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Collaborative Transformation of University Teachers and Students to Improve Teaching Quality in the Context of Knowledge Fragmentation

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Abstract: ***In the digital era, information dissemination is characterized by fragmentation, which makes it difficult for learners to concentrate, and the knowledge they learn lacks systematicity and coherence, greatly affecting the quality of teaching in colleges and universities. In view of this phenomenon, this paper puts forward the changes that should be made in teaching and learning in response to the characteristics of knowledge fragmentation from the perspectives of both college teachers and students: 1. College teachers should accelerate the updating of the knowledge content of teaching, strengthen the systematicity and consistency of the curriculum, adopt more interactive teaching methods, guide students to learn and think in depth, and cultivate their independent learning ability. 2. Students should clarify their learning goals, make a learning plan, choose integrated learning resources, and form their own knowledge framework system by reviewing and summarizing for in-depth thinking. Thus, through the synergistic transformation of both teaching and learning, the negative effects of knowledge fragmentation can be avoided and the quality of teaching can be improved.***

Keywords: Fragmentation of knowledge, Teachers, Students, Transformation, Quality of teaching and learning.

1. Introduction

In the digital age, compared to previous college students, today's students are very adept at accessing information through a variety of platforms such as social media, online courses and news apps. However, this information is often presented in short, fragmented forms that lack systematicity and depth. In this process, the correlation between the part and the whole, the part and the part of knowledge is interrupted or weakened, and the knowledge is disorganized and difficult to form a complete system, which leads to the fact that it is difficult for students to obtain a complete and systematic knowledge system from it, and they can only get some fragmented information, which is the characteristic of knowledge fragmentation [1-2]. The impact of knowledge fragmentation is manifested in the susceptibility to interference in the learning process, which is often in a state of multiple tasks switching when learning, and the subject of learning may be switched at any time, resulting in learners' difficulty in concentrating, jumping in thinking, and lack of systematicity and coherence. Due to fragmented and disorganized knowledge, it is difficult for students to form a comprehensive understanding of the problem, resulting in the inability to analyze and solve problems from a broader perspective. Knowledge fragmentation is also highly likely to lead to a lack of depth and breadth in learners' thinking and analysis of problems. Of course, knowledge fragmentation also has advantages, such as easier access to learning content after segmentation, easier to maintain learning interest by acquiring knowledge in a short period of time, and more convenient for the effective use of fragmented time [3]. In the context of knowledge fragmentation, how to improve the learning effect of students, improve the quality of university teaching, that is, use the advantages of knowledge fragmentation and avoid its negative effects, this paper from the teachers and students to put forward some methods and strategies, in order to provide solutions to improve the quality of university teaching.

2. Impact of Knowledge Fragmentation on University Education

With the popularization of smart phones, the mode of knowledge fragmentation and information dissemination is rapidly taking shape, which has a great impact on society and affects everyone to a greater or lesser extent. In this context, the situation of teaching in university has also changed a lot compared with that of the 1980s and 1990s, and university education is facing challenges and changes and innovations, which have a great impact on both sides of teachers and students who are the implementers of teaching and learning respectively.

2.1 Impact on Students

University students are the forerunners in accepting new things, and the fragmentation of knowledge has a great impact on the learning style and learning habits of university students [4]. First of all, in terms of knowledge acquisition, students in the past mainly relied on traditional classroom teaching and textbooks to acquire knowledge, and the knowledge system is relatively complete and systematic. In contrast, students nowadays are more inclined to acquire fragmented knowledge through various channels such as social media, online courses and short videos. Secondly, in terms of learning styles and thinking habits, former students focus on in-depth understanding and systematic mastery of knowledge, and are accustomed to reading and thinking for a long time. On the other hand, students nowadays are more inclined to fast browsing and acquiring information, and lack in-depth thinking and integration of knowledge. Of course, in terms of the initiative and autonomy of learning, students in the past

tended to learn passively under the guidance of teachers and lacked the awareness and ability of independent learning. Nowadays, on the other hand, students pay more attention to the initiative and autonomy of learning, and are able to choose suitable learning resources and methods according to their own interests and needs [5].

2.2 Impact on Teachers

The fragmentation of knowledge has made it possible for university students to acquire knowledge through various channels, and thus their expectations of classroom teaching have changed; their expectations are for learning that focuses on practical application, interdisciplinary integration, and personalized learning. This requires teachers to constantly update the content and methods of teaching to meet students' needs and to stimulate their interest and motivation in learning [6]. In order to help students constructing a complete and systematic knowledge system, teachers need to study the intrinsic connection between different knowledge points in depth, break down disciplinary barriers, and achieve interdisciplinary integration [7]. In other words, knowledge fragmentation requires teachers to have stronger curriculum integration and design ability, and they need to design a coherent and systematic teaching scheme to ensure that students can gradually deepen and improve in the learning process. In addition, knowledge fragmentation also promotes the innovation of teaching means and methods. Teachers can make use of modern information technology means, such as online education platforms and mobile learning applications, to provide students with a more convenient and efficient learning experience. Through online discussions and collaborative learning, students are guided to actively participate in the learning process and develop their independent learning ability and innovative spirit. Due to the diversified channels for students to acquire knowledge, fragmentation of knowledge also brings some challenges to teachers, who may question or put forward different viewpoints on what they have taught. This requires teachers to have stronger critical thinking and coping skills in order to guide students to view and deal with fragmented knowledge properly.

