Research on Construction of Evaluation Standard System of Micro-course Video

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Abstract In recent years, a large number of micro-course videos are launched in batches, and have achieved good teaching results due to the continuous improvement of learners needs. In the theoretical research field, with the full recognition of the micro-course education for learners, academic research on the micro-course video is also setting off a craze. It is obvious that how to establish the evaluation system of micro-course has become a general trend. Based on the existing theoretical basis and combined with years of experience in teaching video production, the author put forward the evaluation system of micro-course video, which takes the subject knowledge as the main body.

Introduction

With the development of technology in the new media age, the channel and idea of acquiring knowledge and information are evolving, and the fragmental information acquisition way has led to the birth of "micro-times", where the public is more willing to receive micro-information through the mobile Internet, and the micro-blog, WeChat, and micro-film have become the absolute mainstream channels for information dissemination. In this trend, the education mode is also changing. Influenced by the information communicating environment and lifelong learning idea in education field, the learning style of learners is diversified, and is gradually tending to informal learning. When learning goes for mobilization, miniaturization and fragmentation, the content of learning resources is facing new challenges. The traditional large-unit, large-capacity course resources cannot meet the needs of learners; therefore, the learning way gradually tends to miniaturization and mobilization [1]. The teaching content of the micro-course is clear and focused, and the effective combination of different expressions, such as sound, image and graph, can fully show the whole picture of the knowledge points, in addition, it can attract study interests of students, facilitate students to grasp the key points, and unbridle the puzzles, thus achieving the teaching purpose [2]. Micro-course video has become the main form of teaching and knowledge-based video production.

Figure 1. Academic research on the micro-video.
In recent years, a large number of micro-course videos are launched in batches, and have achieved good teaching results due to the continuous improvement of learners needs. In the theoretical research field, with the full recognition of the micro-course education for learners, academic research on the micro-course video is also setting off a craze.

![Figure 2. Academic research on the teaching-video.](image)

Seen from the above two figures, the micro-video research has increased year by year from 2011, and the number of research papers has reached 484 as of 2015. Since 2011, the study of the micro-course video has been starting in the ascendant, and the research papers reached the peak 30 in 2015. This can fully reflects that the production and theoretical research of micro-course video is the general and imperative trend.

According to domestic and international research results of micro-course video, the current academic research on micro-course video focuses on three aspects: first, the production and design of micro-course videos; second, the theoretical research on micro-course video’s application in teaching; third, the research on technology related to micro-video course. Taking design, production, use, test and feedback as a complete research process of micro-course video, the current study is clearly in lack of testing and feedback links. In the past, the judgement of the quality of micro-course video mainly came from two aspects. One is the effect theory based on the study results. The second is the empiricism based on famous teachers’ courses. In fact, both of these two methods are not perfect. The drawbacks of effect theory are lack of early prejudgment, long testing process, and waste of resources. Empiricism cannot achieve the expected teaching effect for all learners. In fact, the two methods are both in lack of scientific evaluation system, evaluation criteria and evaluation elements. It is obvious that how to establish the evaluation system of micro-course has become a general trend. Based on the existing theoretical basis and combined with years of experience in teaching video production, the author put forward the evaluation system of micro-course video, which takes the subject knowledge as the main body. Based on the fundamental element method in education and the taxonomy of film and television, the basic elements of micro-course video were split to establish a scientific and complete evaluation system.

![Figure 3. Split the micro-course video by fundamental technical elements.](image)
The Research Methods of Fundamental Elements of Micro-course Video

Micro-course video is the combination of video as carrier and educational activities, so the study of the fundamental elements of micro-course video can be carried out from two aspects: first, concrete study of video carrier of the micro-course, the other is the abstract research on micro-course video. Among them, the teaching activities are the core of the micro-course, and video carrier performs as an auxiliary means. Not only primary and secondary relations the two has, but also cooperation with each other is needed in order to truly realize the whole process of teaching and learning of micro-course video.

