divided the experiment into several periods of teaching tasks, also known as multi semester teaching. Taking the teaching theory course of three consecutive periods as an example, the weight coefficients representing the contribution rate of  $I$  consecutive teaching periods are used respectively according to the timeliness:  $\xi_1 = 1/6$ ,  $\xi_2 = 2/6$ ,  $\xi_3 = 3/6$ , order

$$q_{ij} = b_{ij} \times \xi_i. \quad (1)$$

So, we get the following.

Add the columns of the above matrix to obtain

$$f_{3i}^{(1)} = \sum_{j=1}^3 q_{ij} \quad (j = 1, 2, A, n). \quad (2)$$

So, there are

$$F_3^{(1)} = (f_{31}^{(1)}, f_{32}^{(1)}, f_{33}^{(1)}, f_{3n}^{(1)}). \quad (3)$$

In the above formula, the more the number of elements, the better the teaching effect of the experimental object in the continuous learning period; otherwise, it is relatively poor. In addition, the degree of reaching the goal is analyzed to reflect the degree of reaching the teaching goal:

$$T = \frac{\sum (kj \cdot Fj)}{K} = \frac{\sum (kj \cdot Fj)}{\sum kj}, \quad (4)$$



FIGURE 2: Common image teaching equipment.

TABLE 1: People’s evaluation table of common video teaching modes.

	Explain-demo-test	Demonstration-example-induction	Preview-discussion-explanation
Teacher	6	8	9
Student	8	7	6
Parent	6	8	6

where  $t$  is the comprehensive achievement degree,  $K$  is the total target coefficient,  $FJ$  is the score rate of  $J$  target level, and is the target coefficient of  $J$  target level. Table 2 shows the evaluation methods of common video teaching modes.

2.3.3. *Results of Video Teaching.* Therefore, examination, test, and homework are important methods to obtain teaching information. From the results of examination, test and homework, we can not only reflect the problems existing in the teaching and acceptance of knowledge, but also reflect the problems in the teaching method and personal learning method. If the video teaching can pay attention to the analysis of the problems and their causes, summarize and comment in time, and point out the problems existing in the learning methods. In particular, it is necessary to grasp the individual’s concern for the test results after the test, and to make a summary in time for the psychological state of deep memory of the problems in the test, The analysis and guidance of its learning method will have more obvious effect.

### 3. Experimental Procedures and Decentralization

#### 3.1. Subjects and Procedures

3.1.1. *Subjects.* Through the experiment of the control group of two classes whose average test scores are very close to each other, the two classes are class A and class B, and the class size is 30. Through the test to prove the two classes of students in scores, insight, and enthusiasm for learning and other aspects of the difference. Which of the two teaching modes is more suitable for the contemporary young people and more in line with the current social development.

3.1.2. *Experimental Steps.* After the experiment began, the teaching method of one class was changed to video teaching, while the other class had no change. Within the period of four months, the differences of students’ scores, enthusiasm for learning and insight of the two classes were observed by random sampling. In addition, due to the differences between individual students, there will be some errors in the experimental results. Therefore, in order to investigate the stability index of individual students and the whole, the algorithm of individual stability is as follows:

$$DS_i = \frac{\text{sum of standar scores of S on the right side of corresponding disability}}{\text{standardized total scores of student}} \quad (5)$$

The global stability algorithm is as follows:

$$D = \frac{\text{sum of area specifications of S line}}{\text{Number of students} \times \text{number of topics}} \quad (6)$$

The above is the discrimination coefficient,  $D$  is the amount of difference,  $s$  line is the distribution curve of students’ scores, is the overall score of students.

At the same time, through the  $f$ - $s$ - $o$  matrix, on the basis of the initial Boolean table, the ranking sequence is adjusted according to the size of the normalized total score. The standardized total score of students should be arranged from

more to at least from top to bottom. Compared with the old serial number, the column is classified according to the standardized total score of each question, at least from left to right, completed with a new number (new serial number) and corresponding old serial number, and the whole row and column will be adjusted. The sum of standardization points should be filled in the matrix. The  $s$  line is the distribution curve of students’ scores. It is defined from top to bottom according to the level. Each layer is moved to the left by a column. Its width (also known as width  $s$ ) indicates the degree of difference in students’ problem-solving ability. The

TABLE 2: The evaluation methods of common video teaching modes.

