Exploration of College Innovation and Entrepreneurship Education from the View of Knowledge Innovation

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ABSTRACT. With the changes in China's demand for innovation, the State Council, the Ministry of Education, the National Science and Technology Administration, and other departments have issued several proposals and opinions, and colleges and universities should actively adjust the policies of innovation and entrepreneurship education to respond to the call. Colleges and universities implement innovation and entrepreneurship-related systems, but the effect is unsatisfactory. Its essence does not lie in the determination and attitude of colleges and universities, but in the formulation of the program system itself that is not close to reality and has not mastered scientific methods. As a result, there are many problems in colleges and universities, such as scattered scientific research resources, low quality of scientific and technological achievements, low patent conversion rate, and slow progress in the integration of production and education. After observing from the perspective of knowledge innovation, it proposes to strengthen the reform of ideological education and training, strengthen the research on quality standards of innovation and entrepreneurship, and deepen the integration of production and education, to solve the current situation of difficult innovation and entrepreneurship in colleges and universities.

1 INTRODUCTION

With the advancement of the information age, the transformation and upgrading of the industrial structure and the changes in the needs of economic development have put forward new requirements for the innovation and practicability of applied talents. With the vigorous development of society, improving students' adaptability to better integrate into and serve society is also a hot topic in colleges and universities. Due to the limitations and incompatibility of colleges and universities for the development of talent training programs, it is necessary to change them to synchronize with the needs of today's social productivity, benchmark the current social development situation, and focus on stimulating students' subjective initiative. The construction and development of innovation teams in colleges and universities is a long way to go. It needs to keep pace with the times and conduct continuous and in-depth research with the development of the times.[1]In 2019, the "National Vocational Education Reform Implementation Plan" issued by the State Council proposed to deepen the reform of the innovative education system in colleges and universities, promote and encourage the integration of resources from enterprises and all sectors of society into colleges and universities, and pass advanced science and technology and innovative ideas to students. Innovative and practical applied talents. The "Several Opinions on Improving the Quality of Patents in Colleges and Universities and Promoting the Transformation and Application" issued in 2020 pointed out that the tasks of colleges and universities regarding the intellectual property system are to improve the intellectual property management system, carry out patent application evaluation, and strengthen the construction of professional institutions and talent teams, and optimize the policy and institutional system. This urges colleges and universities to attach importance to the new form of industry-education joint research and the integration of industry and education. Teachers, as the main force and vanguard of education reform, can only greatly promote colleges and universities by maintaining their innovation and scientific research quality at the forefront of society. Reform and implementation of innovation and entrepreneurship education. Colleges and universities should integrate educational innovation, knowledge innovation, technological innovation, and other requirements into the teaching management system, and accelerate the formulation of innovation quality evaluation standards and whole-process control systems that combine their expertise and characteristics.

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2 CONNOTATION OF KNOWLEDGE INNOVATION

2.1 Definition and development background

Knowledge innovation is the discovery, invention, creation， or application of some new knowledge for the first time in the world. What is "new" is not new in the traditional sense of time and geography, but new in the sense of intellectual property [2]. Knowledge innovation has eight characteristics, including originality, autonomy, and openness, and includes four processes, including the integration of tacit knowledge, the explication of tacit knowledge, the dominance of explicit knowledge, and the combination of explicit knowledge. There are many general laws including exploration, innovation, flexibility, and randomness. Knowledge innovation has a unique management model, in which personnel management is an important link, and multiple management methods such as environmental management and project management are carried out simultaneously. A product that people understand and use. And knowledge innovation is the "tide-setter" born in the era of a knowledge economy. Throughout the history of human development, it can be roughly divided into three major eras: natural economy, industrial economy， and knowledge economy. Leading the era of the knowledge economy are those countries, nations, and even individuals who possess cutting-edge knowledge and have a leading position in knowledge innovation. The era of knowledge economy requires a person to attach importance to both knowledge and ability, not only to be able to communicate with tools, but also to interact in heterogeneous communities, and to have the ability to act autonomously. My country's innovation-driven development strategy promotes the optimization and integration of social innovation resources and requires universities to make new changes in patent quality and patent transformation to adapt to the supply-side structural reform(starting from improving the quality of patents, use the method of university reform to promote the adjustment of innovation structure, correct the existing problems of "shoddy" and "focus on quantity", expand effective patent output, and improve the adaptability of supply structure to changes in demand and flexibility).

