

The Basic Application of Digital Online Technology in Design Teaching

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Abstract—The software practice teaching now takes up a lot of class time in professional design courses, thus both reducing the teaching contents with respect to design creativity and limiting the students in classes. It is also difficult for the students to master all knowledge learned with the help of a traditional teaching method, even with the software technology teaching. Through nearly four years of teaching practice, in this paper, the digital media technology has been introduced in the design class to achieve online and offline teaching method, and some practical and effective methods are also summarized, therefore improving the teaching experience and effect of design classroom and increasing the students in the classes. So that, a “student-oriented” education concept can be truly achieved.

Keywords—Design teaching; Software-based teaching; Digital technology; Digital media

I. INTRODUCTION

In the autumn of 2018, the colleges and colleges in China welcomed their first groups of students who were born after 2000; this generation of students pays more attention to the learning experience, is more receptive to new things and is eager to make their own voice to the world, compared with any previous generation. The traditional teaching methods have been unable to attract the students' attention in the classes, especially for the design major. The students studying in major of design have active thinking, with more perceptual thinking than rational thinking, and are also more accustomed to learning in the study. But the trickiest problem for the students in major of design is to learn the software technology. Now, the design application software technology is updated faster and faster. Although the functions are increasingly powerful, the cost of learning is also increased. Meanwhile, for teachers of design major, the software-based teaching has become an important part of the curriculum, which takes up a lot of time which should have been spent on the creative contents of the design. Further, the professional tutoring of the design teaching is particularly critical, which almost determines the efficiency of the students' professional improvement. But now, in the most the design courses, the class size is approximately 15-30 students [1-2]. The traditional teaching method is unable to effectively tutor more students. Time, place and human factor also have a great impact on the effect of tutoring. These are all the common problems existing in the design course teaching all the time for many years.

The emergence of MOOC (Massive Open Online Course) since 2012 has triggered a wave of blowout-type teaching

model reform. It allows people to rethink the relationship between teaching and learning. The students can study at their own paces, and the efficiency of teaching is improved exponentially. The most valuable thing is that the students can hear more academic opinions and exchange professional opinions with more students. But, the MOOC model is not a suitable solution for all disciplines. It is very difficult for some of practical application disciplines to teach in this way, like the design. The disciplines with respect to the design rely more on the face-to-face professional communication and guidance to find a "right answer" in a large number of practical exercises. Obviously, a simple online teaching is unable to solve problems effectively. But, another teaching reform concept—"Inverted Classroom" which occurring concurrently seems to be more in line with the scene needs for the design course teaching, even if its main teaching object is K12 (the students from primary to high schools). Afterwards, thanks to the improvements of info-communication and online video technology, the real-time online teaching methods and functions are more powerful, like WeChat teaching, live video teaching, and remote technical guidance, etc. The students can get guidance and opinions from their teachers and experts, as well as more objective and fair scores, which all reflects good news in the era of digital experience.

II. THEORY COURSES

Now, the online education (like MOOC and "Inverted Classroom") in a standard sense pays attention to recording the theory courses into videos, so that all students may replay videos to make preview and review. But, in terms of the design discipline, the practical contents are more than the theoretical contents. In other words, the theory courses will not be many, especially the design courses based on the software technology, like film & television title design which requires a lot of efforts to learn the operating techniques of the video effects software. The theoretical courses regarding recording truly exhibit a certain effectiveness, but they also limit the teaching style and on-the-spot performance [3]. In particular, some knowledge points require respective cases to be listed, depending on the knowledge structures of the students on the spot and students' statuses, to help the students understand more effectively. Moreover, the teachers also need to interact with students in some contents, and effective interaction will stimulate students' enthusiasm for learning and concentrate their energy. For this point, the teachers must determine whether all theoretical courses are recorded into videos based on the contents, rather

than blindly following the online teaching methods of other disciplines.

III. SOFTWARE LEARNING

Now, the software-based teaching is an essential part of the design course. The purpose is not only to teach the students how to use software, but more important is to teach the students how to use these tools to create more works. This will involve each teacher's level of design experience, on which the students are taught some useful "tricks" to apply these software tools more quickly and efficiently. But, in the teaching process regarding the cognitive aspects of the software technology, the teachers take up more than half of the classroom time to introduce the basic operations of the software, which is a huge waste of resources. So, such software learning contents are most suitable for teaching videos, and the most common problems for the students are also involved in this part of such contents. Of course, if the teachers have not time to make preparation or can find the contents to be taught by others in a better manner, they may also recommend them to their students. The premise is that the teaching contents of each class should be linked and also cannot deviate from the teaching outline, otherwise the courses cannot be consistent, and the students will not be able to effectively transfer knowledge.

