





Exploration on the Teaching Mode of Contemporary Art Computer Aided Design Centered on Creativity

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Abstract. This article designs a creative teaching model of contemporary art computer-aided design, aiming to explore an open learning model based on the Internet. According to the principle of modular design, the creative teaching mode of contemporary art computer-aided design adopts the B/S-based MVC three-tier architecture mode. This article chooses Microsoft's ASP computer-assisted .NET technology as the development language of contemporary art computer-aided design creative teaching mode, and constructs the information service creative teaching mode based on IIS server. The contemporary art computer-aided design creative teaching mode uses a background database based on Microsoft SQL Server 2010, uses ASP computer-assisted .NET Web database middleware technology to develop Web pages, and uses ADO computer-assisted .NET technology and OLEDB to connect and access the database. The design, development, debugging and deployment of the contemporary art computer-aided design creative teaching model in the same working environment has improved the development coherence and development efficiency of the creative teaching model. Group computer-assisted creative cooperative learning breaks the traditional teaching mode. Through setting tasks and small group work cooperation, all students can participate in the activities, which can greatly improve student performance. Because group cooperation has formed a certain mutual dependence between group members, in order to form a positive mutual dependence, students must communicate effectively. For art students pursuing individuality, listening to and accepting others is not an easy task. Through group cooperation and communication, students have more contact and understanding, and learned to tolerate and listen to each other in disputes and reunification.

Keywords: Contemporary Art; Computer-Aided; Information System Module; Creative Teaching Mode

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1 INTRODUCTION

The current art design education is facing an era of both opportunities and challenges. However, due to the influence of many factors, the development of art design education in China and the pace of its reform have been lagging behind the development speed of art design itself and the society's influence on the development of art design. Higher art design education is the main way to train senior specialized design talents [1]. It is imperative for colleges and universities to train high-quality design talents that meet the needs of social development according to their actual conditions [2]. In view of the current situation and development trend of art design education, various colleges and universities offering art design education are reforming their own education systems, trying to establish an education system that is compatible with the development of the entire society [3]. Therefore, it is an important subject of the discipline of art design to analyze and study the current development of art design education in colleges and universities.

The visual communication course of the German National Stuttgart Academy of Fine Arts comprehensively uses classroom lectures, discussions, student speeches, network collaborative teaching, printing practice tutoring, and workshop teaching in the teaching methods. In the course of teaching practice, there are corresponding auxiliary teaching workshops, including computer teaching studios, book binding and packaging technology studios, audio-visual media studios, photography studios, reprint printing and offset printing studios, and printing studios [4]. Daemei and Safari [5] believe that many universities are too rigid in their professional settings. In most western countries, subject majors are just a combination of courses, and students can choose across subjects with great freedom and flexibility. The discipline and professional system has two main functions: one is to define the knowledge division of the teaching scope; the other is a system for managing knowledge and teaching, which makes it play a normative role. Students apply for the exam according to the division of majors, and enter the colleges and universities to study according to the designated majors. It is difficult for students to change their majors. Jhamb et al. pointed out that each major works independently, resources between different disciplines are rarely shared, and academic exchanges remain in form [6]. When setting up majors, colleges and universities must consider market factors. The development of art design education is restricted by economic and market demands. Therefore, art design education should set the professional direction according to the needs of the market. Emm and Hawkins [7] believe that the current economy is in a transitional period, the industrial structure is continuously adjusted, and the economic system is gradually improved. New requirements are put forward for art design, and the professional setting of art design will surely change and update accordingly. Agarwal and Chakraborty [8] pointed out that modern European art and design education is basically divided into three major curriculum frameworks: basic courses, main courses and graduation design. The primary purpose of the basic course is to open up students' divergent and creative thinking. Through the training of professional design courses and characteristic courses, the students' design ability will be cultivated. For example, in the visual communication design course of the German National Stuttgart Academy of Fine Arts, the main courses are also divided into basic courses and main courses. The last semester is graduation creation and practice. The visual communication design teaching takes the first two semesters as a basic semester. You can freely choose the class to receive basic course training. There are both free-hand drawing students and art design students in the class. Liang believes that some seminar courses "information and graphics practice" can be set up together in close combination with technical courses and professional courses [9]. The professional basic education in the third and fourth semesters focuses on format and writing. Closely integrated with the semester project, through two-way

selection, students can enter the professional professor's class to study until graduation. Powell et al. [10] pointed out that graphic design, photography/film, illustration and typography can be further deepened as another teaching focus, and it can also be offered as a compulsory course in the professional semester. A large amount of theoretical knowledge enriches the arrangement of the course. After the eighth semester, students begin to prepare for graduation design, and there is one semester after that, that is, the internship semester. Students are encouraged to practice internships in relevant professional institutions.

