



The Realistic Dilemma and Breakthrough Path of Online Course Construction for Innovation and Entrepreneurship Education in Universities

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Abstract

Based on the current situation of innovation and entrepreneurship education in universities, this paper analyzes the problems existing in online courses of innovation and entrepreneurship education in universities, and explores the breakthrough paths for the construction of online courses of innovation and entrepreneurship education in universities. Research suggests that the main problems that innovation and entrepreneurship educators urgently need to identify and face are poor quality, resource ruins, uneven distribution, and network stagnation in the construction of online courses for innovation and entrepreneurship education in universities. To solve the problem of high-quality construction of online courses for innovation and entrepreneurship education in universities, it is necessary to pay attention to the integration, development, and application of online teaching resources for innovation and entrepreneurship, leverage the advantages of co-construction and sharing of online teaching resources for innovation and entrepreneurship, achieve the unity of fairness and the efficiency of online teaching resources for innovation and entrepreneurship, and promote the regional coordinated development of online teaching resources for innovation and entrepreneurship.

Subject Areas

Information Science, Pedagogy

Keywords

Innovation and Entrepreneurship Education, Online Course Construction,

1. Introduction

Innovation and entrepreneurship education is an important measure to promote the sustainable development of Chinese talents. Innovation and entrepreneurship education in universities aims to cultivate the innovation and employment abilities of college students, promote their growth and success, and promote the high-quality development of higher education. In 2019, the Notice of the General Office of the Ministry of Education on Implementing the “Double Ten Thousand Plan” for the Construction of First Class Undergraduate Majors [1] advocated for continuously deepening innovative educational concepts, constructing and utilizing online courses, and promoting innovation in teaching methods and models. On October 9, 2021, Wu Yan, Director of the Higher Education Department of the Ministry of Education, reported at a press conference held by the Ministry of Education that more than 30,000 innovation and entrepreneurship education courses have been offered in universities nationwide, with a total of over 35000 full-time teachers for innovation and entrepreneurship. In September 2022, the Ministry of Education announced the construction list of the first batch of national innovation and entrepreneurship colleges and innovation and entrepreneurship education practice bases, including 170 undergraduate universities. In this context, the continuous construction and utilization of online courses for innovation and entrepreneurship education in universities is undoubtedly the key to improving the quality of innovation and entrepreneurship education and a practical measure to promote the connotative development of innovation and entrepreneurship education teaching. This article mainly explores the practical difficulties in the construction of online courses for innovation and entrepreneurship education in universities, and attempts to provide corresponding breakthrough paths, aiming to provide a reference for peers in the construction and application of online courses for innovation and entrepreneurship education in universities.

2. The Current Research Status of Innovation and Entrepreneurship Education in Universities

China’s online teaching resources have been developing continuously in recent years. At the beginning, they were called high-quality courses: from the implementation of quality engineering by the Ministry of Education in 2003 to 2010; Later, MOOC was proposed: that is, a large-scale online open course. Since 2012, this year is called the first year of MOOC. Supported by the rapid development of information technology, it is a unique course with the characteristics of “online open learning”. Then, there are high-quality resource-sharing courses and video public courses: probably from 2014 to 2016. Then, there are high-quality

online open courses: they have been built since 2018, and the third batch is currently being reviewed at the provincial level (those in 2018 and 2019 are first approved and then recognized, and those in 2020 are directly recognized); Now the hottest topic is “golden class”: the concept will appear in 2018 and the construction will begin in 2019. It includes five categories of “golden Courses”, namely, online first-class courses, offline first-class courses, online and offline hybrid first-class courses, virtual simulation experiment first-class courses, social practice first-class courses, etc. These are some forms of online teaching resources, especially in this sudden epidemic, which has made a significant contribution to the normal teaching of colleges and universities.

The Party Central Committee and the State Council attach great importance to the innovation and entrepreneurship work of college students. The State Council has put forward clear requirements for strengthening innovation and entrepreneurship education. On October 12, 2021, the General Office of the State Council issued the “Guiding Opinions on Further Supporting Innovation and Entrepreneurship of College Students” [2], promoting college students’ entrepreneurship and employment, and serving the country’s modernization construction. However, with the development of the times, innovation and entrepreneurship education have gradually exposed problems such as monotonous teaching methods, weak curriculum teachers, lack of curriculum content, and a single curriculum system, which has led to a lack of students’ initiative and low learning enthusiasm. In the era of the Internet, it is imperative to use online platforms to carry out innovation and entrepreneurship education, and the construction of online courses for innovation and entrepreneurship education in universities is of great significance.