2.2 Innovation and entrepreneurship are located in colleges and universities

Innovation and entrepreneurship education are inevitable requirements to promote the growth of college students. Relevant colleges and universities carry out innovation and entrepreneurship education precisely because they know in advance that in the future talent competition, innovative thinking and innovative ability will become the core competitiveness of future college students. According to the ability requirements of each enterprise department for fresh graduates, contemporary college students should not only have a solid theoretical foundation but also have innovative thinking. In this context of recruitment, high-quality and innovative graduates will become the hot talents that enterprises need for recruitment. To have innovative thinking and innovative ability, innovation and entrepreneurship education is necessary to cultivate the innovative quality of college students. The initiative of various colleges and universities to actively carry out innovation and entrepreneurship education is precisely to cultivate the innovative quality of college students and improve their practical ability. Contemporary college students actively participate in and devote themselves to the cause of socialist modernization, constantly improve their ability in innovation and entrepreneurship, and become the backbone of the country. All colleges and universities should strengthen innovation and entrepreneurship education, to a certain extent, help college students to master entrepreneurial methods, enhance their resistance to setbacks, and accumulate relevant practical experience and growth-related experience.

Carrying out innovation and entrepreneurship education is not only of great significance to the individual aspects of college students but at the same time, it also plays a certain role in promoting the development of the country. Actively carrying out innovation and entrepreneurship education in colleges and universities is an important measure to respond to the national call, and it is also an inevitable requirement for building an innovative country. This measure can cultivate high-quality innovative talents that can effectively promote my country's innovation-driven development strategy, and also accelerate the development process of building my country's innovative country. At the same time, carrying out innovation and entrepreneurship education is conducive to alleviating the employment pressure in the current society and is in line with the current global economic development environment.

3 COMPARISON OF INTELLECTUAL PROPERTY STATUS AT HOME AND ABROAD

3.1 Analysis of intellectual property quantity in international mainstream countries

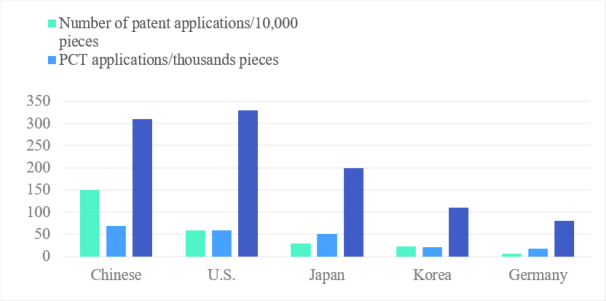

Fig. 1. Global innovation powerhouses in 2020【owner-draw】

The total number of global patent applications in 2020 was 3,276,700. The cumulative number of patent applications in the United States is 590,000, accounting for 18.2% of the total global patent applications. The cumulative number of patent applications in Japan is 280,000, accounting for 8.8%. South Korea has 220,000, accounting

for 6.90%, and the European Patent Office has accumulated 180,000 patent applications, accounting for 5.5%. My country has become the country with the largest number of applications in 2020 with 1.49 million applications. In 2020, the number of valid patents worldwide is about 15.9 million, with the United States ranking first with about 3.3 million, China with about 3.1 million, and Japan with 2 million. It is worth reflecting that the number of applications in my country in 2020 far exceeds that of other mainstream countries, but the proportion of effective patents is far lower than that of countries such as Europe, America, and Japan. This intuitively reflects that the number of innovations has reached saturation, and changes in innovation needs have forced the transformation of innovative ideas, from pursuing quantity and ignoring quality to pursuing quality while maintaining a high number of patent applications. The following figure includes the innovation situation of the four innovative powerhouses.

