Teaching Reform of Application Training in Design Expression Course

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Abstract

Design expression is a basic skill course of environmental art design specialty. It uses hand-painted expression skills to cultivate students' overall design conception ability, which is used for on-site communication with customers and engineering construction personnel, so as to meet the basic requirements of environmental art design post. This course focuses on the rapid performance of traditional hand-painted on paper, combined with modern electronic touch screen performance technology to complete the teaching objectives. In teaching, because the development of modern design has changed with the progress of science and technology, the teaching mode of design expression needs to keep up with the corresponding rhythm in order to achieve the purpose of design expression; On the basis of practical application, this paper reforms and practices the teaching mode of design expression course in order to explore appropriate teaching methods.

Keywords

Design; Teaching; Reform.

1. Introduction

Design expression is a basic skill course of environmental art design specialty. It uses hand-painted expression skills to cultivate students' overall design conception ability, which is used for on-site communication with customers and engineering construction personnel, so as to meet the basic requirements of environmental art design post. In the teaching of design expression course, there are relatively few theories and high requirements for hands-on practice; With the development of modern science and technology, new methods of design expression emerge one after another. At the same time, various teaching methods that can adapt to it in teaching change with each passing day. In design expression teaching, we can teach students according to their aptitude according to their learning situation, strengthen classroom interaction and improve students' classroom participation and enthusiasm; In teaching, according to the students' practice and homework feedback, summarize the classroom situation in time and further refine the teaching methods.

2. Teaching basis and basic path

2.1 Teaching analysis

2.1.1 Talent training and teaching content analysis

Design expression is a basic skill of environmental art design. The course of design expression is a core course in the training program of environmental art design specialty. According to the requirements of the professional teaching standards of higher vocational schools of the Ministry of education, the teaching documents are formulated hierarchically, and the "four element classroom teaching design model" under the "SQAT" framework is determined according to the characteristics of learning. The teaching content of this course is divided into five modules: hand drawn renderings to express basic knowledge, plane renderings, rural house design expression, public space design expression Design comprehensive performance, improve case application, and integrate into classroom ideological and political content; On the basis of having the basic knowledge of environmental art space design, students will train and cultivate their overall design conception ability and hand-painted rapid expression ability for on-site communication between customers and construction personnel to meet the basic requirements of environmental art design, see Fig. 1.
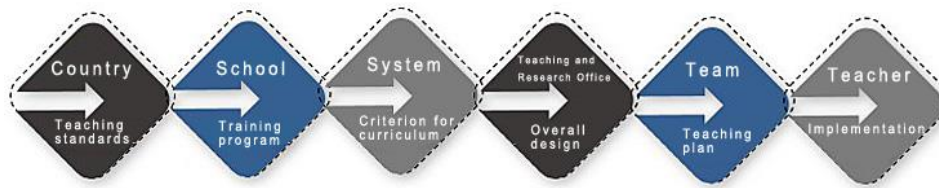
Fig. 1 Teaching basis and basic route

This course aims to cultivate students' overall design expression ability and traditional paper hand-painted rapid expression ability, explore modern electronic touch screen expression technology, facilitate on-site communication with customers and construction personnel, and meet the ability requirements of environmental art design posts, see 2.

Fig. 2 Design and express course objectives

2.1.2 Basic characteristics of teaching objects

The students of this course come from the art students of unified enrollment. They are interested in hand painting and have the basic skills of hand painting; Class thinking is active and rapid, but the depth of thinking is not enough, listening ability and learning continuity are slightly lacking; There are certain individual differences in individual learning ability and intelligence factors, see 3.
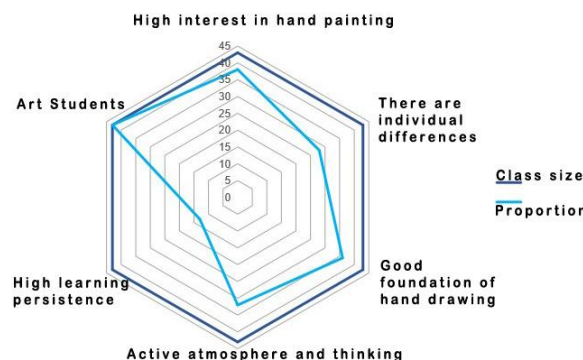

