форми навчання Безумовно, майбутнє освітнього процесу – у поєднанні традиційних і дистанційних методів навчання.

Література:

1. Концепція розвитку дистанційної освіти в Україні (затверджено Постановою МОН України В.Г. Кременем 20 грудня 2000 р.). URL: https://docs.google.com/viewer?a=v&pid=sites&srcid=emFraW5wcG8ub3JnLnVhf GRvfGd4OjUoNzgoOTc5ZmU3OWJlYzA

2. Положення про дистанційне навчання. URL: https://zakon.rada.gov.ua/laws/show/z0703-13#Text

3. Закон України «Про освіту» від 05.09.2017. URL: https://zakon.rada.gov.ua/laws/show/2145-19#Text

4. Кучерак І. Дистанційне навчання студентів спеціальності 016 спеціальна освіта (логопедія) ДВНЗ «Прикарпатський національний університет імені Василя Стефаника» під час карантину (березень-червень 2020 року). Екстрене дистанційне навчання в Україні: Монографія / За ред. В.М. Кухаренка, В.В. Бондаренка. Харків, 2020. С.70-77. URL: https://duan.edu.ua/images/News/UA/Departments/Management/2020/monogra ph_ekstr_dyst_navch.pdf

5. Гавриленко К. Організаційні етапи створення дистанційного курсу. Екстрене дистанційне навчання в Україні: Монографія / За ред. В.М. Кухаренка, В.В. Бондаренка. Харків, 2020.с. 128-142. URL: https://duan.edu.ua/images/News/UA/Departments/Management/2020/monogra ph_ekstr_dyst_navch.pdf

Sun Wei, Educational Science
National Technical University «Kharkiv Polytechnic Institute»
Kharkiv,Ukraine / People's Republic of China

MULTI CHOICE STRATEGY OF ONLINE TEACHING MODE AND RESOURCE CARRIER:
Comparative analysis perspective based on different curriculum support platforms

Affected by the epidemic situation, both basic education, secondary education and higher education have carried out a wide range of online teaching activities[1,p.113].For online teaching, people are familiar with and unfamiliar with it, but a lot of understanding is one-sided, and there are epistemology misunderstandings, such as: online teaching is online live broadcast, the presentation of online teaching knowledge points must record micro video, students know how to learn online, online teaching is difficult / easy, the quality of online teaching is poor, etc.[2,p.100].So, how can teachers get out of the misunderstanding? What are the basic modes of online teaching? What resources construction strategies can support the implementation of teaching mode? This study will explore the multiple choice strategies of online teaching mode and resources through the comparative analysis of various resources and curriculum platforms.

1. What is online teaching

1.1 The basic task of online teaching is teaching

Online teaching is teaching and the process of imparting knowledge, not to attract the audience's attention. Therefore, it is incorrect to think that "online teaching is online live broadcast, and teachers are anchor". In the process of online teaching, teachers should achieve real and in-depth teaching, and make use of the advantages of this environment to ensure the effective transmission of knowledge [3,p.27]. Online live broadcasting is a teaching form selected in the process of online teaching, but it is by no means the whole of teaching. Even if teachers carry out the teaching process through live broadcasting, they must not abandon other basic links in the teaching process, and ensure the integrity of the teaching process.Online teaching takes "learning activities and resources in the network platform" as the carrier Online teaching is a form of teaching organization, which is an information teaching method based on the network teaching environment. It's advantage lies in rich learning resources and activities.Micro-video resources are an important form of knowledge representation in online teaching, but they are not the only media to present resources.We can present knowledge through e-books,multimedia courseware and other graphic materials, multimedia programs and so on.

1.2 Online teaching takes "learning activities and resources in the network platform" as the carrier

Online teaching is a form of teaching organization, and it is an information teaching method based on the network. Its advantage lies in abundant learning resources and activities. In the process of online teaching, micro video resources are important knowledge forms, but not the only media to present resources. We can present knowledge through e-book, multimedia courseware and other graphic data and multimedia programs.

1.3 Learners should be the center of online teaching

The process of teaching is the process of cultivating people. This process of knowledge transfer requires us to consider many factors, such as learners' characteristics, teaching environment, teaching resources, teaching mode, teaching strategy, etc. no matter what kind of environment we carry out teaching, we can not violate the teaching rules and ignore learners[4,p.1].Don't overestimate your students. You must have a correct judgment on them. In fact, many students don't know how to learn online, so they need to be taught to adapt to this learning method.

