Content Design of a Micro Video Curriculum in the Era of Scattered Learning

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Abstract — **In this paper, the author investigated the content design of a micro video curriculum in the era of scattered learning. This paper puts forward a design which is combined with student-centered micro design and the idea of integral design. Finally, the paper discusses the design process of micro-video course and put forward a design framework from the macro-content based and micro-instruction based level and combines it with theories of education, psychology, technology, arts and social context. This paper also analyzed the rationales to decompose the design of a micro-video course and the knowledge-based approaches of decomposition and relation design.**

Keyword - content design, micro video, curriculum, scattered learning.

I. INTRODUCTION

Fragment learning, which is intervened by smart education and learning technology notion, is confronting new demanding of learning resources. Besides, the micro learning resource is highly needed by educators due to learning space division, multiple learning media and the weaker stability of learning concentration. Apart from that, due to the rapid development of web media technology, instructional video resources become significant carriers for delivering and sharing knowledge. Recently, learning resources is emphasizing towards open, multiple and sharing mode. Moreover, teaching video resources have been significantly affecting the education transformation. In addition, as a new format of fragment-based learning, instructional micro-video resources can rationally meet learners' needs. Following on, the micro-video course is a key field which should be paid close attention by educators. In order to increase the integrative value of micro-video course and meet the needs of fragmented learning, the content design of micro-video becomes a significant research area. Accordingly, this research aims to explore the design strategies for course content decompose. The research then proposes a so called 'learner-motivated' instructional micro-video design model as a reference to micro-video course designer and instructors. Ren's research [1] is divided into five parts: Ren discusses the concept, characteristics, advantages and disadvantages, and learning content change of fragment learning in the context of transformative learning context. In addition, Ren's paper also explores the concept and characteristics of micro-video course, and the differences between traditional course and micro-video course. Following on, the significance of micro-course meeting the demand of fragment learning is also discussed.

Fischell [2] first clarifies the concept of micro-video course with other concepts. It then analyses some micro-video websites in education field mapping dimensions, their applicability and development trend of commonly used micro-video. He also compares between international typical micro-video courses and then put forward the category framework. He randomly draws samples from instructional micro videos guided by the content analysis approach, and then summarized the key characteristics of micro videos.

Hoff [3] mainly discusses the theory foundation of designing micro-video course. It then demonstrates scope of this present research from the ecological perspective. Hoff then puts forward a design which is combined with student-centered, micro design, integral design notion. Finally, he discusses the design process of micro-video course and the put forwards the design framework from the macro-content based and micro-instruction based level and from the theories of education, psychology, technology, arts and social context.

Tao [4-6] mainly analyses the rationales of decompose design of micro-video course and the knowledge-based approaches of decomposition and relation design. According Lev Manovich's theory about interactivity of digital myth, this research proposes a 'learner-motivated' design model. This model is adapted from the impact factors in the SMCR communication model and the ARCS motivation model. The 'learner-motivated' design model comprises three dimensions: knowledge content, teaching arts, and video characterization. Tao discusses the practical integration of micro-video course. According to the content design strategies of micro-video course, he elaborates the design process, integration details, and learning outcomes of a micro-video case called "Creative handcraft in kindergartens". After summarizing the shortages of this case course, his research involves the design and exploration work of second case course called 'Chinese for higher education and reflects and concludes the design process and integration practices of the second case.

II. THE MICRO VIDEO CURRICULUM TECHNOLOGY

With the rapid development of network media technology and the popularization of intelligent learning terminals, micro-video courses become an important carrier for knowledge spreading and sharing in the age of fragmented learning. The emergence of open, diversified and

shared micro-video courses has a significant influence on remote education.

