Article

Symmetry for Multimedia-Aided Art Teaching Based on the Form of Animation Teaching Organization and Social Network

Zheng Xie [1,2]

[1] The Media Communication College, Shandong University of Arts, Jinan 250300, China; xiezheng1917@sju.ac.kr

[2] Department of Animation, Sejong University, Seoul 05006, Korea

check for updates

Abstract: Symmetries play a vital role in multimedia-aided art teaching activities. The relevant teaching systems designed with a social network, including the optimized teaching methods, are on the basis of symmetry principles. In order to study art teaching, from the perspective of the teaching organization form, combined with the survey method, multimedia-aided art classroom teaching was explained in detail. Based on the symmetrical thinking in art teaching, the multimedia-aided teaching mode of art classroom was discussed. The reasons for the misunderstanding of multimedia-aided art teaching were analyzed, and the core factors affecting the use of multimedia art teaching were found. In art teaching, more real pictures were shown aided by multimedia; students could experience the beauty of symmetrical things in real life and were guided to find the artistic characteristics of these kinds of graphics, analyze them, and summarize them. The results showed that this method enriched the art multimedia teaching theory and improved the efficiency of art teaching. The blind use of multimedia technology by teachers in art classroom teaching was avoided. Therefore, the method can develop individualized teaching, develop students' potential, and cultivate innovative consciousness and practical ability.

1. Introduction

With the rapid development of science and technology, education reform needs to be deepened. The introduction of multimedia technology into the classroom is an important part of the modernization of education [1]. As a means of teaching organization, multimedia teaching uses multimedia to process text, image, sound, animation, and other information to form visualized teachings of sound, image, picture, and text [2]. It not only stimulates students' interest in learning, but also helps students understand and master the content of art teaching. The insufficiency of the traditional teaching methods such as intuitiveness, three-dimensionality and dynamic sense has been made up. Multimedia-aided art teaching also breaks the boundaries between time and space [3]. An open teaching environment has been established. The teaching activities of individualized teaching forms have been realized [4].

In art teaching, the application of multimedia-aided teaching aims to let students more intuitively feel the various forms of art and aesthetic characteristics. In the field of art, Frey once pointed out that symmetry means stillness and restriction, and asymmetry means movement and relaxation. The former has order and law, while the latter is arbitrary and accidental; the former is constrained by formality and restriction, while the latter has vitality, change, and freedom. When students use multimedia audio and video to feel the symmetry aesthetics in reality and see the symmetry of a work, they not only see its symmetrical external form, but also see its artistry. Hence, in addition to appreciation, they will be infected by the works, which will produce aesthetic pleasure and stimulate their creative thinking.

At present, in art teaching activities, it is mainly the traditional teaching of teachers. It is difficult for students to spread their creative thinking because they cannot show the art works vividly and concretely. Thus, multimedia teaching is applied to art teaching, thus making students better understand the symmetrical aesthetic characteristics of art, and realizing the cultivation of "symmetrical beauty" consciousness in students' art thinking.

2. Literature Review

2.1. Multimedia-Aided Teaching

Symmetries are important in multimedia-aided art teaching. At present, the research on multimedia-aided teaching is developing day by day, and the research involves the advantages and disadvantages of multimedia-aided teaching [5]. However, there are still few researches on the level of teaching organization form. Therefore, there is less research on multimedia as a new organizational form to assist art teaching. In this study, the art classroom teaching of a middle school in Fujian was investigated. Special problems in multimedia organization art teaching were identified. The influence of the new teaching organization on art classroom teaching was discussed [6,7]. The advantages and disadvantages of multimedia-aided art teaching have been analyzed. Through organizing teaching, the auxiliary function of multimedia is brought into full play. Multimedia organization art classroom teaching has been applied. To a certain extent, traditional art teaching methods have been changed. This has certain significance for improving the quality of education and teaching efficiency. Student-centered teaching is realized, which is conducive to teaching students in accordance with their aptitude [8]. The student's independent activities are used to replace the unified activities of the class. This gives students more opportunities to adapt to individual learning activities.

Multimedia teaching means that in the teaching process, according to the teaching objectives and the characteristics of the teaching objects, through the teaching design, the modern teaching media is reasonably selected and applied [9,10]. Since the United States IBM Corporation developed the world's first computer-aided teaching system in 1958, the theoretical basis for guiding computer-aided education has gone through three stages: behaviorism, cognitivism, and constructivism [11]. The background of the formation of constructivist learning theory is the high development of the information society [12]. The development of educational technology and learning theory complement each other [13].

2.2. Symmetrical Thinking in Multimedia Art Teaching

In art teaching, aided by multimedia, more real pictures can be shown, and students can experience the beauty of symmetrical things in real life. They are also guided to find the artistic characteristics of these kinds of graphics, analyze them, and summarize them. Compared with the knowledge taught by teachers, students will have a more profound expression on what they find and have a more unique understanding of art. Use multimedia to show more various, complex, and diverse pictures, and let students record their symmetrical figures with mobile phones or cameras, and share them with each other to find different beauty.

The powerful image editing function and instant function of multimedia cannot be provided by the old teaching mode. By using multimedia to move life into the classroom, students can not only learn new knowledge, but also feel the natural art and human wisdom. In addition, the use of multimedia teaching can make the abstracted concrete, make dynamic demonstration, dynamic and static combination. Teachers can solve the problem that abstract artistic thinking is difficult to express by using multimedia teaching to fully mobilize the synergy of various senses of students. In addition to making students feel the beauty of symmetry in life, it is also expected that students can beautify their life with the knowledge they have learned, which requires students to design symmetrical figures. The use of multimedia can play its role well. Teachers can display high-level works of art in the form of video. According to video teaching, students can understand every step of the work, and freely play their imagination and creativity to create works with personal characteristics.

2.3. Social Network Media

In February 1997, the United States proposed in the "Education for the 21st Century" program that every 12-year-old student must be able to log on to the Internet. In 2000, all classrooms and libraries could connect to the Internet. In Japan, information technology courses are offered from elementary school to high school [14]. The hardware development of developed countries is fast, which lays a solid foundation for multimedia-aided teaching [15,16]. With the development of software engineering technology, education experts, psychologists and educators realize daily teaching experience and ideas through computers. Many teaching softwares have been developed. Through extensive dissemination and exchanges in various ways, the developed educational software industry and market in foreign countries have gradually formed [17].

China's multimedia-assisted teaching work started late. In the late 1980s, simple media-assisted teaching such as sound and picture synchronization slide projectors and projectors were used. In the early 1990s, multimedia computers became an embellishment in education and teaching by means of observation and teaching [18]. The reason why it is not widely available is that courseware development requires computer professional language. Most teachers do not have the ability to design courseware, and computer operations are not skilled [19]. With the increasing maturity and popularity of computer technology, teachers can use PPT to present electronic lectures and produce slides. The Internet can also provide a variety of information [20]. The interaction of knowledge in various disciplines and the rational use of educational resources have promoted the convergence of information technology and subject teaching.

