




Exploration of Computer Aided Graphic Design Teaching under the Experiential Teaching Mode

Mengmeng Zhang 

College of Logistics and E-commerce, Henan University of Animal Husbandry and Economy,
Zhengzhou City, Henan 450044, China, zhangmeng802@126.com

Corresponding author: Mengmeng Zhang, zhangmeng802@126.com

Abstract. With the development and progress of society, consumers are more and more inclined to choose personalized and rich products. In order to meet the needs of people's increasingly rich material and cultural products, the designed products must not only have functional practicality and beautiful appearance, but also be able to meet the internal personalized needs of consumers. The introduction of experiential teaching in computer-aided graphic design courses is mainly for students to design products with rich connotation and personalization based on mastering the technology of computer-aided graphic design and combining with practice. In experiential teaching, the starting point and end point of our teaching reform is to closely combine classroom teaching of design performance techniques with professors of design theory knowledge, while focusing on cultivating and enhancing students' practical innovation ability and personalized design level. And then achieve the purpose of training high-quality composite design talents.

Keywords: Computer Aided Graphic Design; Experiential Teaching; Theoretical Practice; Personalized Design

DOI: <https://doi.org/10.14733/cadaps.2021.S2.1-11>

1 INTRODUCTION

The establishment of the experiential teaching model can be traced back to the early 20th century. At that time, Dewey, a foreign scholar, emphasized that personal experience is a very important part of education, and emphasized that the teaching process is student-centered and allows students to acquire new knowledge and skills through practice [1]. Experiential teaching also has a deep historical origin in China. Domestic scholars generally believe that experiential teaching involves practice, experience, environment, and experience, and then sublimates and creates [2]. Experiential teaching is that teachers let students experience or re-experience past experiences through carefully designed activities, and guide the experiencers to review their own experiences and actively summarize, so as to achieve a new sublimation of the nature of the object and enable it to be used creatively a teaching method of the knowledge learned [3]. Experiential teaching is a teaching model that recognizes the surrounding things through practice and uses personal experience to perceive, understand, perceive, and verify the teaching content.

At present, the teaching of computer-aided graphic design courses is mainly biased towards teaching in the traditional sense. Liu J studied teachers teach corresponding theoretical knowledge and software operation skills, while students passively learn the corresponding knowledge [4]. The teaching content of the teachers is relatively simple and mechanical, the students' enthusiasm for learning is insufficient, Li, D. H. et al. have found that the knowledge structure is single, the autonomous learning is insufficient, and the creative ideas are lacking [5]. This situation is not suitable for professional development and society's need for talents, nor can it cultivate innovative design talents with unique thinking. Wang, X. found that the introduction of experiential teaching is to break the pattern of traditional curriculum teaching and the mode of pure theory and skill teaching [6]. Talent training has also changed from "passive instillation" to "independent learning" and creative design learning. Alhajri S. proved that as people increasingly emphasize their personalization when choosing material and cultural products [7], our industrial design students not only need to be proficient in the application of computer-aided graphic design related software, Nasyrova, E. F. said that to design products that meet functional requirements, but also in on the basis of qualified products, the works are given a certain personalized design, a unique beauty, or have certain cultural connotations [8].

This article analyzes and explores the introduction of the experiential teaching model in the computer-aided graphic design course, focusing on the connection between theory and practice, allowing students to design materials from life, and then using computer-aided graphic design software to creatively design their works, giving products a unique personality. In experiential teaching, it not only teaches students the theory and application of computer-aided graphic design related software, but also emphasizes on letting students explore the connotation of culture in life. By learning and mastering the relevant application knowledge of computer-aided graphic design, they can discover beauty, theory and reality combine to creatively design personalized products, then sum up the innovation and cultivate the ability of independent learning and creative application.

2 CHARACTERISTICS AND CONSTRUCTION OF EXPERIENTIAL TEACHING MODE

2.1 Characteristics of Experiential Teaching Model

The experiential teaching model of colleges and universities, following the teaching theory and the psychological law of teaching, on the basis of absorbing the situation and experiential learning theory, focusing on the implementation of effective teaching, focusing on generating effective learning experience and improving practical ability, will solve practical the problem runs through all the time and is a source-based teaching model. It aims at the comprehensive application of knowledge, focuses on situational experience, and focuses on the correlation with knowledge in other disciplines, it has the following four characteristics. Characteristics of experiential teaching mode is shown in Figure 1.

