

The Analysis on Systematic Development of College Microlecture

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Received: October 10, 2013 Accepted: November 13, 2013 Online Published: November 27, 2013

doi:10.5539/hes.v3n6p65

URL: <http://dx.doi.org/10.5539/hes.v3n6p65>

Abstract

In order to apply micro lectures to college education successfully, construct new teaching and learning strategies and teaching model, this paper proposes characteristics of college microlecture based on the college education features and construct microlecture structure model based on the definitions by the experts and scholars. Microlecture's design philosophy and principles are also discussed here and production strategies and methods are introduced specifically while some companying assessment indicators are set in this paper.

Keywords: microlecture, college education, design

1. Introduction

Big data has become a focus of attention in the information technology field. It is a hot word which already influences people's life and naturally would shape and accelerate the development of educational informatization. Big data could help users find out resources they need in the vast sea of data. With the rapid spread of the mobile terminal such as intelligence mobile phone and tablet PC, etc, big data can also support mobile learning, blended learning and ubiquitous learning powerfully. Microlecture is what exactly meets the requirement of mobile learning, blended learning and ubiquitous learning.

2. The Definition of Microlecture

Micro-lecture is initially developed from 60-second course by Professor LeRoy A. McGrew in University of Northern Iowa. In 2008, David Penrose, the independent instructional designer of San Juan College in New Mexico US who proposes Microlecture, notes that microlecture has to be combined with the specific arrangement and discussion and the knowledge burst of microlecture would be of the same effect as the regular lectures of long hour. He puts forward five steps in microlecture design, list the key concepts you are trying to convey in the 60-minute lecture, Write a 15 to 30 second introduction and conclusion, record these three elements using a microphone or web camera, design an assignment to follow the lecture that will direct students to readings or activities that allow them to explore the key concepts and upload the video and assignment to your course-management software.

Educause, an American educational informatization research institution which specifically studies the information technology in higher education, introduces its definition of microlecture, claiming that microlecture is a short recorded audio or video presentation on a single, tightly defined topic.

In China, microlecture is firstly put forward by Tiesheng Hu, a teacher in Educational Information Network Center of Foshan Educational Bureau in Guangdong Province. Its software has developed from 1.0 to 3.0 currently. In the following part we will share prevalent definitions of domestic experts and scholars along with official document of Chinese Microlecture Contest.

• Tiesheng Hu (Version 3.0): microlecture is the short form of micro video network lecture and its carrier is micro instructional video. Microlecture refers to online video lecture resources which are designed and exploited to form a contextualization multimode learning style aiming at specific knowledge (key point, difficult point, question, and something that will appear in test) or teaching link (such as study activity, subject, experiment and task)

• Jianli Jiao notes that microlecture refers to teaching or studying video which is usually short and upload on line with the purpose of illustrating particular knowledge.

- Jiahou Li says microlecture is a short lecture within 10 minutes which focuses on one specific problem with clear teaching purpose and short content.
- Bingjian Wu defines it as short video or animation online by both teachers and students with the purpose of sharing knowledge and skill which could reinforce studying context and realize the semantic interconnection to satisfy individual learner difference and it could also be used as the learner-built and built-in resources in Wiki.
- Xiaojun Zheng remarks that microlecture is a contextualized, interesting and visual e-learning resource packet aiming at specific knowledge or teaching link which uses the micro streaming media teaching video as the carrier to support new learning styles such as reversal learning, blended learning, mobile learning and fragment learning, etc.
- Chinese Microlecture Contest proposes that microlecture means the short and integrated video of teachers' teaching activity which centers around specific knowledge and teaching link.

The definitions above basically explain that the main carrier of microlecture is short micro streaming media teaching video directing at specific knowledge or teaching link. Concerning about the special nature of higher education, along with adaption and manipulation of college microlectures, microlecture is brief, short, refined, powerful, academic, accessible, connective and generative. In this paper, the structure model of microlecture is constructed below with the help of "Feichang 6+1" model by Tiesheng Hu.

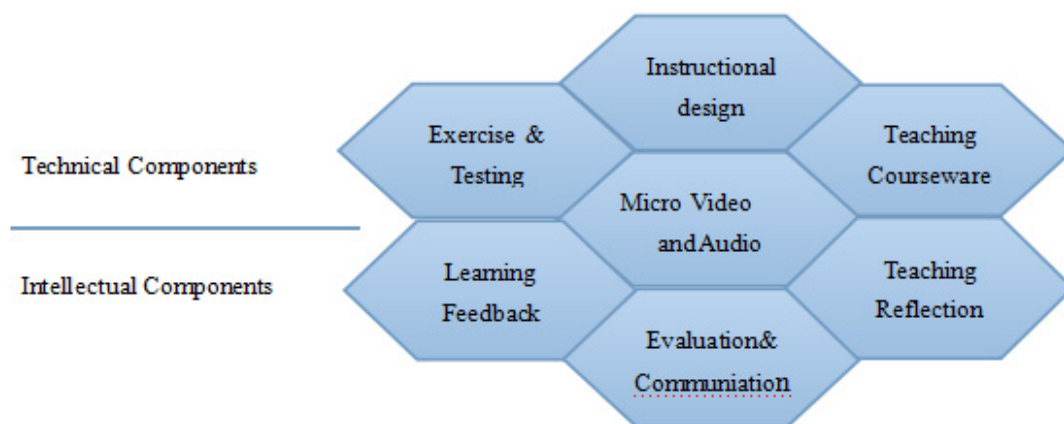


Figure 1. Structure model of microlecture

College microlectures' academic, accessible, connective and generative features are mainly reflected in the intellectual components in order to realize the group intellectual sharing.

