



# The Construction and Practice of E-Teaching and Learning Innovative Mode for the Design History Course

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**Abstract.** In the course system of art design specialty in Chinese universities, the design history course occupies a certain proportion, but teaching results are less effective. The foremost reason is that the students of design majors in Chinese universities emphasize more on practice and less on theories and they have less interest in learning the design history course. In order to change the phenomenon, the researchers carry out an exploratory research where the course of *Modern Design History*, set up by China and United States universities' cooperative specialty, is regarded as a pilot of reform. They creatively build diversified E-teaching and learning innovative mode for design history course and launch empirical research by adopting current international prevailing network teaching resources and methods. Through practical application, the teaching effect is found outstanding.

**Keywords:** Design majors · History courses · E-teaching and learning Innovative mode · Practice

## 1 Introduction

Mostly initiated in the 1980s and 1990s, the design specialty in Chinese universities has a short history and weak theoretical research and teaching. According to researchers' years of design history teaching experience and extensive investigation and communication, students of the major are less attached to design theory course, and they are less interested in learning. "In modern designing art, as for many people, theoretical education about art design is even insignificant for art design education" [1]. Moreover, "on account of single teaching method and antique teaching contents, the actual teaching effect is not as ideal as expected" [2].

The course, *Modern Design History*, regarded as a basic course in curriculum system of art design specialty of Chinese universities, plays an important role in theory teaching. Hence, researchers select *Modern Design History* as a trial spot, which belongs to the course of Visual Communication Design major, established by Anhui Polytechnic University and University of Bridgeport. Fully relying on Sino-foreign educational resources and advantages, they develop E-Teaching and learning

innovative mode. That is establishing the network virtual environment where all learning styles of the teaching module and function and the application of learning system can be developed by means of radio, television, computer, Internet and mobile phone, which is aimed at taking the promotion of the quality-oriented education as core and the elevation of teaching quality as basis. Focusing on changing the traditional teaching mode, this innovative mode is tending to make students overcome learning habit of relying on teachers and cultivate the independence of mind and the autonomy of learning with the help of flipped classroom. Additionally, the mode can change boring theory teaching into interesting interactive and flipped teaching as well as create a digital online teaching platform and teaching environment, which will contribute to improving the students' ability and efficiency of E-learning, stimulating learning enthusiasm, giving full play to personality and promoting individualized learning.

## 2 Traditional Teaching Mode Resources of the Design History Course

The principals in two universities particularly discuss the educational teaching plans and the talent training programs of the design major, a Sino-foreign cooperative major. (Visual Communication Design major in China is called Graphic Design major in the US). "The teaching of design theory holds a large portion of the teaching system of design majors in universities on the basis of well-studied design theory in the US. Just take Graphic Design major for instance, design history courses usually take up 20%–30% of compulsory courses in the major." [3] Therefore, in the teaching plans of the major, Modern Design History, a basic course in design major appointed by US University, starts in the third semester with a total of 3 credits for 48 teaching hours. Furthermore, other relevant courses such as *Art History I*, *Art History II* and *History of Graphic Design* have contributed to the systematized learning of design theory system. According to the need of establishing the course, comprehensive learning of design history courses including Modern Design History will not only help students criticize the role of design cultural field from the perspectives of culture and history but also learn from history. What's more, based on theoretical guidance in practice, developing the historical review of design practice will improve students' abilities of thinking and innovation in design.

Since the establishment of Visual Communication Design major in September, 2014, teachers in the major has adopted a bilingual teaching and other new teaching methods. However, owing to these factors like defective teaching equipment, big class size and the traditional face-to-face teaching environment, teachers' teaching potential fails in digging deeply and developing fully. At the same time, students' learning autonomy and interest can't be stimulated effectively. Therefore, as we can see from Table 1, the current teaching resource is not suitable for the new mode of E-teaching and learning reform.