IV. WORKS GUIDANCE AND COMMENTS

A. Live broadcast teaching

Through this form of online live broadcast teaching, the teachers and experts from other places are allowed to participate in the course teaching activities conveniently. The students do not have to attend classes in the classrooms, and they may be distributed in libraries, cafes, study rooms or even sleeping rooms, so that the teaching activities can be conducted anytime, anywhere. Some live broadcast platforms are provided with the teaching-related tools, like a Baidu Chuanke which allows the clients to use the computers, tablet PCs and mobile phones to learn lessons; Further, it has a function to ask a question and also assigns the students to answer the questions; A real-time questionnaire test can also be made to discuss the professional topics; There is also a Marker-based tool that allows the teachers to mark out the problematic parts and propose modification. This is a relatively advanced online teaching scheme with many functions, but the cost of preparation is high. Meanwhile, there are also relatively rapid and convenient schemes, like WeChat which is very popular in China and easy to operate. In terms of reviewing and scoring the works in this way, the students can get relatively objective and fair scores, and the teachers also get the opinions from different experts to do exchanges and interaction.

B. Remote Q&A

For daily professional guidance work, the WeChat is used quite frequently, and the students may ask questions at any time. But for more complicated technical problems, more professional software needs to be used for consultation and communication. For example, as remote system control software, Teamviewer allows the teachers to control their students' computers and to make remote presentations and

explanation. The students almost do not need to visit the teachers in offices to ask their teachers to answer questions, while the teachers do not need to work in the offices, so it is a very efficient teaching tool.

V. NEW PROBLEMS EXISTING IN THE TEACHING CASES AND PRACTICES

A. Case introduction

The above-mentioned contents show a summary of some efficient methods and experience in implementation, aiming at the common teaching scenarios. Next, I take a major course which has been implemented for four years-"Video Effect Design" as an analysis case to introduce the role that the digital technology plays in teaching and also to share new problems existing in practice.

The "Video Effect Design", as a professional optional course for the sophomores and juniors in major of the art design and film & television advertising, focuses on the film & television title design and video effects; meanwhile, the technical teaching of related software-Adobe After Effects is also made. This course includes 40 class hours, with one lesson each week, and 4 class hours each time. There is a total of ten weeks, and the number of students is 40-60. The course requires six-week teaching of professional theory and software technology, and the last four weeks are used for the teaching of homework practice. For the first six-week teaching, later, the last two lessons of each class are used for the technical test, except for the first class for the professional theories. The students need to preview the software technology to be tested on the day of the class. These software courses are attached with corresponding original teaching videos. Prior to each test, I will tell you the knowledge points to be tested on the same day, and also demonstrate the production process of the test cases. In the subsequent tests, I will solve the operation problems that the students encounter in real time and also understand an overall learning situation of the class. At the end of each class, I will also assign the videos to be previewed by the students in the next class, as well as the extended learning contents of related technologies.

In a link of technical guidance and creative guidance, both online and offline teaching method are used simultaneously. In class, the traditional face-to-face guidance is still dominant; After class, the students may book the time and form to answer questions depending on their own situations. Very often, the WeChat or TeamView is used for remote online guidance, and the most time for the guidance is after 7:00pm, because they have to attend classes during the day. The last class is used to report and comment the final homework. And this class is usually conducted online. Since many off-campus experts can't participate in commenting in class, a popular live broadcast platform is applied. The students submit reports online, while the teachers and experts make comments online and give the final results.

As can be seen from the students' online messages and feedback, the current students are more accustomed to online exchanges and also more prefer to freely select their learning places (like cafes, libraries, and even bedrooms) They are also

very concerned about their online performance, will prepare the speeches in advance, actively exchange ideas with their teachers and students and are willing to get professional advices from more experts and teachers. It can be sure that the application of online technology can effectively increase the teaching quality of design course and also improve the learning experience.

