Problems and Improvement Measures of Online Teaching in Post-Epidemic Period

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Abstract. In the spring of 2020, teaching is all transferred online. Schools at all levels have done a lot of training and platform experiments. At that time, we didn't consider too much but hope to smoothly progress online teaching. Now that online teaching has been completed for a semester, it is time to reflect on existing problems and study improvement measures. Based on the teaching experience, we put forward the shortcomings from three aspects: content, form and effect, and give improvement measures according to the first-line teaching experience.

1. Introduction

From TV universities to MOOCs, online teaching is not a new thing. It's an important part of e-learning. In the spring of 2020, due to the need of global epidemic resistance, large-scale online teaching in colleges and universities has become a new normal, which has been implemented for a whole semester. International students who have been admitted to foreign universities but cannot go abroad are still taking credit from foreign universities through online courses. Both teachers and students believe that the quality of online teaching is not as good as classroom teaching. But the situation that teaching is forced to online is also a good opportunity to promote e-learning in an all-round way. Online education is not only the online and digitalization of traditional teaching, but also the innovation of the form, means and process of curriculum teaching, as well as the reconstruction of teaching form. [1]

Looking back on the online teaching in the spring semester, experienced teachers have found that the teaching quality is not satisfactory. There are many problems and many places to improve. In the following parts, we present and analyze the problems existing in online teaching from the aspects of content, form and effect, and puts forward corresponding measures, hoping to enlighten the peers to improve the level of online teaching.

2. Problems Founded in Online Teaching and Our Improvement Measures

2.1. From the Content Point of View, the Construction of Online Teaching Resources is Not Perfect Enough

We found three more obvious problems, which are described below. In each part, we describe the improvements we can think of or we have tried.
2.1.1. Courses Content is Not Systematic and Integrity

When we need students to show strong self-taught ability, we find out that they have not been taught how to acquire knowledge systematically. How to select and read literature? How to do the experiment? How to describe the experimental results? How to write a paper? etc. These contents do not exist in our curriculum system. Teachers in all courses do not systematically explain, but students are required to do so. Students are mobilized to participate in innovative activities without even understanding the meaning of innovation. Our teaching content only teaches the basic theory, not the basic method.

The training program should add these contents, carry out methodology education and training to help students start the journey of exploring truth as soon as possible.

2.1.2. Lack of Online Practical Teaching Resources

The practical teaching of engineering majors is particularly important, and the online teaching content is also particularly lacking. Some experiments can be finished. For example, experiments in the curriculum of High-Performance Computing. We have set up a VPN channel and assigned accounts to students selected. They may use any computer that can access the Internet to complete the experiments through the VPN of the school's high-efficiency computing laboratory. Experimenter in the cluster background keep monitoring the progress of each student. They guide the problems found in the QQ group. In order to improve the enthusiasm of everyone to complete the experiment, we increased the proportion of experimental results from 30% to 40% of the total score. Practice has proved that although the experimental time has been prolonged and the workload of the experimenter has increased, the effect is satisfied.

Virtual reality (VR) technology should make up for the deficiency of practical teaching content. For example, VR is used to show the principle of machinery, or the principle of grinding tools generation. However, without preparation, many practical contents cannot be carried out with the help of VR.

Considering the future needs, teachers can now design or purchase all kinds of expected resources in spring semester teaching as soon as possible. There are many famous professional IT training institutions such as Tedu.cn. Colleges and universities can cooperate with these institutions flexibly and purchase some practical training resources and services for students.

2.1.3. Students can Get a Lot of Online Courses but Lack Knowledge Mapping

In the spring semester, students did not get the paper version of the textbook. Teachers of various curriculums not only push electronic textbooks and electronic reference books to students, but also let them study online courses. Online resources are dazzling. For students, it is difficult to choose a suitable reference resource. In order to ensure quality, students generally pick up Moocs of good universities to learn. Therefore, while improving the quality of single class construction, we should also build knowledge map to guide course selection and self-study.

