



Research on the Impact of Online Educational Resources on College Students' Knowledge Learning

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Abstract. In today's highly developed information age, online educational resources have become a new and important channel for college students to acquire knowledge, and have become an indispensable component of the higher education ecosystem. The objective existence of online educational resources has become an important influencing factor that cannot be ignored in the learning and life of contemporary college students. The rapid development of online educational resources and the increasingly rich content of online educational resources have had a significant impact on the learning methods of college students. College students should develop good self-discipline and the ability to discern knowledge and information. They should establish a scientific information screening system on their own to cope with the challenges of uneven quality and authenticity of online educational resources. When utilizing online educational resources, they should be able to play to their strengths and avoid their weaknesses. While enjoying the convenience brought by online educational resources, they should also avoid being affected by their unfavorable factors. This article conducts research and analysis on the impact of online educational resources on the knowledge learning of college students.

Keywords: Online educational resources, college student, Knowledge, influence.

In recent years, China's online education market has shown explosive growth. According to CNNIC data, the number of online education users has been increasing year by year since 2017[1]. In 2024, the Global Digital Education Development Index released by the Chinese Academy of Educational Sciences showed that China's ranking jumped from 24th to 9th place - China has become a leader in the global digital education reform. [2] The development of online education has enriched online educational resources, which have had a profound impact on the knowledge learning of college students.

1 The beneficial impact of online educational resources on college students' knowledge learning.

1.1 Online educational resources are a beneficial supplement to classroom teaching for college students.

Classroom teaching in universities needs to be carried out according to the training plan of college students. Every class in university is strictly completed according to the course syllabus and teaching schedule. Generally speaking, classroom teaching content in universities cannot be formulated solely according to the learning needs of students with weak learning acceptance abilities, nor can it be formulated solely according to the learning needs of students with strong learning acceptance abilities. Instead, it should be formulated based on the learning needs of the vast majority of students. So there are actually differences in the acceptance of knowledge in the same class among college students. College students can use online educational resources to enrich and expand classroom teaching content, in order to deepen their grasp and understanding of classroom knowledge points. The existence of online educational resources effectively solves the problem of some students not having enough to eat or not having enough to eat in classroom teaching, and is a beneficial supplement to college students' classroom teaching.

1.2 Online educational resources have expanded the channels for college students to acquire knowledge.

The traditional channels for college students to acquire knowledge include textbooks, classroom teaching by teachers, extracurricular books, knowledge exchange among classmates, experiments, etc. Among these traditional channels, textbooks and teacher classroom teaching are the main sources of knowledge for college students to acquire. Unlike traditional knowledge acquisition channels, online educational resources often present information through various means such as graphics, text, sound, animation, and video. Therefore, knowledge information on online educational resources is often more interesting and approachable, and can also attract students to learn independently. In today's highly developed information age, online educational resources have become a new and important channel for college students to acquire knowledge.

1.3 Online educational resources are beneficial for college students to learn in combination with their actual time

The teaching time of classroom teaching generally has strict time norms, and the course arrangement follows a fixed schedule. Students need to participate in classroom teaching according to the teaching arrangement, and they need to attend classes and end classes on time. Generally speaking, when students participate in classroom learning, they need to adjust their time schedule to meet the needs of classroom teaching, rather than attempting to adjust the classroom teaching schedule according to their own time requirements. This teaching model requires students to adjust their

personal routines to adapt to the pace of collective teaching, rather than the opposite. However, utilizing online educational resources for learning is different. Thanks to the 24/7 uninterrupted services of different digital service platforms, the vast majority of online educational resources are available 24 hours a day. Therefore, students can independently plan the best learning period based on personalized factors such as personal sleep patterns and cognitive efficiency peaks, achieving true "personalized customization of learning time".

1.4 Online educational resources are beneficial for college students to learn according to their personal hobbies and interests.

Online educational resources cover a wide range, from general popular science knowledge to specialized information in specific fields. Online educational resources generally have corresponding content. In terms of subject content, whether it is engineering, machinery, electronics, information, biology, physics, or humanities, politics, painting, art, etc., there may be online educational resources for knowledge and information in many disciplines. So college students can not only learn their own professional subject knowledge, but also learn corresponding content on online educational resources according to their personal hobbies and interests. These knowledge and information learned based on personal interests and hobbies have played a positive role in promoting the comprehensive development of college students' personal qualities.

1.5 Online educational resources are beneficial for college students to learn from various strengths

Due to the large number of companies, organizations, or individuals providing and maintaining knowledge information for online education resources, different units have many differences in the presentation of the same knowledge information in the online education resource library: some are accustomed to presenting knowledge information in a highly professional form, while others are accustomed to presenting it in a simple and understandable form; Some units are good at presenting knowledge concisely and simply on online educational resources, while others prefer to focus not only on the knowledge itself, but also on the abundance of knowledge, introducing the origin and relevance of knowledge in detail. So college students can make full use of the many advantages of online educational resources when learning knowledge, learn from others' strengths, deepen and enrich their understanding and mastery of knowledge points.

