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The Operation Flow of Making Micro Course Based on the Later Stage Technology of Film and Television

——Take Mathematics Micro Class as an Example

Lin Liu, Hui Yan*

School of Mathematics and Statistics, Hubei Normal University, Huangshi 435000, Hubei, China. E-mail: m15172029426@163.com

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Abstract: As a new form of curriculum, micro class not only conforms to the concept of fragmented learning, but also meets the needs of fragmented learning. However, the micro class has certain requirements for the creators' video production ability. Based on the theory and advantages of film and television post technology, combined with the law of education and teaching, the author gives a set of operation guidelines from the early teaching, script and layout design, to the mid-term sound and picture production, and then to the post editing and dubbing, so as to provide reference for the creators and make more creators participate in the production of micro class.

Keywords:Micro Lecture, Film and Television Post Technology; Mathematics

1. Film and television post technology and micro class creation

Micro class is the first mock exam resource that integrates image, voice and text. Compared with the traditional single modal teaching resources, micro course has obvious advantages in teaching efficiency and effectiveness. In the process of micro lesson production, we design and process the materials of each modal type separately to meet the requirements of teaching, and then use the film and television post technology to organically combine them to make them coordinate, so as to give full play to the advantages of micro lesson.

2. Operation process

2.1 Preliminary preparation

2.1.1 Instructional design

The teaching design of micro class mainly includes three parts: first, select appropriate teaching resources according to the learning content, learner characteristics and micro class learning environment in the early stage; second, design teaching modules according to resources, such as scene introduction, classroom exploration, consolidation and promotion, to help students understand the teaching content point-to-point; third, summarize, reflect and modify the teaching design according to students' learning effect.

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2.1.2 Script design

The purpose of script design is to co-ordinate the specific implementation of each step of micro class, and maintains the order of each part, that is, when each part should perform what task, so as to achieve the expected teaching effect.

Taking the script of "the positional relationship between line and circle" as an example (simplified version).

Teacher's script: Hello everyone...please enjoy the scene of "bright moon on the sea" (screening video)... .let's play a game (go to slot B to demonstrate the game process).

Photographer A's script: Fix the seat and record the teacher's appearance in the whole process.

Photographer B's script: Hear "let's make a game" and start recording the demo of the game.

2.1.3 Layout design

The teaching scene of micro class is asymmetric, there is space-time dislocation between students and teachers, and the quality of students' attention is in the development period. To avoid students' distraction from typesetting is the basic requirement to ensure the teaching effect. The design of a unified layout can ensure the stability of students' attention goal from the structure, ensure that students will not be disturbed in a short and valuable time, and focus on the classroom itself. In addition, in order to meet the viewing needs of micro class in special environment, it is often necessary to configure subtitles in the later stage. We usually set a security line at 5/6 of the interface to avoid other elements occupying the subtitle space in the early stage.

Taking the layout design of "the positional relationship between line and circle" as an example.

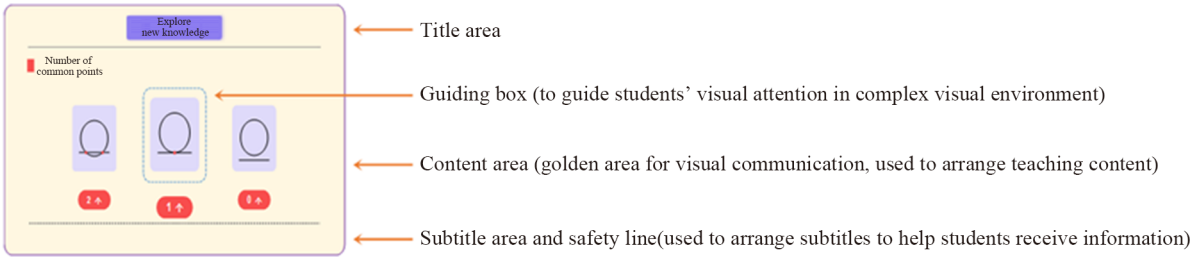

Figure 1. Schematic diagram of layout design.

