Research on Fragmentation Learning of College Students in the Internet Age*

Xiangxiu Wang
College of International Law
Shanghai University of Political Science and Law
Shanghai, China

Yawen Zhang
College of International Law
Shanghai University of Political Science and Law
Shanghai, China

Abstract—In the context of the rapid development of the Internet, fragmentation learning has used the developed Internet technology to attract the attention of college students. With such a trend and background, experts in the education and related fields seize this opportunity to fragment knowledge and facilitate the initial understanding and learning of relevant fields. Fragmentation learning has the advantages of high flexibility, content keeping up with the trend of the times, easy to enhance students' interest in learning, reducing the psychological burden of college students' learning, and helping students develop the habit of lifelong learning. Viewing from another point, fragmentation knowledge also has the following problems: the same fragmentation of knowledge is not conducive to system learning; network information is not well-defined, difficult to distinguish; thinking is not coherent, and attention is easy to disperse. The final destination of fragmentation is still systematic, and the status of fragmentation is always a useful complement to systematic and formal learning. Therefore, in order to make full use of fragmentation, it is necessary to accumulate, classify and fuse fragmentation knowledge.

Keywords—Internet; college students; fragmentation learning; systematic learning

I. INTRODUCTION

"Fragmentation" is one of the hot topical topics in recent years. "Fragmentation" reading and "fragmentation" learning are typical "fragmentation" phenomena. However, fragmentation learning has not had a clear concept and definition in the academic world. Similarly, fragmentation learning does not have a clear learning model. Fragmentation learning can be accessed not only through specific Internet channels, but also through fragmented websites. This paper will combine the development status and trends of Internet education and mobile APP frontiers. It firstly discusses the meaning of fragmentation learning, informal learning, self-scheduled learning content and the characteristics of combining Internet and mobile APP, analyzes the advantages and problems of fragmentation learning of college students in the Internet age, and proposes "accumulation — classification — integration" in view of the problems existing in the fragmentation learning of college students in

the Internet era.

II. FRAGMENTATION LEARNING IN THE INTERNET AGE

"Fragmentation" learning, as the name implies, is a learning method and learning process in which knowledge is accumulated by using scattered time when learners cannot use their total time or schedule their own learning tasks. In this learning process, learners need to adopt a different way of thinking than traditional learning, and get the most meaningful fragmentation knowledge in a limited time. The difference from usual understanding of fragmentation learning is that the key to fragmentation learning is to integrate, classify, process and fill the existing knowledge framework of these acquired knowledge fragments in the later stage. Fragmentation knowledge can be regarded as a supplementary way outside of system learning. If the fragmentation integration of late knowledge is neglected, fragmentation learning will lose its original meaning and function as a learning method.

At the same time, attention should be paid to the distinction between the two concepts of fragmentation learning and the learning of fragmentation mode. Fragmentation learning emphasizes the characteristics of informal learning. [1] The main difference between the two lies in the nature of the learning content. The variety of content available for fragmentation learning is not only applied to the learning of innovative disciplines, but also to traditional disciplines through a fragmented way. For example, college students learn through online resources, and make full use of piecemeal time. The content of the study also includes the above scope. However, these courses are the formal course prescribed by the school or the elective course selected by the students. The way can't be called fragmentation learning, and can only be defined as learning by fragmentation. Therefore, it can be said that the nature of learning content will also become an important factor affecting whether it is fragmentation learning.

According to the research of previous papers and other materials, it can find that the characteristics of fragmentation learning include the fragmentation of knowledge presented on the surface, fragmentation of content, fragmentation of thinking and time fragmentation. Exploring from a deeper meaning, it presents the following characteristics: the characteristics of informal learning, the characteristics of

combining the Internet with mobile APP, and the characteristics that the educatee can arrange learning content independently.

First is informal learning. The informality of fragmentation learning content refers to a purposeful systematic study for obtaining a certificate that is different from a formal course in a school aforementioned. Secondly, the informality of learning method is that students do not have to be confined to the classroom. They can carry out study plans in various environments and occasions through new ways such as micro video and mind mapping.

Second is to arrange the learning content independently. This is not only a feature of fragmentation learning, but also one of the advantages of fragmentation learning. In the traditional teaching mode, students are passively educated and fail to discover their hobbies. Hobbies are the best teachers. If students regard learning as a burden, the learning process will be very painful and hard. The final result will not necessarily be directly proportional to their own efforts. Therefore, if students can learn about their interests through slowly discovering or actively cultivating, students will take the initiative. They will no longer have "cramming education", but rely on their own abilities to get learning resources to meet learning needs.

