

The Fragmented Teaching Designing with Teachers as the Main Body Against the Background of New Liberal Arts

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ABSTRACT

In the context of the new liberal arts, fragmented learning as an indispensable learning method makes learners face cognitive obstacles in perception, attention, memory and thinking due to its fragmentation in learning time, learning content and learning mode. And this conflicts with the systematicness of theory and curriculum. The solution to this contradiction lies in restoration and reconstruction. However, whether it is restoration or reconstruction, teachers play a key role. Their guidance and design ability determines whether students can overcome the disadvantages of fragmentation and truly build a complete knowledge system. Therefore, in the context of the new liberal arts, teachers must be the main body of fragmented teaching design.

Keywords: *The fragmented learning, Curriculum systematization, Teachers.*

1. INTRODUCTION

Against the background of the rapid development of modern information technology and its application in educational practice, the new liberal arts has been widely concerned and explored in the field of theory and practice. And the fragmented learning has become an indispensable way of learning against the background of the new liberal arts. Therefore, the fragmented learning has aroused the interest of many scholars at home and abroad, and certain breakthroughs and progress have been made in both theory and practice field. Many foreign universities (such as Stanford University, University of Oslo, etc.) have developed learning platforms for college students' fragmented learning. Chinese University MOOC Net, Wisdom Tree Net, Love Course Net and other websites in China also provide platforms and technical support for the fragmented learning so as to meet college students' fragmented learning needs at any time, randomly, on demand and in quantity.

In the era of "Internet+" and the background of new liberal arts, the fragmentation of the living world means comprehensive fragmentation and fragmentation of learning (Xu Zhihong, 2015). Many scholars believe that fragmented learning has

many advantages in promoting learning and increasing knowledge. Huang Jianfeng (2016) believed that fragmentation improves the flexibility, initiative and diversity of learning, making learning become to a relaxed and pleasant experience. Zhu Xiaomin et al. (2018) believed that the fragmented learning improved the absorption rate of learning content, the utilization rate of fragmented time and space, and the literacy and reading rates of the people. Yang Hongjun (2018) believed that the fragmented learning was spontaneous and informal and can complement traditional learning styles.

Many scholars have also raised doubts. On the one hand, learning time and habits of the fragmented learning will cause attention disorders and increase the cost of complex thinking (Peng Jingwen et al., 2017). On the other hand, the fragmented learning makes it difficult for learners to master systematic knowledge due to its temporary and transient nature and the fragmented and dispersed of cognitive structure. And so the fragmented learning is not conducive to the cultivation of learners' complex problem thinking ability, logic and innovation ability (Zhang Keyong et al., 2015; Yu Haiyan et al., 2015; Zhang Shilan, 2016; Wei Xuefeng et al., 2017; Zhao Xinmeng, 2018).

In order to solve the problem of fragmented learning, scholars have made active discussions also. Chen Shaocan (2017) advocated that "actively-oriented" teaching strategies should be used to reshape the thinking and practice paradigm of "scene creation, process exploration and goal construction", so as to build a self-repair system and overcome the disadvantages of fragmented learning. Huang Jianfeng (2017) proposed that strategies such as recovery, reconstruction, fractional storage and withdrawal and mass innovation and crowdfunding could be adopted to realize the transformation of the fragmented learning from "fragmented information" to "holistic knowledge". Huang Jianfeng (2018) proposed three specific application modes based on the research on the theory and feasibility of the fragmented learning for college students.

The above researches have undoubtedly promoted the theoretical discussion and practical application of the fragmented learning. At present, the core controversy and dilemma of the fragmented learning lies in that the fragmented learning inevitably contradicts systematic theoretical knowledge due to its fragmentation in learning time, learning content and learning mode. The fundamental difference between undergraduate and vocational education lies in the cultivation of logic, systematization and thinking, which is particularly serious. At the same time, unlike traditional learning methods, teaching is no longer a simple transfer of knowledge. More attention should be paid to the processing and transformation of knowledge in the fragmented learning. Teachers' guidance and design ability is the key to the success of the fragmented learning. Therefore, in higher education, how to integrate the fragmented learning with the systematic learning, explore the fragmented learning model of college students, and design fragmented learning activities with teachers as the main body have become the research focus of this paper.