2.4. Art Education

Students' interest in information technology courses has been improved. In addition, students should avoid being addicted to the Internet. The media supporting teaching becomes particularly important [21]. In terms of application value, people begin to attach importance to social networks. Social networking sites are platforms for communication and sharing. All social software should be provided for immediate and non-immediate communication. At the same time. It has storage and sharing capabilities. Due to the functional diversity, authenticity and interactivity of a social network, it has a large number of users and is favored by the majority of young people. The internet is a very suitable platform for students to study and communicate [22]. The concept of art classroom teaching is closely related to the art curriculum teaching theory. The content of the art course is used as an intermediary, and the multimedia role is implemented in the classroom teaching activities. It includes four organic components: teachers, students, curriculum, and resources and technology [23]. Art courses are carried out in accordance with certain teaching plans. The implementation of this plan cannot be separated from art classroom teaching in terms of teaching content, teaching materials, curriculum standards, subject setting, teaching activities, teaching processes, and other aspects [24]. It can also be said that art classroom teaching is the main way to implement art courses. The optimization of art classroom teaching is the theme of art education development.

3. Methodology

3.1. Symmetry Thinking in Teaching

In the fields of art and architecture, the beauty that people pursue has the meaning of symmetry. Thus, all kinds of architecture, especially the ancient architecture of many nationalities, have high symmetry. The concept of symmetry is becoming more perfect. The earliest definition of symmetry is based on the frequent application of bilateral symmetry, and then there are various kinds of widely discussed symmetries. Generally, symmetry has two meanings: one is that symmetry means very symmetrical and harmonious, that is, indistinguishable. Symmetry, on the other hand, represents the harmony between several parts of the whole. In the process of teaching, teachers should consciously dig out the symmetrical beauty hidden in mathematical properties and theorems, guide students to

appreciate them, promote students' understanding and memory of properties and theorems, and stimulate students' interest in learning.

As man exists in the natural world and lives and produces replying on the natural world, it is inevitable to have a certain closeness to nature. Meanwhile, it means that man can't get rid of the natural attributes, and will be affected by them in all aspects. It is the existence of such a "natural attribute" of man that can unconsciously consider or choose the objects or shapes close to the natural form first. Then, it can be applied to human art and life. It is under the influence of this natural attribute that art creation has a strange natural sensitivity to symmetrical forms. In the production and artistic creation, symmetrical thinking will be projected into the present things through the role of self-subconscious, forming the "symmetry" phenomenon that can be seen everywhere in daily necessities and artistic works. Symmetrical beauty can be said to be a kind of formal beauty found when human beings have the consciousness and concept of beauty. The concept of symmetry has existed in people's unconsciousness. It is a subconscious memory of things that frequently appear around people in their long life and study. It is not only an "imaginary simulation" of nature, but also an "original understanding" of self-body. As an external form of design language, symmetry is first connected with human vision. When students watch the works of art containing symmetry factors, they will feel the aesthetic habits they are in line with. They will also feel happy and excited psychologically and spread their own artistic creation thinking.

3.2. Application of Multimedia Technology in Teaching

First, multimedia-assisted instruction needs to select audio and video that are in line with the course content, helpful for breakthrough of difficulties and key understanding, and use multimedia technology for effect processing. It can be edited according to the current popular video style to show the dynamic and gorgeous presentation effect of block rhythm, and it can be played alone or combined into the PPT. The multimedia audio and video technology that students are generally interested in are directly displayed. In the teaching process, it is regarded as the extended content of teaching, and students are encouraged to display the art of teaching results. The smart classroom utilizes mobile terminals, iPad and other tools to record students' classroom performance, and helps emphasize classroom feedback, strengthen and consolidate the teaching content, and help students better master art skills.

Multimedia audio and video virtual classroom refers to the virtual teaching environment constructed by multimedia audio and video technology, which can be realized by using a network platform to create a virtual classroom. Teachers have the right to set permissions. Students enter the virtual teaching activities after obtaining the permission to listen, which is similar to the teaching method of the multimedia terminal. In the virtual classroom, teachers use the audio and video technology of the network platform to change the content that cannot be displayed on the blackboard in the traditional classroom teaching. By using a virtual classroom to carry out art teaching content, students can learn in the multimedia classroom, and teachers adopt a small class system or the same similar specialty to carry out professional art education, which benefits teachers to guide students' on-site teaching.

3.3. Characteristics of Art Education and Multimedia Teaching

Art education books and art interest books have a common feature. There are more illustrations than words in the book. Art is also called "plastic art" or "visual art". Through the picture, the author expresses the environment and mood at that time. Through the perception of the picture, combined with the experience, it is a feeling and a kind of association transmitted to the brain. The teaching of art knowledge is inseparable from the language, but the connotation of "art language" that only uses eyes to see and uses the mind to feel can only be spoken by art works. Sometimes, language does not fully express the mood and feelings of the time. In the current art classroom teaching, teachers often spend only 10 min to read the text. The remaining two-thirds of the time, the student completes the class

assignment. Many students take drawing as a task to accomplish. They only pursue speed, not quality. If the goal is only to complete the homework, the art class will abandon the image. Students experience visual thinking activities of plastic art works, which provides an opportunity to gain knowledge directly from art works. However, art education is not only the completion of the work. More importantly, visual sensibility is developed and aesthetic aptitude is cultivated. The classroom is actually centered around the teacher. All teaching designs are centered around teaching, and students are passively accepted most of the time. The initiative and enthusiasm of students are difficult to play, which is not conducive to the creativity and imagination of students in art learning.

Most of the teaching modes adopted by network teaching are real-time synchronous teaching modes based on video meeting and non-real-time asynchronous teaching modes based on Web. Real-time network teaching mainly uses a video conference system to transmit video and audio to build a distributed classroom. Teachers and students conduct "real classroom" teaching activities in a virtual space. The teacher's voice, video and other information in the teaching activities are transmitted to the student's terminal in real time. Students can receive teaching information and communicate with other students. At the same time, teachers can receive feedback from students in real time. This model is called a teacher-oriented learning model. In the web-based asynchronous teaching mode, the teacher deposits the teaching resources on the web server, and the students independently conduct course learning, questioning, homework, and exams at any time. Students communicate with teachers or other students through the computer network. The current teaching programs of this model are: video on demand, audio on demand, email, BBS, and newsgroups. Therefore, this teaching model is called a student-oriented learning model.

3.4. Survey Object of Multimedia Technology Assisted Art Teaching

The survey covered 2048 students in the art profession. In the form of questionnaires, the survey was conducted on the basic situation of teachers in the use of multimedia teaching, the level of production and use of teaching materials, the teaching effect and influencing factors, the status of teaching equipment, existing problems, and suggestions for improvement. The questionnaire contains a total of 22 multiple-choice questions for the respondents to choose or answer. A total of 2048 questionnaires were distributed and 1,867 valid responses were collected. More than 90% of respondents made a complete selection of multiple-choice questions (See Appendices A and B).

There are 72 professional teachers in art design in a vocational middle school in Fujian. In May 2018, a total of 72 questionnaires were distributed to first-line art design teachers. Sixty-nine valid rolls were recovered and statistics were provided for each answer sheet. At the same time, the investigation was conducted in conjunction with individual teacher interviews, small symposiums, and lectures. The survey content mainly involves three aspects: The first is the teacher's view on the use of multimedia teaching. The second is the comparison between multimedia teaching and traditional teaching effects. The third is the use of multimedia in daily teaching. After the preliminary qualitative analysis of the questionnaire, quantitative analysis is a further made on the questionnaire. First, the questionnaire is quantified, and then the quantitative data is used for analysis. SPSS software is used for frequency statistics and descriptive analysis of statistical data.