Third is to combine the Internet with mobile apps. An important carrier of fragmentation learning is the Internet, mobile end and PC-end APP. Students can access to massive online learning resources through this platform. The way to acquire such learning resources is very different from that of traditional courses. The traditional way of acquiring learning resources is through words and deeds, which is what now people call "face-to-face" education. The essential element of face-to-face teaching is a classroom where the teacher lectures on the podium, and the students concentrate on listening to classes, reading books, and taking notes. In contrast to the way fragmentation learning is used, it is generally possible to obtain knowledge anywhere, anytime by logging into a commonly used learning app or directly searching the Internet for the courses.

III. THE FRAGMENTATION LEARNING OF COLLEGE STUDENTS IN THE INTERNET AGE

A. *Fragmentation Learning Has Become a Learning Method Universally Recognized by College Students*

Fragmentation learning is in line with the lifestyle and learning style of modern college students. With the popularity of mobile devices and the development of the Internet, fragmentation learning has gradually gained the recognition of college students while gradually infiltrating college students' learning life.

First of all, from the study habits of college students, college students are used to and good at using the Internet to solve various problems they encounter in life and learning. The carrier of fragmentation learning is the Internet, which caters to the learning habits of college students. The Internet is an area where they can "play their fists". They are willing to actively explore in this field, and learning is no exception.

Compared with traditional classroom learning and textbook learning, the Internet has given new meaning to the learning behaviors and methods of college students, opening the learning journey in a new and easy way. According to the Internet Trends Report released by Baidu Education in Baidu Boao Forum in 2017, 67% of China's existing 800 million Internet users use Internet education products to learn, among which the people aged 18-35 years old are the main group, occupying 56% of the number of Internet users, that is, "post-80s and post-90s". After further integrating the data, Baidu Education found that the learning objectives of Internet learning users mainly focus on "improving hobbies" and "satisfying current work needs". At the same time, 45.6% of Internet learning users will choose to learn through the mobile client, and 43.2% of users will learn through the computer or PC. The mobile client is easy to carry compared with the computer, and is highly favored by college students.

Secondly, viewing from the content of fragmentation learning, the content of fragmentation learning keeps up with the trend of the times. [2] For example, the bitcoin and blockchain that emerged in the previous paragraph. People will find that such new things appear in the news yesterday, and there have a detailed introduction to this new thing, and even have an exclusive course for this new thing. Many organizations quickly explore business opportunities, connect them to related fields, and provide vivid and detailed explanations in a knowledge-integrated manner, making it easier for students who purchase courses to understand and master. This example illustrates that the content of fragmentation learning is updated quickly, which can satisfy the strong curiosity of college students at a certain stage.

B. *Students Will Learn Systematically While Having Fragmentation Learning*

The relationship between fragmentation learning and systematic learning is the key to giving a decent and objective evaluation of fragmentation learning. Through the above discussion, the relationship between the two is not absolutely opposite, but complementary. The relationship between systematic learning and fragmentation learning is different from the relationship between primary and secondary contradictions. The difference is that there is no contradiction between the two. Systematic learning will always occupy a dominant position, always the main contradiction, and fragmentation learning will always be a secondary contradiction. Systematic learning refers to a complete knowledge framework constructed by experts in a certain field. The basic concepts, characteristics and other content connect the various parts of knowledge. Then learners have a complete systematic understanding of the field. On the one hand, systematic learning can cultivate students' ways of thinking and research methods, and lay the foundation for further study in the future. On the other hand, systematic learning can also help students achieve the effect of integration and inference, and have a more thorough understanding of the subject. The role of fragmentation is to supplement the details and promote the establishment of a personalized knowledge system. [3]

IV. PROBLEMS IN THE FRAGMENTATION LEARNING OF COLLEGE STUDENTS IN THE INTERNET AGE

Fragmentation learning not only has the above advantages, but also inevitably has the following drawbacks:

First, the same fragmentation of knowledge is not conducive to systematic learning. This is the most obvious drawback of fragmentation learning, and it is also a defect that cannot be avoided by fragmentation learning. First, knowledge is divided into knowledge fragments in fragmentation learning, which is not conducive to learners to integrate systematically. If college students do not pay attention to the connection between knowledge fragments after fragmentation learning, fragmentation learning will lose its effect. Second, fragmentation of knowledge is also fragmentation of content. It is true that college students want to use the fragmentation time to learn extracurricular knowledge or supplementary knowledge of professional courses, but the students must pay attention to the quality of fragmentation learning and clarify the purpose of fragmentation learning. Finally, college students rely on instantaneous memory for fragmentation learning. If they can't achieve effective accumulation, they still can't achieve the ideal learning effect. The instantaneous memory will be limited by time and space. If the students don't review the fragmentation knowledge in time, they will slowly forget it. They can refer to the Ebbinghaus Forgetting Curve.