3. Collaborative Transformation of Teachers and Students

Since knowledge fragmentation has a significant impact on both teachers and students which need to make adjustments from their respective perspectives in order to improve the quality of teaching and learning.

3.1 Transformation of Teachers

3.1.1 Continuously update the knowledge content of teaching

One of the characteristics of the information age is that the speed of knowledge updating is very fast, the amount of knowledge shows an accelerated increase in the trend of a large number of scientific and cultural knowledge, social and historical knowledge and new scientific research results continue to emerge [8], which requires that the university's training of students to pay more attention to the practicability and cutting-edge nature of the knowledge, in order to achieve the purpose of cultivating the comprehensive quality of the students and the ability to innovate. To achieve this teaching goal, from the teacher's side requires lecturers to pay constant attention to the cutting-edge dynamics of the discipline, introduce the latest scientific research results and ideas into the teaching, keep the teaching content up-to-date with the times, with the timeliness and cutting-edge, stimulate the students' curiosity, and do not lose students' interest in the classroom because of the knowledge obsolescence.

3.1.2 Strengthening the systematic and coherent nature of the course

Nowadays, many universities have opened online catechism courses, realizing online and offline hybrid teaching. The use of online platforms can provide rich cases, videos and other auxiliary materials, which is conducive to enhancing the teaching effect. However, the online video content is generally designed to be very short, emphasizing one scattered important knowledge points, and it is difficult to master the knowledge in the video when leaving classroom teaching and textbook learning. This requires teachers to focus on the internal logic and connection of knowledge in the design of offline classroom, to build a clear knowledge framework and vein, so that students can make clear the connection between the knowledge points and the level, to ensure that the course content covers both breadth and depth.

3.1.3 More use of interactive teaching methods

Traditional teaching focuses on the central position of the teacher, and the teacher speaks and students listen is the main form of teaching. The whole teaching process is dominated by the teacher's explanation, mostly on the podium to complete the teaching task, and the interactive way is mostly questions. The teaching objectives of the traditional teaching method pay more attention to the realization of cognitive objectives, emphasizing that students learn through feeling, perception, thinking, imagination, attention and memory, and paying more attention to the way of memorization. With the development of the times, teaching in the information age emphasizes the combination of learning and social development practices, focuses on students' subjectivity and participation, and advocates students' independent learning, cooperative learning and inquiry learning. This requirement requires teachers to adopt more interactive teaching, such as group discussion, role-playing, thinking and debating and other interactive teaching methods, to stimulate students' interest and participation in learning, but also can use commonly used chat tools to set up groups, actively interact with students in the group, answer students' questions in a timely manner, and set up a good mechanism of teacher-student interaction to provide personalized guidance for different students.

3.1.4 Guiding students to deep learning and thinking

After university education, it is one of the important goals of modern university education for college students to have the ability of deep learning and thinking. Deep learning and thinking will enable college students to have the ability to solve practical problems effectively in their future work, which is important for the development of society. As a

university teacher, in the teaching process can be combined with real cases, combined with the course content, designed with practical significance of the problem, the real problem situation can stimulate students to solve the problem of desire, so that students in the process of solving the problem of in-depth thinking and exploration. Teachers can also discuss ways to guide students to find the original knowledge and new knowledge of the contradiction or conflict, in this cognitive conflict to stimulate students' curiosity and desire for knowledge, and then promote their deep learning. In addition, in the author's teaching process, some students use the convenience of the Internet to search for homework answers or essays on the Internet, but due to the uneven information on the Internet, mistakes often occur. Therefore, in this case, teachers should actively guide students to think critically, learn to question, analyze and evaluate online information in multiple dimensions, and form independent thinking and judgment.

3.1.5 Cultivate students' independent learning ability

As the saying goes, it is better to teach a man to fish than to teach him to fish, so cultivating students' independent learning ability is the ultimate goal of university education. Cultivating students' independent learning ability requires teachers' efforts in many aspects. Teachers can design interesting and challenging course content and tasks (preferably with practical problems), and the problems should be designed to stimulate students' interest and curiosity in learning. In the process of solving the problem, students are required to take the initiative to find information, analyze the problem and propose solutions, and teachers give students timely positive feedback and encouragement to enhance students' self-confidence and motivation. Due to the fragmentation of knowledge, students' time management is unreasonable and their learning efficiency is low. Teachers should help students master effective learning strategies, such as time management, information screening, note-taking methods, etc., and guide students to develop good learning habits, such as regular review, active pre-study, independent thinking and so on.

3.2 Transformation of Students

Today's college students, almost everyone owns a smartphone, playing games, swiping short videos and idle information on the Internet take up a lot of their time and energy. Although they can get some knowledge information from short videos, the fragmentation of knowledge greatly affects their learning ability and learning effect, leading to a significant decline in the quality of university teaching in some schools. The concept of "student-centered" education was clearly put forward by UNESCO in 1998. Under the principle of "student-centered", students become the main body, and the learning effect is directly determined by students and presents the results. In order to make effective use of the advantages and avoid the negative effects of knowledge fragmentation, college students should make corresponding changes in the following aspects.