4. Results and discussion

4.1. Application of Multimedia Technology in Art Teaching

At present, in a vocational middle school in Fujian, all classrooms are equipped with multimedia equipment. Teachers in art and design are gradually using more multimedia-assisted instruction. Regarding the use of multimedia in daily teaching, the following questions were raised on the questionnaire to the frontline teachers. Through the teacher's answer, a specific analysis was made. Multimedia teaching in a vocational middle school in Fujian has become more popular. Seventy-two percent of teachers can often use multimedia teaching methods. About 18% of teachers rarely use

multimedia teaching. These teachers need training. Schools should also introduce policies to encourage them to adopt multimedia teaching methods in their teaching. The specific results are shown in Figure 1:
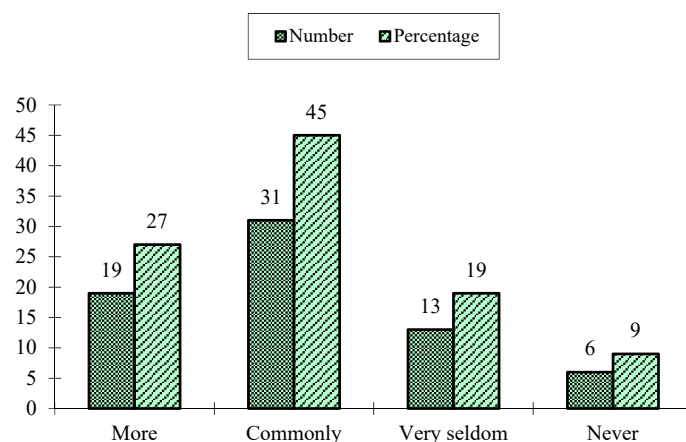

Figure 1. Statistics of multimedia equipment assisted teaching.

The work of a vocational secondary school teacher in Fujian using multimedia-assisted instruction was carried out earlier. About 60% of teachers have more than 2 years of multimedia teaching (including 2 years). However, some teachers also started using multimedia teaching late. Twenty-one percent of teachers have conducted multimedia teaching for less than 1 year. The specific results are shown in Figure 2.
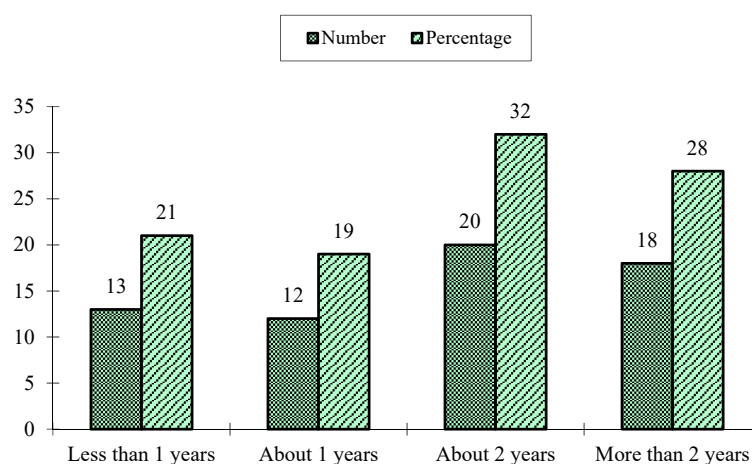

Figure 2. The use time of multimedia-aided instruction.

According to statistics, most teachers prefer to use multimedia teaching methods. Among them, 27% of teachers are very fond of it, which fully shows that teachers are very welcome to use multimedia teaching methods. The specific results are shown in Figure 3:

Currently, most of the courses are conducted in multimedia. Sixty-two percent of teachers use multimedia organization, and this situation is basically normal. In teaching, the use of multimedia should be considered according to a number of factors such as teaching objectives, teaching content, and student conditions. It should not be uniform. Multimedia-assisted instructional technology should be used rationally. The specific results are shown in Figure 4:
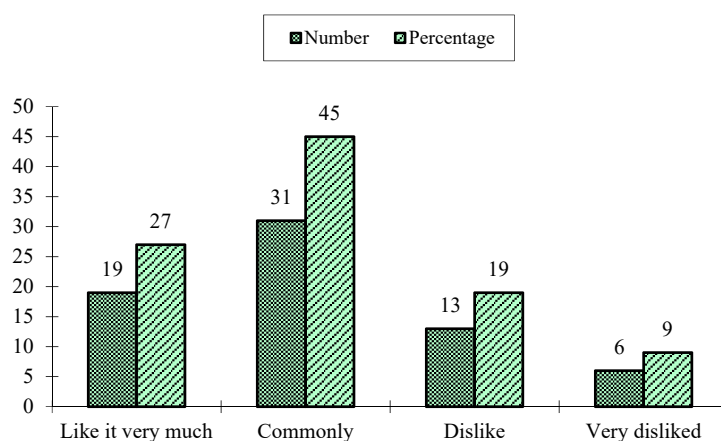
Figure 3. The popularity of multimedia-assisted instruction.
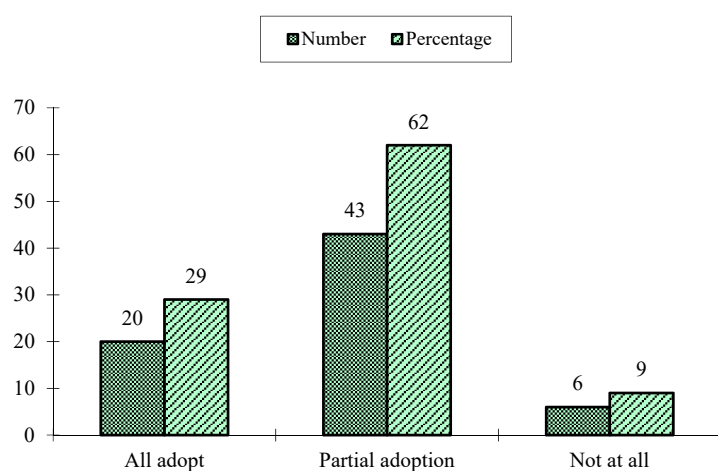
Figure 4. Current use of multimedia courses.

Judging from the multimedia use of front-line teachers in daily teaching, most teachers use multimedia devices when organizing teaching. On the one hand, the school conforms to the development of the times and advocates the use of multimedia-assisted teaching by teachers; on the other hand, the use of multimedia has replaced some of the teachers' explanations to some extent. The focus of teaching is emphasized. Teaching difficulties are solved. The tedious explanation time is simplified. In this way, teachers have more time to easily guide students to learn. Multimedia-assisted art teaching has been welcomed by most teachers. Therefore, the status quo of teachers using multimedia teaching is explored.

4.2. The Status Quo of Teachers Using Multimedia Teaching

With the development of society and the world economy, information technology has become a major trend of development. People's lifestyles are also rapidly changing due to the development of network technology and multimedia technology. Multimedia technology has also had a profound impact on the education community, which has transformed the organizational form of classroom teaching. Teaching and learning methods have been changed. A new form of modern information technology and discipline integration has been produced. From the current situation of multimedia-assisted teaching, multimedia teaching has its obvious advantages. This is conducive to improving the teaching level, the overall quality of students, and the quality of teaching. In order to more clearly understand the current state of multimedia-assisted art teaching, multimedia can reasonably assist teaching. The actual

investigation was carried out. Questionnaire questions were designed. According to their answers, each question was counted and analyzed.