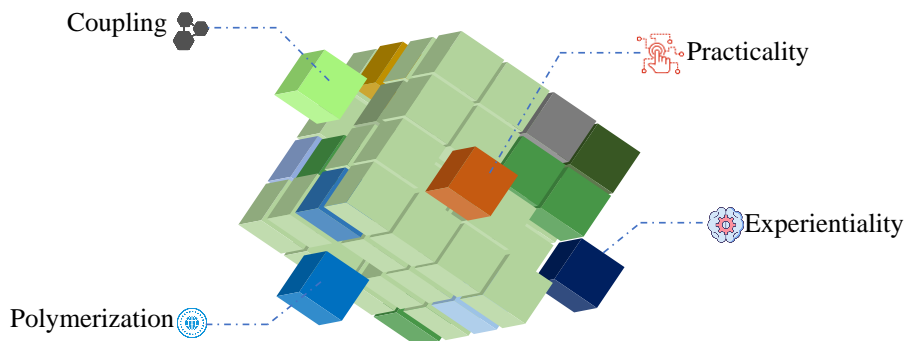


Figure 1: Characteristics of experiential teaching mode

(1) Experientiality

In the context of teaching, teachers organize teaching as mentors, inducers, and guides, and fully mobilize students' enthusiasm and creativity by creating a free and relaxed classroom atmosphere. Think about it with your mind, and understand it with your heart. Students actively participate, experience it in person, and then reflect on it, self-constructing knowledge and skills, and fully experience the fun of learning.

(2) Practicality

In the situational experience, students experience it in person, so that their practical ability can be trained and improved. In the process of solving practical problems, students find and put forward problems from the real situation. In order to solve the existing problems, they collect data, analyze data, and draw conclusions from various aspects based on personal experience, and their practical ability is further improved.

(3) Coupling

College experiential teaching can connect learning with real life, with professional subject knowledge, consistent with the development of students' cognitive abilities, integration with the establishment of professional identity, and unification of school education and corporate practice. Students learn knowledge, master skills, and realize the integration of knowledge and skills, learning processes and methods, emotional attitudes and learning through perception and reflection.

(4) Polymerization

The experiential teaching in colleges and universities takes the creation of real situations as the starting point, takes the practical problem solving as the main line, and builds the knowledge by self-construction based on the knowledge and related knowledge involved in problem solving, and integrates the learned and other knowledge through reflection, internalized into one, applied to practice.

2.2 Construction of Experiential Teaching Mode

The implementation of the experiential teaching model in colleges and universities has high requirements for teachers' knowledge accumulation and curriculum design, as well as students' participation and reflection ability. In the process of teaching implementation, it is necessary to deal with the relationship between the dominant position of teachers and the dominant position of students, the comprehensive development of professional knowledge and ability, the transfer of basic knowledge and the cultivation of practical ability [9]. Based on in-depth analysis and careful research on the theoretical basis, system construction, instructional design, etc. of the experiential teaching model in colleges and universities, four basic principles of implementing teaching are summarized. Figure 2 shows the basic principles of experiential teaching.

(1) Always carry out practical thinking. Experiential teaching in colleges and universities emphasizes the positive experience of students. Teachers teach for practice and students learn for practice. This kind of knowledge acquired through direct experience is more convenient for students to learn and remember, and students' knowledge, skills and emotions can also be comprehensively improved in practice, which is helpful for students to "learn to accomplish things" and "learn to be adults".

(2) Adhere to the principle of mutual adaptability. While mastering the basic knowledge, teachers should pay attention to their own development, contact with the major, carry out innovative learning, and combine the major with teaching. At the same time, teachers and students, knowledge accumulation and practice cultivation, classroom teaching and second classroom activities, teaching effectiveness and economic and social development, enterprise needs and other factors should adapt to each other and develop together.

(3) Adapt to the principle of self-organization. The experiential teaching in colleges and universities should be open, collaborative, and orderly, emphasizing both openness and control. In

the classroom, the teacher creates the real situation according to the teaching content and the students' major, so that the students can experience actively, acquire new knowledge, and give positive and effective feedback, promote the students' reflection, and make the teaching more humanized and scientific.