In recent years, as the network technology improves continually, obtaining information through network and sharing video online have become a habit of more and more people, even many traditional medias also pick for the speedy and interactivity of network communication and start to march towards the video websites. Starting from the concept of micro video appearing in 2006, till today [7], micro video has achieved great development on all aspects of content, producer, operation mode, publishing platform, innovation, etc. As an emerging mode of propagation, micro video has gradually infiltrated every aspect of our lives, influencing and changing the traditional way of communicating and obtaining information. The greatest innovative significance of those micro video websites is a platform being established, which enables the common denizens to actively involved in the steps of shooting and making videos, turning into active creating from initial passive acceptance, and being able to share all these contents together with other netizens. Micro video mainly includes three aspects of micro documentary, micro film and micro advertisement. Except the micro advertisement has a narrow scope of purpose, micro documentary and micro film are all accepted by the wide netizens. With the execution of a series of policies and measures, such as "cutback on TV entertainment", "TV commercials ban", etc., the development of domestic video website achieves an unprecedented prosperity instead. Merchants who are frustrated by advertising on traditional media start to seek for wider advertising space on the network. The video websites not only play the introduced series, they also try to cooperate with upstream producers and make programs jointly with professional team. However, under such a free platform, the development of micro video exist some hidden danger. First, there is no corresponding classifying system and gatekeeper, which makes the level of micro video on the network uneven and some vulgar contents also sneak into the team of micro video; second, attaching excessive importance to economic benefit results in micro video lacking social benefits, which is unfavorable for transmission of whole social cultural; Third, currently the micro video is displayed only on websites, lacking more broadcast platforms; last, limited by the length of micro video, many creator suddenly become not good at telling story, having deficiencies both on arrangement of product rhythm and expression of content. These all are resistance for limiting the progressive development of micro video. In the future development, except continuing to select great series for playing with unique vision and cooperating with traditional media to innovate the self-produced drama, distributing copyright is also an urgent task for each video website. This method can lower the cost for website and the business model will be clear gradually. Besides, video website keeps trying the payment model at present. Whatever paying on click or paying by month, though this occupies a small portion in the entire income of website, which cannot compare with advertisement, once users develop a habit of watching by paying, there will be great room for this market's prospect to improve, and the payment model may be the "front" in future [8]. This article combines theories of communication and sociological, and under the basis of referring to relevant materials, it sorts the contents of micro video's connotation, classification, present development situation, etc. The emphasis of disclosure is put onto features of micro video, respectively proposing my own opinions on aspects of video content, publishing platform, audiences' aesthetic model and profit model. Then aiming at these features of micro video, analyze the current existing problem of micro video one by one.

III. THE BASIC FRAMEWORK AND THE LOGICAL TOPOLOGY STRUCTURE

The curriculum information application logic topology structure is shown in Fig.1. In the curriculum information application logic topology structure, the curriculum information data server group is used for managing variety of data involved in management system, including management materials, software and so on. The whole system can provide 2 different types of service to users by the subsystem server (WBPI/WBL Business Server, WBQB Business Server, WBST business server and WBPIM/WBTM/WBSM Business Server, etc.). One is based on C/S structure only for the manage staff which require higher safety, reliability and efficiency in business conditions; the other is based on B/S-oriented business services for all users, this service requires the appropriate Web server, and the users (including all staff) on Internet/Intranet can access the system through the Web browser. There also is a user authentication identity mechanism on the business server for a variety of users to access. The muter in figure connects the campus network to the Internet, and the firewall protects the campus network from external malicious attacking, so it can operate safely.

The curriculum information is mainly constituted by five databases. (1) PTMDB: it is the core database of curriculum information, which is mainly used to save the data handled by curriculum information, including physical programming, the setting, the venues and timing, information resources and so on. These data are also useful in the management of WBPIM and the WBSM. (2) PIMDB: it mainly used to store the data processed by WBPIM systems for instructors, involving their personal information and relevant information. These data also are partly used for management of curriculum information. (3) SMDB: it mainly uses for saving the data managed by the staff handled by WBSM involving personal information, process, data selection and relevant information. These data also are partly used for management of curriculum information. (4) SCWDB: it mainly uses for saving for the staff; these modules can play on the computer through WBPI or WBL business service in the form of browser page (Web-Pages) to staff. The CWDB can also be used for storage some test questions associated with the process of management. (5) QBDB: it mainly uses for storing several questions generated by the WBQB for the test. The WBST is a computer testing system based on Web, which can be generated Tests according to the actual needs.