Innovation and entrepreneurship education in foreign countries started early, and after long-term theoretical and practical exploration, a complete and distinctive innovation and entrepreneurship education system has been formed. The United States is the birthplace of entrepreneurship education, with entrepreneurship courses offered at Harvard Business School as early as 1947. After entering the 21st century, the education ministries of Finland, Denmark, Norway and other countries have successively proposed the “Entrepreneurship Pioneer Plan”, the “Action Plan to Enhance School Entrepreneurship Education”, and the “Entrepreneurship Education Strategic Plan” to guide and strengthen entrepreneurship education. The courses such as “Fundamentals of Management and Entrepreneurship” and “New Technology Entrepreneurship” offered by Baisan Business School in the United States are widely recognized by society. Stanford University offers comprehensive interdisciplinary courses that greatly meet the learning needs of science students from different fields, such as humanities, engineering, and science. Students are highly motivated to participate. As of 2021, nearly 2000 universities in the United States, the United Kingdom, and Japan have offered over 2400 online entrepreneurship courses. Online courses from 50 world-class universities, including Harvard University, Stanford Uni-

versity, and the University of California, Los Angeles, provide high-quality online learning resources for global innovation and entrepreneurship.

Domestic innovation and entrepreneurship education is steadily advancing, and has achieved gratifying results in policy, theory, and curriculum construction. In May 2010, the Ministry of Education issued the “Opinions on Vigorously Promoting Innovation and Entrepreneurship Education in Higher Education Institutions and Autonomous Entrepreneurship Work for College Students”, requiring universities to carry out innovation and entrepreneurship education; In 2015, Premier Li Keqiang proposed “mass entrepreneurship and innovation” in a government report. Subsequently, the General Office of the State Council issued the “Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Higher Education Institutions” to promote innovation and entrepreneurship education in universities: Integrating innovation and entrepreneurship education throughout the entire process of talent cultivation in universities, strengthening the construction of the teaching staff for innovation and entrepreneurship education in universities, constructing an efficient entrepreneurship education ecosystem, and creating a multi-level innovation and entrepreneurship education curriculum system. Integrating the concept of entrepreneurship education into various links such as general education courses, professional foundation courses, and professional practice courses [3], with students’ learning and development as the center [4], forming a deep integration of innovation and entrepreneurship education and professional education. With the rapid development of network technology and mobile 5G, innovation and entrepreneurship education in universities is equipped with online platforms to build a curriculum construction and service system that meets the requirements of the new era. Information technology is used to integrate professional courses with innovation and entrepreneurship education [5], improving the efficiency of innovation and entrepreneurship education dissemination and implementation [6].

In summary, domestic and foreign universities have long recognized that conducting innovation and entrepreneurship education through online courses is a trend. At present, many domestic universities offer entrepreneurship education courses and professional education courses that are independent, non-interference, and lack of connection, which to some extent leads to a waste of teaching resources and is not conducive to the cultivation of innovative and entrepreneurial talents in universities, becoming a bottleneck that restricts the cultivation of “double innovation” talents. In the information age, taking the construction of online courses as the starting point, integrating innovation and entrepreneurship education into the entire process of professional teaching, and constructing high-quality online courses that integrate innovation and entrepreneurship education with professional education, is an important measure for universities in China to promote innovation and entrepreneurship education reform.

3. The Realistic Dilemma of Online Course Construction for Innovation and Entrepreneurship Education in Universities

3.1. The Quantity and Quality of Online Courses for Innovation and Entrepreneurship Education in Universities Are Poor, Which Negatively Affects the Effectiveness of Online Teaching

Innovation and entrepreneurship education is aimed at cultivating talents with basic entrepreneurial qualities and innovative personalities. It is not only aimed at cultivating the entrepreneurial awareness, spirit, and ability of students in school, but also aimed at the entire society, targeting those who plan to start a business, have already started a business, and have successfully started a business. It is aimed at cultivating innovative thinking and training entrepreneurial abilities in stages and levels. Whether the online courses of innovation and entrepreneurship education in universities can arouse students' interest in learning, maintain their learning motivation, and whether students can gain and think depends on the quality of online teaching resources. Building high-quality online courses for innovation and entrepreneurship education in universities often relies on teachers' understanding and mastery of online teaching.