2. THE CONTRADICTION BETWEEN KNOWLEDGE FRAGMENTATION AND CURRICULUM SYSTEM

The contradiction between knowledge fragmentation and curriculum systematization arises from the characteristics of fragmented knowledge and information and the cognitive impairments in perception, attention, memory and

thinking caused by fragmented knowledge and information.

2.1 Characteristics of Fragmented Knowledge and Information

With the rich resources of fragmented online education and the continuous development and deepening of the fragmented learning, the fragmented decomposition is carried out to meet the learning needs of fragmented learning anytime, anywhere, on demand and in quantity. It makes the fragmented information and knowledge of the fragmented learning present the following characteristics: Firstly, the fragmented information and knowledge are short, frequent and fast; Secondly, the fragmented information and knowledge are unprecedentedly rich and abundant. Thirdly, a lot of the latest or hot information is often provided by net friends spontaneously, which may not be professional and rigorous. Even under the trend of some economic interests, there may be some false, inferior, incomplete and inaccurate fragmented information. This results in the distortion of the fragmented information.

2.2 Cognitive Impairment in the Fragmented Learning

In the fragmented learning, learners' cognitive process mainly involves sensory perception, attention, memory, thinking and other aspects. Due to the differences and learning conditions of the fragmented learning in different cognitive stages, learners are mainly faced with obstacles in sensory perception, attention, memory, thinking and other aspects.

2.2.1 Sensory and Perceptual Disorders

In the fragmented learning, a large amount of short, frequent and fast information is easy to give learners the illusion of learning content and this can thus cause perceptual biases and obstacles. As learners' wrong perception of learning content, illusion is mainly generated for the following reasons: Firstly, due to the large number of fragmented learning resources, learners cannot perceive the integrity of relevant knowledge, and thus form the illusion that they will be quickly eliminated by the society if they do not persist in learning. Secondly, fragmented learning resources inevitably appear shallow when they form short and refined learning contents. And a large number of long-term persistence in learning will give learners

the illusion that they have acquired a large amount of knowledge and skills. But in fact, learners' gain may be very limited. Finally, a lot of the latest or hot information is often provided by net friends spontaneously, which may not be professional and rigorous. Even under the trend of some economic interests, there may be some false, inferior, incomplete and inaccurate fragmented information, which leads to the distortion of fragmented information.

2.2.2 Attention Disorders

Compared with systematic learning, the fragmented learning is learning in fragmented time, showing fragmented, discrete, poor relevance and other disadvantages. A large number of short, frequent, fast and graphically fragmented knowledge and information requires college students to constantly switch between these fragmented information and knowledge. And this constant and tired conversion between a large number of information and knowledge makes college students unlikely to stay in a certain fragmented information or knowledge for a long time. A large number of short, frequent, fast and graphically fragmented knowledge and information also increases the search time, selection difficulty and search cost of fragmented knowledge and information. It not only increases the cognitive load of college students' brains, but also leads to passive knowledge acceptance, lack of depth of thinking and distraction of attention. All of these lead to learners' attention disorders. In addition, in a specific fragmented learning process, attention is often attracted and diverted by other fragmented information and knowledge that makes the previous learning content unable to be deeply analyzed or thought.

2.2.3 Memory Disorders

In the traditional way of learning, people acquire knowledge and information in a continuous and linear way. The interrelation and correlation between different knowledge and information enable the brain to form a knowledge system and memorize it easily. But the fragmented learning weakens and breaks the connections between knowledge. This lack of relevance, leads to the disappearance of the most familiar knowledge structures in the brain and ultimately leads to memory disorders. At the same time, due to the timeliness, randomness and discontinuity of the fragmented learning, the short-term memory

formed by the fragmented learning can not be repeated frequently and it is easy to gradually fade eventually. In addition, due to the short, frequency, fast, much, distortion and other characteristics of the fragmented information and resources there will arise the perceptual bias and obstacles. It is possible to cause learners to acquire and remember a lot of inaccurate, or even wrong knowledge. And then memory disorders will be enhanced.