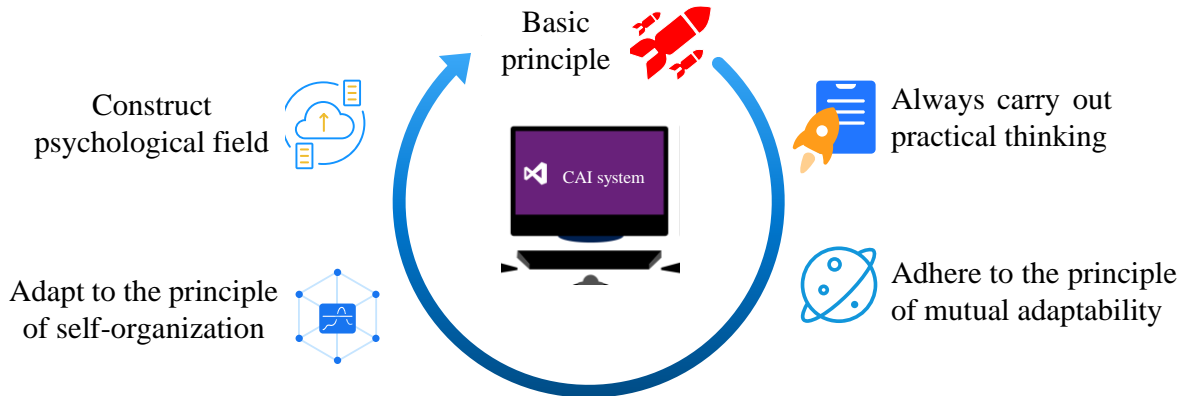


Figure 2: The basic principles of experiential teaching.

(4) Construct positive psychological field. In class, we should make students' emotional potential fully activated through the interaction between teachers and students. Teachers are full of emotions, students experience actively, the classroom atmosphere is active, the teaching atmosphere presents the appropriate state of positive thinking, teachers and students' psychology and teaching space environment will be in a happy state of fit, and teaching activities are more likely to succeed.

The master of experiential learning, David Cooper, a professor at Case Western Chu University, summarized the experience learning models of Dewey, Piaget, and others, put forward the experience learning theory, and divided the experience activities into four the three links: experience, reflection, theorization, and action. from this learning circle, we can see that learning starts with experience, after reflection, and finally applies theory to practice. Combining with the teaching situation in colleges and universities, and referring to the theory of experiential learning circle, the experiential teaching process can follow the following five links: situation creation, task experience, knowledge construction, comprehensive application, and evaluation reflection. Figure 3 shows the basic links of experiential teaching process.

(1) Situation creation. The real situation can make students carry out real valuable learning activities, encourage them to explore problems, generate interests, actively practice, and finally solve problems in the context experience. First, contextualize the content of the teaching materials, associate the content of the teaching materials with the learning and life experience, embed the book knowledge into the real situation, create a familiar and cordial learning situation for the students, let the students feel the life and reality of the knowledge; second, problem-based teaching content, introduce practical problems from the creation of the situation, train the students' awareness of problems, and stimulate the students' awareness of problems, the internal driving force of learning is to point out the direction and provide the carrier for effective learning activities; thirdly, it is necessary to highlight the teaching theme, deeply understand the knowledge background and life experience of students, find out the connection point between known and unknown, touch the students who do not understand and the students who do not understand, and find out the "real problems" that not only highlight the teaching theme but also can really cause students to study deeply.

(2) Task experience. Effective teaching is task-based and participatory. In the process of creating situation, the selected task should be able to arouse students' interest in learning and desire to explore, meet students' emotional and intellectual learning needs, and realize the organic

integration of explicit knowledge in books and implicit knowledge in life. Task setting should be conducive to stimulating and improving students' enthusiasm for learning, and to students' continuous deep thinking and experience. In the organizational task experience, teachers should take the roles of cooperator and guide, interlocutor and guide, expectant and guide to create a two-way expectant, equal and conversational experience relationship between teachers and students, so that students can open their thinking, play their imagination and participate boldly in the free and loose atmosphere [10]. In terms of teaching methods, we should give full consideration to the characteristics of students, not only to adapt to the existing knowledge experience, development level and thinking mode of students, but also to meet the needs of students' development and growth, as well as to help train students' practical thinking, and through the solution of practical problems, to achieve what we have learned, what we have learned and what we have achieved. In the aspect of feedback, we should ensure the rationality of guidance. According to different time, place, students and different situations, teachers should properly implement guidance to help students recover the sense of achievement and failure brought by problem-solving as soon as possible, so that students can carry out more effective deep-seated exploration activities.