1.4 The direct factor that determines the quality of online teaching is instructional design

The teaching environment will never directly determine the quality of teaching, although the teaching environment will affect the teaching process. What determines the quality of teaching is teachers' teaching experience, teaching design, teaching organization and teaching implementation. Experienced teachers will replace the hoarse shouting rigid rules by Creative Instructional Design and task driven, competitive design, visual evaluation, etc. Teachers try project-based learning, problem-based learning, cooperative learning, inquiry learning and task driven learning, which can arouse the enthusiasm of learners.

2. The selection of online teaching model

2.1 Online teaching model

Online teaching mode usually adopts PPT+ sound/video/screen push to carry out live broadcasting or recording teaching. Live broadcasting is a real-time teaching

method, while recording is a non-real-time teaching method. Real-time teaching method needs to be realized by the live broadcasting platform or the live broadcasting function of the course management system. Non-real-time teaching requires teachers to prepare course resources in advance for push broadcasting at a specified time. Real-time teaching can be divided into single broadcast mode and two-way interaction mode. For example, the live broadcast of the "Knowledge of Wisdom Tree" platform adopts single broadcast mode, while the video conference system of the nail adopts two-way voice interaction mode. Online teaching mode includes courseware presentation/desktop, teaching, asking questions, answering questions, discussion, roll call, summary and other activities. In addition to listening carefully, taking notes and answering questions, students also need to participate in various activities. There are many teaching methods or strategies for specific online teaching process, such as live lectures, discussion learning, coaching learning, case teaching, seminars, group meetings, etc. Research shows that teachers often use live broadcast + questionnaire, live broadcast + test, recorded broadcast + discussion, recorded broadcast + Q&A and so on.

2.2 Online inquiry teaching mode

Online inquiry-based teaching mode is also known as internet-based inquiry-based teaching mode. Teachers usually release inquiry-based tasks with the help of network platforms and provide scaffolds to complete the tasks. Students collect information, independently explore, and conclude conclusions in the whole learning process. This teaching mode has high requirements for both teachers and students, students need to have certain ability of independent learning, knowledge construction and the ability to organize and organize information resources, and teachers need to have sufficient ability of problem planning, guidance, communication and evaluation. Inquiry teaching mode can be further refined into problem-based learning and collaborative learning. The two specific teaching modes have different emphases. The problem-based learning focuses on the transfer of students' knowledge and the cultivation of their problem-solving ability, while the collaborative learning focuses on the improvement of students' teamwork and innovation ability. Teachers should choose the most appropriate teaching methods according to the teaching content. For example, to push the desktop, it must be carried out by live broadcast or recording, and to carry out collaborative learning, it needs to organize discussion, communication and group activities, so it is better to carry out teaching through asynchronous communication and real-time interaction. Don't be obsessed with the process of live broadcasting. Good online teaching depends on excellent teaching design and has nothing to do with live broadcasting.

3. Online teaching resources construction and platform selection strategy

3.1 Curriculum resource construction strategy

Whether the course resources are abundant or not is directly related to the success or failure of online teaching, which is also an important symbol of the difference between online teaching and conventional classroom teaching.The construction of online teaching course resources can be started from the following aspects.

3.1.1 Teaching content resource construction strategy

As the main resource of the course, teaching content resources are one of the main channels of knowledge transmission. As the research shown, there are various forms of

expression. At present, the main expression way is teaching micro-video.When preparing teaching videos, teachers should try their best to choose a simple and easy way to operate, and encourage the use of minimalist ideas to carry out informationized teaching, which can save a lot of production time.For example, the course of literature and history can be recorded by PPT+ teacher's video.For courses requiring calculation and derivation, such as science and technology, video production can be made by recording the calculation process through mobile phones. If some engineering principles and mechanical principles need to be presented, it is best to make demonstration animations and then insert them into the video.In short, when preparing teaching videos, we should fully consider the types of courses we teach and the characteristics of knowledge points, and choose the most appropriate way.

Teaching content can also be presented through other forms, such as e-books, courseware, graphic materials, virtual experiment space and so on.Especially when the preparation time is not enough or the teacher is not skilled enough in the video recording technology, it is faster and more convenient to prepare teaching content resources through courseware, graphic materials, network links and other forms.Teaching content and resources should be prepared as rich as possible, which can be one or two kinds of resources as the main, and many other types of resources as a supplement, and strive to build a resource-rich online learning environment for students.The main teaching content resources should be mainly teaching videos, e-books and multimedia courseware as far as possible. The construction of the main resources should strive to cover all the important and difficult contents of the course, and the construction of other resources should also be combined with the knowledge points of the chapters.