The overall structure is determined by the requirements of curriculum industry information system, which is established on the basis of the content structure. The curriculum industry information system is essentially the organizational structure of multimedia information, which reflects the main framework functions of multimedia network courseware. The overall structure of the system is divided into two parts: curriculum industry content and interaction online. The curriculum industry content is composed of industry curriculum and scalability knowledge. Because of the introduction of methods online, it makes a lot of scalability knowledge connect with the data content, which forms a specific industry resources and environment.
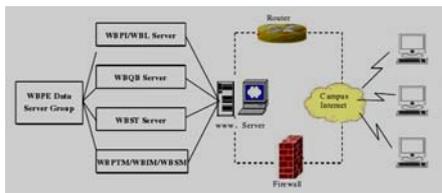

Figure 1. The logical topology structure

It has no need to worry about the data transformation in the food information system or the memories cannot be stored so many data. Because these data will be stored in one or more data centers which cloud computing providers offer. This depends on the cloud storage systems. Cloud storage systems generally rely on hundreds of data servers. Because computers occasionally require maintenance or repair, it's important to store the same information on multiple machines. This is called redundancy. Without redundancy, a cloud storage system could not ensure clients that they could access their information at any given time. Most systems store the same data on servers that use different power supplies. Clients can access their data even if one power supply fails. Not all cloud storage clients are worried about running out of storage space. They use cloud storage as a way to create backups of data. If something happens to the client's computer system, the data survives off-site. The resources of one area could be shared, and other multiple areas can also be shared.

Cloud service providers should complete the first and second steps, the third and fourth steps (such as web design, pay standards) should be completed together by users. Cloud infrastructure's the on-demand capabilities are first designed to do two things: make efficient use of resources and ensure scalability. Some method of load balancing/ application delivery will be necessary to accomplish the former.

To abstract the applications, this layer of the architecture will helpful and will provide a consistent means of access to users, shielding them from the high rate of change which occurs in the infrastructure. This paper introduces the critical first step in detail. Hardware: network, storage. The network must be configured to deal with such change without requiring human intervention and must be able to handle applications which migrate from hardware to hardware. For this, the network will require constant optimization to adapt to changing traffic patterns. As illustrated in Fig. 2.
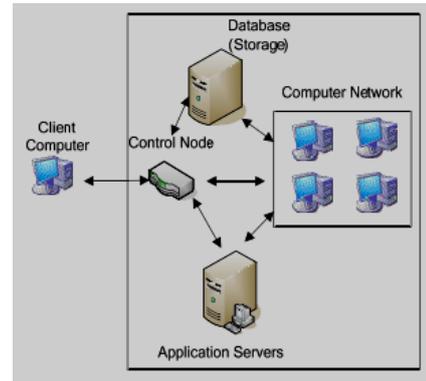

Figure 2. Cloud computing network

When the website runs officially, cloud service providers maintain the safety of data and managers of various university network centers to update the public information. It will strengthen the communication between user and user.

IV. THE DATA PROCESSING

In information grid, there will be many databases or files store the history data. Many departments will need to analyze its own data in the nodes, so we can design some node flow. The node flow will extract its data from the online transaction database or file. The overall data flow will extract data from every node flow by ETL tools. The ETL tools are used in data flow to extract and transform data from data source. The architecture of the information grid data flow system is given in Fig. 3.