Most students believe that it is important to learn art design and advanced external device configurations (such as software, hardware, facilities, etc.). Eleven percent of students believe that they must learn art design and match the advanced external equipment without a husband. The specific results are shown in Table 1.

Table 1. The importance of the configuration of advanced external equipment.

Option	Number	Percentage
Agree	1020	55%
Be noncommittal	640	34%
Disagree	207	11%

The necessity of multimedia teaching in professional courses is being studied. Forty-eight percent of students believe that it is necessary to use multimedia teaching in professional courses. Twenty-two percent of students believe that some courses need to use multimedia teaching, which shows that most students are welcome to use the current multimedia. However, 30% of students believe that there is no need to apply multimedia teaching. The teaching effect is not much different. The specific results are shown in Figure 5.
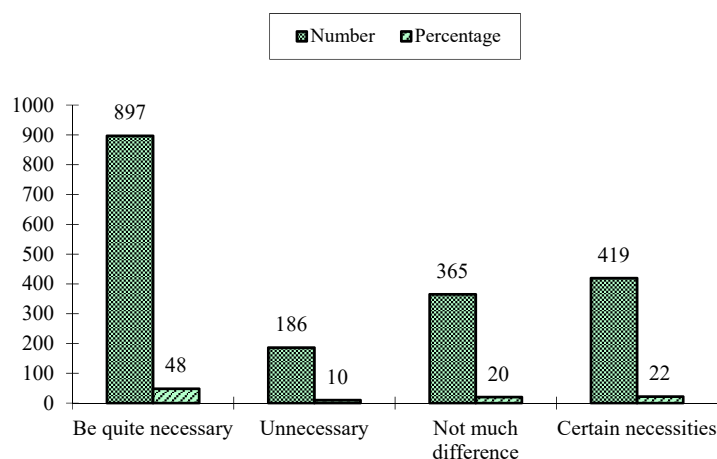
Figure 5. The necessity of multimedia teaching in the professional course of students.

The popularity of using multimedia display images and live demonstrations was investigated while teachers were teaching. The survey results show that the majority of students (69%) believe that the form of multimedia presentation is more acceptable. Thirty-one percent of students believe that the form of teacher demonstration is more acceptable. This shows that the traditional teaching organization also has its great advantages. In the teaching process, the traditional teaching organization form cannot be abandoned. The rational combination of the two should be achieved. The specific results are shown in Table 2.

Table 2. Questionnaire results.

Option	Number	Percentage
Using multimedia to show pictures	1286	69%
Teacher demonstration	581	31%

According to the statistics of the above table, 69% of the students can practice at the teacher's request. Thirty-one percent of the students did not practice as required by the teacher and did something that would affect learning. This shows that teachers should strengthen their sense of responsibility and strengthen classroom management to ensure that teaching is carried out in an orderly manner. Students should not be addicted to the Internet, which affects the development of mind and body. The specific results are shown in Figure 6.
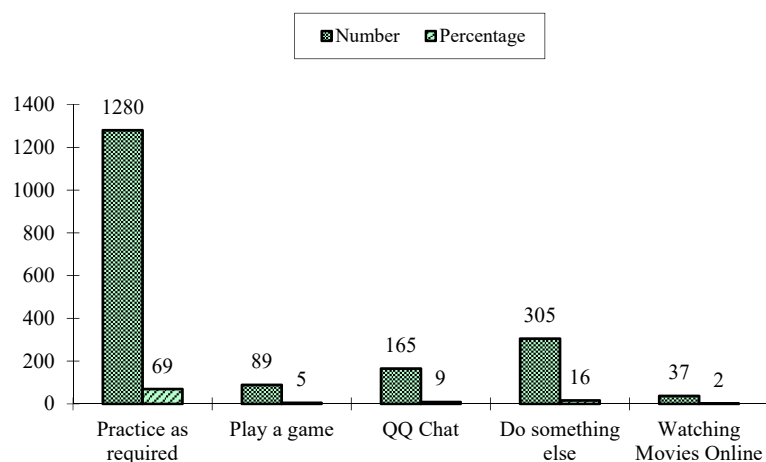

Figure 6. Student behaviors during computer use.

According to the survey results, most of the students can listen when teachers use multimedia to organize teaching. This shows that the use of multimedia teaching can enhance students' interest in learning. However, some students do not take classes seriously, and the reasons for this are also to be studied. The specific results are shown in Figure 7.
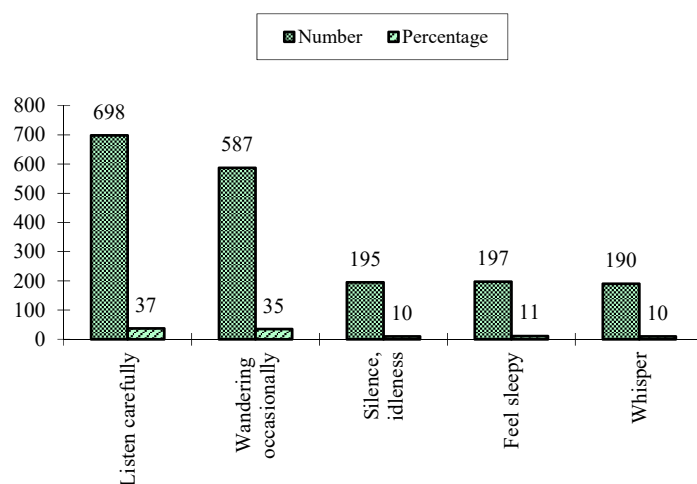

Figure 7. Student performance in the multimedia classroom.

4.3. Students' Views on the Use of Multimedia Teaching

With the development of multimedia-assisted art classroom teaching, students have some opinions on this form of teaching:

When asked about the question "What do you think is decisive in classroom teaching?" 54% of students think that the decisive role in classroom teaching is the teacher's teaching skills. Thirty-four percent of students believe that teachers' modern teaching methods are very important. Twenty-two percent of students believe that the attraction of the course itself is the most important. More than

half of the students chose the "teacher's teaching skills." This shows that in the process of organizing classroom teaching, the leading role of teachers is irreplaceable.

When asked about the use of multimedia to organize classroom teaching, students' learning attitudes have not changed. More than 70% of students think that their learning attitude has changed. This shows that multimedia organization teaching can promote students' learning. Of course, 19% of students choose to use multimedia to organize classroom teaching, and their learning attitude has not changed much. Nine percent of students think that their learning attitude has not changed. This means that any form of teaching is not omnipotent. It must be reasonably combined with other forms of teaching in order to be accepted by students. When investigating the question of how students believe that multimedia teaching is effective in understanding and mastering knowledge, 69% of students believe that multimedia teaching is effective in promoting knowledge understanding and mastery. Multimedia makes up for the insufficiency of traditional teaching methods such as intuitiveness, stereoscopic effect and dynamics. Some incomprehensible knowledge is presented in the form of pictures, which is convenient for understanding and mastering knowledge.

