

RESEARCH ON THE EDUCATION MODEL OF INNOVATION AND ENTREPRENEURSHIP IN UNDERGRADUATE COLLEGES AND UNIVERSITIES IN THE CONTEXT OF DIGITALIZATION

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ABSTRACT

Driven by the wave of digitization, innovation and entrepreneurship education in undergraduate colleges and universities are experiencing unprecedented changes. Digital technology provides not only rich resources and tools for education but also new ways to model innovation in innovation and entrepreneurship education. In the digital context, innovation and entrepreneurship education need to adopt a more suitable model. Through an analysis of the background of digital transformation and its far-reaching impact on innovation and entrepreneurship education in colleges and universities, the main problems existing in employment and entrepreneurship education in colleges and universities are identified, including innovation and entrepreneurship education systems and training modes in colleges and universities. The education system is not perfect, and the utilization and interaction modes of educational resources are not coordinated. On the basis of the investigation and analysis of the above problems, a series of targeted innovation strategies are proposed, including the construction of a digital curriculum system, the enhancement of students' digital skills, and the optimization of the employment and entrepreneurship service system. Through these measures, colleges and universities can train more high-quality innovative talent who can adapt to the digital age, laying a solid foundation for the exploration of innovation and entrepreneurship education modes in colleges and universities.

Key Words: Digitization; Undergraduate Colleges and Universities; Innovative Education; Model Exploration.

Fund Project: Key Educational Reform Project of Zhejiang University of Finance and Economics "Exploration of Innovation and Entrepreneurship Education Model in Application-oriented Local Colleges and Universities in the Digital Intelligence Era" (Project No. 2023JK43)

INTRODUCTION

Deepening the reform of innovation and entrepreneurship education in colleges and universities is urgently needed for the country to implement an innovation-driven development strategy, promote the upgrading of economic quality and efficiency, and promote the comprehensive reform of higher education and the higher-quality entrepreneurship and employment of college graduates. The 18th National Congress of the Communist Party of China (CPC) made important arrangements for the training of innovation and entrepreneurship talent, and the State Council put forward clear requirements for strengthening innovation and entrepreneurship education. In 2015, the “Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship in Colleges and Universities” promulgated by the General Office of the State Council clearly stated that deepening the reform of innovation and entrepreneurship education in colleges and universities is an important starting point in promoting the comprehensive reform of higher education and that innovation and entrepreneurship education and professional education must be organically integrated. Fusion (Zhao, 2023). In recent years, innovation and entrepreneurship education in colleges and universities has been continuously strengthened and has made positive progress, which has played an important role in improving the quality of higher education, promoting the overall development of students, promoting the entrepreneurship and employment of graduates, and serving the national modernization drive (Du, 2022). Moreover, China's digitalization level continues to develop. In September 2023, China's “National Smart Education Platform” project won the 2022 UNESCO Award for Education Informatization, enabling the sharing of more high-quality education resources. With the rapid development of 5G, artificial intelligence and other technologies, online and offline blended teaching and multiparty participation teaching and research activities are being carried out vigorously (Yin Guojun, 2024). Internet technology and digital applications have been involved in education and teaching in various ways. Therefore, how to integrate digitization into innovation and entrepreneurship education in colleges and universities has become one of the models gradually explored by major colleges and universities.

Foreign scholars have adopted systematic analysis and applied it in practice. Most scholars use the Innovative Work Behavior Scale, the Learner Empowerment Scale, and the Creative Self-Efficacy Scale to focus on research questions through literature analysis, systematic research, multidisciplinary integration research, and multilevel analysis. In response to the exploration of innovation and entrepreneurship education models in undergraduate colleges and universities, a series of effective measures have been proposed, such as the building of a government-university collaboration platform and the cultivation mechanism of innovation and entrepreneurship. Foreign universities focus on cooperation with enterprises and the government to jointly build innovation and entrepreneurship