**Table 1.** The initial opening situation of visual communication design major and teaching resource list in September, 2015

Name	Name	Name	Name	Name	Name
Number of teachers	1	Teaching courseware	10	Thesis and teaching achievements	7
Number of students selecting course	39	All kinds of exercises	39	Test bank	2
Multimedia devices	1	Online teaching resources	0	Teaching video	12
Teaching practical base	3	Number of computers	1	Classroom (traditional pattern)	1

### 3 The Construction and Practice of E-Teaching and Learning Platform

In view of the limited online teaching resources in existing curriculum resources, so it is regarded as the breakthrough point and key point of curriculum reform. In order to lay a solid foundation and an effective protection for the application and practice of the mode, researchers apply current new and relatively mature online education resources and learning interface in the international educational circles into the teaching of Modern Design History studied by sophomores of the major in September, 2016.

#### 3.1 The Construction of Teaching Facilities

Above all, specialized infrastructure and hardware devices are needed for the construction and practice of E-Teaching and learning innovative mode. Therefore, based on the investigation of building programs and beneficial experiences from the flipped classroom of some universities in the UK, Singapore and Taiwan, managers and teachers not only choose suitable classrooms to rebuild except for some existing multimedia devices, new wireless networks, LCD and audio and video devices but also establish some specialized tutoring classrooms for group discussion. Additionally, in order to build information based teaching environment, researchers also deploy network computer rooms and audio classrooms with the aim to take advantage of online teaching platform in diversified forms.

#### 3.2 The Communication and Feedback upon E-Survey

Survey feedback mechanism itself belongs to one of teaching modules and online learning and communication. With the periodic publication of online survey on SurveyMonkey, an international famous online survey platform, researchers find that students can be encouraged to use network and to interact with teachers online more frequently in online teaching, which will be beneficial for the dynamic adjustment of teaching (Fig. 1).

**Modern Design History Course**

\* 2.2: How interesting did you find the following parts of the course?

	Very interesting	Quite interesting	Sometimes interesting	Never interesting	Do not participant
<b>Questionnaire</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online video and MOOCs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Edublogs" activate Blog Sub-course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Edmodo" online interactive platform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Individual Tutorials</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online mutual assessments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Jing" Online homework correcting system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Course Wechat social media public platform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Presentation</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Prev Next

Fig. 1. The content interface of E-survey

### 3.2.1 The Pre-class Survey of Applying Flipped Classroom Mode and the Discussion of Learning Task List

Since the initial establishment of the flipped classroom in 2007, it has become a hot issue in the global educational field, the biggest feature of which is that the roles of teachers and students have changed in the teaching process. Besides, it also renovates the organization and linear process. What's more, flipped classroom is a specific type of blended learning design which changes the traditional teaching method with the help of technology and introduces the concept of practice by conducting a series of learning activities as well. As a result, flipped classroom teaching method is adopted in the E-Teaching and learning innovative mode. In order to make students better understand and adapt to this new teaching mode, researchers ask students to take part in an online questionnaire before start the course. Based on introducing flipped classroom, on the one hand, the questionnaire gives an initial assessment of the students' perception and interest to the mode. On the other hand, on the basis of knowing about students' learning abilities and learning status, it also provides an occasion where teachers can discuss with students about teaching tasks in different periods, point out those important knowledge points or teaching difficulties for students and collect their suggestions in order to conform to the flipped classroom.

There are two parts including 45 questions in the questionnaire, the first five questions of which are basic questions for students. In the first part, 20 questions are offered after the succinct statement of the concept, purpose, form and mode of the flipped classroom. More concretely, the first three questions are set up for asking students whether they know flipped classroom. The next five ones are asking students' attitudes towards flipped classroom mode in the teaching of *Modern Design History*.

Question from the tenth to the fifteenth discuss about the form of online teaching platform while questions from the sixteenth to twentieth talk about the potential problems and reasons for the students learning process. In the second part, first of all, the learning goals and teaching tasks about the course are briefly presented in a list and another 20 questions are also offered here. The initial four questions involve students' awareness towards the course while the next six questions are about students' understanding and assessment to learning tasks set by teachers. Questions from the eleventh to the sixteenth are designed for asking students what they want to learn, adjust and suggest. In the last four questions, students are asked to answer their expectation and interest according to their personal situation.