2.2 Exporting video material

After finishing the production of the demo material, we export it to video as the image material of the final product. The quality of the video material directly affects the appearance of the final product, which should be high under the principle of smooth editing. Generally speaking, the frame of video material should not be less than 720P, the bit rate (total bit rate) of recording material should not be less than 10Mbps, the bit rate of exported material should not be less than 1Mbps, and the frame rate should not be less than 24 frames / s.

Image quality: In Windows system, right→click → properties → details to view the frame, code rate and frame rate of the video. The parameters are for reference only, subject to the actual appearance.

Export material: The former is produced by camera recording and screen recording, and this kind of material is generally large. The latter is the image material generated by transcoding, such as PPT or Flash animation video, which is generally of high quality and small size, but needs post dubbing.

2.3 Dubbing

Voice dubbing is the key step of later mode. The voice collected in micro class is mainly human voice. Gun microphone (which can be replaced by wireless collar microphone when it is required to be out of the mirror) can effectively avoid environmental sound and obtain pure and full human voice. It is worth noting that recording is done as soon as possible, especially avoiding changing the position of microphone and voice player. Even the voice of the same person will be different in different radio states, which will affect the viewing experience of video and it is difficult to repair it in the later stage. In order to deal with the sudden situation in recording process such as noise, oral error, equipment failure, etc., we usually set many pause marks in the script. In case of oral error, we do not need to re record. After several seconds of intermission, we can start from the last pause again. In the later stage, we can quickly find and remove NG part through waveform.

2.4 Editing and coding

This step tests the editing level of the creator, which is directly related to the effect of the final product. The higher the degree of completion, the greater the workload of this step will be. The creator who lacks the ability can appropriately reduce the steps and effects, such as noise reduction, subtitles, onomatopoeia, etc., so as not to affect the content.

2.4.1 Alignment of editing with sound and picture

For the same period of audio-visual materials, the NG part can be removed with a razor. If the human voice is unclear, the noise reduction and human voice enhancement effects can be applied in audition or premiere (hereinafter referred to as Pr), and the parameters can be adjusted until they are satisfied. For post sound, we need to synchronize the picture with the sound through editing. The idea is to adjust the video to align with the corresponding audio. we should find the video clip corresponding to the audio sentence through preview, cut it with the razor tool, and adjust the slice to align with the audio.

2.4.2 Subtitles and watermarks

It is tedious to prepare subtitles with Pr, we consider using Arc Time software to prepare subtitles for micro class. After video editing, we use Pr to export the project file as audio, import the audio into Arc Time to prepare subtitles for micro class, and finally import the completed subtitle file into Pr again. Adding watermark in the video can effectively avoid illegal reprint and infringement. Similar to the principle of subtitle production, using other software to make watermark, and then importing the watermark into Pr, it can be arranged in a position that does not affect the viewing.

2.4.3 Soundtrack and onomatopoeia

Appropriate background music can adjust the atmosphere, and create a sense of atmosphere, so that students can quickly enter the state of learning. Generally, we choose the soothing and quiet pure music as the background music. The sound of the background music should not be too loud, otherwise, it will affect the teaching effect. Onomatopoeia is to attract students' attention from hearing, such as setting warning onomatopoeia for wrong examples to attract students' attention. The common onomatopoeia include ring tone, warning sound, falling sound, etc. onomatopoeia can also be used with animation in PPT.

2.4.4 Coding output

The export is rendered when everything is ready. In order to meet the needs of Internet transmission and viewing, we use h.264 (or h.265) encoding method to encode video into mp4 format. Higher code rate means better picture quality and larger file volume, so as to adjusts the code rate to obtain the balance between picture quality and volume.

3. Conclusion

The introduction is just the beginning, and those who are good at doing things will benefit their tools. The methods provided by the author have limitations after all. It is the only way to explore more and try more to improve their own technical level. Micro lesson production is a technology, and it has rules to follow, as long as more study, diligent research can gradually get better. Micro lesson production is also an art. Only when we give full play to our imagination and creativity can it radiate infinite vitality.

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