3.2.1 Clarify learning objectives and make learning plans

Although college students have gone through three stages of learning: elementary school, middle school and high school, college learning is significantly different from these three stages [9]. The first three stages of learning are generally subject to strict supervision by parents and teachers, and learning is mainly for the college entrance examination. University study mainly cultivates students' comprehensive quality and professional skills, and the goal of study is to prepare for the future career. Therefore, college students should plan their possible future careers according to their interests and specialties, and determine the direction and goals of their studies. When making goals, you should plan long-term goals and short-term goals separately, and make them specific or quantitative. For example, you can circle important subjects according to your long-term goals, put more effort on these key subjects, set achievement goals or get some kind of certification. Once your goals are set, set a limited level of study tasks based on the importance of your goals and make sure that you complete the tasks that you consider to be the most important. Make a study schedule, according to the schedule, personal life rhythm and course schedule, a reasonable distribution of study time, to ensure that there is enough time to study, but not too fatigue.

3.2.2 Choosing integrated learning resources

Fragmented resources tend to be fragmented and lack wholeness and coherence. Integrated learning resources can provide a systematic and comprehensive body of knowledge, which are usually carefully organized and screened to cover all aspects of the curriculum (e.g. textbooks), which will ensure that students get a complete learning experience. Fragmented resources often require students to spend a lot of time and effort sifting through them on their own, which can reduce learning efficiency [10]. Integrated resources are those that have been optimized according to the learning objectives and curriculum, and usually have a higher degree of authority and accuracy, which helps to improve learning efficiency and helps to develop an individual's systematic thinking and integrative skills, as well as avoiding erroneous fragmented online resources that mislead students.

3.2.3 Regular review and summarization

College students are exposed to a great deal of new knowledge in the course of their studies, and through regular review, they can deepen their understanding and memorization of this knowledge and avoid forgetting it. This process of consolidating memory helps students to better recall what they have learned in practical applications. There are many fragmented knowledge points in the learning process, and it is only through regular summarization that we can clearly see the connection and vein between the knowledge points, so that we can better grasp the overall framework of the course. Summarization can also refine the key points and difficulties of learning, providing targeted guidance for subsequent learning. Through regular review and summarization, college students can also gradually develop good study habits and self-discipline, reflect on the gains and losses in the learning process, and constantly improve their learning methods to improve learning results.

3.2.4 Constructing one's own knowledge framework

Knowledge framework, which can also be called knowledge structure, is a hierarchical and structured knowledge system formed by classifying and organizing knowledge according to a certain logical relationship, which is a structured way of knowledge organization. College students need to classify and hierarchize the knowledge they have learned logically, clearly understand the connection and interaction between the knowledge points, and form a complete and coherent knowledge network. This systematized knowledge system not only helps memorization and understanding, but also improves the comprehensive application ability of college students in solving problems and meeting challenges.

3.2.5 In-depth thinking and practice

In-depth thinking and practice are an important way for college students to improve their personal ability and quality. Under the background of knowledge fragmentation, college students should read more, and through reading a lot of different types of literature to understand different fields of knowledge to stimulate their own thinking inspiration. At the same time, they should not be satisfied with superficial knowledge information, but should learn to ask questions, especially those that touch the essence and the core of the problem. By asking questions, you can lead yourself to explore and understand the reasons, meaning and value behind the problems more deeply. In addition, students should learn to independently evaluate and analyze various information resources on the Internet, and should make logical judgments about them without superstitious beliefs and blind obedience. The importance of practice for the enhancement of college students' ability is indisputable, so we should pay attention to experiments and internships. Experimentation is the process of applying theoretical knowledge to practice, which can test and consolidate the knowledge learned, apply theoretical knowledge to practical operation, and exercise the hands-on ability and problem-solving ability. Through practice, college students can not only deepen their understanding of specialized knowledge, but also cultivate their ability to innovate, teamwork, professionalism and other aspects of their abilities, so as to be fully prepared for future career development.

4. Conclusion

The information age has the characteristic of knowledge fragmentation, where information is cut into many small pieces, making it convenient for people to access. However, such knowledge often lacks systematicity, which may lead to an incomplete and in-depth understanding of problems, and may also distract attention. For universities, the goal of cultivating comprehensively-qualified talents are the ultimate goal. Graduates who are cultivated should not only have solid subject knowledge and theoretical abilities, but also innovative thinking and practical abilities. The fragmentation of knowledge has a certain negative impact on teaching quality, which may lead to failure to meet the cultivation goals. In order to avoid such impact, universities need to make changes from both teaching and learning perspectives: university teachers should update their teaching knowledge and strengthen the systematicity and coherence of courses, adopt more interactive teaching methods, guide students to deep learning and thinking, and cultivate their autonomous learning ability; students should clarify their learning goals, make study plans, choose integrative learning resources, and form their own knowledge framework system through review and summary to conduct in-depth thinking.

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