The use of the combination of C/S and B/S structures not only uses the advantages of C/S, but also uses the advantages of B/S, which is very beneficial to information sharing and ease of operation. At the same time, it makes it easier to upgrade and maintain the creative teaching mode of contemporary art computer-aided design, and it also has a certain degree of guarantee in terms of data security. This article introduces the main functional module design of contemporary art computer-aided design creative teaching mode, including user management module design, faculty basic information management module design, basic information management module, course management module, grade management module, grade management module and comprehensive query module. The database design process mainly elaborates the conceptual structure design in the database design of the contemporary art computer-aided design creative teaching mode. We convert the E-R diagram into a logical structure consistent with the data model supported by the selected specific DBMS product. The physical structure design gives detailed information about the main database tables. The practical research of computer-assisted creative cooperative learning in the basic teaching of computer application is divided into three stages. The first stage is pre-testing and skills training; the second stage is teaching experiment, a one-year teaching practice is carried out, and the computer hardware contemporary art computer-aided design creative teaching mode is selected to illustrate the application of computer-aided creative cooperative learning in teaching; the third stage is experiment data analysis for experimental class and control class.

2 CONTEMPORARY ART COMPUTER-AIDED DESIGN CREATIVE TEACHING MODE DESIGN

2.1 Design Ideas of Contemporary Art Computer-Aided Design Creative Teaching Mode

Based on computer-aided .NET digital art design teaching information, contemporary art computer-aided design creative teaching mode uses a single database server. Based on hardware costs and the convenience of operation and maintenance of contemporary art computer-aided design creative teaching mode, creative teaching mode does not use special applications, but the same machine is deployed as both a database server and an application server. Considering that the contemporary art computer-aided design creative teaching mode handles a lot of affairs, and the server itself is weak, in order to improve the operating efficiency of the contemporary art computer-aided design creative teaching mode, we consider decentralizing the processing tasks of the server and distributing part of the application processing work. The contemporary art computer-aided design creative teaching mode adopts the combination of C/S and B/S two architectures to carry out the contemporary art computer-aided design creative teaching mode structure. This software architecture not only makes use of the B/S structure's features of easy operation, maintenance and information resource security, but also because of the use of the C/S structure, to a certain extent, it ensures the safe access to the contemporary art computer-aided design creative teaching mode, which has improved the response speed and processing efficiency of the creative teaching mode of contemporary art computer-aided design. The following is an analysis of the C/S and B/S structures. According to the advantages and disadvantages of C/S and B/S, we summarize and summarize why the design mode combining C/S and B/S is used. The overall structure of the contemporary art computer-aided design teaching system is shown in Figure 1.

