



# Research on the Teaching Reform of 2D Software Course for Environmental Art Major Under the Concept of “Golden Course”——Take “Digital Two-Dimensional Representation” as an Example

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**Abstract.** With the country’s proposal of “Golden Course” and the changes in the application direction of 2D software in the environmental art industry, the course “Digital 2D Performance” needs further adjustment and reform. In the original curriculum, there are problems such as single teaching method, lagging teaching content, lack of teaching resources, and the assessment system needs to be improved. In response to these “pain points”, the curriculum reform has made corresponding adjustments. Under the concept of “Golden Course”, the “Digital Two-dimensional Performance” course uses the Xuexitong online teaching platform of Learning Link to change teaching concepts, enrich teaching methods, innovate teaching contents, expand teaching resource platforms, and improve teaching evaluation system. After a semester of teaching practice, the author proves that the curriculum reform under the concept of “Golden Course” can organically combine theory and practice, effectively exert students’ subjective initiative, and improve students’ autonomous learning ability through the analysis of performance comparison and questionnaire survey. Expand the space and time for students to study. The curriculum reform has not only improved the quality of software courses for environmental art majors, but also has reference significance for other courses in environmental art majors.

**Keywords:** Golden class · Environmental art major · reform in education · Two dimensional software · Online and offline teaching

## 1 Introduction

In August 2018, the Ministry of Education issued the “Notice on Paying Close Attention to the Implementation of the Spirit of the National Conference on Undergraduate Education in Colleges and Universities in the New Era”. [1] The document proposes that “all colleges and universities should comprehensively sort out the teaching content of each course, eliminate ‘water courses’, create ‘golden courses’, and effectively improve the quality of course teaching.” [2] This is the first official use of the concept of “golden

class” in the Ministry of Education document. In November 2018, at the 11th “China University Teaching Forum”, Wu Yan, director of the Higher Education Department of the Ministry of Education, made a report entitled “Building China’s “Golden Course”. Director Wu Yan pointed out that “golden lessons” can be attributed to “one degree of gender”, that is, high-level, innovative and challenging [3].

Since the Golden Course was proposed in 2018, there is no unified English translation yet. Articles published in the core journals available on CNKI translate “Golden Courses” into “Golden Courses”. There are relatively few research papers on gold courses abroad. Domestic scholars have focused on research on the connotation and construction path of the golden class [4]. Up to now, the research on “golden courses” is still in the preliminary stage of exploration. Although the teaching reform of ideological and political golden courses and the construction of online and offline courses based on golden courses have gradually entered the research horizon, the research on golden courses in software is still in the initial stage of exploration. There are relatively few studies on curriculum construction.

The author developed the online course “Digital 2D Representation” to assist the teaching of the “Digital 2D Representation” course in schools. Teachers used this course to combine with offline courses to carry out a semester of teaching reform practice. Based on this, this paper comprehensively uses the literature research method, questionnaire survey method, classroom observation method and other research methods to carry out a practical exploration of the teaching reform of the two-dimensional software course under the concept of “golden course”, in order to conduct a more in-depth and comprehensive study of environmental arts majors. The teaching reform of the course provides reference for improving the quality of the course.

## **2 Status Quo of 2D Software Courses for Environmental Arts Majors**

### **2.1 Status Quo of 2D Software Courses**

“Digital 2D Representation” is a basic course for environmental arts majors. This course mainly includes two parts: engineering drawing software learning and image processing software learning. According to the characteristics of environmental majors, the course selects CAD and PS, which are powerful and widely used, as the learning objects. Through the course study, students can master the theory and method of software operation, get systematic training in digital two-dimensional art processing, and lay the foundation for the subsequent professional design performance courses.

### **2.2 Problems with 2D Software Courses**

#### **2.2.1 Single Teaching Method**

The original two-dimensional software courses mainly rely on PPT teaching theory and teachers’ operation demonstration as a supplement. The teaching methods rely too much on multimedia teaching, and the teaching form is single. To a certain extent, students are bound to the inherent knowledge framework system of teachers. Students cannot

combine software operation with design practice in a timely manner. A large amount of boring theoretical knowledge reduces students' enthusiasm for learning, resulting in students easily forgetting the knowledge in class in a short time, which is not conducive to ensuring the quality of the course.