3.1.2 Operation, test resource construction strategy

In the process of online teaching, homework and testing are important means for teachers to acquire students' knowledge. Homework can be divided into classroom work, after class work, practice work, unit work and other forms. Generally, after completing a stage (unit) of study, there should be a comprehensive homework, and it is better to have practice homework after each course. In the process of online teaching, homework activities are not easy to carry out, which can be replaced by other activities such as investigation and questioning, but homework can be arranged in class. At the end of each stage of learning content, it is suggested to set up homework activities, so that students can develop good learning habits, form online learning thinking set, and help to achieve the learning effect.

The test includes classroom test, unit test, comprehensive test and so on. In the process of online teaching, we can quickly understand students' mastery of knowledge through tests. If there are live broadcast, meeting class or real-time question answering and discussion links in online teaching, some classroom tests can be set to activate the atmosphere. It can also help teachers understand students' mastery of current knowledge, so as to provide reference for the next stage of teaching. At the end of a chapter or a certain stage of teaching task, just like homework, unit or chapter test should also be arranged.

3.1.3 Design topics for discussion and group activities

Discussions and group activities are important links in the online teaching process. These links promote the communication between teachers and students, carry out in-

depth interaction and inspire students to think. These links are easy to be ignored by teachers, but at the same time these links are important means for students to gain a deep understanding of knowledge. It is suggested that teachers should formulate discussion topics and group activities related to the teaching contents of each unit. Also teachers should actively organize students to participate in the discussion and to carry out activities. The topic of discussion should be controversial, be able to arouse students' viewpoints and stimulate students' thinking. The topics should not be a fixed and uncontroversial concept or the content of reason, which is not conducive to the development of the discussion. When organizing discussions, teachers should guide students skillfully, stimulate students' continuous thinking, in order to constantly deepen their understanding of knowledge, and guide students to gradually master the ability of summarizing and summarizing unstructured resources and generative resources.

The best choose of online teaching group activity theme is to launch a remote collaborative project. It requires teachers to design teaching content seriously, put in a claim for clear requirements. Generally activity theme should have certain work, which is beneficial to students' collaboration. If we can organize a group activity on how to carry out special training before the event would be even better. These resources need to be prepared before the class. Teach content resources should be pushed to students in advance for self-study and preview. Testing and homework resources should be pushed to students when the current content of the course is taught.To avoid the situation that students do not have homework or tests after learning knowledge. The resources of discussions, seminars, and group activities can be pushed to students during the course, when specific issues are involved, or they can be pushed to students before the class in advance to guide them in preparation.

3.2 The choice strategy of curriculum platform

At present, there are many platforms that can carry out online teaching, and the basic functions of these platforms are similar and the same, but they also have different emphases. Some platforms can carry out live broadcast, some platforms are focus on real-time interaction, and some platforms are focus on flipped teaching. So how should we choose a suitable course platform for ourselves? It is suggested that front-line teachers should consider the following two aspects.

3.2.1 Comprehensive selection of live broadcast tools and course resource management platform

Live broadcasting tool, as its name suggests, can establish channels for direct real-time communication with students, such as QQ group,DING TALK group, WECHAT group, CCTALK, ZHUMU, Tencent classroom,ZOOM,enterprise WECHAT and other platforms. All of these software can build communication channels.Each platform server has different restrictions on the number of viewers in a live broadcasting process, which is directly related to the final effect of teaching live broadcasting. Course resource management platform, also known as virtual learning system or virtual learning environment, is mainly used to plan and manage the course content after the establishment of the course. It is used to push the relevant learning content to the students and carry out activities such as discussion, question answering, homework and testing, so that teachers can obtain the basic information and data of the students, so as to supervise and inspect the students. At present, there are many such platforms,

such as Zhidao of treenity, Xuetong of super star Erya, lanmoyun class, Rain Classroom, Chinese university MOOCs, UMU, CCTALK of China University, etc. At present, the main functions of the platform include: online course construction student teacher management content sharing and push online collaboration discussion and evaluate homework and evaluation class data report, etc.

Usually, we need to carry out online course teaching. We need to carry out course construction through relevant platforms, organize resources, let students join in, There is a space for online learning. This is the main function of the course management platform. However, most of the course management platforms only have asynchronous management function, while synchronous live broadcast function is relatively lacking. A normal teaching process, the two are inseparable, so generally, in order to ensure the integrity of the teaching process and the smooth development of classroom teaching activities, it is recommended to adopt the "1 + 1" strategy, that is, a live broadcast tools and a course resource management platform are used at the same time.