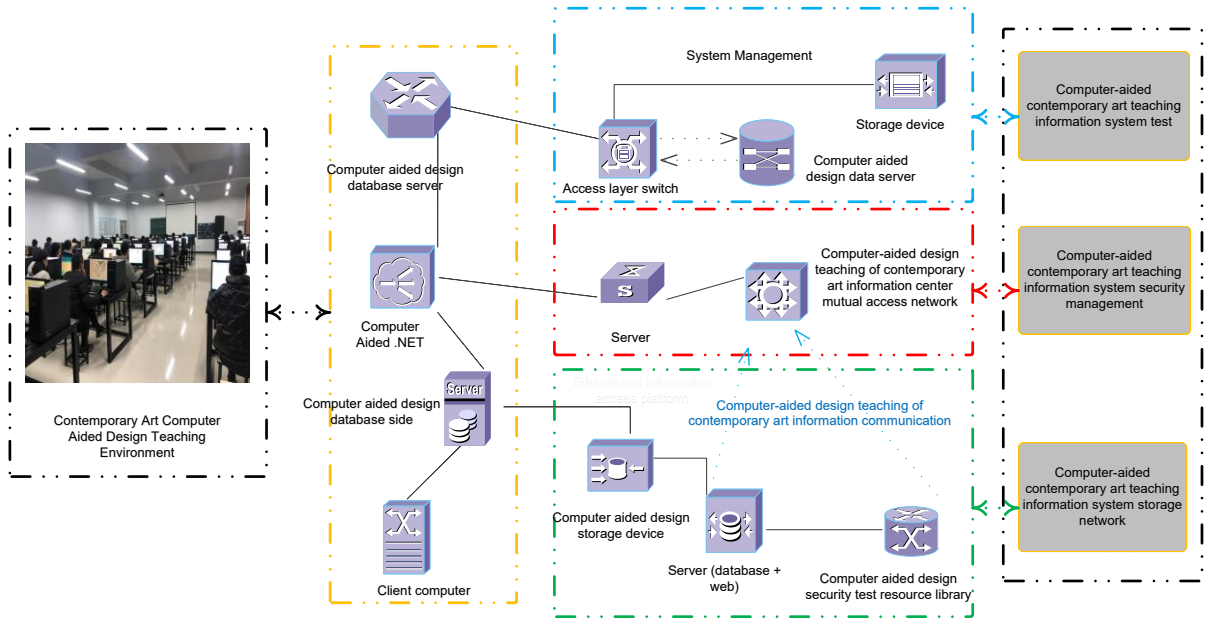


Figure 1: The overall structure of contemporary art computer-aided design teaching system.

The C/S mode divides the operation of the entire contemporary art computer-aided design creative teaching mode into two layers: client and server. Among them, the client has certain data processing and data storage requirements, which requires the development of client and server software separately. By reasonably distributing the calculation and data storage tasks of the contemporary art computer-aided design creative teaching mode on the client and server, it can effectively reduce the network communication and server calculations. However, due to the limitation of data communication, this method is adopted. The structure of management information contemporary art computer-aided design creative teaching mode is mainly suitable for running in a local area network with few users, but it is not feasible to use it in a wider range. Since the C/S mode disperses a considerable part of the functions on the client computers, it is necessary to develop a special client installation program. The post-maintenance and upgrade of the creative teaching model also need to be carried out separately for different clients, so the workload of its development, release, and transplantation is extremely large and cumbersome, and it requires huge expenses for the maintenance of the contemporary art computer-aided design creative teaching model.

B/S mode is a new type of management information contemporary art computer-aided design creative teaching mode platform mode based on Web technology. Generally, it adopts a three-tier structure. The B/S structure is a special C/S structure. With the development of network access technology, the client software under the new form only needs to install a browser, and most of the business logic processing, interface display and data processing are implemented on the server side. The B/S structure has low requirements on client hardware, and only needs to realize the display and interactive functions of the interface. The user can choose different levels of equipment and services, as long as it supports the standards and protocols required by the contemporary art computer-aided design creative teaching mode.

2.2 Design of the Main Functional Modules of the Creative Teaching Mode of Contemporary Art Computer-Aided Design

1) User management function module design

Based on computer-aided .NET digital art design teaching information, contemporary art computer-aided design creative teaching mode adopts the development mode of combining B/S and C/S. It is used by the leading agency of the professional department, the teaching secretary of the professional department, the leader of the professional department, the teaching office, and the academic work office. Because the disciplines involved in digital art education have cross-combination of arts and sciences, which is unprecedented in traditional art education, today's design is no longer a purely artistic behavior and cultural behavior, which requires us to continuously integrate various teaching resources and form new ones. Therefore, the contemporary art computer-aided design creative teaching mode is diversified for users and realization functions. Different users need to face different processing tasks. The contemporary art computer-aided design creative teaching mode will group the access rights and realization functions of different types of users to the contemporary art computer-aided design creative teaching mode according to the type of each user.

The design of the entire teaching process follows the student-oriented and teacher-led thinking, and adopts task-driven, computer-assisted creative cooperative learning methods, and integrates knowledge points into specific examples to improve students' collection, analysis, integration, and application. Figure 2 shows the flow chart of the concrete teaching process of contemporary art with creativity as the core.