	Describe	Weights (%)
Teacher	Test the classroom atmosphere and teaching results	25
Student	Test classroom interaction and learning outcomes	30
Parent	Score the teaching environment, teaching equipment, and teaching results	30
Academic affairs office	Grading teachers' teaching methods, progress, and achievements	15

change in the direction of the  $s$  line on the right indicates that the overall performance level of pupil is higher, and the change of  $s$  line to the left indicates that the overall performance level of pupils is low. The distribution of the pupils is usually normal. The resolution of S-line is inversely proportional to the overall stability. The higher the price, the more unstable the assessment and distorted distribution of students' source line. S-line and O-line were slightly separated, and some of them were in symptom state, indicating that the test was generally stable. The concept of difference ( $d >$  evaluation) is the overall stability index of students. When  $D$  is less than 0, 2, it indicates that the students are generally stable. If  $d > 0, 2$ , we must analyze and find out the reasons.

**3.2. Evaluation of Change in Average Test Scores.** In addition, the average change (or typical deviation) of test scores in different periods reflects the difference of teaching results to a certain extent. In this paper, the proportional dispersion variation method is used to explain. The large difference indicates that the difference of teaching effect between witnesses is more significant, while the smaller difference indicates that the difference of teaching results is not obvious between the two periods. Continue to take the theoretical and practical behaviors of two groups of nurses in different periods as examples, and record their changes (or typical deviations) as an effective method to change each test level

$$\begin{aligned}\mu_1 &= \frac{D_1}{D1 + D2 + D3}, \\ \mu_2 &= \frac{D1}{D1 + D2 + D3}, \\ \mu_3 &= \frac{D1}{D1 + D2 + D3}.\end{aligned}\quad (7)$$

The calculation formula (taking standard deviation as an example) is as follows:

$$D1 = \sqrt{\frac{\sum_{i=1}^n (bn - \bar{b}1)^2}{n}}.\quad (8)$$

There  $\bar{b}1 = \sqrt{\sum_{i=1}^n (bn - \bar{b}1)/n}$  is the average change of order

$$Yij = bij \times \mu_i.\quad (9)$$

Then we can get the following results:

$$f_{3j}^{(2)} = \sum_{i=1}^3 r y j \quad (j = 1, 2, \wedge, \mu).\quad (10)$$

So,

$$F_3^{(2)} = (f_{31}^{(2)}, f_{32}^{(2)}, \wedge, f_{3\mu}^{(2)}).\quad (11)$$

In the above formula, the larger the value of elements, the better the teaching effect of the course in the  $j$  period of continuous teaching; on the contrary, it is relatively poor.

## 4. Teaching Experiment and Report

**4.1. Teaching Differences.** In the above two experimental classes, video and traditional joint teaching method and traditional teaching method were used to teach, and the teaching effect was compared. In the traditional teaching class, the instructor first explains in the class for 20 minutes, and then the students actually operate to complete the animation effect. In the traditional video joint teaching class, students learn independently for 10 minutes through the video teaching materials, and then the lecturer explains the problems for 10 minutes. Within the 4-month period, the test is conducted every month, and then the average score and overall effect of the two classes are tested through the test. The teaching content of the two classes is the same, the content is text animation with mask effect, the number of students is the same, and the final test results are attached. The results of the two classes are shown in Table 3:

The data in Table 3 fully shows that, in the four time periods, the effect of students learning in the traditional mode has not changed very much, while the students who study through the video teaching mode have greatly improved both their scores and their understanding of knowledge.

In order to more intuitively see the gap between the two classes in this period, understand the differences between the two teaching modes, as shown in Figure 3:

It can be seen from Figure 3 above that when using the traditional teaching method, students' comprehension ability and test level do not change much in the test in these months, and the four periods basically remain the same. However, if the traditional video teaching method is used for teaching, the students' test results will change differently with the increase of time, and the final effect of students' achievements will be greater. Come, the better. At the same time, we made an evaluation of the teaching mode carried out by the students in the two control classes. The evaluation results are shown in Table 4:

TABLE 3: Comparison of the effects of the two methods in the same time period.