2.2.4 Thought Disorders

Regardless of which learning style is adopted, the essence is to be able to carry on independent thinking. In the learning process, learners' perception, attention, memory and thinking are actually a continuous process with high correlation. From perception, through attention and memory, to the final thinking, they interact and interlink with each other. Obstacles in any link will affect the final thinking result. In the fragmented learning, the short, frequent, fast and widespread distortion of a large amount of fragmented learning information and knowledge will cause different degrees of sensory and perceptual disorders, attention disorders and memory disorders in the learning process. All of these will affect the thinking of learners and form thinking disorders.

2.3 The Contradiction Between Fragmented Learning and Systematic Curriculum

In higher education, any course has its unique systematization. And there is strict logic and overall systematization among related theories and knowledge. Although the fragmented learning has many advantages, such as mobility of learning places, high flexibility of learning time, availability and timeliness of learning resources, strong pertinence and the individualization of learning contents and high absorption of learning effect. But its logic and system are very weak. However, in the process of the fragmented learning, information fragmentation leads to knowledge fragmentation. Learners will face obstacles in perception, attention, memory and thinking in the fragmented learning within fragmented time. Such a long-term lack of in-depth thinking on the internal logic between fragmented knowledge and information will weaken learners' ability to think complex things, cause obstacles to their training of global concept and systematic thinking, and eventually form the contradiction between fragmented learning and systematic curriculum. ("Figure 1")

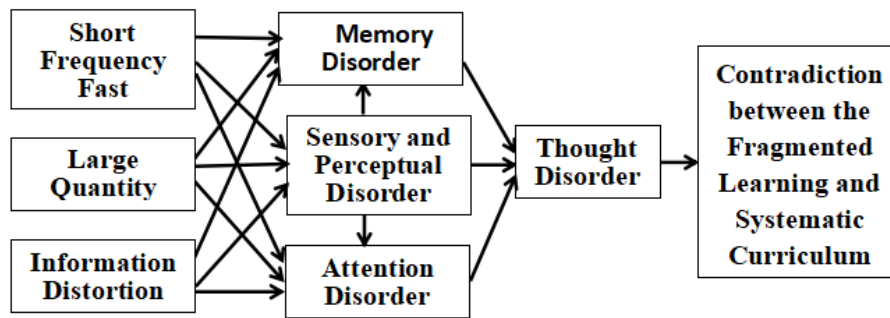


Figure 1 The formation logic of the contradiction between the fragmented learning and systematic curriculum.

3. THE CONTRADICTION BETWEEN FRAGMENTED LEARNING AND SYSTEMATIC CURRICULUM CAN BE OVERCOME THROUGH RESTORATION AND RECONSTRUCTION

So, how to overcome the disadvantages of the fragmented learning, especially the contradiction between fragmented learning and curriculum system? The solution lies in recovery and refactoring.

Based on the mature curriculum knowledge system and the degree and specific situation of knowledge fragmentation, the restoration here completes the restoration of fragmented knowledge and restores the "connection" between different fragmented knowledge. At present, most resources of micro-courses and MOOCs mainly take the following two forms. Firstly, teachers conduct thematic, modular, hierarchical and serialized decomposition of course contents according to the mature curriculum knowledge system, and then develop the fragmented learning resources with clear logic and complete system so as to facilitate college students to learn step by step in the fragmented learning time. Secondly, teachers should design knowledge maps or mind maps of relevant teaching contents, provide rich and open teaching resources such as videos, texts and pictures, and guide students to carry out the fragmented learning in a gradual and open way within fragmented learning time. Therefore, micro-lessons and MOOCs are actually structured courses which are composed of fragmented teaching resources and carefully designed by teachers in different forms according to the curriculum knowledge system and specific teaching objectives. No matter what form of MOOCs is adopted,

teachers' guidance in teaching design and teaching process is the key to systematize students' fragmented knowledge and construct a complete knowledge system. Moreover, college students in their youth have active thinking and pay attention to personality and interests, so they are not necessarily willing to restore the original knowledge structure by learning step by step according to the framework or system pre-established by teachers. In addition, some students are more interested in the content that conforms to their preferences or is more conducive to solving practical problems, so they will think more deeply and pay less attention to other content. It can also increase the difficulty of "recovery" of knowledge system.