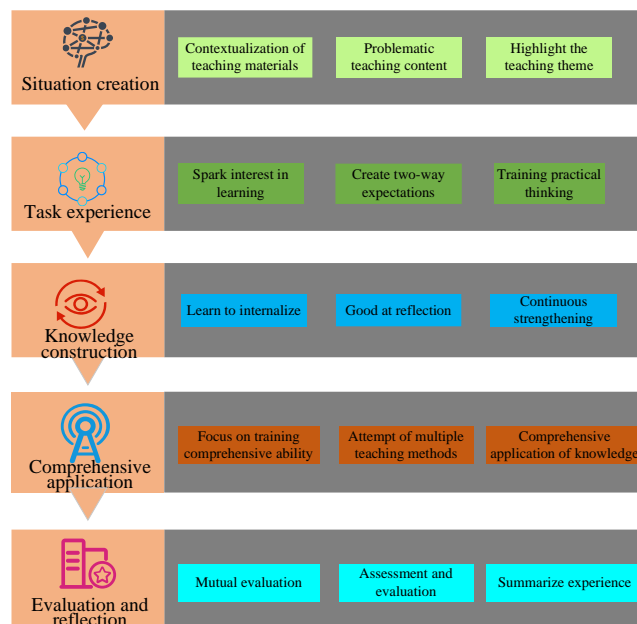


Figure 3: Basic links of experiential teaching process.

(3) Knowledge construction. By constructing useful knowledge system independently, students can transform indirect experience into direct experience to achieve the best learning effect. One is to learn to internalize. Students can experience the whole process of learning through review and exploration, find the causal relationship between knowledge and skills, actively think, summarize, and sort them out, and internalize them into their own. Second, students are good at reflection. When they memorize information, they also reflect and judge the whole learning process and results, to realize the sublimation of knowledge ability to personality quality. The third is to strengthen the experience results in different forms, such as students' role-playing, topic discussion and display, so that students can understand knowledge, apply knowledge, and even explore new knowledge according to the relevant knowledge outline. Fourth, teachers are not only teachers, but also guiders, trainers of skills, and motivators of students' emotions. They should

actively feedback, properly evaluate, and focus on encouraging and guiding students to construct knowledge.

(4) Comprehensive application. In the process of teaching, students should learn how to transfer the knowledge and skills they have learned to the working and living situations, to apply what they have learned. First, we should pay attention to the cultivation of students' comprehensive qualities such as autonomous learning ability, self-control ability and practical ability, as well as their follow-up development ability. The second is to encourage teachers to participate in teaching, case teaching, research teaching, project teaching, on-site teaching and other teaching methods, advocate group cooperation, competition and cooperative learning, and improve students' ability to actively acquire new knowledge, explore, cooperate, organize and participate in social activities. In practical problem-solving, help students to connect the acquisition, transfer, sharing and application of knowledge and skills, and make comprehensive use of knowledge.

(5) Evaluation and reflection. To improve the effectiveness of teaching and respond to the needs of students and society is the key to maintain the vitality of experience teaching in colleges and universities. First, organize students to conduct self-assessment and mutual assessment, and summarize their strengths and weaknesses. Second, teachers evaluate students' learning situation in various ways during the teaching implementation to reflect the real ability of students' comprehensive use; reflect and evaluate each link of teaching, summarize the success, find out the reasons for failure and improvement methods.

3 THE USE OF EXPERIENTIAL TEACHING MODEL AND ITS VALUE IN COMPUTER-AIDED GRAPHIC DESIGN TEACHING

3.1 Computer-Aided Graphic Design Teaching in Experiential Teaching Mode

Teaching and learning are inseparable; theory and practice are organically unified. Experiential teaching is to require students to connect classroom theory with extracurricular practice, to fully grasp the theory and application of computer graphic design software, to explore the thoughts and feelings of their lives from multiple angles, and finally to creatively design a certain content s work. The realization of graphic design works under the experiential teaching mode is shown in Figure 4.