	The first stage	The second stage	The third stage	The fourth stage
Number of students in the experimental class	10	5	5	10
Number of people in the control class	3	3	4	20

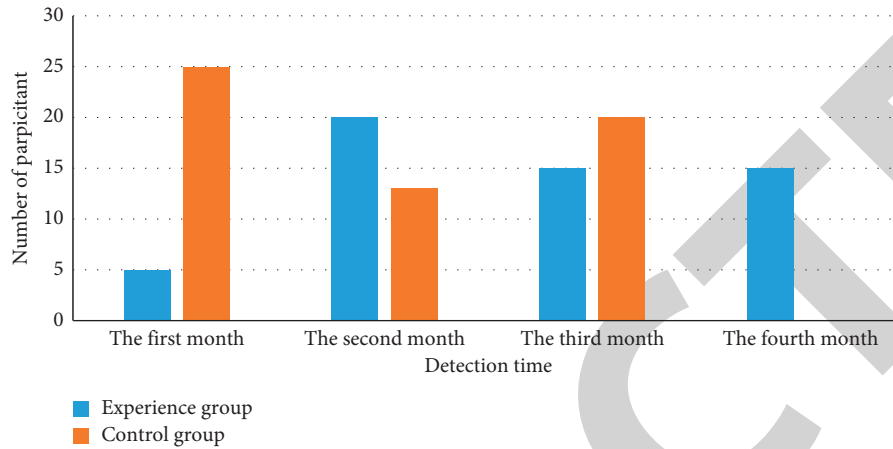


FIGURE 3: Relevant data of teaching methods.

Through the analysis of Table 4, we know that the students in the traditional teaching plus video teaching class are more satisfied with their teaching activities.

In the two classes of teaching experiments, teaching methods, learning methods and learning time have a great impact on the actual results. Teaching time and teachers' preparation time are also the decisive factors. Autonomous learning through video teaching materials and traditional learning methods play a great role in promoting students' comprehension and improving students' performance. The success rate of students will have a great difference, in the combination of the two teaching methods, more conducive to the efficiency of learning, the success rate will be higher. The difference between teaching effect and time required is shown in Table 5:

As can be seen from Table 5 above, only through the combination of the two teaching methods in these four time periods can students' learning efficiency be improved and the success rate of the test will be higher. Through video teaching material learning and traditional learning methods, it also has a great role in promoting students' comprehension.

Video teaching class students, can set the time to complete the task well, and not completed, also said that there is enough time, confidence to complete. This shows that people who study through video teaching show an upward trend in academic performance and comprehension, as shown in Figure 4:

It can be seen from Figure 4 that in the four time periods, the experimental class is the class with the traditional teaching mode, and the control class is the class with the combination of traditional video teaching mode. In the comparison of the two, we can see an upward trend, and its role is rising. From the analysis and comparison of the relevant data obtained, only a few

people can finally complete the task in the video teaching class, and most of them are in the unfinished task stage. Moreover, given more time, many people also express that they are not confident to complete the task, Some even said they could not start at all. On the contrary, in the video teaching class, most of the students have completed the task within the specified time, and those who have not completed it also indicate that as long as they have enough time and confidence to complete the rest of the work, there is no one who cannot start. The above analysis results further show that: for most of the skill courses, video teaching mode is more effective than the traditional teaching mode.

*4.2. Benefits of Video Learning.* When students encounter learning difficulties and can not get help in time, many will choose to give up, in real life, this phenomenon is very common. Some students with a sense of inferiority, even if they encounter difficulties in their studies, do not want to turn to their classmates for help. In addition, in a class with a large number of students, due to the limitation of class time, teachers can not provide timely help to every student with learning difficulties, which will lead to students' low learning mood. Video teaching mode can reduce or even eliminate this phenomenon. In the process of video teaching, students can learn according to their own progress, when learning problems, they can also look back at the video teaching materials. Even if the students with poor grades usually learn by video, they will not be obscure, but learn slowly. Poor students can through their own efforts, coupled with video teaching, can be very good to complete the task, into the track of progress. In order to better show the effect of video teaching method, we analyze it, the results are shown in Figure 5.