Under the guidance of constructivism learning theory, learners take the initiative to select, interpret and process the fragmented knowledge and information to form personal opinions and viewpoints, recombine fragmented knowledge and information through piece-and-get learning strategies and then build a brand new cobweb knowledge system according to their own experience and interests. In the fragmented learning, while breaking through the original knowledge system, reconstruction pays attention to learners' interests and solving their practical problems. So it is beneficial to the application of learning and knowledge innovation. Of course, reconstruction does bring new challenges to teachers. Teaching should not ignore students' original knowledge and interests and carry out traditional and crude knowledge indoctrination. Instead, it should be based on students' original knowledge. Teachers should guide students to recombine the fragmented knowledge and information and actively construct new and unique knowledge driven by interest. In this process, the teaching process is no longer simple knowledge infusion, but to pay more attention to processing, conversion and application

of the knowledge. And teachers and students need to exchange, explore and question some specific problems and knowledge fully together.

4. THE FRAGMENTED TEACHING DESIGN WITH TEACHER AS THE MAIN BODY

In the fragmented learning, teachers play a key role in both recovery and reconstruction. Their ability to guide and design determines whether students can overcome the disadvantages of fragmentation and truly build a complete knowledge system.

4.1 Paying Attention to the Status of the Fragmented Learning in Higher Education

In the era of Internet+ education, the mobile communication and intelligent technology have been vigorously developed. The fragmented learning has become an indispensable way for the public to acquire knowledge and information. Because of their sensitivity and novelty to new things, college students have become the main participants in the fragmented learning and have relatively stable learning preferences and habits. At the same time, the fragmented learning does have many advantages that traditional learning methods lack, such as the mobility of learning places, high flexibility of learning time, availability and timeliness of learning resources, strong pertinence and individualization of learning content, and high absorption of learning effects. Therefore, there is no reason for us to reject or reject the fragmented learning in higher education. However, in our current practical teaching, many teachers still have some misunderstanding on the understanding of the fragmented learning. They think the fragmented knowledge and information is not rigorous enough and they exaggerate the disadvantages of the fragmented learning in some degree. Therefore, we must fully recognize the indispensable position of the fragmented learning in higher education and let more teachers fully understand the fragmented learning through corresponding promotion and training. Only in this way, we can enrich fragmented learning resources and design scientific fragmented learning process so as to provide college students with a new, personalized, efficient and scientific learning experience.

4.2 Enriching and Mastering Fragmented Educational Resources

Fragmented educational resources are the premise and basis of the fragmented learning. As the spreaders of knowledge and the designers of teaching activities in higher education, teachers are not only the demanders but also the suppliers of fragmented educational resources. On the one hand, teachers are the suppliers of fragmented education resources. They can provide a large number of high-quality MOOCs, micro-courses and other fragmented education resources for major online education resource platforms. This naturally makes our fragmented education resources more abundant. On the other hand, teachers also are the demanders of fragmented educational resources. In the specific course teaching design, teachers can choose the fragmented course resources recorded by themselves and can also use the course resources recorded by other teachers on the network education resource platforms or even choose more timeliness and novelty of fragmented learning information from a wider range of Internet information. Therefore, in the specific fragmented teaching design, teachers need to master the fragmented education resources of relevant courses in a wider range including MOOCs and micro-courses on major online education resource platforms and the latest and most cutting-edge knowledge on the Internet, and relevant comments on forums, etc.