### **3.2.2 The Questionnaire About Teachers' Guidance in Class and Students' Learning Effect Investigation**

In the mid-term examination stage in the course, researchers survey students' feeling towards flipped classroom in the form of questionnaire. After survey, they provide targeted guidance for each student upon feedback. The questionnaire includes thirty three questions, the first six questions of which are about students' feelings. Questions from the seventh to the twelfth discuss the problems and the reasons for those troubles students meet in learning. From the thirteenth to the nineteenth, students need to make assessments about the current online resources. The next five questions are about students' expectations. While the last six questions talk about students' learning interest, contents and methods in second half course study.

### **3.2.3 The Questionnaire About Teaching Assessment**

After finishing all teaching tasks, there is a questionnaire including thirty-five questions for students to make teaching evaluation. The whole questions are divided into eight aspects which are the effectiveness of flipped classroom mode, the operation of online teaching platform, the applicability of online learning resources, teacher's mastery of flipped classroom, the result of communication between teachers and students, the suggestions about the mode and platform, the effect of new assessment method, and self-assessment of students which is to evaluate self expression during course learning.

### **3.2.4 The Network Testing System**

The question bank module's design function of SurveyMonkey can easily set various text types, like single choice, multiple choice, filling the blanks, answering questions and even drawing, which therefore, can be regarded as network examination system. At the end of the course, the teachers can ask students to have an online test in class to convert the traditional way of examination.

## **3.3 The Design Application of E-Interaction**

Researchers and teachers have tried to apply a new teaching method into class that is to reserve the traditional face-to-face teaching on the one hand and to finish other teaching modules through building an E-interactive platform of course on the other hand. To illustrate, the integral network transplantation and online working of question answering, presentation, discussion and students' valuation and other teaching

procedures have reached the creative combination of off-line classes and virtual classes, which not only includes the active atmosphere of classroom teaching, but also involves the technology of the latest network teaching. The specific executing processes are as follows: First, teachers import the teaching tasks, teaching courseware, audio and video material, relevant websites or questions into the online interactive system, with combining the knowledge to be taught in class. That is to say, teaching on the spot means that teachers will give the lesson by pointing out the learning task and the core knowledge of the lesson for students. Then, students should log into the online interactive system to learn autonomously and finish the task assigned by teachers in class. While teachers will answer students' specific questions in the whole process one to one. Furthermore, teachers will also ask every student to selectively evaluate the performance of other students after finishing their own studying task, which can not only helps students to have real-time communication and discussion, but also helps students to find out other students' unique understanding and thinking when analyzing problems in class.

The online interactive platform of course is supported by the global educational content sharing platform and the electronic network teaching platform, Edmodo (Fig. 2). First, the teacher should create a class group of the course with all students joining. Then, the classroom should be equipped with network and computers. Due to the large number of 35 students in one class, students will be taught in two groups separately and each group will be taught for three teaching hours per time to ensure teacher's tutoring quantity and teaching quality and to advance the course's exploration, speculation, interaction and practice to a new height.