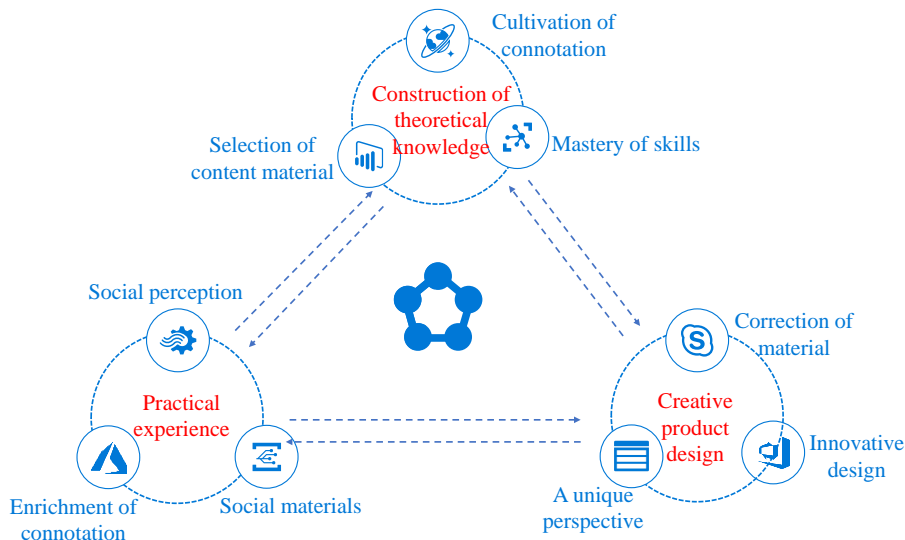


Figure 4: The realization of graphic design works under the experiential teaching mode.

(1) Construction of classroom theoretical knowledge. The construction of classroom theoretical knowledge is mainly through the teaching of relevant computer-aided graphic design software theoretical knowledge and related applications, based on proficiency, the introduction of problem solving and project teaching methods. Mainly through the selection of interesting content materials selected by some students, such as development and survival, war and peace, population and resources, landscape and environmental protection, and other materials, guide them to use Photoshop, AI and other graphic design related software to modify and improve these materials , In order to improve students' skill in using software and cultivate their humanistic feelings. Let them not only master a skill, but more experience life, care about the social status, and cultivate their connotation, so that they can design thoughtful and cultural works. For example, let students design personalized business cards, apply AI software, design personalized signatures, and increase their interest in learning. For the restoration of the color of old photos, choose your own home or your favorite black and white old photos, apply PS software related instructions to exercise software skills while gaining a memory and beauty. In this way, teachers gradually reduce the relevant knowledge of graphic design to zero in the classroom, making it difficult to guide students to correct the image effect pictures in different modes. On the one hand, students have learned the application of related software; on the other hand, they have also experienced life, discovered beauty, and enhanced their own inner.

(2) Experiences of extracurricular practical activities. The practical activities outside of the classroom are more to encourage students to go out, observe each corner of this society with their own eyes, perceive its bits and pieces, and use their own thoughts to think about the leaves of life, Appreciating its sweet, sour, bitter, and spicy, combined with thoughts and feelings, designed a complete and thoughtful work. Jiaxing is in the water town of Jiangnan, with a long history and rich culture, and rich in society. Jiaxing is also the birthplace of the party and has the red boat culture spirit that dares to be the first in the world. Jiaxing is also a microcosm of building a harmonious society and the Chinese dream in our new era. Let students discover in life, experience in life, exercise and grow in practice, cultivate their own rich cultural connotations, and incorporate these) into the works we design, so that the works have more connotations.

(3) Creative design products. In the final creative design stage, students are encouraged to use their unique perspective to discover the good, evil, beauty and ugliness of life, apply the computer graphic design knowledge they have learned, modify the material as a whole, and use a variety of software design techniques to The work implements innovative design, giving the design work a unique personality, a certain connotation, and a carrier of life.

3.2 The Value of Computer-Aided Graphic Design under the Experiential Teaching Mode

The art of computer-aided graphic design is a practical art form combining artistry and economy. Social economy is the basis of the art development of computer-aided graphic design, while computer-aided graphic design should serve the social economy, which can promote the social economy, create the enjoyment of beauty for the human society, and delight people's spiritual world. This also determines that the computer-aided graphic design art must be a very practical subject closely related to social activities. It not only shows its artistic aesthetics, but also reflects its economic value through the market in the process of solving practical problems. The school enterprise cooperation training mode is one of the ways of experiential practical teaching. On the premise of improving the students' actual combat level, it is beneficial to realize the deep integration of teaching outside the school, establish the practice base, and jointly create the students' training program. It is a beneficial choice to improve the students' stress level, and it is also a creative talent training the new way of pattern can effectively guide students to feel the relationship between society, market and economy and computer-aided graphic design art. In the high-speed development of modern society, students only stay in the stage of theoretical research and design creation cannot fully meet the needs of the society for talents, nor can they realize the computer-aided graphic design art to serve the public. As soon as possible, we should combine teaching activities with social practice activities to carry out experiential practice teaching, so that

students can fully realize the social aesthetic value of computer graphic design art, which will make education more direct and persuasive, so as to change students' understanding of graphic design art, strengthen the purpose of professional learning, and mobilize students. The self-conscious initiative of the students plays a role in promoting the maturity of their professional consciousness and behavior, and lays a solid foundation for the students to enter the society smoothly. Therefore, the development of computer-aided graphic design art not only needs a vibrant, healthy, and promising market, but also needs to improve the important link of school practical education and teaching to effectively explore the market, to realize its real value.