Academic feature is what the college education pays great attention to develop with either theoretical depth or data support, which is different from the elementary education.

Accessibility means that different viewpoints are allowed to enter the system and mutually interacted.

Connectivism believes that learning is a reconstruction and construction of relation and node in learning network in which learning is a process of inosculation. (George Siemens, 2005) Microlecture is an independent and integrated microlearning unit and also a node of course resources in which student could construct their individual knowledge network based on their remaining cognitive experience.

Microlecture's generative nature could collect information from the students or participants' using evidence which changes the traditional learning resources which is long believed to be solid and hard to renew.

3. The Development of College Microlectures

Curriculum is like a huge honeycomb, in which microlecture is only a micro unit. Students could make use of this micro contact to build knowledge framework on their own and teachers could develop their major. Therefore, microlecture is not fragmental course but the essence of course (including key points, important points, funny parts and error-prone part, etc). All these could be present in micro video leading students into a knowledge hall and study the course with depth and integrity.

3.1 Microlectures' Design Philosophy and Principles

Confronted with the application of information technology in education, what we emphasize is student-centered concept and the dimension of value rationality in technical rationality, embodying human being's key role and avoiding the spread of technical rationality which results in the technology-centered tendency. What we admire deeply the design philosophy of microlecture is to help students carry out autonomous, cooperative and inquiry learning focusing on teachers' role as a guider and students' role as a partner in their knowledge internalization.

In current China, there are plenty of people who are addicted to computer, cell phone, and micro blog. This phenomenon is especially true for the youth, who is lost in the electronic products and usually keep them in their hands no matter having meals, or to the bathroom. Mare Prensky assumes that the digital indigenous people, who are born with digital technology, tend to screen reading. Their multi-tasking recognition approach and psychological features of hunting for novelty, along with the thinking mode of image priority, make the youngsters accept and fit for digital reading more easily. Under this situation, we combine the concept analysis and designing concept, summing up the designing principles of micro lectures as follows:

Firstly, microlecture should be short and effective video or audio which should be 8-15 minutes long (5-8 minutes long in elementary education) and it is better not to exceed 20 minutes with the output format which could support online play. It could be brief but also catch students' eyes and inspire or motivate students' further study regarding it worth to be watched again.

Also, micro lecture should be commenced with specific key points which are easy to learn and understand. Select tiny but independent integrated content as the teaching content which conveys the core concept, specific knowledge or teaching link. All those which are not so important will not be selected as the microlecture. Though it is short and brief, the design should include three steps, introduction, explanation and conclusion.

The last is to lead and promote. A straw shows which way the wind blows. The saying also goes with the microlecture design. Well-designed microlecture could promote students further learning of micro problems and create active learning environment which will guide students' learning to realize the knowledge network construction and promote their study by man-computer interaction, student-student interaction and student-teacher interaction.

3.2 Microlectures' Production Strategies and Methods

There are many strategies of microlecture production, including task-driven, problem—oriented, cooperative inquiry, feedback interaction, step-by-step, instruction and enlightenment, knowledge reinforcement, experimental demonstration, operative exploration, explanation and analysis, reasoning and calculation, doubt solving, searching weakness, treating individual differently, with definite objects in teaching, using something perceptive and true to life, teaching vividly and funny, knowledge explanation and give guidance in problem solving, etc. Teachers could flexibly choose appropriate strategies or combine various strategies together according to microlectures' need.

Many ways could be adopted to produce microlecture and many equipment could be used to shoot (professional camera, DV, digital camera, computer camera and intelligence mobile phone, etc). Some screen recording soft ware (Camtasia Studio, jinda.tv) could be also used and be integrated into microlectures with animation video software (Flash, Premiere and Corel).

Currently there are two ways to produce microlectures in colleges, one is the professional team which uses the professional equipment and another is teachers who use their individual screen recording software. Although, for many years, with the development of fine course construction, fine video demonstration lesson and sharing of fine resources, most colleges are equipped with professional requirement of microlecture production with professional shooting equipment, post production team and even professional photo studio, what needs to be explicit is the key that microlecture is still content and technology could only serve the content. As a result we emphasize that teachers should exploit screen recording software to record microlectures' ways and steps.

3.2.1 Topic Selection and Title Choice

One microlecture could only introduce one knowledge point. It could capture students' eyes if the title could break through the traditional profession boundary and aim to novelty and close to people's life.

3.2.2 Clear Orientation

A clear orientation of audience is necessary who will be the undergraduates, graduates and doctors. Too broad orientation is not preferable. Microlecture is communication with the one in front of the computer; the learning circumstance is one to one, not one to many.