Fig. 3 Analysis of learning characteristics

2.1.3 Teaching materials and reference books

The textbook of this course uses the book "rapid performance of indoor and outdoor hand drawn renderings". The textbook of this course belongs to the "13th five year plan" textbook of design specialty. It takes task driving as the compilation module and post ability training as the standard, reflects the characteristics of work study alternation and school enterprise cooperation, and integrates the post vocational ability requirements into various knowledge points. The textbook introduces a large number of design works corresponding to different knowledge points to strengthen students' design ability and performance ability. Teachers provide students with bibliographies and materials according to the specific teaching contents.

2.2 Teaching design

2.2.1 Instructional design model

Based on years of teaching practice and rigorous demonstration, this paper constructs a four element classroom teaching design model under the SQAT teaching framework" Sqat teaching framework "refers to the framework of teaching design, which focuses on learning by doing and learning by doing to improve students' skills, art based aesthetic creation, ideological, political and professional quality improvement assisted by quality, and post technical ability training with skills as the main body" SQAT teaching framework "is based on the national teaching standards of art and is constructed according to the needs of curriculum teaching objectives" Four element classroom teaching design model ", that is, under the" SQAT teaching framework ", it adopts the four steps of learning guidance display - group mutual evaluation - competitive PK - teacher summary, project driven, and integrates the four elements of post scenario introduction, industry education integration, smart classroom and professional atmosphere; Classroom teaching is divided into three parts: guidance before class, practice in class and expansion after class" "Four elements classroom teaching design model" is a teaching method based on the analysis of the learning characteristics of art students and aiming at the key and difficult points of teaching, which combines the four elements of post situation introduction, production and education integration, smart classroom and professional atmosphere with each link and step teaching, and integrates into ideological and political education. It can effectively promote teaching reform, optimize classroom teaching and improve teaching quality, see 4.
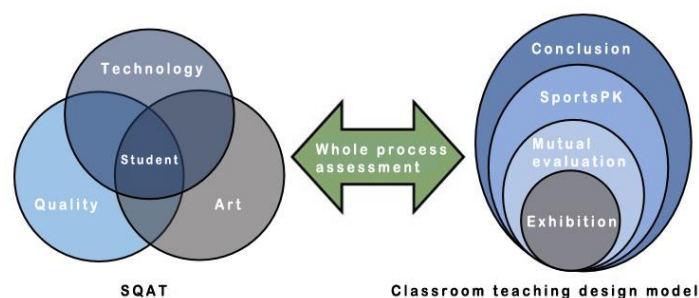

Fig. 4 SQAT teaching framework and classroom teaching design model

2.2.2 Application of teaching strategies

Around the principle of "learning by doing and teaching by doing", the purpose is to cultivate the ability of hand-painted expression of environmental art design students; Formulate three teaching strategies before, during and after class. In the pre class link, students preview and complete the test questions by using the teaching resource database of environmental art design major of national vocational education. Teachers understand the students' mastery of preview according to the statistical data and test results of the resource database platform, so as to determine the key and difficult points of classroom teaching; In the class, we use the post situation to introduce knowledge points, combined with teacher demonstration, virtual reality, animation decomposition, discussion and analysis between teachers and students, so as to break through the key points; Optimize the real project as the classroom practice application, complete the post skill training with teacher skill

demonstration, animation playback and personalized guidance, and resolve the teaching difficulties. After class, students use materials to expand their knowledge and skills on the environmental art design resource database platform, submit the end of class test results, and teachers and enterprise designers jointly evaluate and give improvement suggestions, see Table 1.

Table 1. Teaching strategy

Teaching strategy							
Before class		In class				After class	
Advance organization		Concept formation		Behavior practice		Self management	
Teacher	Student	Teacher	Student	Teacher	Student	Teacher	Student
Prepare network platform materials, practice assignment and preset learning process.	Log in to the network, preview the information in the materials, and strengthen it.	Knowledge discussion, using animation and on-site demonstration to form the concept of spatial expression.	Accept new knowledge, perceive the demonstration process and form a preliminary spatial impression.	Clarify the tasks of practice links, control the practice time and provide differentiated guidance.	Practice according to practical tasks.	Review practical tasks and monitor the review effect.	Log in to the network platform, submit homework and review.