The art of computer-aided graphic design is a comprehensive and interdisciplinary subject. Therefore, its education and teaching are also in the direction of diversification and multi-disciplinary development. However, the traditional computer-aided graphic design art education focuses on the cultivation of students' basic knowledge and general professional knowledge, ignoring the cultivation of the comprehensive quality of the practical ability of design art. Therefore, it is very beneficial to help students improve their comprehensive ability of design art and fully realize the role of social practice in the education of computer-aided graphic design art.

(1) Social practice improves students' innovation ability. Innovative thinking ability is an important part of human overall ability and an important pillar of building good thinking quality. Innovation ability is a kind of conscious behavior in pursuit of innovation, an ideological power to find problems and explore actively, and an ability to change oneself and the environment. Computer aided graphic design is an innovative activity to improve people's quality of life. If there is no innovative graphic design, there will be no vitality. Therefore, to a large extent, the cultivation of computer-aided graphic design art innovation needs to enter social practice to reflect its significance. The traditional computer-aided graphic design art education lacks the innovative teaching process under the experience teaching mode. In addition, the traditional "cramming" teaching destroys the students' initiative and hinders the cultivation of creative thinking. Therefore, in the modern teaching, the open teaching and experiential teaching reform have been carried out. Open teaching can strengthen the interaction between teachers and students, form a learning atmosphere of discussion and exchange, encourage students to consciously participate in the process of learning practice, train students' ability of independent innovation, increase social knowledge, open their eyes, strengthen communication and cooperation, and guide students to explore and discuss problems from multiple perspectives and in a wide range of areas. In practice, students can not only learn more and stronger professional knowledge, cultivate profound knowledge and theoretical literacy, but also practice skilled practical operation ability, which lays a solid foundation for the innovation of design art and better reflects the value of design art.

(2) Social practice improves students' ability of knowledge integration. Computer aided graphic design art is an interdisciplinary and marginal applied subject based on multi-disciplinary achievements. Students must have the literacy of erudition while mastering certain professional knowledge and skills. To cultivate students' solid professional knowledge and skills, broad knowledge field, and lay a good foundation for them to participate in social competition and in-depth research and innovation in the professional field in the future. The traditional idea of "emphasizing knowledge and neglecting ability" in graphic design education is deeply rooted, which leads to the problems of narrow knowledge and insufficient theoretical and practical ability of students. It is difficult to verify and develop the knowledge in time, and the single knowledge structure hinders the development of design ideas. Therefore, to pay attention to the improvement of students' comprehensive ability, we must promote the integration of various qualities and abilities through many effective practical activities, and gradually form innovative design practice ability. Modern computer-aided graphic design art education should not only cultivate innovative talents, but also practical and compound talents, that is, those who are not only proficient in their own professional knowledge, but also have a broad artistic vision, involve knowledge of related disciplines, and have a strong interest in social and cultural knowledge, so that the learning of the whole design art specialty has more accommodation. From this point of view, it is necessary to increase the social practice of computer-aided graphic design teaching, which will help to mobilize

the enthusiasm of students' learning, stimulate their enthusiasm for learning, and cultivate their knowledge integration ability.

(3) Social practice exercises students' communication ability. The art of computer-aided graphic design itself is a way of communication. It needs to meet people's diverse physiological and psychological needs, understand the current situation of social economy, master the development trend of the whole society, and adapt to the requirements of the society for continuous innovation of design art. Under the control of traditional knowledge-based education, teaching is just for better understanding and mastering the knowledge of teaching materials, but neglecting the process of exchange and interaction, which makes students weak in communication ability, lack of keen insight, extraordinary insight and good communication and cooperation ability, unclear in design purpose, and design concept fuzzy, cannot effectively communicate with customers, and team cooperation, resulting in the design work is difficult to meet the needs of customers and the market. Experiential practical teaching will help students better understand the language of computer-aided graphic design art and how to use the design language to accurately convey the design concept to customers, companies, and colleagues, to achieve consensus in all aspects and ultimately realize the value of design art. Therefore, the goal of computer graphic design art education is to gradually improve students' interpersonal communication ability, market analysis and judgment ability, professional control ability and social adaptability through experiential teaching.