3.2.3 PPT Production

To make a successful PPT, the design should be professional, brief, clear and beautiful which decides the teaching effects of microlecture. Office 2007 is recommended strongly.

3.2.4 Script Composing

Make the design clues clear, design the teaching steps, detailing the corresponding time allotment. It is better to calculate time in second.

3.2.5 Being Familiar with Software

Camtasia Studio is what we recommend which is an user-friendly software with powerful screen motion recording tools (with edition function). It could record screen motion easily (screen or camera), including image, audio, mouse moving path and narration voice. The recording file could be output as the regular video file or be introduced to Camtasia Studio and edited. Camtasia Studio could make various video editions based on timer shaft, such as attaching labels, media library, PIP (Picture in Picture), special effects of subtitle, scene changes, voiceover and headline editing, etc and support comprehensive format of source file and output file.

3.2.6 Live Recording

During live recording, people should pay attention to detailed operation, for example, mouse should not move disorderly, typeface should go well with the background colour. When giving lectures, the mouse motion speed should not be too fast and pictures should be brief, without any irrelevant icon, background and teachers' images, etc. The surroundings should be quiet without noise.

3.2.7 Edition and Output

Though many output videos could be of plenty of formats, avi is strongly recommended when it is the first time for output without being condensed. Parameter setting of video and audio should be high. Though the output file is large, it will not influence quality of video transformation.

3.2.8 Format Conversion

In order to make the file fit for network transmission and support online watching, some software as Format Factory could transform .avi into .mp4 and .flv, etc.

3.2.9 Uploading Management

Finished microlecture video could be uploaded to the campus network or the third part website (youku or tudou etc.) and conduct dynamic management, which will play the roles of feedback, communication, evaluation and reflection thus making the microlecture concept into practice. This step is very important which determines if microlectures could last long and keep a prosperous vitality.

3.3 Assessment of Microlecture

Design and production is the basic component in microlecture development and what is more important is the intellectual element practice in college microlecture. Therefore, assessment is required to test its effectiveness, deciding whether the microlectures are well-designed or not. Meanwhile microlectures could develop itself from the assessment. Such approaches as subject choice, lecture content, lecture structuring, teaching norms and teaching effect, etc could be used to evaluate microlectures. The assessment indicators are being listed Chart 1 at length.

Table 1. The assessment indicators of college microlecture development

First Grade Assessment Indicator	Second Grade Assessment Indicator	Explanation
Subject Choice	Perfect Subject Choice	Check if the subject is of small granule which shares an independent and integrated content rather than a fragment. Develop microlectures aiming at core concept, specific knowledge and teaching links, which could be in the form of lecturing, problem solving, question answering, experiment and activities, etc.

	Precise Orientation	The orientation should be confined to undergraduate, graduate or doctor, avoiding being too wide a range. Check if the content of subject fits student needs.
Teaching Content	Being Scientific	Microlectures should be precise and enriched. Check if the teaching content is correct without some scientific and policy mistakes.
	Being Academic	Check if the teaching content fits relevant teaching aims, if it is of theoretical depth, well-supported by data, and if it integrates theory with practice reflecting social and disciplinary development. Academic reflection is what college education focuses on.
	Extensibility	Openness, connectivity and generativity should be embodied in microlectures. Check if the organization of teaching content is of consecutiveness, sequentiality and conformability.
Structuring Design	Being Well-organized	Check if the designing style is of unification and coordination and if the relationship between technical elements and intellectual elements is clear.
	Being Interactive	Check if microlectures allow students to reframe the information and if it provides students opportunities to construct their knowledge by comparison and contrast.
Teaching Norms	Integrity	Check if micro audio and video are included in microlectures. (indispensable part in microlectures.) Supplementary and extension materials (optional) in microlectures could be teaching design, teaching courseware, exercise, test and teaching reflections, etc.
	Being Technical	Check if such information as subjects, major, course and applicable targets is explained clearly in the teaching scheme. The video or audio should be 8-10 minutes long (a word of warning it could not be longer than 20 minutes). Check if the animation and video image perform well and if the voice and images match well. Check how well the internet works and if it is easy to upload, download, demand and broadcast. Check feedback and the effectiveness of communication tools and help. Test the likeness of information communication and cooperative learning.
	Artistry	Check teaching courseware to see microlecture video style, overall arrangement, and distribution and color scheme.
Teaching Effect	Goal Attainment	Check if the microlectures achieve its teaching aim, solve practical teaching problems, hone student thinking ability and invite students to the course and help them study the course in depth and in full.
	Evaluation from Internet	Check its popularity through click rates, assessment, share and check if microlectures are hot discussed.

4. Conclusion

Being different from elementary education, college microlecture is very special. This paper introduces the college microlecture's characteristics and makes some assessment indicators which supplies some practical strategies for its design and production, making microlectures fit for college education. However, there is some limitation in our study because the microlecture design and its production are still elementary construction. What is more important is to keep its prosperous development. Consequently, our subsequent study will focus on microlectures' application and extension along with the further study of basic concept, systematic design and production.

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