4.3 The Designing of Fragmented Teaching Process Scientifically

The design of fragmented teaching process is the core of the fragmented learning and directly determines the effect of fragmented learning. In order to give full play to the advantages of fragmented learning at any time, anywhere, on demand and in quantity in teaching, and to overcome cognitive disorders such as perception, attention, memory and thinking induced by fragmented learning, it is necessary to carry out scientific fragmented teaching design and grasp the following principles. Firstly, holistic and systematic thinking should be reflected. In the fragmented instructional design, the process of knowledge fragmentation must be scientific and reasonable. It is not only necessary to grasp the logical relationship between fragmented knowledge, but also to pay attention to the breadth, depth and difficulty of specific fragmented knowledge, so as to avoid the complete separation of the correlation

between fragmented knowledge, lack of in-depth thinking and distraction of attention and other cognitive problems. Secondly, it is to reflect a high degree of flexibility. In order to realize the advantages of fragmented learning anytime, anywhere, on demand and in quantity, the length of fragmented learning fragments after segmentation should be more controllable, which should not only have the characteristics of ending learning at any time, but also make the fragmented learning fragments more complete and interesting. Thirdly, we should have a strong pertinence. Personalized learning is one of the important characteristics of fragmented learning. College students are active in thinking, pay attention to personality and do not like to learn step-by-step. Therefore, in fragmented teaching design, teachers should take into account the pertinence and absorbability of teaching content, so as to ensure the high absorption rate of fragmented learning. Fourthly, we should pay attention to the cultivation of innovative spirit. It is the ultimate goal of our teaching to put what we have learned into practice and to cultivate the spirit of innovation. In the fragmented teaching design, we should provide materials and cases for students to criticize and make them better at questioning and discriminating. This is not only conducive to solving practical problems to apply what they have learned, but also conducive to deep thinking, the realization of methods, ideas and values and other substantive knowledge exploration, improve students' innovation ability.

4.4 Formulating Diversified Learning Evaluation System Reasonably

Just like traditional learning, learning evaluation plays an indispensable role in improving learning effect in the fragmented knowledge. In the specific fragmented learning, teachers must attach importance to stimulating students' learning interest, personalized learning and innovative ability and give play to the advantages of learning mode of anytime, anywhere, on demand and in quantity. This requires the fragmented teaching evaluation must have the characteristics of diversification. In other words, teachers need to adopt diversified teaching evaluation indexes or evaluation systems in order to meet the diversified goals of fragmented learning in the teaching process of fragmented learning. Specifically, teachers can develop a teaching evaluation system for the fragmented learning by comprehensively using data from the data platforms, teacher-student mutual evaluation, inter-student mutual evaluation and mutual

evaluation of members within the learner community. In addition, since the fragmented learning is usually completed within the fragmented time, teachers are required to develop not only outcome teaching evaluation indicators, but also process and phased teaching system evaluation indicators so as to track students' fragmented learning process and better complete the fragmented learning objectives.

5. CONCLUSION

Against the background of the rapid development of modern information technology and its application in educational practice, the new liberal arts has been widely concerned and explored in the field of theory and practice. And the fragmented learning has become an indispensable way of learning against the background of the new liberal arts. In the process of the fragmented learning, information fragmentation leads to knowledge fragmentation. Learners will face obstacles in perception, attention, memory and thinking in the fragmented learning within fragmented time. Such a long-term lack of in-depth thinking on the internal logic between fragmented knowledge and information will weaken learners' ability to think complex things, cause obstacles to their training of global concept and systematic thinking, and eventually form the contradiction between fragmented learning and systematic curriculum. The solution to this contradiction lies in restoration and reconstruction. However, whether it is restoration or reconstruction, teachers play a key role. Their guidance and design ability determines whether students can overcome the disadvantages of fragmentation and truly build a complete knowledge system. Therefore, we can pay attention to the status of the fragmented learning in higher education, enrich and master fragmented education resources, design the process of the fragmented teaching scientifically and formulate diversified learning evaluation system reasonably to carry out teacher-oriented fragmented teaching design.

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