4 EVALUATION OF THE EFFECT OF COMPUTER-AIDED GRAPHIC DESIGN TEACHING UNDER THE EXPERIENTIAL TEACHING MODE

4.1 Evaluation of Learning Effect

According to Figure 5, compared with the traditional classroom teaching, the students who think the learning effect is very good are shown in the blue in the figure, the color part shows 18.9% of the students who think the learning effect is better are as shown in the yellow part of the figure 65.47% of the students who think the learning effect is average and fail to improve have 14.8%. In addition, there are students who think the learning effect is poor and fail to achieve good learning effect is 2.65% .

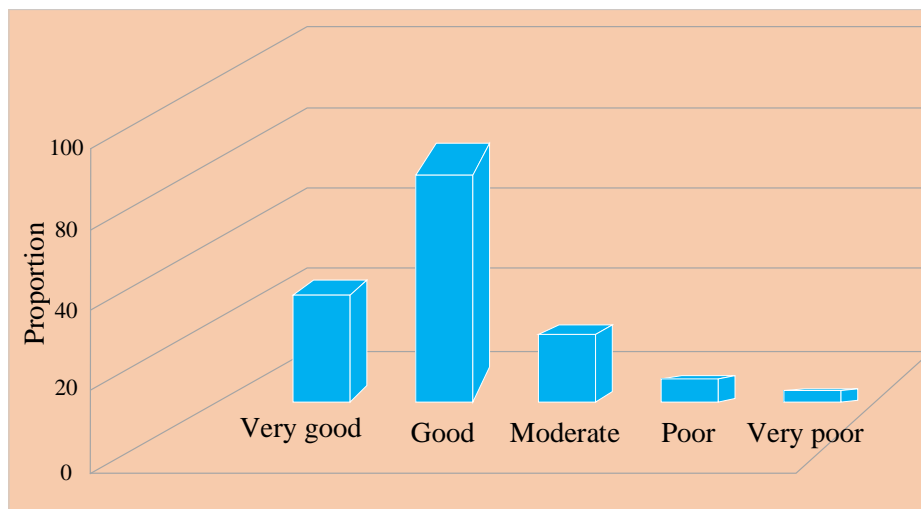


Figure 5: Evaluation of Learning Effect.

4.2 Evaluation of Learning Ability

According to Figure 6, there are 54.79% of the students think that their ability of self-study has been greatly improved; 24.66% of the students think there is a great improvement; 17.81% of the students think it's average; and 2.74% of the students think it's smaller.

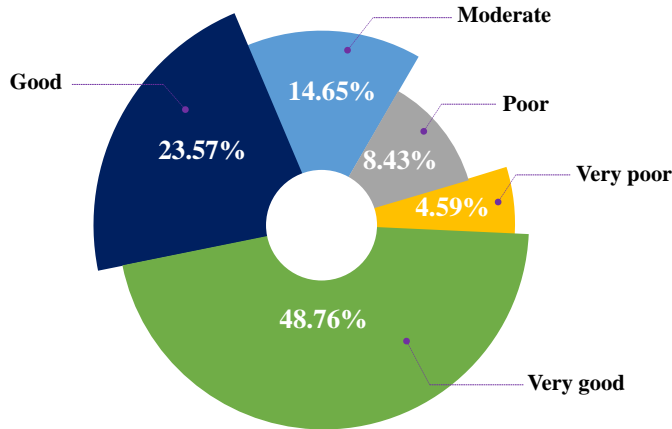


Figure 6: Analysis chart of learning ability evaluation.

4.3 Evaluation of Practical Operation Ability

According to Figure 7, 57.8% of the students think that their practical ability of graphic design has been greatly improved 14.63% of the students think it has been greatly improved; and 16.38% of the students think that the improvement effect is average. 9.21% of the students thought that the improvement effect was small, 1.98% of the students think that the improvement effect is very small.