TABLE 4: Student evaluation form.

	The first stage	The second stage	The third stage	The fourth stage
Traditional class	8	7	5	7
Experimental class	9	8	8	9

TABLE 5: Data of teaching effect.

Class	Number of effects completed	Number of people in the middle	The number of people with no clue	Final result
Experimental class	5	5	10	10
Control class	0	5	10	15

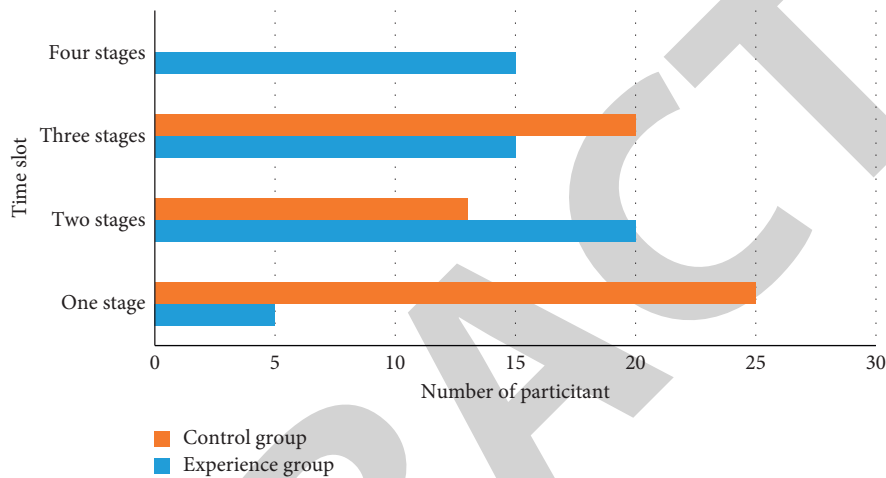


FIGURE 4: Data related to teaching effect and development trend.

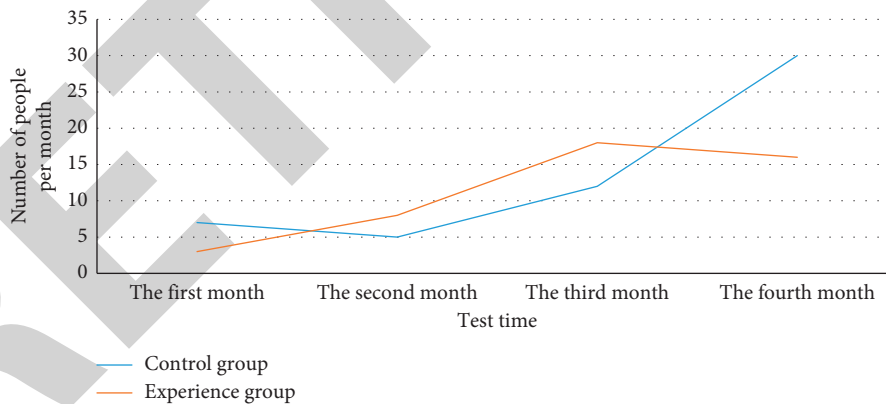


FIGURE 5: Effect of the two methods at the same time.

It can be seen from Figure 5 above that in the process of video teaching, students can learn according to their own schedule. When they encounter problems in learning, they can look back at the video teaching materials and imitate learning. Using video teaching, learning will not be very difficult, but relatively speaking, learning is slower. Table 6 is a statistical table of the average time spent by students in the two classes at each stage of the learning process:

Through the analysis of Table 6, it can be known that the students in traditional classes mainly rely on classroom

teaching to learn, so they need to spend a lot of practice time to help them understand and consolidate the knowledge they have learned. The students who have video teaching spend more time watching the video repeatedly.