2.2.3 Teaching activity planning

Innovate teaching activities to improve teaching effect. In the classroom, situational introduction and teaching aids observation and discussion are used to guide students to obtain perceptual knowledge. Teachers demonstrate the difficulties of hand-painted skills on site. Students' achievements are evaluated jointly with industry enterprise designers by using the national vocational education teaching environment art design resource database platform, online test and industry enterprise designers.

Teaching activities supported by informatization and intelligence. The teaching video, PPT, micro class, virtual reality and other resources in the national vocational education teaching environment art design resource database platform can be used in teaching activities to achieve the effect of learning and review at any time; Using the intelligent classroom to track the whole process of learning behavior and interact with the intelligent map evaluation system to analyze the teaching effect; Use the resource database platform to sign in, submit relevant works, practical achievements and online testing.

Integrate ideological and political education and labor concept education into the curriculum. According to the arrangement of teaching links, timely integrate the habit of good observation and independent thinking; The innovative spirit of daring to try; Love novel coronavirus pneumonia, love life, love the motherland (combined with the new crown pneumonia epidemic situation), and pursue the curriculum of Ideological and political education for better life. Integrate the labor concept education of the craftsman spirit of excellence, see 5.
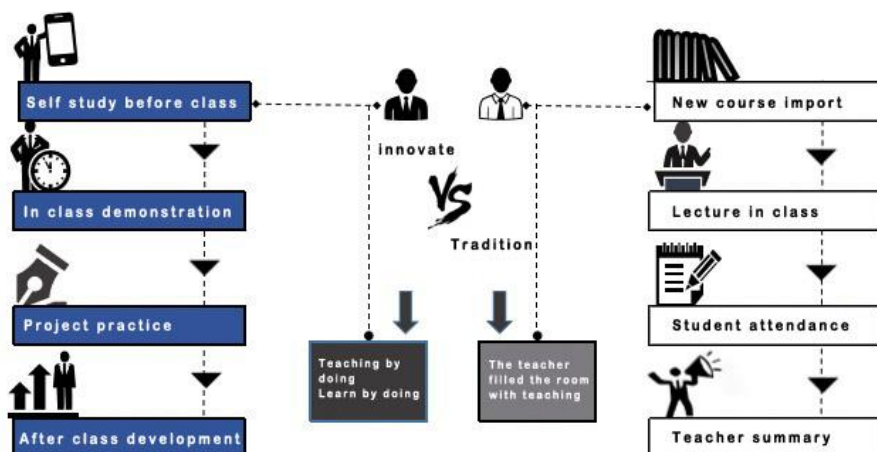

Fig. 5 Analysis of teaching activities

2.3 Analysis of main technical means of teaching

The teaching of this course adopts the combination of traditional advantageous technical means (physical teaching aids), modern information technology (smart classroom, virtual reality, animation) and national teaching resource database platform to demonstrate and decompose the key knowledge in teaching and break through the difficulties in hand drawing skill training. Application of main technical means and target effect, see Table 2.

Table 2. Analysis of teaching technology means

	Technical means	Type	Use link	Use intention	Target effect
			Analysis of teaching technology means		
1	Network interaction	Teaching videos, courseware and test questions of the resource database platform of environmental art design specialty	Pre class guidance Practice in class After class development	1. Preview and test before class to determine the key points and difficulties of teaching. 2. Sign in during the class, play back the operation video, consolidate and improve. 3. Review, expand and innovate after class, test and evaluate the effect.	Everyone learns Can learn everywhere Always learn
2	Wisdom classroom	1. Behavior tracking system 2. Intelligent evaluation system	Whole process	1. Track the learning behavior in the whole process and analyze the teaching effect. 2. Provide evaluation system to enhance interactive efficiency.	Fully grasp the learning status
3	Virtual reality	1. Experiential scenario 2. Furniture accessories system	Practice in class	1. Provide perceptual knowledge of residential space scenes. 2. Avoid the operation danger in the real environment.	Improve learning efficiency
4	Animation demonstration	1. Structural animation 2. Teaching demonstration animation	Practice in class After class development	1. Demonstrate the operation steps through animation. 2. Review operation skills through animation.	Consolidate learning outcomes
5	Physical teaching aids	1. Perspective demonstration teaching aids 2. Furniture model teaching aids	Practice in class	1. Enhance real feelings and mobilize the classroom atmosphere. 2. Break through teaching difficulties.	Break through key points and difficulties