First of all, seen from the concrete study, taking video as an object, and micro-course video is a kind of video, so we can have a basic elemental analysis following the general principles of splitting the video elements, namely, decompose the video level by level based on the video working principle: first, split the micro-course video into several scenes, and then the scenes can be split into the smallest unit of film and television production—frame. Frame is the smallest video division unit theoretically, but it is a static picture, and only at least two or more continuous frames can be called video, therefore, the frame element group, which is composed by a number of frame images and which can completely express the clear meaning, is the most fundamental element of micro-course video, referred to as primitive of micro-course video. The principle is as follows:

There is no fixed time defining each fundamental element of micro-course video, and its most direct use of micro-course video is to analyze the structure of micro-course video, and to qualitatively and quantitatively study the structure of teaching. By classifying the interaction between teachers and students in class quantitatively, analyzing the number of occurrences of various types of behavior, state duration and migration path provides a set of effective analytical methods for specific quantitative analysis of the teaching process. Of course, the role of micro-course video primitives is more than that, and it is also the gene map which describes the contained properties of micro-course video vividly.

Seen from the abstract research, the splitting of fundamental elements in micro-course video, whose object is teaching activity, is more complex, and to study the elements of micro-course video, whose main component is teaching activity, it is necessary to define the micro-course video first. Micro-course video is a kind of teaching video, “a video-type teaching resource that covers knowledge and skills to be taught and published for learners in accordance with the requirements of the syllabus, with integration of various information of pictures, text, sound and video processed by teachers or professionals using technical means” The primary attribute of micro-course video is the course, whose learning platform is the network platform. Therefore, the micro-course video has a relationship with course and network course. According to the existing definition and combining the current situation of the production and actual use of micro-course video, the definition of micro-course video is as follows: with the knowledge transmitter as the core, transmitting knowledge and skills as the main purpose, and mobile network as the main releasing channel, professionals use video technology and art means to arrange and produce micro-video teaching recourses, in line with the logical way of disciplinary teaching.

From the definition we can see that the core content of micro-course video is teaching and acquiring of knowledge, namely, the problem of teaching and learning that we often mention. Therefore, it is reasonable to split the elements of the micro-course video with the principles of instructional theory, and the elements can be rationally and completely applied to the construction of the evaluation system, realizing the quality controllability of the teaching object of micro-course video.

Analysis of Object Structure of Micro-course Video Teaching

The following conclusions can be obtained from the definition of micro-course video: teaching efficiency of micro-course video is directly related to two main categories of elements, one is teaching factors, and the other is movie and television factors. Are they the only factors influencing the success of micro-course video? Actually, there is no direct related research result in the
academic field. Some foreign scholars believe that a micro-course video shall be evaluated from four aspects, content, teaching program, technical factors, and auxiliary information\cite{7}. The domestic scholars don’t have direct research on factors contained in micro-course video. Through a large amount of literatures, the author summed up the common cognition of most domestic scholars on factors influencing the micro-course video: content, video technology index, teaching skills of teachers, micro-video recording environment, and video producing skills. Through integrating domestic and foreign scholars’ viewpoints, the following main factors can be obtained: content, teaching program, teaching skill, video technology factors, micro-video recording environment, and auxiliary materials. Therefore, it can be said that the above six factors are the main factors influencing micro-course video. From the meaning, in fact, these six factors are not all independent elements, which can be classified into three parts, including teaching factors (content, teaching program, teaching skill, auxiliary materials), video factors (video technology factors), and environmental factors (micro-video recording environment and watching environment).

![Figure 4. The elements contained in micro-course video.](image)

Through a careful comparison on the conclusions from these three parts and the above definition of micro-video, it can be found that the two conclusions are consistent with each other. Thus, the primary element splitting of micro-course video should be teaching, video, and environment. According to existing theories, each 1-level element is split as follows:

**The Splitting of Teaching Element**

It can be drawn from the definition of micro-course video that teaching factors include teachers’ classroom teaching skills and teachers’ knowledge structure. In accordance with *Basic Teaching Skills Book for Teachers* published in 1997, teachers’ classroom teaching skills can be split into skills of introduction, language, blackboard-writing, change on teaching manner, teaching demonstration, explanation, question-asking, feedback-strengthening, ending, and teaching organization\cite{8}. For teachers’ knowledge structure, according to pedagogical PCK theory, teachers’ professional knowledge includes the following three aspects: 1. general pedagogical knowledge, which is composed of classroom management strategies, general teaching strategies, students, and acquired knowledge of students; 2. subject knowledge, which is composed of subject content knowledge, content structure of subject, syntactic structure of subject, subject knowledge-related discussion methods, and development of subject knowledge; 3. subject teaching knowledge, which is composed of the knowledge on subject teaching purpose, knowledge related to students’ learning on the subject, knowledge on course and course materials, presentation of specific subject knowledge, and knowledge on teaching strategies\cite{9}. The specific splitting of teaching elements are shown below:
The Splitting of Micro-video Element

Video is composed of technology elements and art elements; technology elements are concrete, which can be relatively split; art elements are also important, but always been ignored. A complete video element splitting should be split into two firstly, namely micro-course video technology elements, and micro-course video art elements.