B. New issues

1) Pre-class publicity

For the courses for such experiment, it is very necessary to hold a public promotion meeting of the course before the course selection to propagandize the course. Otherwise, if some students who are accustomed to this learning style mistakenly choose the experiment courses, the teaching effect will not be good, and the teaching troubles will be increased without any reason. Therefore, the early stage of the course propaganda is very critical; the propaganda is made by means of collective mail, article forwarding via WeChat or viral video transmission. Besides, a special event for the course instruction can also be held. The teaching mode, course arrangements, final homework requirements, scoring standards and main matters may be briefly explained before the students finalize the class schedule in the next semester. This event can help the students know about the contents of the class in advance and objectively choose the courses.

2) Self-study and self-discipline

The students are required to have basic self-study ability to ensure the quality of learning for the online teaching; but, not all students have such ability; if some students are unable to finish their home works because they do not understand the learning materials, they will lack the ability and confidence to actively solve these problems. Moreover, how to prevent the students from being lazy is an important issue. For this purpose, many teachers choose to make their students fail an exam, but this is not the main purpose. On the contrary, the teachers should think about how to use effective mechanisms to motivate the students to move forward on their own. Then, the test in class is an important work, which can not only check the students' attitudes toward after-class learning, but make the teachers know the problems encountered by their students timely and solve them in time.

3) Teamwork

The class size of the online teaching must be larger than that of the traditional teaching, so the teamwork is an inevitable form of work. However, the students often have few opportunities for face-to-face communication except for weekends, due to different class schedules, which is one of the main reasons for the slow progress of the teamwork. Therefore, when students are free to form a team, the students sharing the same class schedule are initiatively recommended to form a team. It is necessary to explain the possible cooperation problems to them timely.

4) Equipment

Except for inconsistent after-class schedule, another major factor impacting the progress of the teamwork is the computer equipment. Some students' computer hardware configuration can't reach the level as required by the homework, especially

for some visual design courses, so it is necessary for them to configure higher-level computers, but the students not studying major of the image do not have high-configuration computers. In view of this, it is necessary to prepare one public professional computer room, and the instructors and teaching assistants should also be arranged to guide the students in the computer room, as scheduled.

5) Problems existing in the live broadcast

In recent years, short video and live broadcast platform have suddenly emerged. For an experimental teaching course, the online public class via the live broadcast has been attempted three times. The platform used was one of the most popular Chinese live broadcast platforms, namely Douyu, for guidance and comments. In the absence of any propaganda, the maximum number of online viewers was 136, and unfamiliar netizens made comments for exchanges. Although such platform has stable data transmission technology, there are two main problems: Firstly, since these platforms are mainly based on entertainment contents, the teaching function necessary is absent, resulting in very limited interaction between the teachers and students; Secondly, it is unable to set audience permits effectively on such platform, resulting in some "trouble maker" coming in to disturb the order. Therefore, it is recommended to arrange a space administrator to maintain order to avoid some embarrassing problems. Further, be sure to prepare various tools and equipment at least one and a half hours in advance to ensure a smooth network environment.

VI. SUMMARY

The technology of the Internet era has brought about a revolution in today's teaching model. John Hennessy, President of Stanford University, even held that the MOOC is an unprecedented "digital tsunami" in the history of education. Meanwhile, it also has changed the role attribute of the teacher. Now, the teachers are more like coaches, and they do not have to play the game, but they will arrange corresponding training tasks depending on each student's talent characteristics, or even set a development strategy from the perspective of the team to guide all students to grow more effectively. So in such process of guidance, the teachers' own existence factors cannot be ignored. When the concepts of MOOC and "Inverted Classroom" just emerged, many so-called authorities said the traditional education would disappear in the next five years, and a large number of teachers would be unemployed. But now, five years have passed, the traditional colleges and universities have not been affected. On the one hand, it is because no reasonable profit model has been found; On the other hand, the role that the teachers (people) play in the teaching is still irreplaceable. The method, technology or form of expression is only changed. But the education is education, It is not necessary to ignore the meaning of education itself for the new form. That is to say, creative talents are cultivated to solve the problems. As an explorer of the teaching model, we should respect the characteristics of different disciplines and cannot treat different things as the same. The teaching model suitable for liberal arts and science is used to teach the design courses, which is very problematic. The simple imitation does not always lead to good results. An effective experience reference

and learning from each other can be used to find a reform and development path suitable for one's own discipline.

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