Sixty-nine percent of students believe that multimedia teaching is effective in promoting an active classroom atmosphere and improving interest in learning. However, 22% of students think that it is not very good, and 11% of students think that it is purely watching. This shows that the structure should be reasonable when using multimedia to organize teaching. Teachers should not only focus on form but on teaching content. Regarding the effect of multimedia teaching on promoting communication between teachers and students, 35% of students believe that multimedia teaching has a better effect in promoting communication between teachers and students. Thirty-two percent of students think that the effect is average; 22% of students think it is not very good; and 11% of students believe that the teaching effect is bad. This shows that multimedia teaching has affected the communication between teachers and students to a certain extent. The original "human–human communication" became "human–machine communication". This is not conducive to the transmission and reception of knowledge and the improvement of students' knowledge level. Furthermore, the quality of teaching is affected. The specific results are shown in Figure 8.
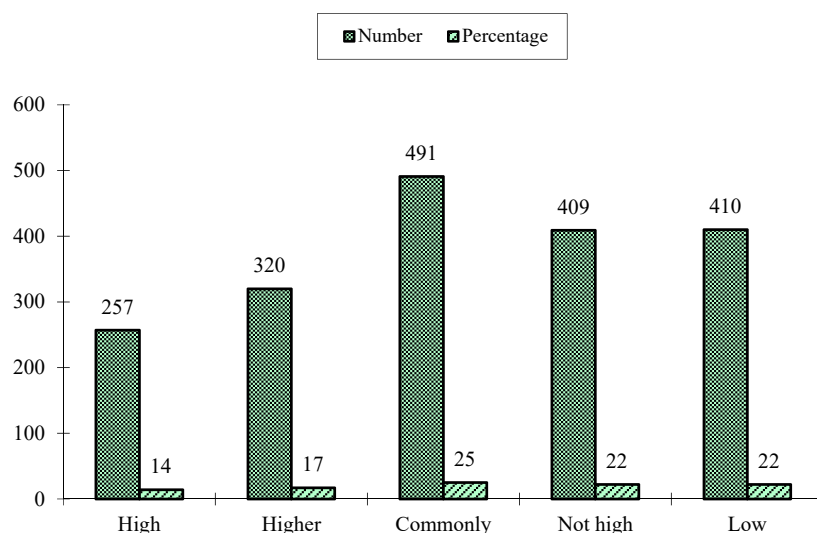
Figure 8. Design and production level of a multimedia courseware used by teachers.

Students also have their own opinions on the level of design and production of multimedia courseware used by teachers. Thirty-one percent of the students believe that the teacher's courseware design and production level is relatively high. However, nearly half of the students believe that the teacher's courseware design and production level is not high, or even poor. The design and production quality of teachers' multimedia courseware is an important factor affecting the effectiveness

of classroom teaching. Therefore, when designing and producing multimedia courseware, teachers cannot simply use multimedia teaching as a means to reduce labor intensity. Courseware must be centered around teaching content. Content must be novel, refined, and focused. The blind use of multimedia technology should be avoided.

The survey results show that multimedia-assisted art teaching can stimulate students' interest in learning and activate the classroom atmosphere. To a certain extent, the teaching effect is improved. However, there are also some problems. In the application of multimedia technology, the overall design of teaching content is ignored. The proficiency of teachers in using multimedia courseware needs to be improved. Some students believe that multimedia teaching cannot be overemphasized. They should be used in appropriate teaching activities. Otherwise, multimedia-aided instruction is best not to be used. If multimedia teaching is used frequently, teachers become lazy and students become dull. When playing the teaching courseware, the curtains should be pulled up, the classroom is black and dark. After the last few lessons, many students were sleepy and the teaching effect was very poor. In addition, there are problems with multimedia teaching equipment. These issues have yet to be identified.

4.4. Effective Strategies for Organizing Art Teaching in Multimedia

To do a good job in multimedia teaching, the advantages of traditional teaching should be fully utilized. Courseware is designed and produced well, and the teaching content is carefully organized, and the teaching materials are properly handled to achieve outstanding focus [25–27]. The actual requirements of teaching are followed. Multimedia technology should not be used blindly. Teachers should make full use of multimedia pictures, images, sounds, texts, and other technical means to visually and vividly display the teaching content. Students' sights, hearings and other organs are stimulated. The student's attention is concentrated and the interest in learning is stimulated. However, if blindly abusing the various signal, such as sound, light, electricity, etc., some invalid information is too much, and the courseware is too fancy, it will cause the audience to distract, dilute the theme of the teaching content, and affect the teaching objectives [28]. Teachers should try to combine the advantages of traditional teaching with multimedia teaching. For example, when referring to the focus of this lesson, teachers can use chalk to make appropriate books, which not only attracts students' attention, but also provides an appropriate time to record and digest what they have learned [29,30].

Some teachers in school do not adapt to the requirements of current art multimedia teaching, and the operating technology is not skilled. Teachers should be familiar with the device operating system when using multimedia teaching. Equipment failure can affect classroom teaching. Individual teachers also refuse to learn this new technology and do not pursue personal development. A good multimedia class teacher should have four conditions: rich teaching experience, dedicated dedication, skilled multimedia production technology, and operation of multimedia teaching equipment. Schools must use new ideas, new theories, and new technologies to arm front-line teachers and strengthen training for teachers. It is necessary to help teachers establish a correct teaching concept, understand the characteristics of multimedia teaching, and improve the information technology quality of teachers. The art discipline pays attention to the cultivation of aesthetic ability, practical ability and creative ability [31]. When teachers use multimedia to organize teaching, they should talk and practice, and give students time and space to think. Courseware should not pile up excessive information. Otherwise, class will be like watching a movie and students do not have enough time to think. According to the students' knowledge level and ability to accept, the content of the class is arranged in a planned way to avoid the phenomenon of machine filling. Students' enthusiasm for learning is motivated, and they can understand knowledge while receiving knowledge [32–34]. Teachers should not only cultivate students' good learning ability, but also pay attention to students' self-reflection adjustment ability, especially when using modern teaching methods such as multimedia networks. On the one hand, it guides students to the ability to process information; on the other hand, it also trains students to learn and exercise their self-monitoring ability. The network provides a wide range of learning resources,

but it is an open world filled with negative and unhealthy information. For example, in a classroom instruction, when a teacher asks a student to search for a picture of a "Venus" portrait, some unhealthy pages may be presented to the student [35]. They will browse the contents out of curiosity, which will have a negative impact on students with poor judgment. It is not conducive to their formation of correct aesthetics and noble moral sentiments. Therefore, teachers should adhere to positive education and strengthen classroom management in classroom teaching.