The construction and utilization of online courses for innovation and entrepreneurship education by university teachers in non-traditional teaching modes have put forward new requirements for teachers' abilities in all aspects. The online teaching of innovation and entrepreneurship is relatively complex, which requires teachers to have certain abilities in innovating online teaching methods, designing online teaching content, creating online teaching resources, and operating online teaching resources. Teachers need to record clear online teaching resources for innovation and entrepreneurship before class, and be familiar with the operating methods of online teaching platforms to ensure the smooth implementation of high-quality innovation and entrepreneurship online teaching; in the process of online teaching, teachers should fully utilize the advantages of online teaching resources that combine graphics, text, audio, and video to make up for the limitations of offline teaching; in terms of teaching skills, teachers can appropriately include some roadshow case videos when explaining innovation and entrepreneurship, so that students can watch and understand the core principles of innovation and entrepreneurship; in terms of theoretical knowledge teaching, teachers can use online teaching platforms to release on-site tests of innovation and entrepreneurship knowledge, requiring students to answer within the specified time. Through systematic statistics, teachers receive timely feedback from students, making online innovation and entrepreneurship teaching more accurate and efficient. Online innovation and entrepreneurship education requires teachers to design teaching content that is different from offline and innovate teaching methods that are superior to offline. Otherwise, simply reproducing the content and methods of offline teaching in online courses of in-

novation and entrepreneurship education is not of great significance. The online course of innovation and entrepreneurship education in universities is a teaching resource that deeply integrates information technology and innovation and entrepreneurship education. Only by continuously improving the abilities and levels of online teaching can teachers build high-quality online courses of innovation and entrepreneurship education in universities. Currently, we are in a period of digital transformation, and we still face many challenges in building high-quality online courses for innovation and entrepreneurship education in universities.

3.2. The User Diversion of Online Courses for Innovation and Entrepreneurship Education in Universities Has Resulted in a Large Number of Online Teaching Ruins

Online teaching is ubiquitous learning achieved through various means, such as online and offline, through the use of network organization by teachers and the reception of students at terminals. Network ubiquity, the quality of online courses, and students' learning interests all affect user traffic. The online teaching platform has the characteristics of large-scale, open, and online, which can provide teaching content, learning resources, communication space, theme practice, self-testing and evaluation without time and space constraints [7]. Students can learn, communicate, and interact according to their own needs anytime and anywhere. The online course of innovation and entrepreneurship education in universities is not only a breakthrough in time and space, but also a process of gathering disciplinary advantages, jointly building and sharing resources, and guiding students to learn in a diversified way between schools. In the process of building online courses for innovation and entrepreneurship education in universities, teachers can integrate a massive amount of innovation and entrepreneurship pictures, audio, and video resources on the network, stimulate students' interest in learning innovation and entrepreneurship knowledge, enable them to learn more rich theoretical knowledge and practical skills of innovation and entrepreneurship, and fully utilize students' subjective initiative.

Currently, with the construction and use of first-class courses (also known as "golden courses"), the "online & offline" hybrid teaching of innovation and entrepreneurship education in universities has become the norm. At the same time, the phenomenon of learner diversion based on online courses is much more common than face-to-face classroom teaching, which undoubtedly affects the effectiveness of online courses for innovation and entrepreneurship education. Diversion will reduce the number of learners in online courses of innovation and entrepreneurship education in universities, and teachers' enthusiasm for using online courses of innovation and entrepreneurship education in universities will also decrease, ultimately leading to the problem of online courses of innovation and entrepreneurship education being shelved in universities. Espe-

cially during the post-pandemic period, as teachers and students return to offline classrooms, the number of visits to online teaching resources has plummeted, and a large number of online course resources are at risk of becoming digital ruins [8]. Although online courses for innovation and entrepreneurship education in universities can break through time and space limitations and provide many conveniences for innovation and entrepreneurship teaching, due to the accumulation of resources (denominators) over time and the limited number of online learners (numerators), the utilization rate of online course resources has decreased. At the same time, the increasing number of online courses in many universities may bury high-quality online courses on innovation and entrepreneurship education in a vast amount of online information, increasing the difficulty for teachers and students to explore high-quality online courses on innovation and entrepreneurship education in universities, and posing a huge challenge to the co-construction and sharing of high-quality resources.