### **2.2.2 Teaching Content Lags**

The two-dimensional software course mainly teaches the theory, and the teacher summarizes and demonstrates the software operation process. However, there are few practical teaching parts in the course and the update frequency is low, which causes the content of the two-dimensional software course to lag behind and cannot meet the market demand for rapid update. Because the two-dimensional software course has many operation knowledge points and the content is relatively boring, if the students are not proficient in the knowledge points, the operation practice process is prone to lag, which is not conducive to the teacher's guidance on the students' operation.

### **2.2.3 Lack of Teaching Resources**

At present, the main teaching resources of software courses are still teaching materials. Due to the fast updating of software and strong practicality, the updating speed of teaching materials cannot adapt to the rapid software development, and the content of teaching materials cannot meet the needs of curriculum reform. The knowledge that students can master comes from the content of the teacher's classroom. Due to the limited time in class, the construction of knowledge system is not comprehensive enough.

### **2.2.4 The Evaluation System Needs to Be Improved**

The assessment and evaluation of environmental art professional software courses are mainly "result"-oriented. Teachers pay too much attention to the graphic effects of the final work, and ignore the learning rules of environmental art majors and the application of software operations in actual design, so that students do not have a solid software operation foundation and cannot exercise the ability to reasonably express the actual design plan, the final student's renderings work only focus on the surface effect, the form is greater than the content.

## **3 Teaching Reform Measures Under the Concept of "Golden Course"**

### **3.1 Teachers Should Change Teaching Ideas**

Teachers should change the traditional teaching concept, and transform the traditional "one-word classroom" into a "teaching community" where teachers and students discuss issues together. The environmental art major requires students to be able to flexibly use the basic knowledge of design according to the actual situation. The 2D software course not only requires students to be proficient in PS, CAD and other software operations, but also to cultivate students' divergent thinking and innovation ability. Teachers should change from "leader" to "leader", and students should change from "passive acceptance" to "active participation" [5].

### 3.2 Teachers Should Enrich Teaching Methods

The reform of the two-dimensional software curriculum requires teachers to improve the teaching mode and enrich the teaching methods. The “Golden Course” teaching reform course of 2D software is not limited to the offline classroom, but divides the course into three parts: before class, during class, and after class (as shown in Fig. 1).

The first part is the pre-class self-study stage. Before the class, teachers upload or reprint suitable basic knowledge materials to the course platform according to the needs of the course, including short videos, micro-lectures, PPT, software operation cases, etc., and set up corresponding learning tasks. Students learn online courses independently, complete the task points assigned by teachers, and discuss problems arising from the learning process with their classmates online to try to solve them by themselves. Teachers can observe students’ real-time preview status and task completion progress on the teaching platform. Before the class, the students’ online questions are summarized for centralized explanation in the offline class [6].

The second part is the classroom teaching stage. In the class, the teacher first uses the method of explaining the design case to summarize the basic knowledge involved in the online course, to help students review the operational knowledge they have mastered, and to add some more difficult knowledge to the case, so that students can Improve while strengthening your foundation. Secondly, the teacher will summarize and display the problems generated by the students’ online preview, so that the students can think about the problems again, and the students can discuss in groups and try to solve the problems by themselves using the newly learned knowledge. Teachers need to pay attention to guided teaching and cultivate students’ ability to analyze and solve problems by themselves. After the students’ discussion is over, the teacher will answer the unresolved questions.