In group company or large organization, there will be many departments inside of their organization. These departments often locate in different place of the world each department will need to construct their own data flow called node flow. The overall department will need to realize the entire information of the Group Company or organization, so they need to construct the overall data flow. With the node flow, using DSS the direct department will analyze its data for decision; the overall department will analyze the overall information data for the overall decision.
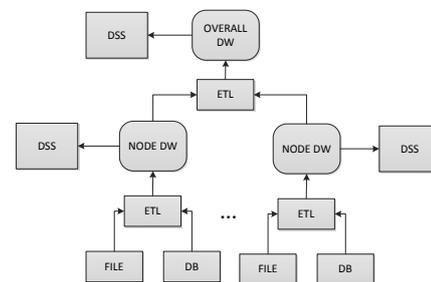

Figure 3. The architecture of the information data flow system

Data marts are usually smaller and focus on a particular subject or department. Some data marts, called department data marts, are subsets of larger data flows. Each data mart is used for a direct analysis, for instance; selling analysis,

product analysis, etc. Compare with the node flow, the data marts and the node flow are two different concepts.

The node flow can contain some data marts and the overall data flow contains some data marts too. They are all subject oriented. They maybe contain the same subject. But in fact, the node flow's data marts contain the node information and the overall data marts contain the overall information. The node flow usually is not subject oriented. For example, the node department is a sub company named company A, which is a sub company of a group company. So the node flow stores the sub company's information, the overall data flow store many sub company's information. The company A is a computer mainboard factory. This factory has a department of selling. So the company A's data flow is a node flow of the overall group company. The company A's dataflow will at least contains two data marts: selling oriented and product oriented. The data marts will also contain in the overall group's data flow. It is the difference and relation of the data marts and node data flow.

Using distributed data flow, we can analyze the node data and overall database. This strategy can reduce the cost of development and maintenance. In a group company, if we only construct an overall data flow to satisfy all the needs of each department, the management will be very complicated. It seems impossible for the overall department to extract data directly from the distributed departments' on-line transaction database or file. So, we must develop distributed data warehouse to realize these needs. Hence, in information grid, wanted to develop the distributed decision support system to analyze the distributed data.

To solve the problem mentioned above, by introducing error back propagation neural network, the system can equip with adaptive, self-learning ability, to achieve the deployment parameters adjusted dynamically to improve the cloud computing system which is used to deal with the request in response to the performance of required bursty workloads. The main adaptive workflow model proposed is shown in Fig. 4.
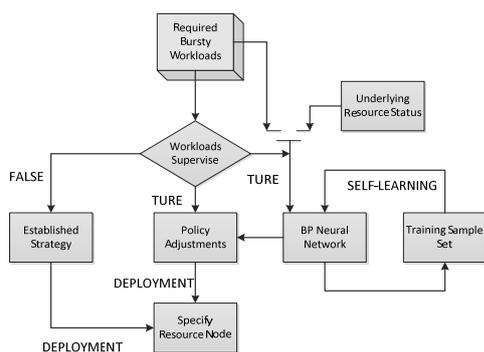

Figure 4. The main frame of adaptive workflow based on BP neural network

Due to the rapid development of web media technology, instructional video resources become significant carriers for delivering and sharing knowledge. Recently, learning resources is emphasizing towards open, multiple and sharing mode. Moreover, teaching video resources have been significantly affecting the education transformation. In addition, as a new format of fragment-based learning, instructional micro-video resources can rationally meet learners' needs. Following on, the micro-video course is a key field which should be paid very close attention by educators.

V. CONCLUSION

In this paper, the author researched on the content design of the micro video curriculum in the era of scattered learning. This paper puts forward a design which is combined with student-centered, micro design, integral design notion. This article combines theories of communication and sociological, and under the basis of referring to relevant materials, it sorts the contents of micro video's connotation, classification, present development situation, etc. The emphasis of disclosure is put onto features of micro video, respectively proposing my own opinions on aspects of video content, publishing platform, audiences' aesthetic model and profit model. Then aiming at these features of micro video, analyze the current existing problem of micro video one by one.

In the future development, except continuing to select great series for playing with unique vision and cooperating with traditional media to innovate the self-produced drama, distributing copyright is also an urgent task for each video website. This method can lower the cost for website and the business model will be clear gradually. Besides, video website keeps trying the payment model at present. Whatever paying on click or paying by month, though this occupies a small portion in the entire income of website, which cannot compare with advertisement, once users develop a habit of watching by paying, there will be great room for this market's prospect to improve, and the payment model may be the "front" in future.

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