3. Implementation and effectiveness of classroom teaching

3.1 Classroom teaching implementation

Classroom teaching is implemented according to the four element classroom teaching design model under the sqat teaching framework, and detailed data analysis is carried out in each teaching link and step as the basis for teaching reflection, see 6.
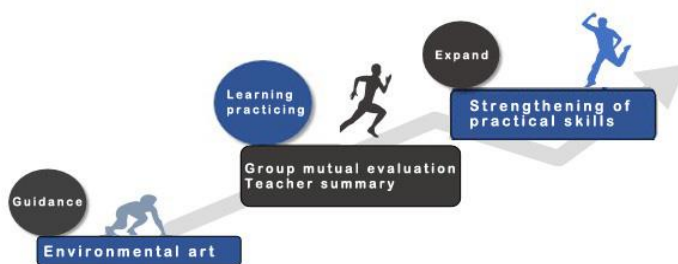

Fig. 6 Flow chart of teaching design ideas

In the pre class guidance stage, apply the teaching resource database platform of environmental art design specialty to study and submit the task results. Give full play to the advantages of the platform to facilitate students to learn everywhere and from time to time; According to the analysis of statistical data (learning completion and mastery of knowledge and skills), determine the key and difficult points of classroom teaching.

In class -- sign in, sign in on the teaching resource database platform of environmental art and design specialty, and cultivate students to be punctual and trustworthy.

In class - learning guidance display, each group displays the task results of the pre class learning guidance stage in turn.

In class - group mutual evaluation, teachers guide students to explore the technical performance of task results, and put forward their own solutions to the key and difficult points of rural house design expression.

In class - competitive PK, introduce knowledge points based on post situation and virtual reality scene, take the designer's post ability as the goal, practically apply project driven, arrange student group competitive PK, so as to achieve the purpose of learning from each other and displaying works on site. For the more difficult to understand abstract concepts, the use of teaching aids, animation demonstration, teacher skill demonstration video, students look for answers and get results.

In class - teachers' summary, use the intelligent drawing evaluation system of smart classroom to evaluate competitive PK works. For the design and expression difficulties, teachers summarize the laws and methods to achieve the purpose of learning by doing and teaching by doing. Through a series of classroom practice and application, promote the formation of students' rural house design performance skills and skills, so as to achieve the post ability of complete independent operation.

After class -- expand. After class, use the teaching resource database platform of environmental art design specialty to review relevant knowledge and skills, expand and cultivate innovation ability. Upload skills application works on the platform, and teachers give evaluation and guidance according to classroom knowledge; Enterprise designers shall evaluate and give guidance according to post skill requirements.

After class -- end the test, and the teachers in the school evaluate the students' knowledge mastery; Enterprise designers evaluate the practicability and artistry of students' works.

Ideological and political contents are properly integrated into the course according to each classroom teaching link.

3.2 Classroom teaching effectiveness

In order to test the teaching effect, the whole process assessment and evaluation is implemented under the supervision of two-level teaching supervision of colleges and departments, in which formative assessment accounts for 60% and summative assessment accounts for 40%. According to the teaching implementation process, the evaluation is divided into links.

In the pre class guidance stage, the completion of students' preview and the preliminary mastery of test knowledge and skills are statistically evaluated according to the data of the resource database platform of environmental art design specialty;

In class evaluation - sign in stage and tool preparation to evaluate the cultivation of students' professional quality of punctuality and trustworthiness;

In class evaluation - show the mutual evaluation stage, not only pay attention to whether students' knowledge mastery has reached the teaching objectives, but also use the smart classroom behavior tracking system to evaluate students' concentration, participation, communication and discipline.