Second, the network information is mixed and difficult to distinguish. On the one hand, the Internet has lowered the threshold for knowledge to enter the public's field of vision, and the network information is mixed. Undoubtedly, the Internet provides more channels for college students to learn new knowledge. However, it is not known whether the source of this knowledge is reliable and the content is correct. On the other hand, the learning process is not "pure" enough, and is easily interfered by "side effects", which seriously affects learning efficiency. While the mobile terminal creates convenience for college students' learning and living, it also provides opportunities for other types of APP such as entertainment and shopping. The possibility that primary and secondary school students have fragmentation learning is not very large [4]. The self-control ability of primary and secondary school students is not enough. It is easy to use mobile clients to spend a lot of time on games and chats. The college students and adults who have been working in the society for many years are still not fully self-disciplined. Therefore, the fragmentation learning of college students may inoculate the normal learning time of college students and delay the normal learning efficiency of college students.

Third, thinking is not coherent, and attention is easy to distract. This is also a defect that cannot be avoided by long-term fragmentation learning. First, fragmentation learning leads to inconsistencies in thinking. The reasons for the inconsistency of thinking include the fragmentation of the information resources. The content of fragmentation learning is inconsistent, and it is affected by the amount of learning each time. The existence of fragmentation knowledge lies in the shallow knowledge, relatively scattered and no systematic learning order. Only a low correlation among knowledge can guarantee the possibility of fragmentation learning. Second, fragmentation learning can also lead to fragmentation of attention. Some scholars have explained that fragmentation learning leads to the principle of fragmentation of attention from a medical point of view. Hyperlinks, animations and other information of fragmentation learning can stimulate the production of "dopamine" in the human body. Dopamine in the human body is a kind of nerve-conducting substance, which can make college students feel the stimulation of new things, and click on these animations, micro video and links. However, the bytes that the brain can process every second are limited. Too frequent clicks will further disintegrate the fragmented knowledge, eventually completely being forgotten because of the brain's overload. [5]

V. THE COPING STRATEGIES OF COLLEGE STUDENTS' FRAGMENTATION LEARNING IN THE INTERNET AGE

Although the above drawbacks exist in fragmentation learning, the above drawbacks can be avoided. People can avoid or reduce the adverse effects of fragmentation learning completely by taking certain measures and means.

In order to reduce the drawbacks of fragmentation learning, it is necessary to pay attention to methods in the process of fragmentation learning, and complete the transition from fragmentation to system through accumulation, classification and organization strategies. This kind of countermeasure is similar to the principle of "fixed deposit by installments" proposed by Professor Wang Zhuli. He believes that the key to turning fragmentation into systematization is the ability of students to build the knowledge systems they need. Whether it is fragmentation learning or systematic learning, the educatees are college students. Whether the knowledge can be transformed into their own unique knowledge reserves, the self-learning ability and learning skills of college students are crucial factors. In order to cultivate the ability of college students and improve the efficiency of fragmentation learning, the fragmentation knowledge can be restored and reconstructed through "fixed deposit by installments".

First is the accumulation. The so-called "accumulation", as the name implies, refers to the integration of fragmented knowledge learned within a certain period of time and accumulated in the knowledge base. In fact, accumulation is a crucial step in the systematization of fragmentation learning. As mentioned earlier in this article, fragmentation knowledge mainly relies on short-term memory. If the students can't review or repeat it in time, it easily leads to forget. Therefore, while using the idle time for fragmentation learning, the students should not take it lightly, and think that it is enough after the fragmentation learning. On the contrary, they need to reproduce the previous fragmentation knowledge in the next idle time, review it in time, and take notes or other forms to accumulate knowledge to prevent forgetting.

College students may have fragmentation learning based on two needs. One is to discover the points of interest and to have a deeper learning desire as the students extend the areas

of interest. This fragmentation learning resource is highly correlated. Although the learning process is relatively fragmented, on the whole, the fragmented knowledge constitutes a complete knowledge framework and system, not independent of each other. The second is to supplement the content of the course that students are studying systematically. The fragmentation knowledge is also not completely fragmented. When combined with system knowledge, it is integrated with the systematic knowledge system to form part of the knowledge system of the discipline. The process of knowledge accumulation is shown in "Fig. 1":
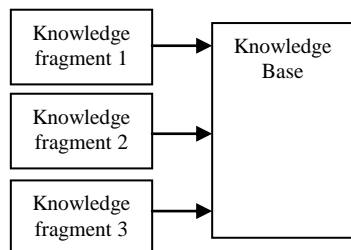

Fig. 1. The process of fragmentation knowledge accumulation.