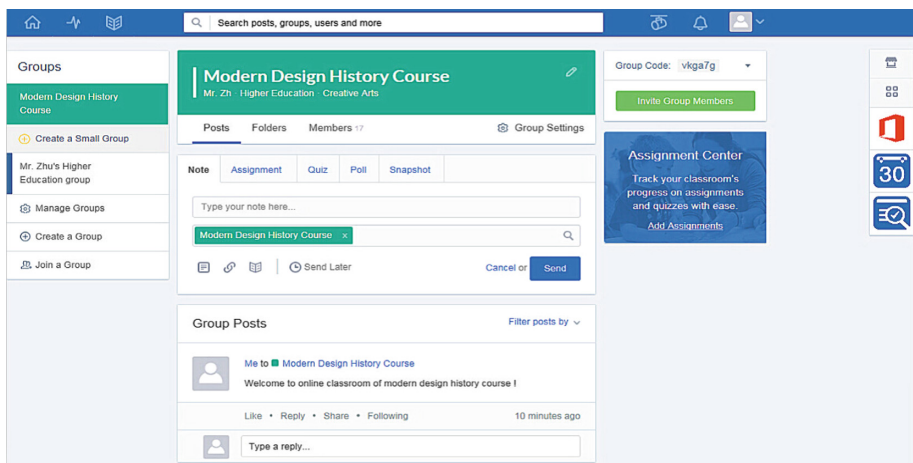


Fig. 2. The online interactive interface of the course on Edmodo

### 3.4 The Online Operation of Homework Checking

Jing® is popular video capture software and its features are used by researchers to create an online homework checking system and a video sharing platform. It is unique

in that not only students can submit jobs on line and teachers can correct the homework and give feedbacks on line through implanting the homework checking into the network, but also teachers can check students' homework in audio and video form rather than in the traditional writing form. On account of that the audio can deliver much more information than the several written commenting sentences, so teachers can stress the key mistakes and extend the relevant knowledge or even give an example to illustrate in the audio or video checking. At the same time, teachers can also make careful and clear homework valuation, which will effectively avoid the students' incomplete understanding for teachers' comments or suggestions that often happen in the traditional checking. Thus, the comprehensive and profound homework checking can be achieved. Besides, in this way, students will know about the whole process of teachers' checking and find the teachers' thinking perspectives, thinking ways of solving problems or design thinking from it in a more accessible form, like communicating with teachers face to face instead of just seeing some emotionless comments.

The creative application of Jing's online homework checking system (Fig. 3) has evoked strong responses among students and all of them have a highly opinion of the system when giving suggestions and feedback about it. Meanwhile, Jing brings novelty of learning to students and arouses their learning interest, making them love or even expect teachers' homework checking. As a result, watching the comments in media form has become one of their learning hobbies. "The homework online submitting and the checking is one link of attracting students" [4]. Apart from applying Jing's online homework checking system into practice, in terms of these students who want to pass the TOTEL in Sino-US cooperative class, teachers should promote them to practice writing regularly and recommend them to use Checker software or other free net resources to correct mistakes and improve the writing by themselves.



Fig. 3. The online homework checking interface

### 3.5 The Introduction of MOOCs

As a very convenient online distance education platform, MOOC is widely used in nowadays. Besides, MOOCs in English and other globally diverse learning channels without limit on time and space have the relatively real foreign learning environment, the new teaching modules and the broaden international vision, which comes to a unique advantage to those students in Sino-US cooperative majors. Most importantly, the relevant online courses on MOOCs not only involve the rich teaching experiences, refined knowledge system and particular teaching methods from famous teachers, but also include the display of combining the historical design and the latest design, which can provide *Modern Design History*, a boring course most students think before, with continuous fresh and high-quality learning resources and greatly enhance students' learning interest, self-learning consciousness and their design innovative thinking abilities.

To this issue, according to the major characteristics of Sino-US visual communication and the course characters and contents of *Modern Design History*, researchers investigate students' familiarity with MOOCs. On the one hand, they specially open the introductory lectures about MOOCs, resource library and how to choose and enter to the MOOCs for students before classes. On the other hand, with many professional teachers together, they also pick out 24 excellent courses, more highly related with *Modern Design History*, from the abundant resources on MOOCs. There 24 courses are divided into four categories with 6 courses in one category for students' reference.