1.6 Online educational resources are beneficial for college students to learn new technologies and knowledge

In today's rapidly changing and explosive development of knowledge and technology, compared with traditional paper-based information media, online educational resources can more timely and effectively spread new technologies and knowledge

widely and universally. Online educational resources have broken the geographical limitations between the origin and audience of knowledge, enabling college students to acquire new knowledge and technologies in a more timely manner, and also enabling them to understand the development trends of new knowledge and technologies in a more timely manner. This is beneficial for college students to more effectively follow the trend of scientific and technological development. Online educational resources not only enable real-time updates and widespread dissemination of new technologies and knowledge, but also break through geographical limitations, allowing knowledge dissemination to no longer be limited by physical distance. This characteristic enables college students to obtain cutting-edge technological information in a timely manner, grasp the development trends of disciplines in a timely manner, and better adapt to the pace of technological innovation, maintaining a learning state that keeps pace with the times.

1.7 Online educational resources are the new applications of science and technology in the field of education, representing a part of the new development trend of university teaching. College students should actively accept the new changes brought by technological development to higher education.

With the development and progress of science and technology such as network technology, computer technology, big data technology, and artificial intelligence technology, traditional higher education will inevitably be affected by their progress and development in terms of teaching content and teaching methods. This influence is a mutual demand between technological development and educational development. Technological progress needs to promote corresponding development in various aspects of social life, and education also hopes to use technological progress to promote its own development and progress. So the existence and development of online educational resources is a natural social phenomenon that emerged at a certain stage of technological development. Online educational resources represent the development and progress of education from one aspect, and are a new thing in the development of education. College students should actively accept the new changes brought by technological development to higher education, so that their learning can enjoy the dividends brought by technology.

2 The adverse effects of online educational resources on college students' knowledge learning.

Of course, everything has its two sides. While online educational resources actively promote the learning and development of college students, there may also be some issues.

2.1 Some online educational resources require a certain fee to use, which may cause difficulties for some college students from disadvantaged families

Many online educational resources nowadays generally adopt a paid information acquisition method. These paid online educational resources are often high-quality online educational resources, and their teaching content is generally systematically designed with strong systematicity; And the presentation format of its content is also in line with the principles of cognitive science, which is more suitable for paid personnel to learn. However, this payment based approach to obtaining educational resources objectively creates a new type of educational access barrier, which keeps some college students from families with poor economic foundations out of the door to paid educational resources. The contradiction between the need to pay for online educational resources and insufficient family economic conditions is a real problem faced by some college students. The existence of this contradiction may have some impact on educational equity on the one hand, and may also cause certain mental distress for college students facing these contradictions on the other hand.

However, this situation has greatly improved now. According to the "White Paper on Smart Education in China" released by the Ministry of Education of the People's Republic of China, China's higher education has integrated 24000 high-quality online courses, and 22 online education platforms have been selected to be open to teachers and students for free[3]. The successful construction of these high-quality online educational resources has played a great role in breaking down the barriers to access educational resources.

2.2 Some online educational resources may only be more attractive in form but lack substantial content. The existence of such online educational resources often distracts college students' excessive learning attention but cannot truly help them improve their academic progress.

Although many online educational resources, especially those with higher fees, have excellent content and presentation methods. But it cannot be denied that some online educational resources may only be more attractive in form but lack substantial content, and even some online information may only rely on the shell of online educational resources but its content is not truly online educational resources. These fake and inferior online educational resources often only distract college students' learning attention, but cannot truly help them make academic progress. Moreover, due to the fact that these fake and inferior online educational resources are generally not rigorously and scientifically reviewed, there may be certain issues with the systematic and scientific nature of their content. The existence of these problematic online educational resources not only fails to help college students make academic progress, but may also lead some college students who study these resources with an attitude of knowledge acquisition to obtain incorrect information without realizing it. This is undoubtedly a problem that needs to be dealt with strictly and properly.

2.3 The lack of classroom atmosphere in learning online educational resources is not conducive to college students forming good study habits.

The classroom atmosphere, as a key environmental variable that affects learning effectiveness, has a multidimensional shaping effect on the learning outcomes of college students. The research of modern educational psychology and pedagogy tells us that the effectiveness of classroom teaching depends not only on how teachers teach and how students learn, but also on a certain teaching environment. The teaching environment referred to here includes both the material and spiritual environment of teaching, and this spiritual environment refers to the classroom atmosphere. A good classroom atmosphere refers to a dominant comprehensive psychological state formed by teaching and learning activities between teachers and students, as well as among students, around teaching objectives in the classroom[4]. When college students engage in online educational resource learning, they often only focus on online educational resources, and the teaching atmosphere they face is only a small environment composed of information on the internet and individual students. In this small environment, college students lack necessary teacher-student and peer interaction in their learning, and there is a lack of emotional and knowledge guidance during the learning process. Long term study in such a learning atmosphere may lead to poor study habits among college students, who are accustomed to passively receiving information but no longer actively discovering, thinking about, and solving problems.