3.2 Current situation of intellectual property education in domestic universities

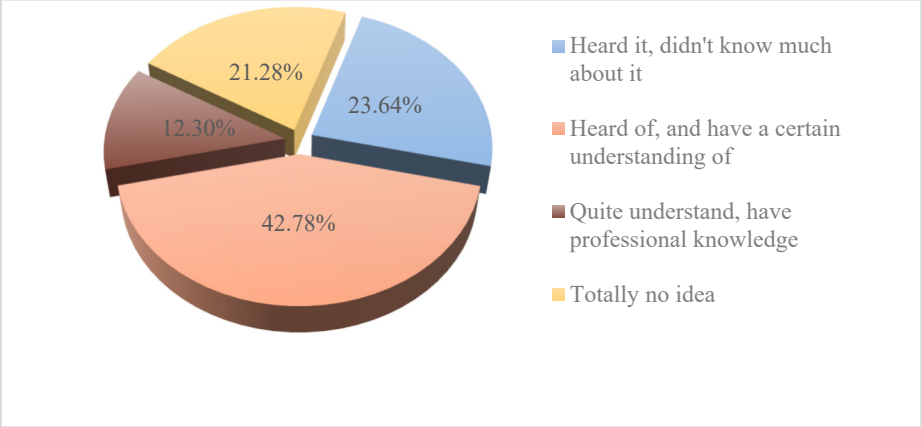

Fig. 2. University students' understanding of intellectual property-related knowledge【owner-draw】

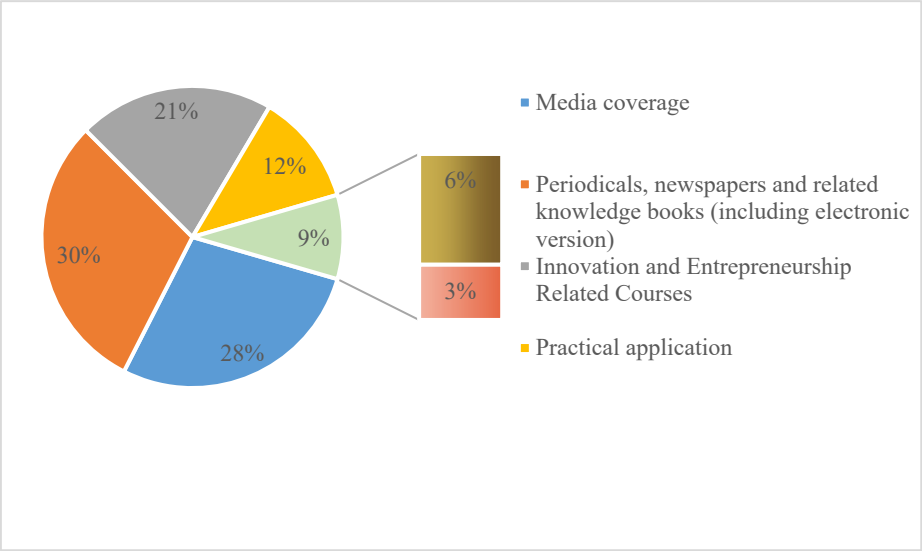

Fig. 3. Ways for college students to understand intellectual property-related knowledge【owner-draw】

Innovation and entrepreneurship education play a pivotal role in improving the comprehensive quality of college students in the new era. Although most colleges and universities are generally aware of the importance of innovation and entrepreneurship education, they have begun to actively carry out innovation and entrepreneurship education. However, due to the influence of many factors, the development of specific work has repeatedly hit a wall, and the expected results have not been achieved. One of the fundamental reasons for the difficulty in implementing innovation and entrepreneurship education is that colleges and universities lack intellectual property management awareness and incomplete management systems, resulting in their weak intellectual property capabilities. According to statistical surveys, some colleges and universities only implement incentive policies for relevant scientific research achievements, but the management system for patent maintenance and industrial transformation is relatively lacking. Intellectual property management in colleges and universities is at the leadership level and the specific managerial level. At the leadership level, most colleges and universities pay more attention to the protection of intellectual property rights. And with the progress of the times, the school leaders' awareness of intellectual property rights has gradually increased. However, through the investigation, we also found the problems exposed as follows: liberal arts colleges and universities generally do not