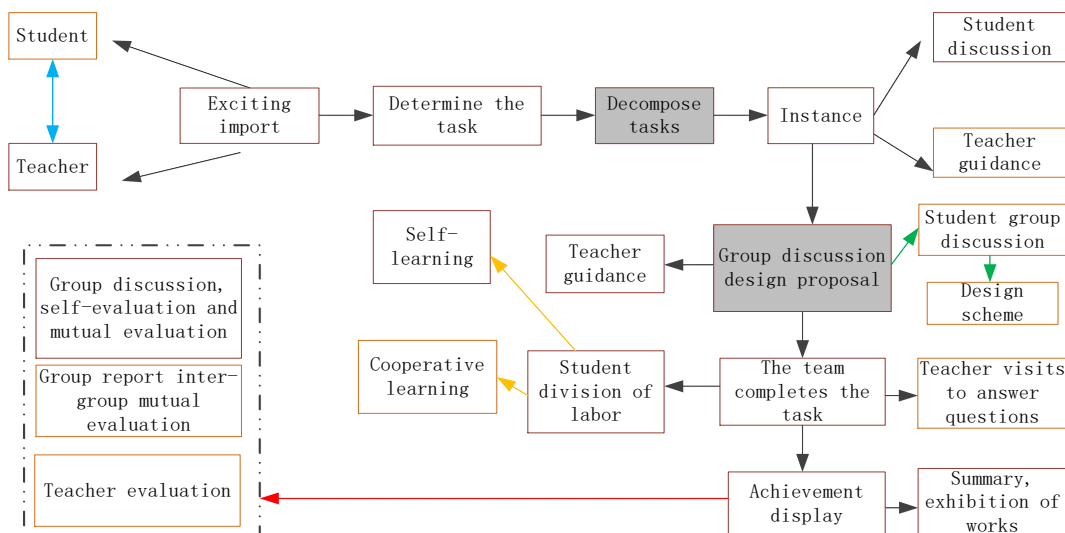


Figure 2: A flowchart of contemporary art teaching process centered on creativity.

The administrator and the user of the contemporary art computer-aided design creative teaching model are complementary and independent of each other. The administrator of the contemporary art computer-aided design creative teaching mode has the right to set user groups, permissions and initialization. However, for users, they cannot specify their own initial password, nor can they change their own access rights, but they can modify their own password for contemporary art computer-aided design creative teaching mode at will. The user management module of the contemporary art computer-aided design creative teaching mode classifies different users and

restricts the operation authority of the various functional modules of the contemporary art computer-aided design creative teaching mode for users who are not grouped, thereby ensuring the contemporary art computer-aided design creativity teaching mode.

2) The functional design of the basic information management module for the faculty and staff of the college

The faculty management information module mainly includes functions such as student management, query, grade entry, teacher personal information management, query and modification, and other operational faculty management functions. You can query the basic information of faculty and staff, such as name, age, teaching status, basic education, graduate school and major, final education, department, current position (including administrative and professional technical positions), job position, and main work experience. With the replacement of new and old faculty members, the information will change. This module needs to make corresponding changes to realize the functions of adding and deleting, and can realize the printing output function.

3) Course management module

Curriculum management module is mainly used to realize the addition, deletion and modification of courses, classroom deployment, teacher deployment, curriculum entry, modification, deletion and query operations, including the query of students' course selection. For inquiries about courses, you can query information about a certain course based on the course number, such as the use of textbooks, the instructor, the use of classrooms, and other related information. You can also query the ongoing courses of a certain class in a certain classroom on a certain day, and query the selection of courses. You can input the student's name to find it accurately, or you can find it in a fuzzy way through the course code.

4) Score management module

Achievement management is an extremely important part of the creative teaching mode of contemporary art computer-aided design in college teaching and administrative management. Student performance is an important student information resource. Normal students only have the authority to inquire about the results; and teachers not only have the authority to inquire about the results of the courses they teach, but also have the authority to enter student results, modify student results, and view results. At the same time, managers can also deal with special circumstances such as exemption and re-examination related to grades, and generate a variety of practical grade analysis reports.