3.2.2 Choose the appropriate platform according to the course content.

Different courses often have different teaching procedures, which requires teachers to choose the appropriate platform according to the course content.Using the platform with live broadcasting function is of vital significance.For instance, the teaching content needs teachers to interact with students to mobilize their emotions, or to summarize and change teaching strategies during the process of live broadcasting. For one thing, if the teaching content is the software operation method, it is necessary to ensure the Screen Sharing function.During the course,we can explain the content of class by pushing the screen and sharing teachers' computer desktop. For another thing, if a lot of interaction is needed in the process of teaching, it is better to choose the platform with more powerful interactive function.What's more, if the teaching content needs to be recorded and played back, in that case, platform with playback function should be put in the first place. The research shows that the course management platforms such as wisdom Zhidao App and superstar learning App have obvious advantages in content management. However, the screen sharing and live broadcast playback still need to be strengthened. According to the statistics, the live broadcast tools such as nailing, Tencent classroom have obvious advantages in live broadcast, playback, screen sharing and real-time interaction, but the ability of content management is relatively weak.

4. Summary and prospect

Online teaching mode is mainly divided into two types: lecture based teaching mode and inquiry based teaching mode. Lecture based teaching mode can adopt live screen, PPT +Voice live broadcast, video broadcast and other methods. Inquiry based teaching mode can specifically carry out problem-based learning, cooperative learning and other teaching forms. Online teaching is not equal to live online, and teachers can not be network anchor. In a word, The fundamental task of online teaching is teaching. There are many ways to present teaching content in the process of online teaching, such as courseware, e-book, graphic materials, etc. The construction of curriculum resources can start from the construction of teaching content resources, homework, test resources, discussion topics and group activities. In the selection of live broadcasting tools and course management platform, it is suggested to select the best

course carrier according to the main functional advantages. With the accumulation of online teaching experience, teaching mode and teaching resources will be more abundant.

Reference:

1. Xuebo Zhang, Shubing Lin. Suspension of classes: coping strategies and phenomenon perspective of online teaching [J]. Modern educational technology, 2020,30 (11): 113-119

2. Weidong Fu. Online teaching of primary and secondary school teachers in China during the epidemic period: current situation, problems and strategies -- Based on the data of online questionnaire survey of 7111 primary and secondary school teachers in China [J]. Modern education management, 2020 (08): 100-107

3. Junquan Mao. Future development of online teaching: trend, reflection and action [J]. China audio visual education, 2020 (08): 27-32

4. Yunying Cui, Wensen Yu , Yuanxiang Guo , Xiaoqing Liu , binyan Xu , Shuangye Chen, Xiaoming Wang, Junyan Liu ,Xiaozhe Yang,Tao Wang, Jianji Chen, Shaofei Wang. Exploration and reflection of online teaching (written discussion) [J]. Educational science, 2020,36 (03): 1-24

Н.В. Шаронова, доктор технічних наук, професор
Національний технічний університет «Харківський політехнічний інститут»
І.В. Кириченко, кандидат технічних наук, старший викладач
Харківський національний університет радіоелектроніки
Г.Ю. Терещенко, асистент
Харківський національний університет радіоелектроніки
м. Харків, Україна

ПРОБЛЕМИ ЕЛЕКТРОННОГО АДАПТИВНОГО НАВЧАННЯ В УМОВАХ КРИЗОВИХ ОБМЕЖЕНЬ

Досягнення в області інформаційних та комунікаційних технологій надають багато перспектив, зокрема в сфері освітніх технологій, особливо через наявність мережевих та Інтернет технологій. Такі технології дали можливість розвинути різноманітні педагогічні підходи і це суттєво вплинуло на навчальний процес за рахунок створення нових можливостей для обміну та надання знань [1]. Наявність різноманітного програмного забезпечення для підтримки та супроводу великої кількості ресурсів та сервісів дозволило багатьом університетам та освітнім закладам використовувати їх для управління навчальним процесом, студентами та розподіленням навчальних матеріалів.

Протягом останніх двох десятків років, ми спостерігаємо процес переходу від традиційного навчання до навчання із застосуванням сучасних комп'ютерних технологій. Це стало можливим завдяки глобальному розвитку мережі Інтернет і це дало можливість переміщувати необхідну кількість даних з одного ресурсу в інший, вільно вести дискусії з іншими користувачами мережі в online-режимі та розміщувати різноманітну інформацію на Інтернет-ресурсах, що зробило інформаційні дані високо доступними для всіх бажаючих. Сучасні інформаційні технології дають змогу підвищити та вдосконалити ефективність освітнього процесу.