In class evaluation - competitive PK stage, the intelligent classroom intelligent map evaluation system is used to evaluate the practical application and innovation ability, and the intelligent classroom behavior tracking system is used to evaluate the professional quality cultivation of students' learning initiative and teamwork.

In the after-school evaluation stage, the completion degree of students' review and the comprehensive evaluation of skill test are statistically evaluated according to the data of the resource database platform of environmental art and design specialty. After each class, a comprehensive test of knowledge and skills shall be conducted, which shall be jointly evaluated by team teachers and enterprise designers.

Unit teaching evaluation based on classroom evaluation; By analogy, the overall evaluation result of the course is finally obtained. Whole process assessment form, see Table 3.

Table 3. Whole process assessment form

Type	Evaluation proportion	Activity	Content and score	Object	Evaluation subject and weight
Formative assessment	Pre class evaluation (15%)	Watch the teaching video and complete the pre class exercises	Preview completion rate, test and learning level (15 points)	Group	Teachers 100%
	In class evaluation (30%)	Sign in	Early, punctual, late and absent from class (5 points)	Personal	Teachers 100%
		Preparation of tools and materials	Timeliness, accuracy and efficiency (5 points)	Personal	Teachers 100%
		Work display and mutual evaluation	Knowledge mastery, classroom concentration, participation, communication and discipline (10 points)	Group	Teachers 100%
		Competitive competition	Practical application, innovation ability, teamwork and initiative (10 points)	Group	Teachers 50%, students 50%
	After class evaluation (15%)	Review and expand the teaching video of residential space design performance of resource base platform, and upload project application works.	Review completion rate, initiative, application, expansion and innovation (15 points)	Personal	Teachers 100%
Final assessment	Testing (40%)		Online test (40 points)	Personal	Teachers 60%, Enterprise designers 40%

Based on the ability of employment and driven by real projects, students have a high degree of participation. The key points and difficulties of teaching are determined according to the data of preview of students' environmental art design resource database before class; Introduce knowledge points through post situation and virtual reality scene, and students discuss and study. With the application of teaching aids and the demonstration of teachers' skills, the knowledge objectives of the course have been achieved by integrating the ideological and political content. Through the course assessment and test, students can apply the thinking mode and performance methods learned in the classroom, perfectly express the design cases of rural houses, and achieve the ability objectives of the course; We have properly integrated ideological and political education into all links of teaching, and completed the teaching of quality objectives.

According to the above evaluation scheme, according to the comprehensive evaluation of the rural house design expression unit of design expression, 95% of the students can master relevant knowledge points, 91% of the students can master the skills of rural house design expression, 88% of the students can achieve the literacy goal, and 65% of the students have certain artistic cultivation, see 7.
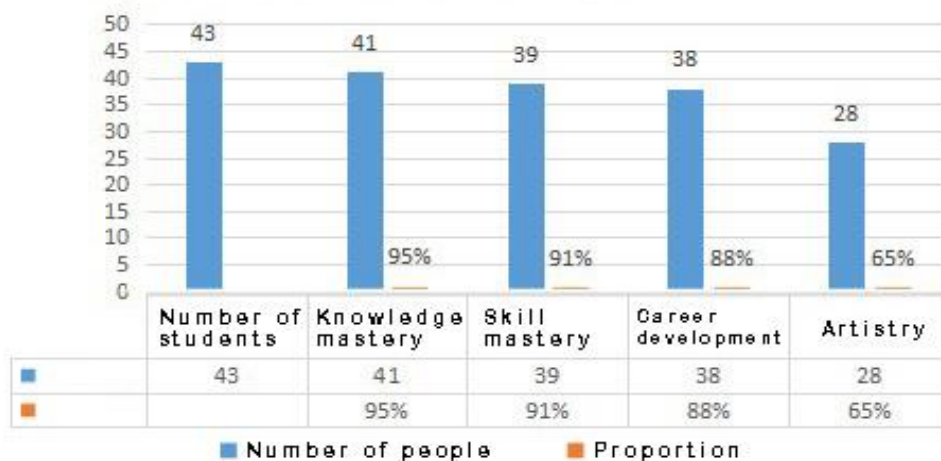