Teachers, students, and teaching administrators can use the performance management module. Teachers are responsible for inputting student performance, students can inquire about their own performance, and academic staff are responsible for student credit statistics. This part mainly includes three parts: student performance entry, student performance management and student credit statistics.

5) Comprehensive query module

An important part of the creative teaching model based on computer-assisted .NET digital art design teaching information is the integrated query module. After the initial information input of the contemporary art computer-aided design creative teaching model is completed, most operations do not require data modification. From the positioning of the contemporary art computer-aided design creative teaching model, it can be known that ordinary query operations on the contemporary art computer-aided design creative teaching model data will appear very frequently in daily management work, and the frequency of use is relatively high. From the perspective of practicability, the comprehensive query module realizes query functions such as keyword query, keyword fuzzy query, and secondary query. Whether it is students, teachers, teaching administrators, contemporary art computer-aided design creative teaching mode administrators, etc. can use the query function, but each type of user has different query

permissions. Figure 3 shows the request processing mode of an ASP.NET application using Windows authentication.

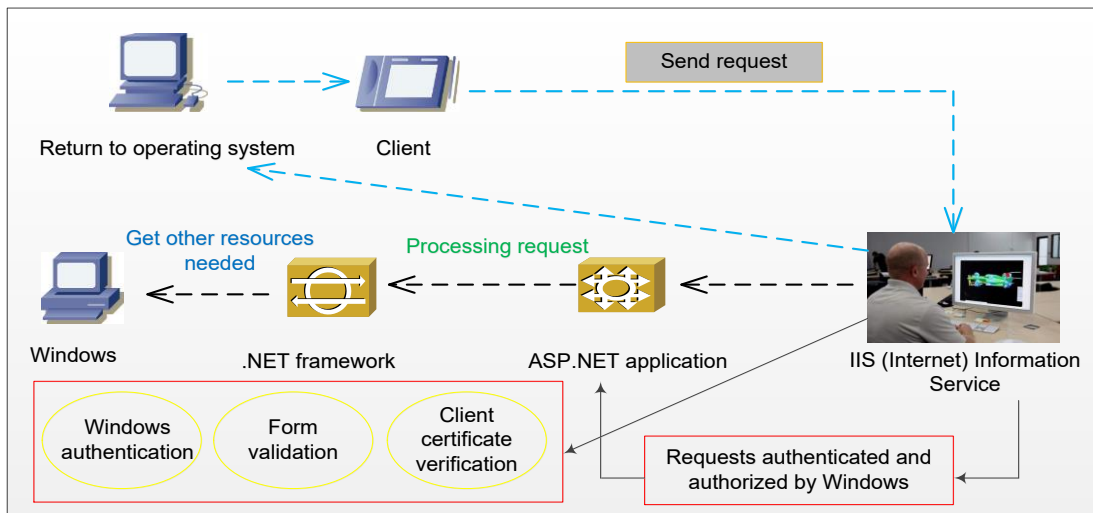


Figure 3: Mode of request processing by ASP.NET application using Windows authentication.

2.3 Contemporary Art Computer-Aided Design Creative Teaching Model Database Design

1) Database design tasks

Database is the core and foundation of the creative teaching model of computer-aided design of information contemporary art. The database determines whether and how the various parts of a creative teaching model of computer-aided design of information contemporary art can be closely integrated together. The design of the database must not only meet the requirements of users, but also be closely related to the given application environment. Therefore, it is necessary to adopt a standardized, contemporary art computer-aided design creative teaching model design method. The life cycle of a database is usually divided into two important stages: one is the design stage of the database, and the other is the implementation and operation stage of the database. Among them, database design is a relatively large stage in the entire life cycle of the database, and its quality has a great influence on the creative teaching mode of contemporary art computer-aided design of the entire database.

Database design is to provide a logical design to determine the optimal data model and processing model for a given application environment, as well as a physical design to determine the database storage structure and access method. It can not only reflect real world information and information connections, meet user data requirements and processing requirements, but also be accepted by a database management contemporary art computer-aided design creative teaching model.