2.2. Some Small Shortcomings in Online Teaching

The renewal of teaching technology is an eternal topic. After the courses are fully launched, with the Internet, all kinds of small defects which are ignored in classroom teaching are magnified.
2.2.1. The Environment of Online Teaching and Learning is not Perfect

Most teachers teach at home without video. Although they have cameras, they don't want students to see the messy home backgrounds. The average family rarely has a separate study room, it is difficult to find a clean and beautiful shooting background at home. Especially during the outbreak, the whole family was at home. The child has to have classes online in his own room. If it's not convenient for you to teach in your bedroom, only in the living room. Young teachers have noisy children at home, they have to drive to school to find an empty office or laboratory to teach online classes.

Most students have their own separate bedrooms to attend the lecture. Because the whole family avoids the disease at home, the whole class could hear various noises from his house when a student opened his microphone. Cannot see the teacher, cannot see the students, cannot see the textbooks, nobody even urges you to hand in your homework, the students' enthusiasm and serious attitude greatly reduced.

What kind of voice and speed can keep students listening for two hours? We have tried a variety of ways including speak slowly, increasing sense of humor, increasing pause and interaction, increasing the content of patriotism education, etc. [3] Either method should be closely related to the characteristics of the curriculum.

2.2.2. PPT and Lecture Form are not Attractive

Worried about the students do not have textbooks, teachers move what they want students to read to PPT. PPT is full of words and looks boring. Some teachers have been reading PPT because they are not proficient in using various marking tools. Teachers are easy to fatigue in class, and students are more likely to fatigue.

Considering the needs of the future, it is necessary for teachers to do a perfect set of PPT for each of their online courses. Whether there is an epidemic or not, PPT is not attractive is a complete defect in teachers' ability and working attitude. This time we can also use the lack of preparation as an excuse, the next time we cannot face the complaints of students.

2.2.3. The Tools Used in Lectures are not Attractive Enough

What can students' sight be attracted to your screen? For example, the mouse used in the lecture is small and transparent, which is not eye-catching enough. Students cannot see it when with their mobile phones in class. The effects of using different mouse symbols are shown in figure 1. We find that (1) Color cursors are more eye-catching; (2) Large cursors look easier; (3) Large mouse on the difficult pages or multi-graph pages are more eye-catching. Therefore, we should carefully choose everything presented to students, including the mouse.
2.2.4. The Communications between Teachers and Students is Not Rich

In order to remind students to listen carefully, teachers usually ask students some small questions as the course progresses. Sometimes the teacher's roll call is not answered because students are unlikely to focus on the screen continuously for two hours, even if the screen is not courseware but an interesting film. Most students are embarrassed to ask the teacher questions in QQ group. Few teachers answer questions online in time. These reasons lead to the case that teacher-student interaction is seriously not enough in online teaching.

A good experience from MOOCs is to give a question for students to think and discuss briefly for every ten to fifteen minutes. So, before each class, we should prepare several questions carefully.

2.3. The Effect of Online Teaching is not as Good as Classroom Teaching

To establish a world-class university, we should take students as the center, evaluate education with students' learning results, and evaluate the effectiveness of education with what students have learned and learned. [4] Online education is flexible and convenient, so it obtains the better approval rate of teachers and students. But for different majors, different courses and different students, the evaluation of teaching effect is very different. For example, the approval rate of engineering majors for online teaching is much lower than that of liberal arts majors. Some experiments can't be done without the lab. For students who are good at self-taught and self-disciplined, there is little difference between online teaching and classroom teaching. Because of the quietly study at home, their free learning time is longer, and through the way of keeping communication on hold with teachers, the results of these students learn and research are better than before.

For students with poor self-taught ability and self-discipline ability, the teaching effect of spring in 2020 was worrying. The students have many excuses not to finish their homework and experiments.

The final exam for the spring semester is over. The teacher's feelings of checking the examination papers show that the effect of online teaching is more than 10% worse than that of classroom teaching. Thanks for the smart decision for schools to postpone the examinations of compulsory courses. Most students carefully review and prepare for the exam before returning to school in the autumn semester.
3. Conclusions

In order to achieve comprehensive online teaching, we have done a lot of work, and have repeatedly studied the problems found in it. When the spring semester was over, teachers breathed a sigh of relief. They are basically satisfied with their own performance. They did it. They can do better after realizing the inevitability of online teaching and finding many shortcomings.

At present, all colleges and universities are summarizing and improving their own online teaching. We hope that this article can make up for the improvement of online teaching methods.

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References