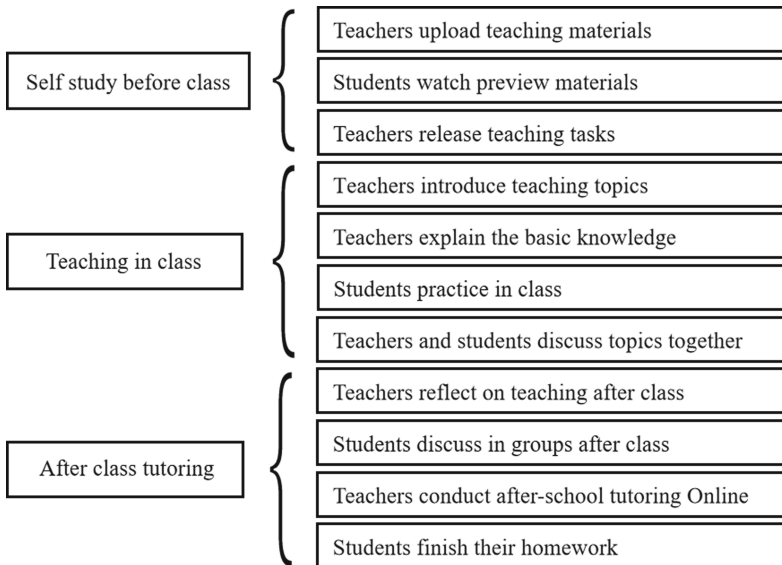


Fig. 1. Teaching flow chart.

Finally, the teacher adopts the task teaching method to let the students practice the software operation through the way of case design tasks. Students can work in groups to design and complete design tasks together. Within the specified time of the course, students will report on the practice assignments of the group, and teachers will then make comments and summaries to strengthen students' impression of knowledge points and improve teaching effects.

The third part is the after-school guidance stage. Teachers organize the content in the classroom, record them into short videos in sections and publish them on the learning platform. After class, students can find and watch specific teaching videos according to their own knowledge, and flexibly arrange time for review to consolidate what they have learned in class. In the after-school exercises, if students still have knowledge points that they cannot master, they can ask teachers for advice through WeChat groups, or they can discuss solutions with other students in the exchange group, which improves learning efficiency. After the course is over, teachers can display the students' design work in the form of online exhibitions on the teaching platform or course public account. Teachers should also reflect on the teaching content of the whole course after the class, summarize the common problems encountered by students in the course, summarize the key points and difficulties of the online and offline mixed teaching mode, optimize the teaching mode, supplement the course content, and continuously improve the course Effect.

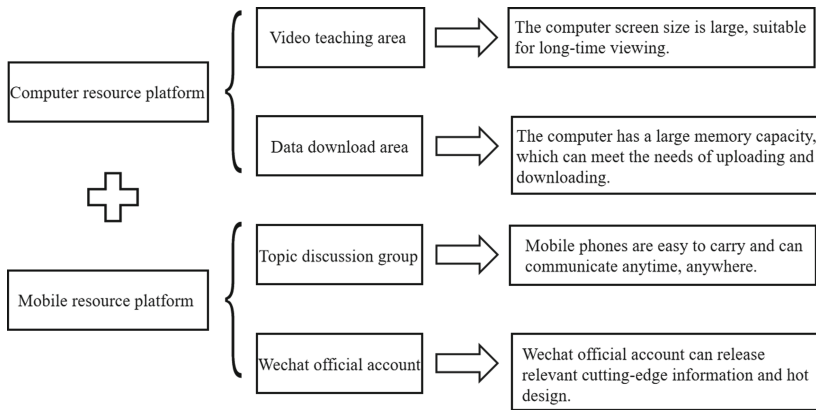
### **3.3 School Teaching and Research Team Should Innovate Teaching Content**

The school's teaching and research team should innovate the syllabus of the "Digital Two-dimensional Representation" course, improve the teaching content, and improve the teaching quality. Students are the main body of the classroom. Only when the content of the course meets the actual learning needs of the students can it meet the depth and requirements of the "Golden Course" construction. The teaching content innovation of "Digital 2D Representation" adds the part of actual program design on the basis of the original course. In the CAD course, the original CAD operation knowledge is rearranged and combined in the task process of completing the home improvement design scheme. Questions that are closer to social practice are raised in a task-driven mode. Teachers guide students to learn software basic operations, and to be able to independently think about "where to use" and "how to use" software techniques, thus better consolidating students' foundation. The mastery of knowledge [7].