The second is classification (see "Fig. 2"). The so-called "classification" means that the above integrated knowledge is extracted and classified according to their own learning needs, such as disciplines or functions. Classification is also a process of re-digesting and absorbing fragmentation knowledge. After the accumulation of fragmentation knowledge is completed, these knowledge fragments need to be classified according to the needs of learners, and the process of knowledge storage is carried out. This process is a process in which learners can exert their own initiative. The learners perform "secondary development" on these knowledge fragments, and they can have a series of creative activities such as screening, deleting or reconstructing in the process of classifying them. [6]
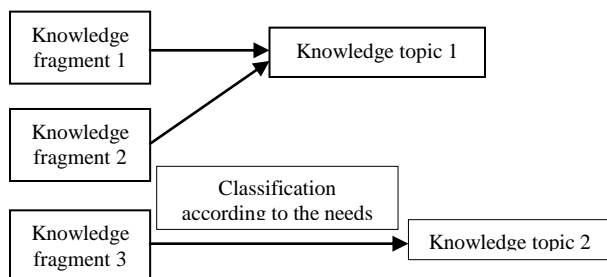

Fig. 2. The process of classifying fragmentation knowledge.

The third is integration (see "Fig. 3"). The so-called "fusion" refers to the organization and integration of the classified knowledge with the content of the subject system to which it belongs. This phase is the final stage in the transformation of fragmentation knowledge into systematic knowledge. The premise of systematizing fragmentation learning is a thorough understanding of fragmentation knowledge. In fact, the above three steps are also a thinking process. Fragmentation learning may not completely guarantee that the results of fragmentation learning can be completely transformed into systematic knowledge and

absorbed by learners according to this idea, but this is one of the views currently feasible and acceptable to the academic community. With more creative knowledge of future technological developments or learning skills, more strategies can be explored to meet the needs of college students to continue fragmentation learning. [7]
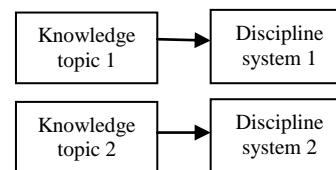

Fig. 3. The process of integrating fragmentation knowledge after classification.

VI. CONCLUSION

With the popularity and development of the Internet, the fragmentation learning model has become the subject of academic debate. Fragmentation learning has the characteristics of informal learning, self-scheduled learning content, and the combination of the Internet and mobile apps. According to the relevant literature and the survey results, it is found that fragmentation learning has the following three advantages: first, it gradually becomes a learning mode universally recognized by college students; second, it is conducive to the habits and abilities of college students to establish lifelong learning; third, college students will conduct systematic learning as well as fragmentation learning. However, its three major drawbacks deserve attention. First, the fragmentation of knowledge is not conducive to systematic learning; second, the network information is mixed and difficult to distinguish; third, the thinking is not coherent, and the attention is easy to disperse. Therefore, in view of the above three major drawbacks, this paper proposes the learning strategy of accumulation — categorization — integration. While promoting fragmentation learning as the best auxiliary tool for systematic learning, it is convenient to play the best effect of fragmentation learning.

REFERENCES

[1] Wang Zhuli. "The Fragmentation Learning and Countermeasures in the Mobile Internet Era — From fixed deposit by installments to "Internet + Classroom", "Journal of Distance Education", No. 4, 2016, p. 9. (in Chinese)

[2] Wang Chunling, Wang Meihong. Optimization of Fragmentation Learning of Electronic Information Students in the Internet+ Era, Journal of Taishan University, 2017, No. 11, p. 139. (in Chinese)

[3] Wang Zhuli. "The Fragmentation Learning and Countermeasures in the Mobile Internet Era — From fixed deposit by installments to "Internet + Classroom", "Journal of Distance Education", No. 4, 2016, p. 12. (in Chinese)

[4] Jiang Qiang, Zhao Wei, Wang Pengjiao. Cognitive Research on Mobile Learning of College Students Based on the Perspective of Fragmented Learning, Modern Distance Education, 2014, No. 1, p. 38. (in Chinese)

[5] Peng Jingwen, Xu Xiangyun. Repair of Fragmented Learning: Reflections on Learning Support Based on MOOC, Jiangsu Higher Education, No. 5, 2017, p. 43. (in Chinese)

[6] Huang Jianfeng. "Study on Fragmented Learning Strategies Based on "Internet +" — Transformation from "Shards" to "Overall", E-education Research, No. 8, 2017, p. 81. (in Chinese)