have corresponding management departments, while science and engineering colleges and universities have intellectual property management departments, but their relevant personnel has not received professional knowledge education. Not to mention, complete the protection of intellectual property rights efficiently and with high quality. In order to explore the current situation and existing problems of intellectual property rights for innovation and entrepreneurship in colleges and universities, we conducted relevant social practice and questionnaire surveys. It can be seen from Figure 2 that 42.78% of college students have heard about intellectual property-related knowledge and have a certain understanding. However, it is quite understandable that college students with professional knowledge only account for 12.3% of the total. According to the data in Figure 3, it can be seen that most of the students have learned knowledge through media reports, periodicals, newspapers, and related knowledge books (including electronic versions). Intellectual property-related knowledge, only 21% of the students learned about intellectual property-related knowledge through innovation and entrepreneurship courses offered by colleges and universities. This shows that the curriculum system related to innovation and entrepreneurship in colleges and universities is very unreasonable. There should be more ways for students to understand intellectual property knowledge, but the proportion of practical experience is still relatively small. Colleges and universities should also guide students to talk about innovative thinking and apply methods to practical exploration. Strengthen students' innovative ability and enhance the school's innovative atmosphere.

4 THINKING ON THE APPLICATION PATH OF KNOWLEDGE INNOVATION

4.1 Improve the awareness of innovation and entrepreneurship cultivation, and support the education mode reform

Innovative forms of teaching in related subjects are a challenge for most teachers. Because college teachers tend more to standardize teaching and complete related scientific research work in the fields they are familiar with. Teachers will choose a single discipline to carry out scientific research work internally and undertake the research tasks within the discipline that they are familiar with. According to the investigation, even if some universities advocate and carry out interdisciplinary team talent construction, but few results. Strange to the field so that the enthusiasm shown in the activities is very low, they advocate that single-discipline scientific research tasks are much lower than the risk value of interdisciplinary scientific research tasks. The College stage is the golden stage in their life, and if students want to be shaped into compound talents, this makes demands on the education they receive. Teachers should have an interdisciplinary vision and the development of interdisciplinary ability. Under this education model of innovation and entrepreneurship, the knowledge that students receive will not only be limited to a single subject, changing the limitation of inherent thinking. Traditional education focuses on the cultivation of students' fixed thinking, which makes students inevitably labeled as "rigid mechanical" after entering the workplace, and unable to adapt to the complex and changeable social environment. Therefore, focusing on cultivating students 'innovative ideas is an inevitable choice for universities to improve students' ability in responding to the demands of enterprises [3].

The intellectual property strategy of universities involves multiple internal functional departments, so it is the only way to set up a special organization for systematic management. In response to the call, many universities have set up special innovation and entrepreneurship colleges to stimulate students' innovative thinking and set up clear incentive mechanisms to encourage more college students to participate in scientific research projects. Operation mode roughly includes two types, one is just staying in the teaching level, another mode is with various functions of entity college, not only have professional innovation entrepreneurship course teaching and training and training base and incubation base, provide them to participate in the competition, also encourage interested students to brainstorm, put forward innovative ideas[4].

4.2 Strengthen the research on the quality standards of innovation and entrepreneurship in colleges and universities

Most of the targets of innovation in universities are competitions or scientific research projects, and these unified results will be accepted in the form of papers and patents. However, the internal driving forces of innovation in universities are insufficient. Two conclusions can be obtained by monitoring each management link from the perspective of knowledge innovation. First, from the perspective of the project results, the project topic has become the index of assessment and evaluation, because its level is clear, quantifiable statistics, and the index conditions are easy to meet, which has a normal trend in the academic environment of the academic official standard. Institute of the history of natural science of Chinese Academy of Sciences researcher YiDong Liu puts forward the scholar promotion, scientific research, university ranking, subject ranking only the output of knowledge statistical evaluation, project conclusion as knowledge results evaluation, various funds, the national and provincial project itself is not as output results. This fundamentally means that although there is a large amount of investment in major projects or projects of universities, most of their terminal results are nothing, encouraging original and original results. Second, from the perspective of environmental management, the current scientific research direction of universities is relatively scattered, and the resource allocation is fragmented. There are even several research teams in a college that have completely different research directions and are generally too divergent. As a result, of the diversion of re-