The arrival of the new crown has changed people's lives. But in difficult days, batches of heroes of the era have emerged, including doctors, police officers, community workers, volunteers, etc. Their deeds are touching. In the PS course, students discussed heroic deeds through group communication, and cooperated in groups to create and design posters with the theme of "Anti-epidemic Heroes". Based on actual cases, in the process of making cases, students learn the operation knowledge of software, find problems, analyze problems, solve problems, and jointly build a teaching community.

### **3.4 Schools Should Expand Teaching Resource Platform**

Schools can cooperate in depth with the learning platform, create a teaching resource platform for this course with the help of the platform system, and package and upload



**Fig. 2.** Online teaching resource platform.

large-scale flat material resources to the teaching platform resource library. Teachers provide students with software-related tutorials and materials through the platform, and guide students to preview independently and learn with high quality.

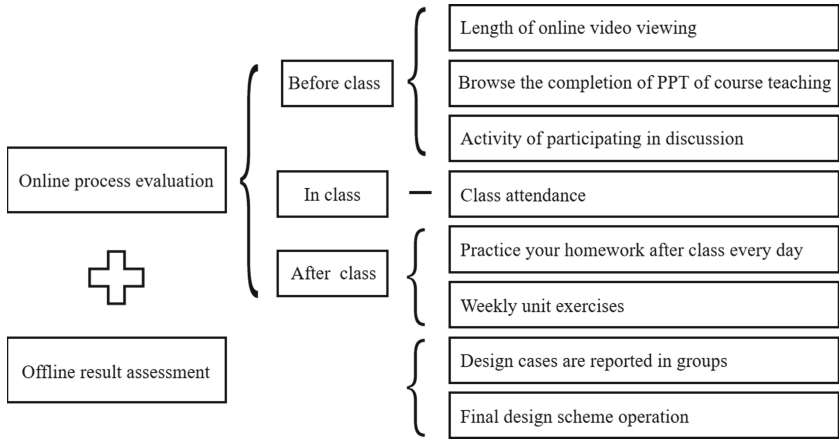
The online resource platform of the course “Digital 2D Performance” is mainly composed of the Xuexitong online teaching resource library on the computer side, the Xuexitong App and WeChat public account on the mobile phone side (as shown in Fig. 2).

The Xuexitong resource library on the computer is the main body of online course resources. The teaching platform consists of multiple partitions such as video teaching area, resource download area, and homework upload area. The computer screen size is large, which is more suitable for students to watch teaching videos for a long time. After class, students can view the software operation process in the teacher’s class in the video teaching area of the platform and practice repeatedly. The computer terminal is not limited by the memory capacity, and can meet the needs of uploading and downloading teaching materials. The teaching and research team should organize and update the materials on time to ensure the practicability of the materials [8].

The mobile phone is easy to carry, and the Xuexitong App on the mobile phone is more suitable for students to discuss group tasks at any time. The WeChat official account of the course will publish cutting-edge information and hotspot designs related to the course. For knowledge points that students do not understand in class, teachers can ask teachers to answer them from a distance in the Q&A area, which solves the limitation of space and time.

### 3.5 Schools and Teachers Should Improve the Teaching Evaluation System

The teaching reform of the course “Digital 2D Performance” combines the online process evaluation feedback using Internet information technology with the offline result assessment in which teachers and students participate in the evaluation through two evaluation modes, online and offline. A comprehensive teaching evaluation system has been established (as shown in Fig. 3).



**Fig. 3.** Hybrid assessment system.

The online process evaluation evaluates the online learning part of the students through the help of the learning network teaching platform. In the pre-class online self-study part, the evaluation content includes the students’ online viewing time, the degree of completion of browsing the course PPT, and the activity of discussion questions. Teachers organize each part of the process data as part of the attendance through the teacher management platform of Xuexitong. In the offline classroom, due to the large number of participants in the class, it is easy to replace and miss points. Teachers can set the check-in pattern by means of mobile phone positioning, shorten the check-in time, and increase the check-in accuracy. In the after-school student review section, teachers can use the teaching management platform to score and count students’ daily after-school practice assignments and weekly unit practice assignments as their usual homework scores.