### 3.6 Establish a WeChat Public Platform and Analyze the Data Online

With the aim to expand and use the online platform completely, researchers establish the public platform of the course on WeChat, the most popular social media on China Mobile's network, sharing course resources and learning experiences on it. Students in the course are required to upload the information of their learning materials, elected according to their hobbies, and share the learning experience in time. Meanwhile, the platform will be promoted to those students from other majors or even to the outside society to obtain the largest-scale follows, taking the outside learning resources and helpful experience. After setting up and expending the database for learner's self-studying, on the one hand, researchers will offer a dynamic analysis for all kinds of online learning information and relevant data, mainly including 3 aspects. The first is the analysis of the properties of the following users, like gender, age, major, educational structure, school or the types of company, city or province and so on. The second aspect is the analysis of course resources and their properties, including the types and quantity of the resource, the topics and the relevancy of the followed information, the learning heat, focus point and keywords analysis. The third is the statistics about the information's usage and reading with 4 indexes that is the number of users and times of browsing, discussion or commenting, the sharing, collecting or transmitting, and clicking the link to the original text.

Moreover, by collecting all autonomous learning information and resources data uploaded by students, researchers plan to carry out the measuring analysis of students' learning activities, the real-time assessment of learning content, learning target and



learning expectation and the directive leading with three objectives. First, according to the online data of WeChat public platform and the feedbacks among students, researchers will collect and classify the learning contents, interesting points and learning expectations of students, from which students' learning activities and thinking patterns will be analyzed, simulated and located and their deep or potential learning expectations can also be searched by analyzing data. Second, on the basis of republishing students' learning activities on the Internet and analyzing their learning contents, the targeted and orientated evaluations can be carried out differently for all students of the course, all professional teachers in the universities opening the course and the social groups on the public platform by taking the advantage of the function setting of these micro activities and the feedback mechanisms on the WeChat public platform. Third, based on the data of assessment feedbacks and further analyzing, refining and matching, the directive feedbacks and the targeted suggestions will be offered to personal students or the same learning groups to help them to choose the most suitable learning contents and learning activities through publishing directive information on the WeChat public platform.

## 4 Conclusion

The E-teaching and learning innovative mode for design history course and digital learning environment make the historical knowledge alive in the modern network teaching space. The online interaction and other new teaching methods, network media and unlimited space not only improve students' digital learning abilities, but also make their characteristics and specialties completely played, which can allow students to carry out various personalized studies more freely and autonomously without any time and space limits. According to the feedback of questionnaires among students and for private tutoring and the analyzing results of public platform online data, students' learning interest, learning activeness and learning efficiency have been advanced greatly and the teaching effect is obvious as well.

By means of the flipped classroom, combining design history with its practice or application and changing boring theory teaching to colorful interactive teaching or flipped teaching will make students think independently, learn autonomously, explore the knowledge and apply the design history creatively. It not only reach and surpass the learning subjective set for the course, but also reach the International level in new educational resources and teaching modes, which totally conform to the aim of developing international innovative talents of Sino-foreign cooperative design major.

Combining the E-teaching platform, teaching activities have been changed and they will adapt, help and service learning from the traditional class to the virtual class, from the traditional teaching mode to the flipped classroom teaching mode, which also advances the teaching and researching level of teachers.

The deep-rooted learning habits of depending on teachers, coming into being in China long-time traditional education, have been removed, which facilitates the nurturing of new learning habits and learning motivation. Moreover, the traditional relationship between teachers and students has also converted to the new learning partnership.

The classes will be of high quality to cater to students' learning interest and meet their needs on the basis of establishing the E-teaching and learning innovative mode for Modern Design History and the integrative innovation and application of the teaching methods in the flipped classroom where students learn first before teaching. This teaching mode can absolutely be promoted and applied in the course of design history for design majors in Chinese universities.

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## References

1. Teng, M.T.: The teaching design of theoretical courses of art design majors. *Educ. Forum* **11**, 162–163 (2017)
2. Xu, Z.: Discussion of international teaching resources' value on design history courses. *Art Res.* **6**, 332 (2015)
3. Sun, T.H.: A survey of design history courses teaching status of visual communication major in China. *Des. Educ.* **6**, 28–30 (2016)
4. Niyaz, S.M.: The Future development of online homework evaluation system. *Jilin J.* **5**, 52–54 (2016)