2) Database design process

The first stage of the database design process is requirements analysis. Commonly used survey methods for needs analysis include follow-up work, holding survey meetings, special introductions, inquiries, and designing survey forms for users to fill in and check records. The task of demand analysis is to clarify the various needs of users through detailed investigation of the objects to be dealt with. This process is the starting point of database design, it will directly affect

the design of the subsequent stages, and affect whether the design results are reasonable and practical.

The second stage of the database design process is to establish a conceptual model. The conceptual structure is an abstraction of the real world, and it is the core and foundation of the creative teaching mode of computer-aided design for contemporary art of database. Through the integration, induction and abstraction of user requirements, a conceptual model independent of the specific DBMS can be formed, which can be represented by an E-R diagram.

If the database runs successfully, it indicates that the database design task is basically over. The focus of the future is the maintenance of the database, including backup work, database security and integrity adjustment, and improvement of database performance.

3 PRACTICAL EXPLORATION OF COMPUTER-ASSISTED CONTEMPORARY ART CREATIVE COOPERATIVE LEARNING

3.1 Pre-Test and Preparation

According to the pre-test results and questionnaire survey, the students are divided into groups according to the principle of "homogeneity between groups, heterogeneity within groups". The experimental class is divided into 10 groups, each group contains 10 students. Each member of the group plays a different role.

As the main body of computer-assisted creative cooperative learning, every student has his own responsibilities and role positioning. In addition to being responsible to themselves, everyone is also responsible to the team and others. In addition to a leader in each group, there are operators, recorders, commentators, and results exhibitors. Although once the group is established, the members of the group remain basically the same, but the role is not fixed.

In order to keep the progress of the experimental class and the control class consistent, the training of the cooperative awareness and skills of the experimental class students is mainly assisted by the head teacher in the form of thematic class meeting.

3.2 Teaching Experiment

In this market survey and communication, most students were able to actively participate and initially experienced the cooperation, but they also encountered some problems, such as inconsistent opinions in the group, their own opinions, and some group members did not actively participate, etc. As the problem is solved, the cooperation skills of the students are improved, and the communication and understanding between the students are also promoted. Through the survey, most of the students have a deeper understanding of computer hardware, and some have even become "masters". The content of their exchanges is beyond my expectation. The reports produced are full of pictures and texts. In the screening and comparison, students easily mastered the knowledge points and deepened the impression. At the same time, it also improved the students' ability to analyze and solve problems, and also let the students taste the sweetness of cooperation, making learning a joy.

We organize group work evaluation and give an evaluation of artistic creativity, as shown in Figure 4. We organize students to study to ensure that each member of the group can clearly define the meaning of each evaluation standard, so that they can fairly rate the results of other groups.

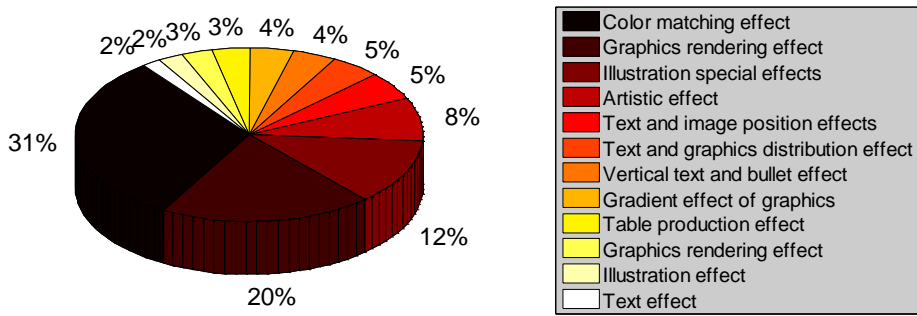


Figure 4: The proportion of different evaluation indicators to the evaluation of artistic creativity.

When evaluating, we follow the principles of fairness and objectivity, and highlight the strengths of others. When evaluating yourself, you must follow the principle of seeking truth from facts, and fill in your own feelings and participation in the activity. This has a great effect on the students to correctly understand themselves and continue to move forward. The results of the team members' self-evaluation are shown in Figure 5.