The offline result assessment is mainly conducted from two aspects: design case group report and final design scheme assignment. Before the start of the course, the teacher stipulates the content and weight of each part of the assessment, and clearly informs the students. During the class, the students’ learning progress is monitored by means of network technology, so that the assessment results are more objective and fair. When students understand the grading system, they can participate more actively in teaching activities, complete learning accumulation, and improve learning efficiency.

#### 4 Analysis of Teaching Effect

The software teaching reform for environmental art majors has been implemented for one semester in the teaching of the “two-dimensional digital representation” course. The analysis of the teaching effect of the course reform mainly includes three parts: score comparison, platform data analysis and questionnaire survey.

Grade	Total number of samples	60-70 points	70-80 points	80-90 points	90 Points or more	Average value	Minimum value	Maximum value
Grade 19, Class 1 and 2	40	3	9	26	2	83.6	62	92
Grade 20, Class 1 and 2	42	0	7	31	4	86.2	70	93

**Fig. 4.** 2019 and 2020 course grade statistics.

#### 4.1 Performance Comparison

In order to understand the teaching effect of this practice, the author compares the results of the “Digital Two-dimensional Representation” course of the 2020 environmental art major class 3 and 4 (using the teaching mode after teaching reform) with the 2019 environmental art major class 1 and 2 students. (the teaching reform practice has not yet been carried out) to compare the course scores (as shown in Fig. 4).

As can be seen from the average, the final average grade of the 2020 students is slightly higher than the average grade of the 2019 students. From the minimum value, it can be seen that the final minimum grades of the 2020 students are much higher than the minimum grades of the 2019 students. It can be proved that the teaching reform has improved the overall teaching quality of the “two-dimensional digital representation” course, and the improvement is more obvious for students with poor foundation. However, from the maximum value, it can be seen that the highest grades of 2020 students at the end of the semester have little change compared with the highest grades of 2019 students. The teaching reform has no obvious effect on students with high grades, and it is still necessary to continue to adjust and improve.

In the course reform of “Digital 2D Representation”, teachers take the design case as the task orientation, integrate the basic knowledge of software into the case, and organically combine online theoretical teaching with offline practical teaching. After the course, the teacher organized the course assessment works completed by the students to be publicly displayed online, which was unanimously affirmed by the school leaders and other professional students. Due to the combination of the coursework requirements and the theme of the graphic design competition, students can participate in the graphic design competition of the relevant theme with a slight modification of the course work, and obtain an excellent ranking.

#### 4.2 Platform Data Analysis

By sorting out the feedback data of the Xuexitong teaching platform, we can know that there are 7 students who log on the Xuexitong learning platform 1–3 times a week, accounting for 16.67%; 25 students log on the Xuexitong learning platform 4–6 times a week. Accounted for 59.52%; 10 students logged on to the Xuexitong Learning Platform 7 or more times a week, accounting for 23.81% (as shown in Fig. 5).



Login times	1-3	4-6	7or more
Number of samples	7	25	10
Proportion	16.7%	59.5%	23.8%

**Fig. 5.** Weekly log in to the platform statistics table.

Log in time (h)	less than 0.5	0.5-1	1-2	2or more
Number of samples	5	16	14	7
Proportion	11.9%	38.1%	33.3%	16.7%

**Fig. 6.** The duration of each login to the platform.

According to the data analysis of the online time after students log in to the Xuexitong platform each time, it can be seen that there are 5 students whose online learning time is less than 0.5 h after each login to the Xuexitong platform, accounting for 11.9%; students with a duration of 0.5–1 h There are 16 students, accounting for 38.1%; 14 students with a duration of 1–2 h, accounting for 33.33%; 7 students with a duration of more than 2 h, accounting for 16.67% (as shown in Fig. 6).