2.4 The learning of online educational resources may lead college students to develop psychological dependence on virtual experimental scenes, which is not conducive to the cultivation of their practical and hands-on abilities.

Virtual laboratory is an open networked virtual experimental teaching system based on web technology and VR virtual reality technology, which is the digitization and virtualization of various existing teaching laboratories[5]. For disciplines such as physics, chemistry, biology, economics, information technology, etc. that require a large amount of experimental teaching in addition to theoretical teaching, an important component of their online educational resource content construction is the corresponding professional virtual laboratory. Compared to physical laboratories in reality, the experimental content and process of virtual laboratories are simulated through computer technology. Therefore, when college students use online educational resources in virtual laboratories for experimental learning, they do not have to worry about the loss of consumables or personal safety during the experimental process. In addition, when using virtual laboratories with online educational resources, college students are not affected by their location in time and space. As long as the servers and network facilities are working properly, they can conduct online virtual experiments anytime and anywhere. So the virtual laboratory of online educational resources provides a very favorable experimental learning environment for college students to learn certain experimental content. However, virtual laboratories for online educational resources are only conducted through information simulation, which has a significant gap compared to real-world experiments. The operation of different exper-

imental equipment and reagents in the real world has been transformed into mouse and keyboard operations in the virtual laboratory. If college students develop a psychological dependence on virtual experimental scenes, their practical and hands-on abilities will be adversely affected.

2.5 Long term online teaching resources may have certain adverse effects on the physical health of college students.

Normal university classrooms have appropriate class time and break time, so college students can study and relax reasonably during classroom learning, and the balance of work and rest is arranged scientifically, without being too exhausted. However, when college students engage in online teaching resource learning, they are often not constrained by the normal class and break times. In today's increasingly popular digital learning, the convenience of online teaching resources has also brought health risks. Learners usually need to maintain a fixed sitting position for a long time and continuously stare at electronic screens. If this static learning mode becomes the norm, it may have multiple health impacts on college students. Specifically, persistent close eye use can lead to visual fatigue and increase the risk of myopia occurrence and development; Secondly, a sedentary lifestyle may cause strain in the cervical and lumbar spine, and even affect the function of the circulatory system. Although online learning may not cause significant harm in the short term, if one does not pay attention to scientific eye use and timely rest, the long-term accumulated health problems cannot be ignored

3 Conclusion

In short, with the rapid development of information technology, online educational resources are experiencing unprecedented expansion and innovation. Massive course platforms, intelligent learning tools, and diverse forms of knowledge presentation are profoundly reshaping the learning patterns and cognitive habits of contemporary college students. This change is not only reflected in the flexibility of online educational resources in terms of learning time and space, but also in the diversified trend of knowledge acquisition paths. Online educational resources have become an indispensable and important component of the higher education ecosystem. College students should develop good self-discipline and the ability to discern knowledge and information. They should establish a scientific information screening system on their own to cope with the challenges of uneven quality and authenticity of online educational resources. When utilizing online educational resources, they should be able to play to their strengths and avoid their weaknesses. While enjoying the convenience brought by online educational resources, they should also avoid being affected by their unfavorable factors. In order to make more rational use of online education resources, college students need to strengthen the cultivation of self-management ability, and resist various negative effects in the process of learning online education information through the enhancement of self-management ability.

References

1. Asset Information Network. 2023 Online Education Industry Research Report [EB/OL]. <https://zhuanlan.zhihu.com/p/655605113>. last accessed 2023/09/11.
2. China Education Daily Series Review of Digital Progress in Education in China Part 3-Government Portal of the Ministry of Education of the People's Republic of China [EB/OL]. http://www.moe.gov.cn/jyb_xwfb/s5147/202505/t20250514_1190455.html. last accessed 20225/05/14.
3. The Ministry of Education of the People's Republic of China White Paper on Smart Education in China [EB/OL]. <https://jy.hpe.cn/wcm.files/upload/CMSjy/202507/2025070317195655149.pdf>. last accessed 2025/05/16.
4. Classroom Atmosphere _ Baidu Baike [EB/OL]. <https://baike.baidu.com/item/%E8%AF%BE%E5%A0%82%E6%B0%94%E6%B0%9B/4014420?fr=aladdin>. last accessed 2025/04/26.
5. Virtual Lab _ Baidu Baike [EB/OL]. <https://baike.baidu.com/item/%E8%99%9A%E6%8B%9F%E5%AE%9E%E9%AA%8C%E5%AE%A4/1529912?fr=aladdin>. last accessed 2025/04/27.

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