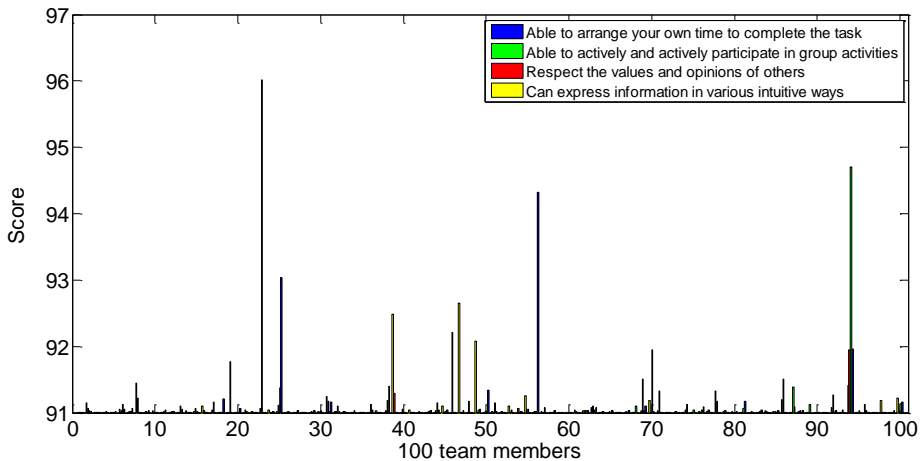


Figure 5: Results of team members' self-evaluation.

3.3 Experimental Analysis

1) The influence of computer-assisted creative cooperative learning on students' computer performance

At the beginning of the school and after the experiment, the computer situation of the experimental class and the control class was tested. The score evaluation of the two classes is shown in Figure 6. It can be seen from the figure that computer-assisted creative cooperative learning has a significant effect on improving students' performance. This is due to the rotation of roles in computer-assisted creative cooperative learning. Students of any level can be in the position of tutor and supervisor. While affirming their abilities, they also give them a certain amount of pressure and motivation to learn. Students with poor grades are partly not interested in computer learning and partly because they have not had contact before. Through group study, their learning motivation and interest are improved. With the help of group members, they are most likely to improve.

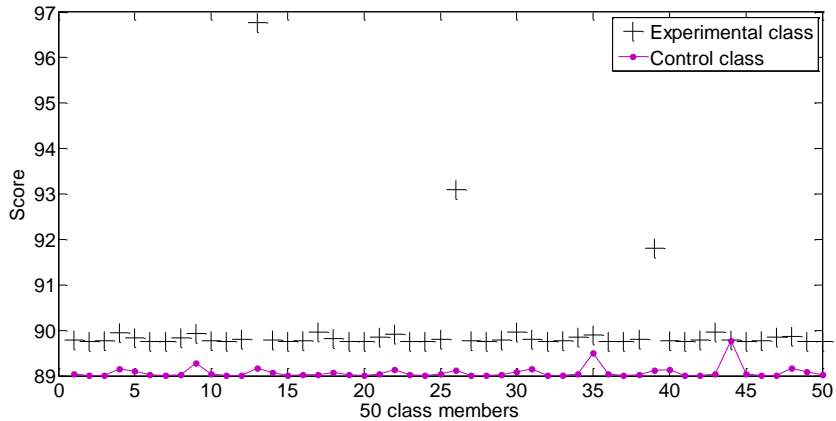


Figure 6: The score evaluation of the experimental class and the control class of contemporary art computer-aided design.

2) The impact of computer-assisted creative cooperative learning on students' interest in learning

Before and after the experiment, the students in the experimental class and the control class were investigated for their interest in contemporary art. The scores of the experimental class and the control class's learning interest are shown in Figure 7.