3.3. The Uneven Distribution of Online Courses for Innovation and Entrepreneurship Education in Universities Cannot Guarantee Fairness in Online Teaching

Based on the two batches of national first-class undergraduate courses that have been announced so far, there are significant differences in the distribution of first-class courses in innovation and entrepreneurship education among universities in different regions. The balanced distribution of high-quality online courses for innovation and entrepreneurship education in universities is the driving force for promoting the fair development of innovation and entrepreneurship education in different regions and the continuous promotion of innovation and entrepreneurship education in different universities. Against the backdrop of first-class courses, universities across the country have established a large number of online courses for innovation and entrepreneurship education, generating a strong teaching team for innovation and entrepreneurship, and forming unique teaching methods, concepts, and technical expertise for innovation and entrepreneurship. In the process of innovation and entrepreneurship education and teaching in universities, the use of high-quality online teaching resources by teachers can help improve the quality of innovation and entrepreneurship teaching in our school. Online courses for innovation and entrepreneurship education in universities with clustering advantages and breakthroughs in time and space constraints can provide high-quality innovation and entrepreneurship teaching resources to schools in remote areas, helping to solve the problem of weak or insufficient teaching staff for innovation and entrepreneurship; Utilize high-quality online courses on innovation and entrepreneurship education in universities to help students in remote areas understand and recognize innovation and entrepreneurship knowledge, enhance their interest in learning innovation and entrepreneurship, and increase their enthusiasm to participate in innovation and entrepreneurship. During the digital transformation period, the ef-

fectiveness of innovation and entrepreneurship education in schools is largely influenced by the quality of online innovation and entrepreneurship teaching resources. In addition, there are significant differences in the economic development level and innovation and entrepreneurship teacher strength of schools in different regions. How to ensure the quality, sustainable development, and balanced distribution of online courses in innovation and entrepreneurship education in universities is a question worth considering for innovation and entrepreneurship teachers.

The online course of innovation and entrepreneurship education in universities is a product of the deep integration of information technology and innovation and entrepreneurship teaching. With the help of high-quality online courses of innovation and entrepreneurship education in universities, developed regions with higher levels of economic development can be achieved, so the level of informatization is generally higher than that of schools in underdeveloped regions. The proportion of high-level online teaching resources in the central and western regions is significantly lower than that in the eastern regions, and the construction effect in the central and western regions is significantly different from that in the economically developed eastern regions. A strong faculty is the guarantee for building high-quality online teaching resources [9]. Due to economic and talent constraints in remote areas, the quality of innovation and entrepreneurship education is relatively low, and the gap in online courses for innovation and entrepreneurship education in universities is gradually widening.

3.4. The Transmission of Online Courses for Innovation and Entrepreneurship Education in Universities Is Sluggish, Making It Difficult to Meet the Needs of Online Teaching

Network stuttering is the most common problem encountered by college students in online learning, which directly affects learning effectiveness [10]. The attribution of online teaching network stagnation is not only related to the factors of online teaching resources and equipment, but also often influenced by network bandwidth. In the offline classroom, teachers are the leaders in imparting innovation and entrepreneurship knowledge and practical skills. Utilizing online teaching resources for innovation and entrepreneurship education requires transmission of resources, and network bandwidth is the main factor affecting transmission effectiveness.