In recent years, the number of school multimedia classrooms and multimedia teaching equipment has increased rapidly. Existing teaching resources are used to create better teaching benefits. The management of multimedia classrooms has been strengthened. The multimedia teaching facilities are regularly maintained and updated to ensure their normal operation. This is a problem that deserves serious research and resolution by relevant departments [36–38]. First of all, the correct teaching philosophy has been established. Multimedia is used as a teaching aid. Overall management has been strengthened and new situations have been continuously studied. The new issue has been resolved. Multimedia teaching management has been standardized and institutionalized to promote the healthy development of multimedia teaching. Capital investment has been increased to comprehensively improve the equipment level of multimedia teaching. The soundproofing of the multimedia classroom has been solved. There is no mutual interference between multimedia classrooms. Outstanding problems such as poor maintenance of multimedia devices has been resolved. Second, the construction of multimedia teaching hardware equipment has been promoted. Third, in order to ensure the smooth flow of the network and information system, the maintenance of the multimedia teaching system has been greatly strengthened. Finally, the construction of multimedia teaching resources has been strengthened and a resource sharing mechanism established. In order to provide rich resources and communication platforms, low-level repetitive development has been reduced, and the waste of teaching resources is avoided. Schools should strengthen the construction of multimedia teaching resources.

At present, a variety of teaching organizations coexist. Each teaching organization has its own advantages and disadvantages, and there is no omnipotent teaching organization. When choosing the teaching organization form, in accordance with the principle of teaching practice, teachers should try to use various teaching organization forms in the teaching practice in a planned and orderly manner when organizing teaching [39,40]. The advantages and disadvantages of several common forms of teaching organization have been clarified. The advantages and disadvantages of various forms of teaching organization have been comprehensively utilized and optimized. In this way, the advantages of each form of teaching organization are played, and its own disadvantages are overcome to achieve true optimization of teaching effects. The use of multimedia-assisted art teaching also has advantages and disadvantages. Reasonable use will improve the classroom teaching effect and teaching quality. Therefore, the characteristics of multimedia technology have been analyzed [41–43]. Starting from the teaching practice, media technology and art disciplines are closely combined to enhance the appeal and persuasiveness of art education, and to stimulate students' interest in learning and motivation. Personalized teaching has been developed. The potential of the students is tapped. Innovative awareness and practical ability are cultivated to achieve good teaching results.

5. Conclusions

In teaching, teachers should consciously dig out the symmetrical beauty hidden in mathematical properties and theorems, guide students to appreciate them, promote students' understanding and memory of properties and theorems, and stimulate students' interest in learning. When students create art, symmetrical thinking will be projected into the things on the scene through the role of the self-subconscious, forming the "symmetry" phenomenon that can be seen everywhere in daily necessities and art works. From the perspective of teaching organization, the situation of multimedia-assisted art classroom teaching has been observed. Teachers and students of a vocational middle school in Fujian were investigated and interviewed. The problems in multimedia-aided art classroom teaching have been discussed. The survey results show that in the comparison between

traditional teaching methods and multimedia teaching methods, more than half of the students think that the multimedia teaching method is more acceptable. More than half of the teachers and students believe that multimedia-assisted art teaching can help stimulate students' interest in learning, activate the classroom atmosphere, and motivate students to learn. Teaching efficiency is improved and the teaching effect is good. For students, multimedia-aided art teaching can stimulate their interest in learning, activate the classroom atmosphere, and improve the teaching effect to a certain extent. However, there are some problems in multimedia-aided teaching. Some students think that in the application of multimedia technology, teachers ignore the overall design of teaching content, and the ability of making multimedia courseware needs to be improved, so that it is more suitable for teaching activities. In this regard, the reason should be found. This will help to use multimedia organization teaching more rationally in future teaching. In the next step, the important role of multimedia teaching methods in other subject areas will be studied.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Questionnaire on Multimedia Organizational Teaching of Front-line Teachers

Distinguished teachers: This is a questionnaire about Multimedia-aided Teaching in our school art class. The purpose is to understand the current situation of our school art class teaching. The survey results are only for the research of art teaching. This survey is aimed at professional teachers of art design. This questionnaire is anonymous, so you needn't to worry about filling in the answers. According to the actual teaching situation in peacetime, please mark "√" directly under the option of the question.

Please fill it out carefully and return it next week. Thank you for your support in our research work!

1. Do you often use multimedia equipment to assist teaching?

   A. a lot
   B. general
   C. seldom
   D. never

2. How long have you been using multimedia-assisted instruction?

   A. less than one year
   B. about one year
   C. about two years
   D. more than two years

3. Do you like to use multimedia-assisted instruction in class?

   A. very much
   B. just so so
   C. dislike
   D. hate

4. Does the course you are teaching use multimedia?

   A. all of them
   B. some of them
   C. none of them

5. Compared with traditional teaching methods, do you think multimedia teaching can enhance students' interest in classroom learning?

    A.   yes
    B.   no
    C.   a little
    D.   decrease the students' interest instead

6. Compared with traditional teaching methods, do you think that using multimedia to organize teaching can significantly improve the teaching effect?

    A.   obvious
    B.   general
    C.   not obvious
    D.   the effect is worse.

7. What do you think are the main problems of multimedia equipment in our university?

    A.   poor sound insulation between classrooms
    B.   low grade
    C.   cumbersome operation
    D.   poor management

8. What are the sources of multimedia courseware you use?

    A.   homemade
    B.   purchasing
    C.   downloading
    D.   downloading and remanufacturing online

9. What do you think are the shortcomings of multimedia teaching?

    A.   overdependence on multimedia to dilute teachers' leading role
    B.   The application ability of multimedia technology is not strong enough
    C.   not conducive to the development of students' thinking ability
    D.   Some teachers have deviations in their teaching concepts (abuse or non-use)
    E.   Too much information makes students cannot keep up with the speed of lecture, and less students attend the lecture. They copy the courseware after class.

Appendix B. Questionnaire on Multimedia-aided Instruction in Art Classroom

Dear students: This is a questionnaire about Multimedia-aided Instruction in our school's art classroom. The purpose is to understand the current situation of our school's art classroom teaching. The survey results are only for the research of art teaching. The subjects of this survey are 2048 students majoring in art. This questionnaire is anonymous, so you needn't to worry about filling in the answers. According to the actual teaching situation in peacetime, please mark "√" directly under the option of the question.

Please fill it out carefully and return it next week. Thank you for your support in our research work!

1. To learn arts well, advanced external equipment configuration is very important. What do you think of the idea?

    A.   disagree
    B.   indifferent
    C.   agree

2. Is it necessary to use multimedia in the courses offered by your major?

    A.   It's necessary
    B.   It's not necessary
    C.   There's not much difference
    D.   In some courses, it is necessary.

3. Which form is more acceptable when using multimedia to show pictures and teachers to demonstrate on the spot?

    A.   Multimedia is used to display pictures
    B.   by teachers' demonstration
    C.   Both of them are easy to accept.

4. Using multimedia to organize classroom teaching makes your learning attitude . . . .?

    A.   great change
    B.   a little change
    C.   little change
    D.   no change

5. Compared with traditional teaching methods, what do you think of using multimedia to teach art?

    A.   very interesting
    B.   interesting
    C.   just so so
    D.   not interesting

6. Compared with traditional teaching methods, what do you think of the overall effect of using multimedia teaching?

    A.   quite good
    B.   good
    C.   just so so
    D.   not good
    E.   bad

7. During the practice on the computer, what are you doing there?

    A.   practice as required by teachers
    B.   play games
    C.   chat on QQ
    D.   watch online movies

8. When teachers use multimedia in class, what are you doing there?

    A.   listen carefully
    B.   listen carefully, but occasionally, you are distracted
    C.   stunned, idle
    D.   sleepy
    E.   talk to your deskmate in a low voice.