In the two different teaching modes, students' enthusiasm for learning is very different, and the students' emotional changes between the two are shown in Figure 6:

As can be seen from Figure 6 above, as time goes on, it will be obvious that people who only learn through traditional methods will become more and more incompetent and their efficiency will gradually disappear. On the

TABLE 6: Average time distribution table.

	Preview before class (min)	Classroom learning (min)	Review after class (min)	Homework (min)
Experimental class	30	40	60	60
Control class	25	45	30	120

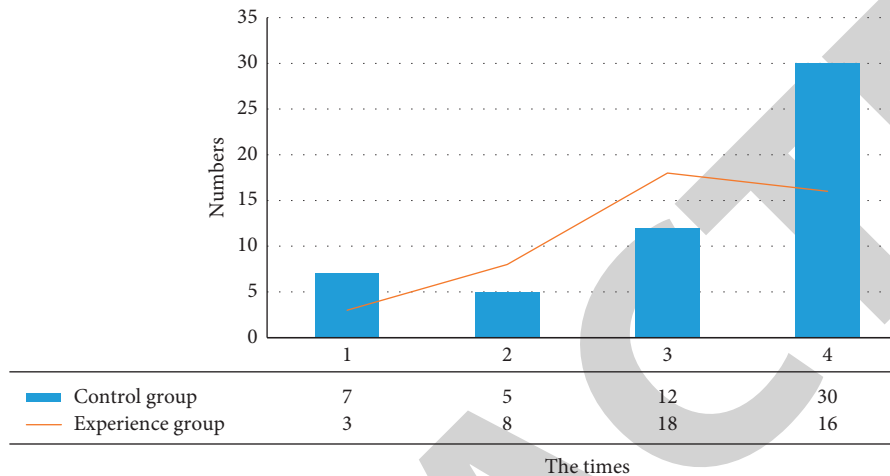


FIGURE 6: Shows the decentralization ratio of the two methods in the same time.

contrary, the other one is more efficient and insightful. Video teaching is to help to understand the teaching content by finding the video materials related to the teaching content, and through the dual stimulation of vision and hearing. It is a kind of teaching method to achieve the synchronous improvement of “listening, speaking, reading, writing, and translation.” Through repeated practice and exploration, as well as through the feedback analysis of the experiment, it not only improves the learning interest, but also strengthens the understanding of the text content. Through the audiovisual impact, it makes them experience the scene in the video with empathy and deepens their understanding of the content and make them realize that this kind of course is real and impressive. The development of society is accompanied by the continuous progress of science, and the video teaching method has gradually been involved in classroom teaching methods and various disciplines.

## 5. Conclusions

The evaluation of image and video teaching mode has a profound impact on the theory and practice of school education evaluation reform in China. It requires that the evaluation concept of promoting the development of all students should be established in the concept of student evaluation; in terms of the content of student evaluation, the diversity and comprehensiveness of student evaluation content should be paid attention to, that is, to focus on students’ cognitive intelligence, emotional intelligence (EI) and the development of problem-solving ability. In the process and method of evaluation, we should pay attention to the evaluation of students’ development

process. This theory also has guiding significance to the evaluation of teaching effect, that is, from the evaluation of the efficiency of knowledge transfer to the evaluation of the effect of students’ multiple ability training.

Through the teaching method of image and video, students can understand knowledge more quickly and clearly. Then the f-s-o algorithm is used to reduce the error caused by the instability between individuals. In addition, the f-s-o matrix is used to make the measurement results more realistic and effective. Finally, we evaluate the experimental teaching effect, we can see that in the image video teaching, our students can learn new knowledge faster, and their comprehension has been greatly improved. At the same time, the addition of data fusion technology also helps teachers and students to improve teaching methods, learning methods, to provide more targeted assistance, so that teachers’ teaching efficiency is continuously improved, and students’ learning outcomes are constantly increasing.

The ultimate significance of the teaching mode and method in this paper is to scientifically evaluate the teaching effect of video teaching mode, discover its advantages, and find common rules. To sum up and promote the success of the place, reflect on the shortcomings of our traditional teaching and seek to make up for the solution.

## Data Availability

No data were used to support this study.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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