Figure 5. The splitting of teaching element.

Figure 6. The splitting of micro-video element.
Micro-course video technology can be understood as all used and involved technologies in making micro-course video. Through analysis of nearly 1000 kinds of micro-course videos at home and abroad, the elements of video technology can be split into technologies of photography, post-production, special effects, virtual reality, format conversion, storage, and transmission of movie and television. By drawing lessons from movie element theory and movie and television primitive method, micro-course video art elements can be split into lens, sound, editing, art designing and montage.

The Splitting of Environment Element

The splitting of environment element, namely teaching environment element here, which include natural environment, material environment, interpersonal environment, and conceptual environment of teaching, classroom teaching environment, and social teaching environment. For analysis of micro-course video, the author took environment elements influencing micro-course video into consideration only, namely, natural environment of teaching and classroom teaching environment. Therefore, the author split them into elements of classroom time, classroom space, and classroom participant, of which classroom time can be split into two sub-elements of actual classroom teaching time and specific classroom teaching time; classroom space can be split into two sub-elements, the size and position of classroom; classroom participant can be split into two conditions, the number of classroom participants and the quality of classroom participants.

Through the above analysis, we have split education video element into 4-level abstract elements with clear meaning and function for each; through combining with research on primitive method of concrete micro-course video teaching, all elements can be summed up the corresponding index parameters rules, and abstract elements can be described by means of concrete elements, which also bring specific quantized data to evaluation system of micro-course video.

Logical Relationship between Micro-course Video Elements

Elements influencing micro-course video are split into three categories with seven 3-level elements, which were split into 31 4-level elements finally. By taking the micro-course video as a multivariate equation, then the final presentation effect of micro-course video is outcome variable A, and the other elements are variable B, C, D ...... of the equation, and level change of each element will affect the final results. Elements are not independent of each other. In the three categories of elements, teaching element is the core, and video and environment elements serve the teaching elements. By taking production process of micro-course video as the benchmark, the final embodiment form of micro-course video is video, therefore, the video elements should be the last one when considering precedence relationship.

Figure 7. The splitting of environment element.
By taking production process of micro-course video as the benchmark, there are logical causal relations among each 3-level element of the three categories of elements. Teaching element: based on logical relationship, teachers’ knowledge structure should be after teacher’s teaching skill, and the two belong to progressive relationship. Video element: video technology and video art belong to parallel relationship. Environment element: classroom time, classroom space and classroom participants belong to parallel relationship. 4-level elements basically belong to parallel relationship.

Construction of Evaluation System of Micro-course Video

Through the above research, the author obtained all levels of elements influencing micro-course video, and clear logical relationship between elements. And then, according to the definition and production process of micro-course video, the evaluation system of micro-course video has been established by giving priority to education elements.

By taking spreading subject knowledge as motive power, taking video frame collection completely expressing a single meaning as basic research unit, and logically testing elements of teaching, environment, and video level by level, the author obtained a three-dimensional data map which can reflect the specific index of each element. This system is to test the found bad factors that influence teaching effect through the detailed basic element, to control the quality of micro-course video, and to explore how to achieve the best teaching effect of subject knowledge through video. The evaluation system is a dynamic circulatory system, which takes subject knowledge as the core; different subjects knowledge correspond to different teaching methods and different video expression methods, and it can achieve the best teaching results in the use of different learning environment.
The conclusion of this research can provide scientific and rational theoretical basis for the production and evaluation of micro-course video, and can also provide a referential theoretical framework and research system for research on micro-course video. Of course, this research is not the final conclusion of micro-course video elements, and it can be said that it has just begun compared to the research on micro-course video elements. In the future, the property research of micro-course video elements aiming at specific subject and specific knowledge will have more practical significance, what’s more, researches associated with the final teaching effects, such as the broadcast media researches on micro-course video and related context researches affecting micro-video teaching effect will also develop gradually with the development of micro-course video elements in depth. The author hopes that this research can open a new skylight for theoretical research on micro-course video. There will be more theories about the micro-course video in the future, which will provide a perfect theoretical system for the development of micro-course video eventually.

References
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