practice platforms and provide students with rich practice opportunities and resources. For example, the establishment of entrepreneurship incubation centers and the holding of innovation and entrepreneurship competitions (Liu, 2023). In addition, through international cooperation and exchanges, advanced innovation and entrepreneurship education concepts and resources are introduced to enhance the international level of education worldwide. In addition, foreign colleges and universities use digital technology extensively in innovation and entrepreneurship education: big data technology is used to analyze market demand to guide students in the selection and positioning of entrepreneurial projects, and cloud computing technology is used to achieve resource sharing and collaborative innovation to reduce the cost of entrepreneurship. Virtual reality (VR) and augmented reality (AR) technologies have also been widely used in innovation and entrepreneurship education in foreign universities, providing students with a more immersive learning experience and helping them better understand the entrepreneurship process. Domestic scholars have also made considerable achievements. In recent years, the Chinese government has attached great importance to innovation and entrepreneurship education in colleges and universities and has introduced a series of policies and measures to promote their development. For example, the establishment of innovation and entrepreneurship funds and the provision of tax incentives (Tong W, 2023). Colleges and universities also actively responded to national policies and increased investment to promote the innovation and development of innovation and entrepreneurship education models. Moreover, attention has been given to the reform and innovation of the curriculum system (Wu, 2019). Through investigation and study, Mei et al. proposed that innovation and entrepreneurship courses related to digital technology should be offered to cultivate students' digital literacy and innovation and entrepreneurship ability. An online and offline linkage teaching mechanism is promoted, and relevant content on professional innovation and entrepreneurship in society is incorporated in a timely manner to keep the course content closely connected with market demand (Mei, 2019). At the same time, domestic universities are actively building innovation and entrepreneurship practice platforms to provide students with rich practice opportunities and resources. For example, the establishment of an on-campus business park and cooperation with enterprises to carry out internships and training. Through school-enterprise cooperation and industry-university-research integration, enterprise resources and projects can be introduced to achieve the in-depth integration of innovation and entrepreneurship education and industrial development (Wang, 2024). In the future, with the continuous development of China's digitization and innovation-driven development strategy, new challenges and opportunities are posed to the teaching and research methods of universities. As a future-oriented activity, innovation and entrepreneurship education need to be in line with the development of the times and integrated with the development of technology. On this basis, the influence of the digital age on digital innovation and

entrepreneurship models in colleges and universities, the current status and existing problems, and the future development trends of digital innovation and entrepreneurship models in colleges and universities will be researched to explore the education ecology of innovation and entrepreneurship in colleges and universities in China against the background of the digital age. A new development model for the system.

PROBLEMS IN THE INNOVATION AND ENTREPRENEURSHIP EDUCATION MODEL IN UNDERGRADUATE COLLEGES AND UNIVERSITIES

With rapid development, innovation and entrepreneurship education in China’s undergraduate colleges and universities is constantly developing against the background of digitalization, which has received increasing attention in recent years. However, there are many problems with its development. Through literature collation and investigation, we find that most colleges and universities have problems such as unsound innovation and entrepreneurship education systems and training models and uncoordinated use and interaction models of educational resources, as shown in Figure 1.