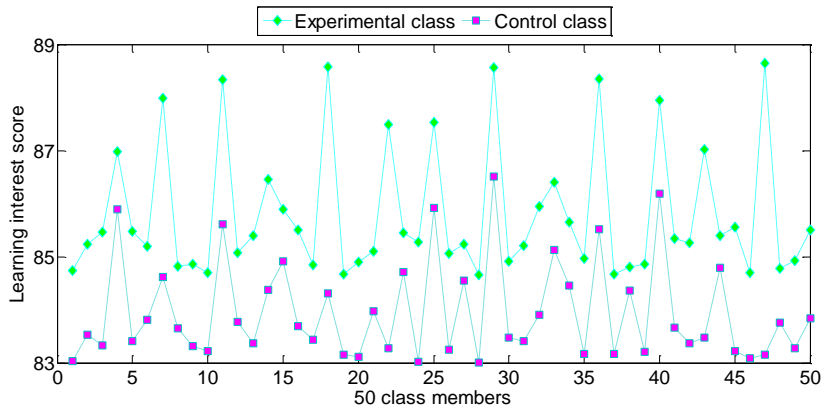


Figure 7: The interest scores of the experimental class and the control class of contemporary art computer-aided design.

It can be seen from Figure 7 that the learning interest of the experimental class is obviously higher. This is because they have gained self-confidence from group learning. The computer-assisted creative collaborative learning task connected with life has given them a new understanding of contemporary art. They no longer study purely for grade examinations, which greatly enhances students' interest in learning.

3) The influence of computer-assisted creative cooperative learning on interpersonal communication skills

It can be seen from Figure 8 that the communication skills of the experimental class are significantly higher than those of the control class. This may be due to the unsatisfactory academic

performance of the students in the control class, coupled with social prejudice, aggravated the inferiority complex of the students, and lack of self-confidence in interpersonal communication. The experimental class students have made certain progress in academics, their self-confidence has been strengthened, and they have become more confident and mature in interpersonal communication and communication.

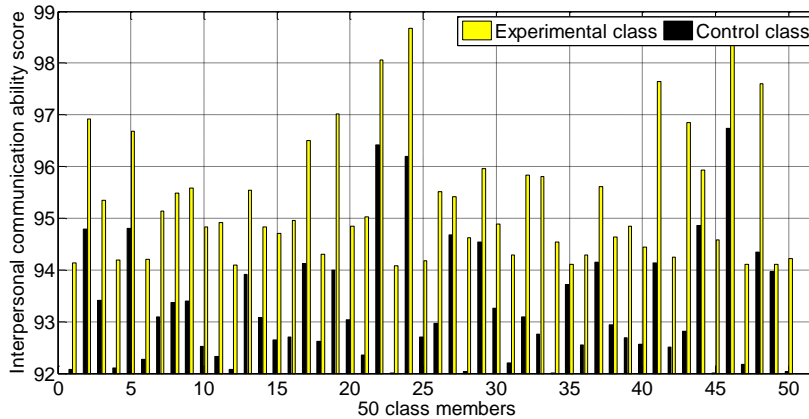


Figure 8: Interpersonal communication ability scores of the experimental class and control class of contemporary art computer-aided design.

4 CONCLUSION

This article gives a detailed introduction to the process of computer-assisted .NET digital art design teaching information creative teaching mode. The technology used in the development of the contemporary art computer-aided design creative teaching model includes computer-aided .NET technology and database technology, etc., and the ASP computer-aided .NET development platform and SQL Server database development platform are determined to be used. After comparing the strengths and weaknesses of B/S and C/S, this article chooses the combination of B/S and C/S as the development mode of contemporary art computer-aided design creative teaching mode. In view of the wide application of the contemporary art computer-aided design creative teaching model, Microsoft's ASP computer-aided.NET (C#) technology is selected as the development language of the contemporary art computer-aided design creative teaching model to build an information service based on the IIS server. The contemporary art computer-aided design creative teaching mode uses a background database based on Microsoft SQL Server 2010, uses ASP computer-assisted .NET Web database middleware technology to develop Web pages, and uses ADO computer-assisted .NET technology and OLEDB to connect and access the database. The design, development, debugging and deployment of the contemporary art computer-aided design creative teaching model share the same working environment, which improves the development continuity and development efficiency of the creative teaching model. More emphasis should be placed on the training of operational skills in the course positioning, and the teaching mode should also be more advocated for "students as the main body". This will also become the choice of more and more contemporary art teachers. Driven by this general environment, the research on computer-assisted creative collaborative learning will become more and more in-depth and its applications will become more and more extensive. In the future teaching practice, we should continue to study and use the computer-assisted creative cooperative learning teaching mode, and hope that it will allow more students to experience the joy of learning in a relaxed environment.

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