9. What do you think of the effect of multimedia teaching in promoting the understanding and mastery of knowledge?

    A.   quite good
    B.   good
    C.   just so so
    D.   Some courses are good, but some courses are not good.
    E.   poor.

10. What do you think of the effect of multimedia teaching in enlivening classroom atmosphere and improving learning interest?

    A.   quite good
    B.   good
    C.   just so so
    D.   not good
    E.   just for fun

11. What do you think of the effect of multimedia teaching in promoting communication between teachers and students?

    A.   quite good
    B.   good
    C.   just so so
    D.   not good
    E.   poor.

12. What do you think of the design and production level of multimedia courseware used by teachers?

    A.   quite high
    B.   high
    C.   just so so
    D.   low
    E.   poor

13. From the perspective of teachers' teaching, the main reasons affecting the effectiveness of multimedia teaching are as follows:

    A.   Lessons preparation is not serious
    B.   Sitting position is not proficient in teaching
    C.   Operating skills are not proficient
    D.   Low level of courseware production
    E.   Teachers do not pay attention to students' reactions, only focus on demonstration courseware most of the time.

14. Considering from the perspective of students' learning, the main reasons affecting the effectiveness of multimedia teaching are as follows:

    A.   not accustomed to multimedia teaching

    B.   Audio and video influence attention

    C.   It is difficult to grasp teachers' ideas

    D.   Too much courseware makes it difficult keep up with the speed of lectures

    E.   Multimedia teaching will increase the inertia of teachers and lead to electronic "full house irrigation"

    F.   When using multimedia to teach, we are too busy taking notes to listen to the teacher's classroom analysis and interact with the teacher, so we can't give timely feedback.

15. Considering from the point of view of equipment, the main reasons affecting the effectiveness of multimedia teaching are as follows:

    A.   The computer often breaks down

    B.   The sound effect is not good

    C.   The projection effect is not good.

    D.   Sound insulation effect is poor, and each classroom affects each other

    E.   other factors

16. The measures taken by the teachers when the computer fails or they forget to bring multimedia courseware are as follows:

    A.   use standby teaching plan blackboard and give demonstration lectures

    B.   lecturing without a lesson plan

    C.   ask someone to repair or retrieve the courseware before giving lectures

    D.   do not lecture, let students do homework and study by themselves, teacher counseling and answering questions

    E.   no lectures. let students study and do homework by themselves. Teachers leave the classroom.

17. When teachers use multimedia in class, which of the following phenomena is more prominent?

    A.   Replace the content of courseware with the catalogue of textbooks

    B.   Often replacing class with audio-visual

    C.   Projecting directly from textbooks or handouts

    D.   not using courseware, only using sound reinforcement equipment.

    E.   use courseware with pictures and texts, prominent emphasis and clear organization in class

    F.   use courseware with poor quality to teach

18. How do you think multimedia can be used better in teaching?

    A.   give priority to multi-media display, less explanation

    B.   use multi-media to teach completely

    C.   Do not use multimedia at all or less. The traditional explanation is mainly carried out.

    D.   It depends on the content of the course and should be combined reasonably.

19. Why do you think the use of multimedia technology has brought you closer to your teachers?

    A.   Teachers and students have more time to communicate, discuss

    B.   Teachers' role diversifies

    C.   The media role of multimedia

20. Why do you think the use of multimedia technology has alienated you from your teachers?

    A.　Teachers and students do not have more time to communicate, discuss
    B.　Teachers become obstacles to multimedia operators
    C.　multimedia obstacles

21. When you encounter problems in your own learning process, the way you seek answers is:

    A.　asking teacher through the internet,
    B.　finding teacher's face-to-face answer
    C.　asking classmate through the internet
    D.　finding information through the internet

References

1.　Schank, R.C.; Korcuska, M.; Jona, M. Multimedia Applications for Education and Training: Revolution or Red Herring? *ACM Comput. Surv.* **2016**, *27*, 633–635. [CrossRef]
2.　Abreu, R.; Dos Santos, J. Using abstract anchors to aid the development of multimedia applications with sensory effects. In Proceedings of the 2017 ACM Symposium on Document Engineering, Using Abstract Anchors to Aid The Development of Multimedia Applications With Sensory Effects, Valletta, Malta, 4–7 September 2017; Volume 2, pp. 211–218.
3.　Shuja, J.; Gani, A.; ur Rehman, M.H.; Ahmed, E.; Madani, S.A.; Khan, M.K.; Ko, K. Towards native code offloading based MCC frameworks for multimedia applications: A survey. *J. Netw. Comput. Appl.* **2016**, *75*, 335–354. [CrossRef]
4.　Das, A.; Kumar, A.; Veeravalli, B. Reliability and Energy-Aware Mapping and Scheduling of Multimedia Applications on Multiprocessor Systems. *IEEE Trans. Parallel Distrib. Syst.* **2016**, *27*, 869–884. [CrossRef]
5.　Peddi, S.V.B.; Kuhad, P.; Yassine, A.; Pouladzadeh, P.; Shirmohammadi, S.; Shirehjini, A.A.N. An intelligent cloud-based data processing broker for mobile e-health multimedia applications. *Future Gener. Comput. Syst.* **2017**, *66*, 71–86. [CrossRef]
6.　Cremonesi, P.; Elahi, M.; Garzotto, F. User interface patterns in recommendation-empowered content intensive multimedia applications. *Multimed. Tools Appl.* **2017**, *76*, 1–35. [CrossRef]
7.　Cao, P.; Liu, B.; Yang, J.; Yang, J.; Zhang, M.; Shi, L. Context Management Scheme Optimization of Coarse-Grained Reconfigurable Architecture for Multimedia Applications. *IEEE Trans. Very Large Scale Integr. Syst.* **2017**, *99*, 1–11. [CrossRef]
8.　Chen, X.; Li, L.; Xiang, X. Ant colony learning method for joint MCS and resource block allocation in LTE Femtocell downlink for multimedia applications with QoS guarantees. *Multimed. Tools Appl.* **2017**, *76*, 4035–4054. [CrossRef]
9.　Zhou, S.; Xu, Q.; Qi, Q. Big data in mobile social networks: A QoE-oriented framework. *IEEE Netw.* **2016**, *30*, 52–57.
10.　Parsegov, S.E.; Proskurnikov, A.V.; Tempo, R.; Friedkin, N.E. Novel Multidimensional Models of Opinion Dynamics in Social Networks. *IEEE Trans. Autom. Control* **2017**, *62*, 270–285. [CrossRef]
11.　Wang, Z. Friendbook: A Semantic-Based Friend Recommendation System for Social Networks. *Mob. Comput. IEEE Trans.* **2016**, *14*, 538–551. [CrossRef]
12.　Sosa, M.E. Where Do Creative Interactions Come From? The Role of Tie Content and Social Networks. *Organ. Sci.* **2016**, *22*, 1–21. [CrossRef]
13.　Bedi, P.; Sharma, C. Community detection in social networks. *Wiley Interdiscip. Rev. Data Min. Knowl. Discov.* **2016**, *6*, 115–135. [CrossRef]
14.　Jacquemart, A.L.; Lhoir, P.; Binard, F.; Descamps, C. An Interactive Multimedia Dichotomous Key for Teaching Plant Identification. *J. Biol. Educ.* **2016**, *5*, 1–10. [CrossRef]
15.　Armenteros, M.; Liaw, S.S.; Sánchez-Franco, M.J.; Fernández, M.; Sánchez, R.A. Analysis of FIFA referees and assistant referees' motivational factors towards the Multimedia Teaching Materials. *Educ. Inf. Technol.* **2017**, *22*, 1–32. [CrossRef]
16.　Xu, J. A Study of Extension Strategies of Multimedia Online Teaching Platform in Sports Teaching of Universities. *J. Comput. Theor. Nanosci.* **2017**, *14*, 94–98. [CrossRef]