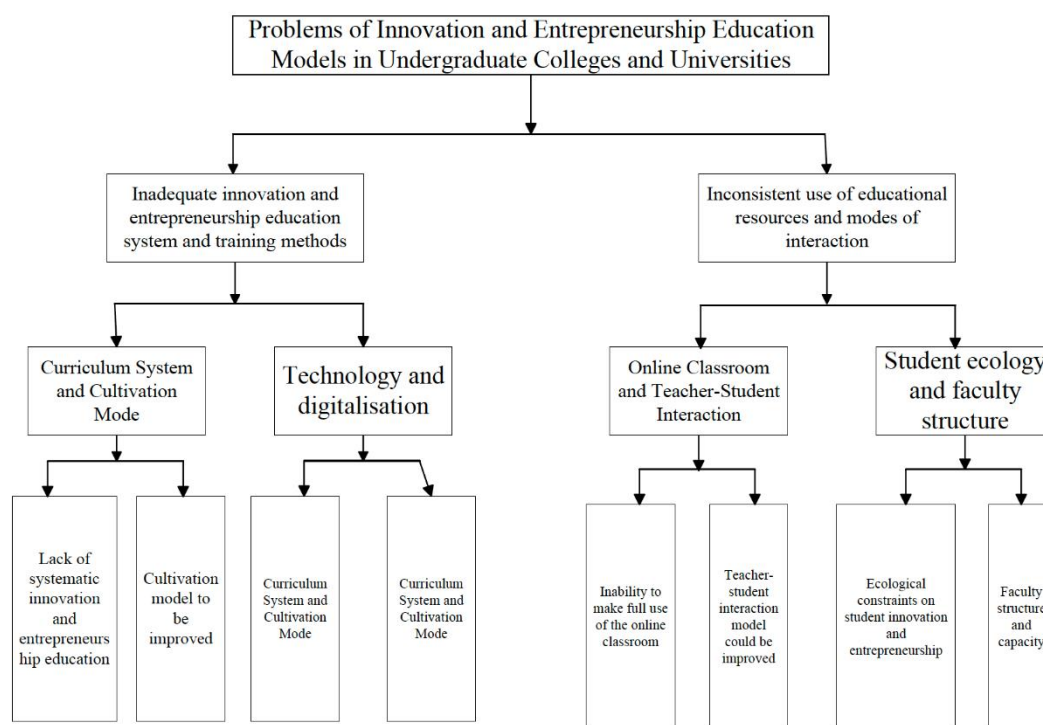


Figure 1 Problems in the innovation and entrepreneurship education model in undergraduate colleges and universities

2.1 The innovation and entrepreneurship education system and training mode are not perfect

In the current innovation and entrepreneurship education system, although many colleges and universities have begun to explore and practice the innovation and entrepreneurship education model, overall, the system and training model still has the problem of being unsound, and the application of

technology and digitization is lacking. . In general, innovation and entrepreneurship education lack systematic planning, and the course content is often scattered and incoherent, failing to form a complete theoretical system and practical framework. This makes it difficult for students to obtain a comprehensive and in-depth understanding and mastery when they receive innovation and entrepreneurship education. In addition, the training model of innovation and entrepreneurship education is singular and lacks diversity. Many colleges and universities still use the traditional “lecture + case” teaching mode in innovation and entrepreneurship education, which lacks the training and cultivation of students’ actual innovation and entrepreneurship ability and the lack of close contact and cooperation with industry, making it difficult for students to acquire a real business environment. and practice opportunities, the inability to truly experience the process and challenges of innovation and entrepreneurship (Hu, 2024). From a subjective point of view, some teachers are deeply influenced by the internet and rely heavily on it. The only source of information is the internet, and it is difficult to guide students effectively in innovation and entrepreneurship activities. In addition, the methods used by university teachers do not match the trend of the digital age. From an objective point of view, the evaluation of innovation and entrepreneurship education in most colleges and universities mainly focuses on surface forms such as course assessment and entrepreneurship competition and lacks the evaluation and recognition of students’ actual innovation and entrepreneurship ability and achievements. As a result, students do not receive the rewards and recognition they deserve for their efforts in innovation and entrepreneurship, thus affecting their enthusiasm (Xu 2024). In summary, the imperfection of innovation and entrepreneurship education systems and training models has seriously constrained the development and progress of innovation and entrepreneurship education in China. To solve this problem, we need to start from the aspects of systematic planning, diverse training models, faculty construction, and improvement of the evaluation system to strengthen system construction and model innovation in innovation and entrepreneurship education to better cultivate students with innovative spirits and practical ability. innovation and entrepreneurship talent.

2.2 The utilization and interaction modes of educational resources are not coordinated

When the current utilization and interaction modes of educational resources are analyzed, it is not difficult to find significant uncoordination between the two. With the in-depth development of the digital age, educational resources have become increasingly abundant and diverse. However, many educational institutions have failed to form an effective interaction mode when using these resources, resulting in a waste of resources and a limited teaching effect. The number of educational resources continues to grow, covering many aspects from traditional paper textbooks to modern online courses, virtual laboratories, and digital libraries. However, when these resources are used, many educational

institutions remain at the simple piling and display level, lacking in-depth analysis and satisfying the individual needs of students. This one-size-fits-all method of resource utilization cannot truly play the value of resources, nor can it stimulate students' interest and enthusiasm in learning. Moreover, the interaction mode also plays a critical role in education. Effective interaction can stimulate students' interest in learning, improve their learning results, and cultivate their cooperative spirit and innovation ability (Yi, 2024). However, in actual teaching, many teachers still use the traditional “lecturing + listening” mode, which lacks effective interaction with students. Even if some digital tools are used, they are often only used as a means of displaying the teaching content rather than as a true interaction mode. This lack of interaction in the teaching mode not only affects the learning ability of students but also limits the full use of educational resources. The incoordination between educational resources and interaction modes is also reflected in the update and iteration of resources. With the continuous development of technology and the renewal of educational concepts, educational resources need to be constantly updated and iterated to meet the needs of the times (Wang, 2024). However, many educational institutions often lag behind in terms of resource updating, and as a result, educational resources are outdated and unable to meet the needs of students. Moreover, owing to the lack of an effective interaction mode, students are unable to acquire the latest knowledge and information in a timely manner, thus affecting their learning ability and innovation ability. To solve the uncoordinated problem between educational resources and interaction modes, we need to address this issue from multiple aspects. Teachers should actively adopt a variety of teaching methods and means to form an effective interaction mode and stimulate students' interest and enthusiasm in learning. Moreover, we need to strengthen the updating and iterative work of educational resources to ensure the timeliness and prospectiveness of educational resources.