In the process of utilizing online courses for innovation and entrepreneurship education, firstly, due to the differences in the network environment between teachers and students, the phenomenon of network lag frequently occurs, and online teaching will fall into an awkward situation of being at a loss, inevitably delaying the teaching progress and affecting students' learning enthusiasm. Secondly, in order to ensure the order of online teaching, students usually provide feedback in the form of text in the classroom, while teachers communicate with students through electronic screens. Network lag delays timely feedback from

students, leading to teachers needing to repeat explanations and demonstrations, seriously affecting the effectiveness of online teaching for innovation and entrepreneurship. In addition, when online teaching of innovation and entrepreneurship encounters network congestion, it often requires teachers and students to spend time debugging and waiting, which can to some extent distract students' attention. Therefore, if the online courses of innovation and entrepreneurship education in universities encounter unstable network operation, it will not only affect the teaching effectiveness of teachers, but also affect students' learning interests, making it difficult to meet the needs of online teaching.

4. The Breakthrough Path of Online Course Construction for Innovation and Entrepreneurship Education in Universities

4.1. Pay Attention to the Integration, Development, and Utilization of Online Courses for Innovation and Entrepreneurship Education in Universities, and Improve the Quality of Resources

The quality of online courses for innovation and entrepreneurship education in universities is the key to ensuring their continuous development and effective utilization. The main ways to improve the quality of online course resources include the integration, development, design, and application of course resources [11]. University innovation and entrepreneurship teachers should collaborate with each other and jointly build high-quality online innovation and entrepreneurship teaching resources, breaking through the constraints of "quantity without quality". On the one hand, teaching team members should combine the theoretical teaching tasks and practical skill points of innovation and entrepreneurship in our school, widely collect and organize corresponding innovation and entrepreneurship teaching materials, and also sort and classify them to provide support for the construction of online courses for innovation and entrepreneurship education in universities, and improve the quality of online teaching resources. Actively carry out cooperation between schools, starting from cultivating students' fun, physique, willpower, personality, and other aspects, develop and design online teaching resources for innovation and entrepreneurship, and provide support for students' comprehensive development with online course resources for innovation and entrepreneurship. On the other hand, teachers should highlight the practical application effect of online teaching resources and improve the quality of online teaching resources for innovation and entrepreneurship based on the actual situation of the school, in accordance with the requirements of real-time and efficient online course teaching for innovation and entrepreneurship. The online courses of innovation and entrepreneurship education in universities have the following characteristics: the Internet has moved the innovation and entrepreneurship teaching ecology from closed to open, students' learning methods of innovation and entrepreneurship from single to di-

verse, and teachers' teaching methods of innovation and entrepreneurship from indoctrination to interaction [12]. Innovation and entrepreneurship teachers should keep up with the times, use online teaching resources for innovation and entrepreneurship in a planned and targeted manner, enhance the value of online courses for innovation and entrepreneurship education in talent cultivation in universities, and continuously improve the quality of online teaching resources for innovation and entrepreneurship [13].

4.2. Utilize the Advantages of Co-Construction and Sharing of Online Courses for Innovation and Entrepreneurship Education in Universities to Reduce the Waste of Resources

The co-construction and sharing of online courses for innovation and entrepreneurship education in universities can help reform the supply mode of idle resources, improve the efficiency of utilizing online resources for innovation and entrepreneurship, and revitalize idle online resources for innovation and entrepreneurship. Therefore, solving the problem of online innovation and entrepreneurship teaching resource ruins can be explored from the perspective of co-construction and sharing [14]. The mechanism for sharing and co-constructing online teaching resources should be constructed from four aspects: the state, government, schools, and teachers [14]. Firstly, in the process of jointly building and sharing online teaching resources, it is inevitable that issues of intellectual property protection will arise. In the face of issues such as replication and piracy of online teaching resources for innovation and entrepreneurship, the country should establish a standardized sharing guarantee mechanism, including policy guarantee, organizational guarantee, institutional guarantee, etc. Secondly, under the mechanism of government macroeconomic regulation, schools need to contribute recognized online teaching resources for innovation and entrepreneurship to the resource pool, in order to have the right to obtain online teaching resources for innovation and entrepreneurship from other schools from the resource pool, thus creating a virtuous cycle of "access"- "acquisition"- "re-access" [14]. In addition, when exchanging high-quality resources between schools, an "Exchange and Use Agreement" should be signed to protect the interests of both parties. Thirdly, standardization is a prerequisite for the sharing of online innovation and entrepreneurship teaching resources. Schools should establish standardized resource database data structures in accordance with the innovation and entrepreneurship teaching syllabus and the "Technical Specifications for Online Teaching Resource Construction". At the same time, schools should encourage teachers to seriously study the technical specifications for online teaching resource construction and actively improve their ability to build innovation and entrepreneurship online resources. Fourthly, innovation and entrepreneurship teachers can screen and organize high-quality innovation and entrepreneurship teaching resources on the Internet, laying a solid foundation for the joint construction and sharing of online courses for innovation and entrepre-

neurship education in universities.