According to the data analysis, the vast majority of students can complete online learning according to the teaching tasks issued by teachers. The learning space is no longer limited by traditional classrooms and classrooms. Students can learn online courses at multiple time periods and locations through a variety of network devices and learning platforms. It is easy to operate, less affected, and greatly expanded. Learning space and time.

### 4.3 Questionnaire

In order to have a more comprehensive understanding of the effect of the curriculum reform and the actual thoughts of the students, the author conducted a questionnaire survey on the teaching effect of the curriculum from the aspects of teaching effect, teaching content, teaching method and the improvement of students' own ability (as shown in Fig. 7).

It can be seen from the survey data that the vast majority of students believe that the teaching reform of two-dimensional software courses under the concept of "golden courses" is effective. Students are satisfied with the teaching practice effect of the course, and the teaching reform is helpful to improve students' self-learning ability, communication ability and innovation ability. The combination of online and offline courses improves students' interest in learning and mobilizes students' enthusiasm for learning.

There are also a small number of students who believe that the combination of online and offline teaching methods has too much content and greater learning pressure. It can be seen that some students have not yet developed the habit of watching video content

Topic	Options	Number of samples	Proportion	high frequency messages
What is the learning effect of teaching reform courses under the concept of "Golden Course"?	Very good	16	38.1%	Good effect Like it very much
	Good	20	47.6%	
	Generally	5	11.5%	
	Not good	1	2.4%	
Are you satisfied with the arrangement of the curriculum content after the teaching reform?	Quite satisfied	21	50%	Knowledgeable Learned a lot
	Relatively satisfied	17	40.5%	
	Generally	4	9.5%	
	Dissatisfied	0	0	
Do you like the combination of online and offline teaching methods?	Like very much	12	28.6%	Slightly faster pace Not enough time
	Like	18	42.9%	
	Generally	9	21.4%	
	Do not like	3	7.1%	
Does the teaching reform improve self-learning ability and communication ability?	Very useful	23	54.8%	Learning from passive to active More motivated to learn
	Has an effect	15	35.7%	
	Generally	2	4.8%	
	No effect	2	4.8%	

Fig. 7. 2020 Class Teaching Effect Questions Feedback Questionnaire.

on the mobile terminal. Therefore, this survey not only reflects the effect of teaching reform, but also can improve future courses according to the suggestions of students.

## 5 Conclusion

Based on the Xuexitong online teaching platform, this paper takes the course “Digital 2D Performance” as an example, and conducts teaching application research on the reform of the 2D software course for environmental arts majors under the concept of “Golden Course”. Through the reading and sorting of the literature in the early stage, the problems existing in the original curriculum are summarized. The teaching reform has made a series of adjustments such as changing the teaching concept, enriching teaching methods, innovating teaching content, expanding the teaching resource platform, and improving the teaching evaluation system of the “Digital 2D Performance” course, which has played a role in combining theory with practice, improving student performance, and mobilizing students. Learning enthusiasm, expanding the role of students’ learning time and space. The course reform of “Digital Two-dimensional Representation” under the concept of “Golden Course” conforms to the laws of software education and teaching, and also conforms to the trend of the times. Carrying out practical teaching can promote the more advanced development of software teaching, improve teaching quality, and lay a foundation for later professional design courses, which has important practical significance.

While the curriculum reform has achieved certain teaching effects, it also shows that there are certain problems, such as: students’ incomplete cognition of the teaching

mode, excessive pressure on online and offline teaching content, and insufficient class hours. Therefore, the teaching reform requires schools to increase the publicity and training of the online and offline teaching mode, so that more teachers and students can understand and master network information technology. Teachers should use multimedia teaching reasonably and correctly, appropriately grasp the time of online teaching, and prevent students from relying too much on the Internet. Only by continuously adjusting the teaching mode and improving the teaching content can we effectively improve the quality of course teaching, optimize the learning experience of students, and popularize it in more environmental art courses.

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