3. EXPLORATION OF INNOVATION AND ENTREPRENEURSHIP MODELS WITH A DIGITAL BACKGROUND

3.1 Innovative education and online classroom interaction model innovation

In today's ever-changing technological and economic environment, the construction and optimization of innovation and entrepreneurship education systems are particularly important. At present, the lack of coordination between educational resources and interaction modes also exists in the field of innovation and entrepreneurship education and has become one of the bottlenecks restricting its development. To cultivate talent for the new era with an innovative spirit and practical ability, we must conduct in-depth reflection and reconstruction on the existing innovation and entrepreneurship education system.

First, We need to re-examine the allocation and utilization of innovation and entrepreneurship

education resources. The traditional educational resource model often places too much emphasis on the indoctrination of knowledge and neglects the cultivation of students' innovative thinking and practical ability. In the digital age, we should make full use of rich online courses, virtual laboratories and other modern education resources to overcome the constraints of time and space and provide students with broader learning platforms and practice opportunities.

Second, We need to focus on the personalized allocation of resources and provide customized learning programs according to the interests and needs of students to stimulate students' interest and enthusiasm in learning. The innovation of the interaction mode is the key to optimizing the innovation and entrepreneurship education system. Effective interaction can not only stimulate students' learning interest but also cultivate their cooperative spirit and innovation ability. Therefore, we should abandon the traditional mode of “lecturing + listening” and actively explore new methods of interaction (Guo, 2024).

Third, For example, project-based learning and team cooperation can be used to allow students to learn by doing and to grow through interaction. Moreover, we can also use online platforms such as social media and online forums to strengthen exchanges and cooperation between teachers and students to form a closer learning community.

Forth, We need to pay attention to the update and iteration of innovation and entrepreneurship education resources. With the continuous advancement of technology and the constant changes in the market, the content and methods of innovation and entrepreneurship education also need to be constantly updated and improved. We should pay close attention to industry dynamics and market needs and adjust the structure and content of educational resources in a timely manner to ensure the timeliness and prospectiveness of educational resources. Moreover, we need to strengthen exchanges and cooperation with advanced international educational institutions, introduce advanced educational concepts and methods, and continuously improve the level of innovation and entrepreneurship education in China.

3.2 Application of the online classroom and innovation of the teacher–student interaction mode

With the rapid development of information technology, as an emerging force in the education field, the online classroom is gradually changing the traditional education model. However, in current practice, it is not difficult to find a significant uncoordinated phenomenon between the application of the online classroom and the interaction modes between teachers and students. To solve this problem, we need to make full use of the advantages of the online classroom to create a teaching method that combines online and offline courses while optimizing the interaction mode between teachers and students to build an effective online interaction platform.

First, The application of online classrooms has provided rich educational resources and broad teaching space. From traditional paper textbooks to modern online courses, virtual laboratories, digital libraries, etc., online classrooms cover various teaching resources. However, to truly play the value of these resources, we need to avoid simple piling up and display and instead conduct in-depth analysis on the basis of the individual needs of students and provide customized learning programs. Through the combination of online and offline methods, we can achieve the sharing and complementarity of resources and provide students with more comprehensive and flexible learning experiences.

Second, optimizing the interaction mode between teachers and students is the key to improving the teaching quality of online classrooms. In the traditional “lecturing + listening” mode, the interaction between teachers and students is often limited. In the online classroom, we can use an online interactive platform to increase the degree of communication between the students and the teacher. Through real-time questions and answers, group discussions, online collaboration, etc., teachers can keep abreast of students' learning situations and answer students' doubts (Wu, 2024). At the same time, students' learning interest and enthusiasm are stimulated. This effective interaction mode not only improves the learning effect on students but also cultivates their cooperative spirit and innovation ability. In summary, the application of online classrooms and the innovation of teacher–student interaction modes are important ways to improve education quality. We should make full use of the advantages of online classrooms to create a teaching method that combines online and offline methods while optimizing the interaction mode between teachers and students and building an effective online interaction platform to provide teachers and students with better and more convenient teaching services.