search energy, the quality of innovation has decreased significantly, and the effective patent implementation rate in universities is only 13.8%. Colleges and universities should combine their advantages to carry out targeted innovation research, do a good job in controlling scientific research progress, and interdisciplinary disciplines, analyze research prospects, vigorously develop national key direction research, strengthen patent navigation and patent layout, and develop a set of patent quality evaluation and control plans that meet their own development needs.

Innovation direction, scientific and technological achievements in colleges and universities for investment as the main way of achievement transformation, can complete scientific and technological achievements unit rich advantages of scientific and technological resources, scientific and technological achievements of research and development advantages and entrepreneurs are keen to market demand advantage, through common shares closely together, form the benefit sharing, risk sharing economic community. Colleges and universities should actively guide students to buy shares and incubate science and technology companies with patent achievements, optimize the output of scientific research projects to maximize resource allocation, improve the success rate of the transformation of scientific and technological achievements, to adapt to the development of patents towards high quality.

4.3 Deepen the overall environment of the integration of industry and education, and promote the new three-way management system

At present, with the formulation of serialized policies in China, universities have made an active practice in the integration of industry and education. However, due to the differences in regions, enterprise distribution, and educational resources. The industrial integration of most universities is still in the preliminary stage of exploration. Due to the past, the process of university-enterprise cooperation is mostly enterprises and university teachers cooperative research binary, caused when under the unified management of colleges and universities, joined as the regulatory situation of the most teachers still adopt the method of the past, the attitude between university administrators and teachers differentiation, the fusion propulsion degree is different, difficult to control the whole. Colleges and universities have studied the fusion construction mode, project traction mode, and talent education mode, such as a variety of successful modes, academic research on fusion more focused on fusion cooperation mode, cooperation content, constraints, and fusion mechanism, etc. It is very necessary for the early research and beneficial to our comprehensive, multi-angle to grasp the basic situation of the fusion[5]. Only when it is clear that teachers are the core transition of the integration of industry and education, should we encourage teachers, stimulate their internal motivation, actively promote further development of the integration mode of industry and education, and find out an effective, long-term and efficient cooperation system. At the same time, colleges and universities are also required to carry out targeted concept change, organizational adjustment, and policy guidance. Universities, teachers, and enterprises will gather together, no longer simply stimulate internal motivation by administrative means, uniformly organize teachers into enterprises, always ensure that the teacher teams have the latest scientific research technology, top-down feedback to the innovation team, steadily and efficiently achieve high-quality patent, and improve the patent conversion rate.

5 CONCLUSION

With the continuous enhancement of my country's comprehensive strength, the country pays more and more attention to cultivating high-quality talents with innovative abilities. As the cradle of talent training, colleges and universities should actively respond to the call of the state and constantly explore a path of innovation and entrepreneurship suitable for implementation in colleges and universities. The problems exposed in the current situation of innovation and entrepreneurship education can be effectively solved through theoretical training education reform, strengthening institutional system research, and deepening the integration of production and education. In addition, colleges and universities should keep up with The Times to update the concept of innovation and entrepreneurship education, constantly optimize the existing education model, optimize the teaching staff, improve the curriculum system, and teach students in accordance with their aptitude. It will be the development direction of innovation and entrepreneurship education in the future to actively build a quality evaluation system of innovation and entrepreneurship education and promote multi-disciplinary mutual integration and the deep integration of information technology. The implementation of innovation and entrepreneurship education in colleges and universities cannot be achieved overnight. It is a tough battle that requires the long-term joint efforts of college teachers, students, and the close cooperation of relevant departments. Only under innovation and entrepreneurship education can we cultivate batches of high-quality innovative talents, thus promoting the process of building an innovative country.

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