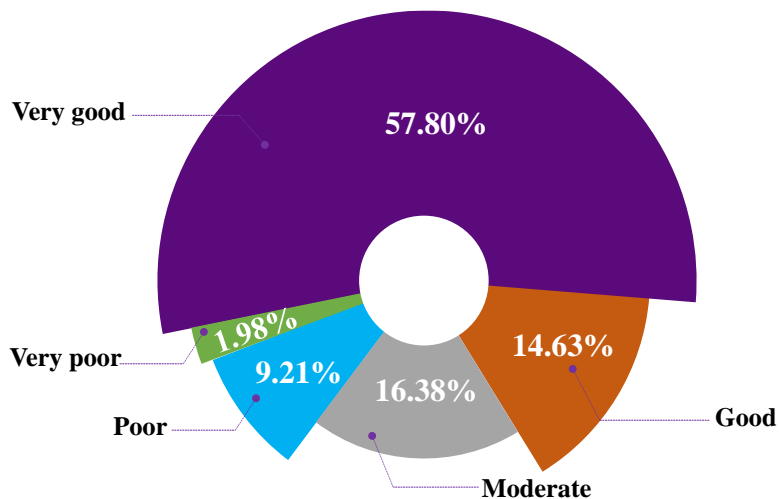


Figure 7: Result chart of practical operation ability improvement.

5 CONCLUSIONS

The characteristic of computer-aided graphic design is that theory is closely connected with practice, and skill type is emphasized, especially skill application from a unique perspective. The experiential teaching is introduced into this course, which emphasizes that students' independent experience is the center, and various forms of experiential teaching are flexibly used to guide students' creative learning and apply what they have learned. Through the introduction of experiential teaching in the actual teaching, we can see that students' subjective initiative is greatly improved, and they can better grasp the knowledge and skills they have learned. On this basis, combined with their own unique perspective and experience, they can give the product certain connotation. Overall, the introduction of experiential teaching into the computer-aided graphic design course is successful, is conducive to the cultivation of innovative talents in line with the needs of social development, and is conducive to the reform of experiential teaching in colleges and universities. In the new era, college teaching and talent training is a very meaningful exploration and attempt.

Mengmeng Zhang, <https://orcid.org/0000-0001-7910-5726>

REFERENCES

- [1] Triggs, T.: Sites of graphic design criticism: new spaces, new critics, South African Archaeological Bulletin, 37(136), 2016, 75-80. <https://doi.org/10.2307/3888681>
- [2] Overhill, H.: Design as choreography: information in action, Curator the Museum Journal, 58(1), 2015, 5-15. <https://doi.org/10.1111/cura.12094>
- [3] Appiah, E.; Cronjé, J.: The influence of information and communication technology on graphic design: reflections on pedagogy, Journal of Science & Technology, 34(1), 2014, 78-83. <https://doi.org/10.4314/just.v34i1.8>
- [4] Liu, J.: Electroencephalographic characteristic of automatic calibration of finger movements in graphic design, Neuroquantology, 16(5), 2018, 45-52. <https://doi.org/10.14704/16.5.1250>
- [5] Li, D.-H., Li, H.-Y., Wei, L.: Application of flipped classroom based on the Rain Classroom in the teaching of computer-aided landscape design, Computer Applications in Engineering Education, 28(2), 2020, 357-366. <https://doi.org/10.1002/cae.22198>
- [6] Wang, X.: Analysis and application of plane visual aesthetics elements design based on computer-aided technology, Advanced Materials Research, 926-930, 2014, 1668-1671. <https://doi.org/10.4028/www.scientific.net/amr.926-930.1668>
- [7] Alhajri, S.: The effectiveness of teaching methods used in graphic design pedagogy in both analogue and digital education systems, Universal Journal of Educational Research, 4(28), 2016, 637-642. <https://doi.org/10.13189/ujer.2016.040216>
- [8] Nasyrova, E.-F., Filatova, M. -V.: College students' art and design competence as the basis of graphic design teaching, Tomsk State Pedagogical University Bulletin, 5(13), 2017, 95-98. <https://doi.org/10.23951/1609-624X-2017-5-95-98>
- [9] Silvia, S.: Out of scale, out of context. the use of images in the teaching of graphic design history, Proceedings, 1(9), 2017, 880-885. <https://doi.org/10.3390/proceedings1090880>
- [10] Martínez-Carricondo, P.; Carvajal-Ramírez, F.; Yero-Paneque, L.: Combination of nadiral and oblique UAV photogrammetry and HBIM for the virtual reconstruction of cultural heritage, Case study of Cortijo Del Fraile in Níjar, Almería (Spain), Building Research & Information, 48(2), 2020, 140-159. <https://doi.org/10.1080/09613218.2019.1626213>