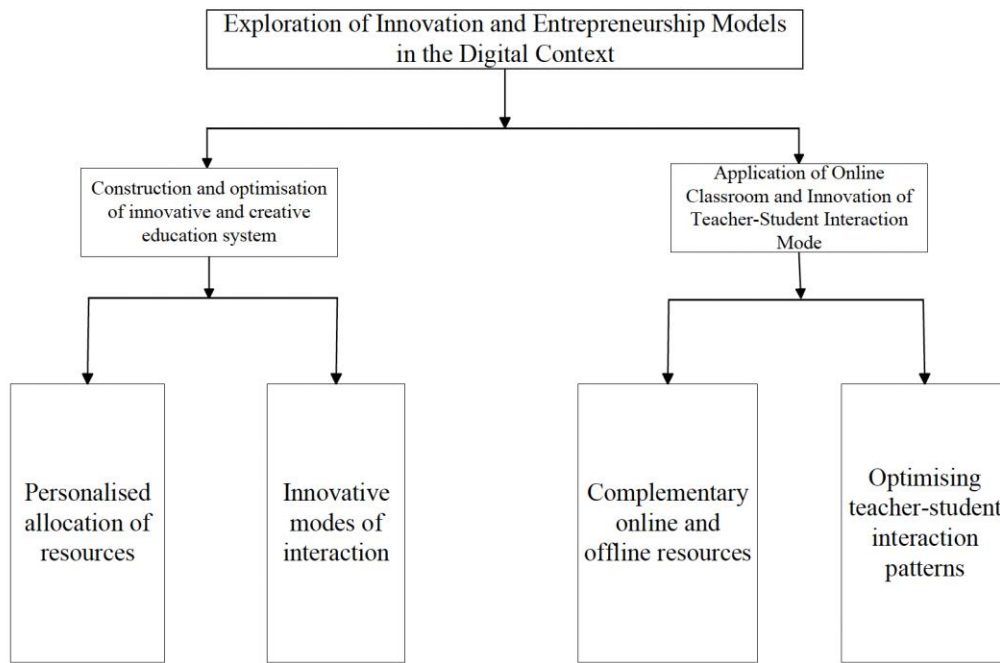


Figure 2 Exploration of the innovation and entrepreneurship model in the digital background

3.3 Comprehensive solutions for innovation ecosystem construction and resource security

In the current digital age, the richness and diversity of education resources provide unprecedented opportunities for students to innovate and start businesses. However, the lack of coordination between educational resources and interaction modes is also fully revealed in the construction of the ecological environment for students' innovation and entrepreneurship. To cultivate students with innovative spirit and practical ability, it is particularly important to construct a good innovation and entrepreneurship environment. We need to examine the current use of educational resources (Zhong, 2024). Despite the continuous growth of educational resources, many educational institutions often lack in-depth analysis of the individual needs of students when using these resources. This "one size fits all" resource utilization method cannot truly stimulate students' enthusiasm for innovation and entrepreneurship, nor can it meet their diverse learning needs. Therefore, we should encourage students to actively explore and use various educational resources, including online courses, virtual laboratories, digital libraries, etc., to broaden their knowledge horizons and practical ability. The innovation of the interaction mode is very important in building the ecological environment for students' innovation and entrepreneurship. The traditional "lecturing + listening" mode can no longer meet the needs of innovation and entrepreneurship education. We need to break this single teaching mode and introduce more interactive elements, such as project-based learning, teamwork, and guidance from corporate mentors. Through these interactive methods, students can gain a more in-depth understanding of the

process and challenges of innovation and entrepreneurship, as well as cultivate their cooperative spirit and innovation ability. The emphasis on updating and iterating educational resources is also indispensable. With the continuous development of technology and the changing market demand, knowledge and information in the fields of innovation and entrepreneurship are also constantly being updated. Therefore, we need to strengthen the updating and iterative work of educational resources to ensure that students can acquire the latest knowledge and information in a timely manner. This not only improves the learning effect and innovation ability of students but also lays a solid foundation for their future innovation and entrepreneurship.