	Number of students	Knowledge mastery	Skill mastery	Career development	Artistry
■	43	41	39	38	28
■		95%	91%	88%	65%

■ Number of people   ■ Proportion

Fig. 7 Unit comprehensive evaluation

4. Teaching characteristics and innovation

4.1 Characteristic

Establish classroom teaching design model according to national standards, standardize teaching team, and achieve the purpose of "doing while learning and teaching while doing"

The "four elements classroom teaching design model" under "SQAT" realizes the simplification of complex problems, the visualization of abstract problems, and resolves the difficult problems in teaching; Achieving the goal of "doing while learning and teaching while doing" is conducive to promoting teaching reform, optimizing classroom teaching and improving teaching quality.

The curriculum realizes the integration of industry and education, the classroom practice adopts the real project driven teaching method, and the enterprise actually designs the project as the classroom practice task; Introduce classroom teaching with job situation, optimize real project learning and practice, and create a professional atmosphere; The double evaluation of teachers and enterprise designers has effectively promoted learning enthusiasm and self-discipline.

4.2 Innovate

Flexible use of modern teaching technology means, inherit excellent traditional teaching technology, and achieve the purpose of teaching students according to their aptitude.

According to the characteristics of learning situation, we should flexibly use modern information teaching technology and inherit traditional excellent teaching methods in all links of teaching, so as to achieve the purpose of student-centered and individualized teaching.

During the epidemic prevention and control period, give full play to the advantages of the national vocational education teaching environment art design professional resource database platform for online and offline teaching; Make proper use of different types of modern teaching technical means such as virtual reality and animation demonstration to break through the teaching difficulties and resolve the teaching key points; Inheriting the excellent traditional teaching skills, using physical teaching aids to guide students to observe and find laws independently, so as to teach students according to their aptitude, see Table 4.

Table 4. Innovation model

Innovation characteristics	teaching model	1. SQAT	2. Teaching model	Ideological and political Learning and practicing Project application	3.Team
	Integration of industry and education	1. Demonstration, learning and Practice	2. Project driven	Post skills Process assessment Final assessment	3.Learn by doing and learn by doing
	Teaching technology	1. Modern information	2. Traditional advantages	Wisdom classroom Virtual animation Physical teaching aids	3.Teach students according to their aptitude

5. Teaching reflection and improvement

5.1 Teaching reflection

Students use the network platform of environmental art and design professional resource library for video teaching, poor consciousness of simulation exercise in advance, and slightly lack the continuity of learning. Teachers and group members need to supervise and encourage each other.

As the environmental art professional resource library is in the construction stage, the materials are relatively insufficient for pre class preview, post class review and consolidation, and teachers can not fully grasp the learning status of students.

Due to the large number of students, it is difficult for all groups to express their understanding and views one by one in the classroom mutual evaluation link, so all students can not have the opportunity to express themselves.

5.2 Teaching improvement

Take incentive measures to enable students to gradually develop the habit of online learning, give full play to the online teaching advantages of the resource database platform of environmental art and design, improve the expansion efficiency of pre class preview and post class review, and consolidate learning achievements.

At present, the national environmental art design professional resource database platform is in the construction stage. In the future, through the construction of resource database curriculum material resources and the integration of production and education, develop more relevant high-quality curriculum resources, improve students' learning interest, expand the teaching of design expression and better serve the teaching.

Further strengthen the construction of modern smart classroom, enhance the interaction between students with the upgrading of teaching equipment, share design performance experience with each other and make common progress.

6. Conclusion

At present, domestic colleges and universities have put forward various views and suggestions on the teaching reform of the design expression course of environmental art design specialty. According to the practice, summarize the reform of this course, fully understand the academic situation, art based creative aesthetics, and improve the ideological, political and professional quality assisted by quality, The training of post technical ability with skills as the main body is the framework of teaching design; It adopts the four steps of learning guidance display - group mutual evaluation - competitive PK - teacher summary, project driven, combined with the evaluation of the whole teaching process, so as to achieve the purpose of student-centered and individualized teaching, so as to effectively improve the teaching quality.

Acknowledgements

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