17. Shen, C.W.; Min, C.; Wang, C.C. Analyzing the trend of O2O commerce by bilingual text mining on social media. *Comput. Hum. Behav.* **2019**, *101*, 474–483. [CrossRef]

18. Svirko, E.; Mellanby, J. Teaching neuroanatomy using computer-aided learning: What makes for successful outcomes? *Anat. Sci. Educ.* **2017**, *10*, 35–54. [CrossRef]

19. Fasoula, S.; Nikitas, P.; Pappa-Louisi, A. Teaching Simulation and Computer-Aided Separation Optimization in Liquid Chromatography by Means of Illustrative Microsoft Excel Spreadsheets. *J. Chem. Educ.* **2017**, *94*, 1167–1173. [CrossRef]

20. Poole, R. A corpus-aided approach for the teaching and learning of rhetoric in an undergraduate composition course for L2 writers. *J. Engl. Acad. Purp.* **2016**, *21*, 99–109. [CrossRef]

21. Zeng, J.; Chang, B.; Du, D.; Peng, G.; Chang, S.; Hong, Y.; Shan, J. A Vision-Aided 3D Path Teaching Method before Narrow Butt Joint Welding. *Sensors* **2017**, *17*, 1099. [CrossRef]

22. Ige, O.A.; Hlalele, D.J. Effects of computer-aided and blended teaching strategies on students' achievement in civic education concepts in mountain learning ecologies. *Educ. Inf. Technol.* **2017**, *22*, 1–17. [CrossRef]

23. Wang, S. The Improvement of Practice Teaching in Drawing Series Courses. *J. Graph.* **2016**, *37*, 573–576.

24. Chiang, K.H.; Fan, C.Y.; Liu, H.H.; Chen, G.D. Effects of a computer-assisted argument map learning strategy on sixth-grade students' argumentative essay reading comprehension. *Multimed. Tools Appl.* **2016**, *75*, 73–90. [CrossRef]

25. Edmondson, A.C.; Higgins, M.; Singer, S.; Weiner, J. Understanding Psychological Safety in Health Care and Education Organizations: A Comparative Perspective. *Res. Hum. Dev.* **2016**, *13*, 65–83. [CrossRef]

26. Jury, M.; Smeding, A.; Stephens, N.M.; Nelson, J.E.; Aelenei, C.; Darnon, C. The Experience of Low-SES Students in Higher Education: Psychological Barriers to Success and Interventions to Reduce Social-Class Inequality. *J. Soc. Issues* **2017**, *73*, 23–41. [CrossRef]

27. Xue, G.; Liu, L. A Comparative Study on Cooperative Learning in Multimedia and Network Environment Used by English Majors between China Mainland and Taiwan. *Adv. Lang. Lit. Stud.* **2018**, *9*, 127. [CrossRef]

28. Shen, C.W.; Ho, J.T. Technology-enhanced learning in higher education: A bibliometric analysis with latent semantic approach. *Comput. Hum. Behav.* **2020**, *104*, 106177. [CrossRef]

29. Barz, D.L.; Achimaşcadariu, A. The development of scientific reasoning in medical education: A psychological perspective. *Clujul Med.* **2016**, *89*, 32–37. [CrossRef]

30. Deasy, C.; Coughlan, B.; Pironom, J.; Jourdan, D.; Mannix-McNamara, P. Psychological distress and help seeking amongst higher education students: Findings from a mixed method study of undergraduate nursing/midwifery and teacher education students in Ireland. *Ir. Educ. Stud.* **2016**, *35*, 1–20. [CrossRef]

31. Master, A.; Meltzoff, A.N. Building bridges between psychological science and education: Cultural stereotypes, STEM, and equity. *Prospects* **2017**, *46*, 1–20. [CrossRef]

32. Winter, L.A.; Burman, E.; Hanley, T.; Kalambouka, A.; McCoy, L. Education, Welfare Reform and Psychological Well-Being: A Critical Psychology Perspective. *Br. J. Educ. Stud.* **2016**, *64*, 1–17. [CrossRef]

33. Hall, A.; Pais, S. Learning and teaching symmetry by creating ceramic panels with Escher type tessellations. *Indagatio Didact.* **2018**, *10*, 85–107.

34. White, K. Visualizing oral histories: A lab model using multimedia DH to incorporate ACRL framework standards into liberal arts education. *Coll. Undergrad. Libr.* **2017**, *24*, 393–417. [CrossRef]

35. Li, H. Design of multimedia teaching platform for chinese folk art performance based on virtual reality technology. *Int. J. Emerg. Technol. Learn.* **2017**, *12*, 28–40. [CrossRef]

36. Al Hashimi, S.A.; Al Muwali, A.A.; Zaki, Y.E.; Mahdi, N.A. The Effectiveness of Social Media and Multimedia-Based Pedagogy in Enhancing Creativity among Art, Design, and Digital Media Students. *Int. J. Emerg. Technol. Learn.* **2019**, *14*, 176–190. [CrossRef]

37. Yi, G. Design Research on the Network Multimedia Courseware for Art-Design Teaching. *Eurasia J. Math. Sci. Technol. Educ.* **2017**, *13*, 7885–7892. [CrossRef]

38. Mahdi, N.; Al Muwali, A.; Zaki, Y. Proposing a framework for evaluating digital creativity in social media and multimedia-based art and design education. *Glob. J. Arts Educ.* **2019**, *9*, 48–62.

39. Patton, R.M.; Buffington, M.L. Keeping up with our students: The evolution of technology and standards in art education. *Arts Educ. Policy Rev.* **2016**, *117*, 1–9. [CrossRef]

40. Chatzara, E.; Kotsakis, R.; Tsipas, N.; Vrysis, L.; Dimoulas, C. Machine-Assisted Learning in Highly-Interdisciplinary Media Fields: A Multimedia Guide on Modern Art. *Educ. Sci.* **2019**, *9*, 198. [CrossRef]

41. Zhao, G.; Wang, X.; Li, M. Effects of Semi-Finished Products as a Scaffolding on University Liberal Art Students' Learning of Multimedia Technology and Webpage Producing. *Creat. Educ.* **2018**, *9*, 2405–2418. [CrossRef]

42. Thamwipat, K. The Outcome of the Development of Multimedia and Activities to Enhance Knowledge about Arts and Cultures for Community Youths through Social Lab. *Int. Educ. Stud.* **2019**, *12*, 10–19. [CrossRef]

43. Liang, W. Scene art design based on human-computer interaction and multimedia information system: An interactive perspective. *Multimed. Tools Appl.* **2019**, *78*, 4767–4785. [CrossRef]