3.4 Educational resource distribution and cybersecurity problem solving

With the rapid development of the digital age, the distribution of educational resources and the issue of cybersecurity have become challenges that cannot be ignored in the education field. In the current context, educational resources are becoming increasingly abundant and diverse. However, how to rationally allocate these resources and ensure cybersecurity to maximize their educational value has become an urgent problem. The unbalanced distribution of educational resources is a major challenge in the current education field. Despite the continuous growth of educational resources, the distribution of educational resources among different regions and different schools varies significantly. This imbalance not only leads to a waste of resources but also affects improvements in education equity and quality (Jiang, 2020). Therefore, we need to establish a set of scientific and reasonable educational resource allocation mechanisms to ensure that every school and every student can obtain the necessary educational resources to achieve equity and balanced development in education. Moreover, the issue of cybersecurity cannot be ignored in the process of educational resource distribution. With the widespread use of digital tools, cyber security risks are also increasing. When digital resources such as online courses and virtual laboratories are used, educational institutions need to ensure the security and stability of the network environment to prevent the leakage of teaching materials and information. This not only requires educational institutions to strengthen cybersecurity management but also needs support and cooperation from the government and enterprises. To solve the issues of educational resource allocation and cybersecurity, we need to consider multiple aspects. First, the government should increase its investment in education resources to ensure a sufficient and balanced distribution of resources. The government should establish a sound education resource distribution mechanism to ensure the rational distribution and effective use of resources. In addition, educational institutions should pay more attention to cybersecurity and establish a complete security management system and technical protection measures to ensure the security of teaching materials and information. In addition, it is necessary to strengthen cybersecurity education for teachers and students to enhance their cybersecurity awareness and capabilities. In summary, the distribution of educational resources and

cybersecurity are important challenges in the current education field. We need to proceed from multiple aspects to establish a scientific and reasonable distribution mechanism of educational resources, strengthen cybersecurity management, and ensure the full use of educational resources and the security and stability of the cyber environment. Only in this way can we provide students with a higher-quality and safer educational environment and promote their overall development.

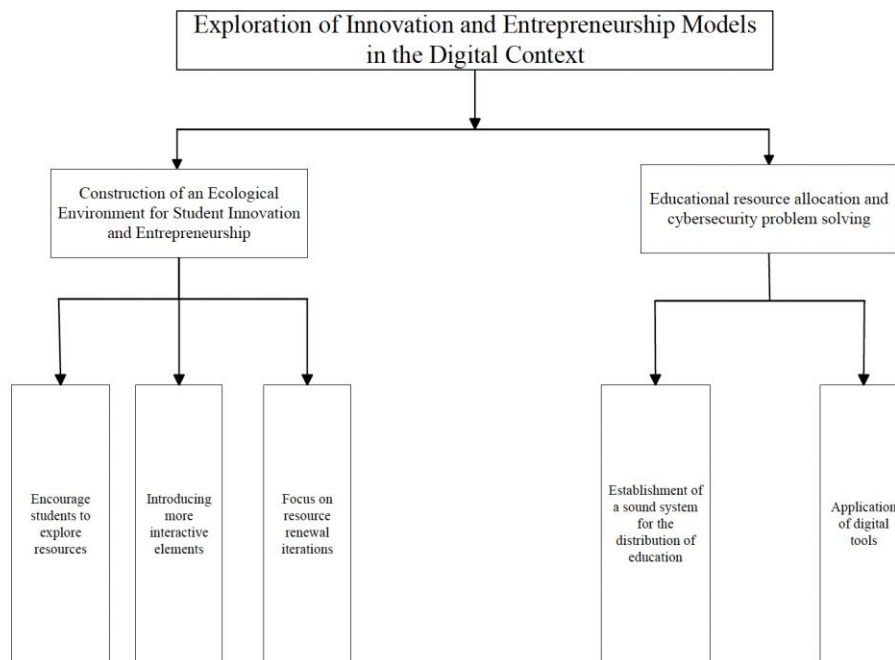


Figure 3 Exploration of the innovation and entrepreneurship model in the digital background

CONCLUSION

In the era of mass entrepreneurship and innovation, cultivating more innovative and entrepreneurial talent for the country has become one of the important tasks of colleges and universities. Through exploration of the innovation and entrepreneurship education model in undergraduate colleges and universities with a digital background and current employment and entrepreneurship education in colleges and universities to address the main problems, a series of targeted innovation strategies are proposed, including innovating interaction modes, establishing a sound distribution mechanism for educational resources, establishing a safety management system to prevent cyber problems, and introducing more interactive elements to encourage students to explore more learning platforms. Only in this way can we provide a good innovation and entrepreneurship environment for students, stimulate their enthusiasm for innovation and entrepreneurship, and cultivate their innovation spirit and practical ability.

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