4.3. Realize the Unity of Fairness and Efficiency in Online Courses of Innovation and Entrepreneurship Education in Universities, and Promote Resource Balance

The previous epidemic prevention and control period posed a serious challenge to the balanced allocation of online teaching resources in universities. The on-line teaching level and economic development level of universities in the eastern and western regions have obvious advantages. It is necessary to achieve the organic unity of fairness and efficiency in information resource allocation through adjustments from both the government and the market [15]. On the one hand, to address the issue of fair allocation of information resources, it is necessary to strengthen the government's macro regulation of information resource allocation. For example, the government should attach importance to the construction of online courses for innovation and entrepreneurship education in universities in the western region, increase funding investment, and promote the popularization of online teaching projects, so that students from different regions have a fair opportunity to enjoy online teaching resources for innovation and entrepreneurship, and narrow the gap in the level of innovation and entrepreneurship education. The government should also improve policies and regulations related to innovation and entrepreneurship education in universities, and reduce the regional imbalance of online courses for innovation and entrepreneurship education in universities through the role of policies and regulations. In the process of sharing online courses on innovation and entrepreneurship education in universities, effective coordination of conflicts of interest between universities is achieved through policies and regulations. On the other hand, to address the efficiency issue of information resource allocation, it is necessary to adjust the allocation of information resources through market mechanisms. Firstly, schools and teachers need to adjust the direction and scale of online course construction for innovation and entrepreneurship education in universities according to the needs of the innovation and entrepreneurship online teaching market, in order to maximize students' learning of high-quality online course resources for innovation and entrepreneurship education in universities. At the same time, in the process of building online teaching resources for sports, schools should carefully consider the operation of online courses for innovation and entrepreneurship education in universities, to avoid the waste of human, financial, and material resources caused by the mismatch between the constructed resources and the needs of the school. Secondly, schools need to strengthen their awareness of free competition, which is the driving force behind the effective allocation of online courses for innovation and entrepreneurship education in universities. Through free competition, the builders of online courses for innovation and entrepreneurship education in universities can minimize the cost of investment and achieve maximum output, thereby improving the efficiency of online course construction for innovation and entrepreneurship education in universities and achieving optimal re-

source allocation.

4.4. Promote the Collaborative Development of Urban and University Innovation and Entrepreneurship Education Online Courses, and Improve the Network of Resources

Currently, with the rapid development of information technology and the Internet, it has entered the era of digital transformation and 5G communication. However, China has a vast territory, with uneven information technology levels in the eastern and western regions, as well as in urban and rural areas. The network coverage and bandwidth are still uneven. Due to network congestion, students' experience of learning online courses on innovation and entrepreneurship education will be greatly reduced. Collaborative development is an effective method and path for online teaching. Building an online teaching action framework from the perspective of communication platforms can effectively solve the problem of network congestion [16]. To ensure a smooth network environment for the school, we request online teaching platform providers to expand network capacity, and operators to provide cloud resources and broadband [16]. The school has established an online teaching support team to handle network congestion in real-time, ensuring the smooth implementation of online innovation and entrepreneurship teaching. The school is responsible for arranging professional computer teachers to handle network issues within the school. When network congestion occurs during online innovation and entrepreneurship teaching, the first step is to analyze the source of network congestion [17]. If it is a network problem on the teacher's end, it can be considered to provide high-speed network Wi-Fi for the teacher's teaching environment and upgrade the teacher's teaching computer configuration for free. If it is a network problem on the student end, the school should arrange dedicated staff to record the online teaching of innovation and entrepreneurship education in universities. After class, the replay of the course should be shared on WeChat or QQ groups to ensure the progress of students' learning.

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Conflicts of Interest

The authors declare no conflicts of interest.

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