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Under the Background of New Engineering, New Way Exploration to Enhance the Innovation Ability of University Students

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Abstract: *With the continuous deepening of the innovation-driven development strategy and the arrival of the fourth industrial revolution centered on information technology and intelligent manufacturing, my country's industry is developing towards intelligence, informatization and servitizatian. The economic development has also entered a new period. At Present, Innovative knowledge occupies a dominant position in knowledge, and the creative industry has gradually become the leading industry. In this context, the development of the new economy and emerging industries have also changed the requirements for the knowledge system and ability of talents. Under the consensus of the "new engineering", colleges and universities are actively exploring how to improve the awareness and ability of innovation and entrepreneurship of college students. Nowadays, with the continuous integration and development of various disciplines, intelligent manufacturing and the information industry are developing rapidly. Based on "intelligent robots", this article explores a new model for improving college students' innovation and entrepreneurship capabilities.*

Keywords: *Strategy-Driven Development, College Students, Innovation and Entrepreneurship, Intelligent Robots, New Engineering*

1. Introduction

With the rapid development of social technology and economy, emerging technologies such as artificial intelligence, big data, and cloud computing have begun to become active factors that promote industrial development and production capacity transformation, and gradually occupy a dominant position. The face of my country's industry has also undergone tremendous changes. The application of high-tech in industrial production has become more and more extensive, which has stimulated a number of emerging industries such as smart robots, Internet+, and smart home. At the same time, industrial development and economic development complement each other, Promote each other [1].Economic development has entered the "new economy" era characterized by innovative knowledge as the leading knowledge and creative industries as the leading industry. The new industrial development situation and the new economic era have put forward unprecedented requirements on the knowledge structure of talents and the awareness and ability of innovation and entrepreneurship. Colleges and universities are responsible for cultivating high-quality talents. In terms of talent cultivation, they must also make corresponding changes in accordance with the development of the times, and provide a large number of outstanding engineering and technical talents for socialist modernization.

Western developed countries such as Europe and the United States have long been aware of the mutual promotion of industrial development and higher engineering education, and have formed a complete innovation and entrepreneurship training system, which guarantees college students to carry out innovative and entrepreneurial practice activities from policy orientation, training programs, financial support. [2]

My country started relatively late in this regard. At present, major colleges and universities are in line with innovation-driven development strategies and double-creation strategies, and are actively exploring how to cultivate comprehensive talents with a rich knowledge structure and innovative entrepreneurial spirit and ability.

In the new era, in order to ensure the supply of talents and avoid the disconnection between talent training and social development, my country's higher education has also stood at a new historical

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starting point. In order to promote the close connection between engineering education and industrial development and promote each other, on February 18, 2017, the Ministry of Education held a higher engineering education development strategy seminar at Fudan University to form a new engineering "Fudan Consensus", promote the integration and innovation of disciplines, and cater to the development of the times , Build a new structure of disciplines, cultivate new talents with outstanding innovation and entrepreneurship capabilities, build a new engineering system, improve the quality of higher engineering education, and realize the transformation of my country's higher engineering education from large to strong.

In the new era, in order to ensure the supply of talents and avoid the disconnection between talent training and social development, my country's higher education has also stood at a new historical starting point. In order to promote the close connection between engineering education and industrial development and promote each other, on February 18, 2017, the Ministry of Education held a higher engineering education development strategy seminar at Fudan University to form a new engineering "Fudan Consensus", promote the integration and innovation of disciplines, and cater to the development of the times , Build a new structure of disciplines, cultivate new talents with outstanding innovation and entrepreneurship capabilities, build a new engineering system, improve the quality of higher engineering education, and realize the transformation of my country's higher engineering education from large to strong.

In recent years, the machinery industry has been upgrading and transforming, gradually eliminating excess capacity and developing emerging industries. With the continuous integration of artificial intelligence, computer control, microelectronics, virtual manufacturing and other cutting-edge technologies, it has spawned cutting-edge fields such as intelligent robots and intelligent manufacturing, and strengthened the use of innovative technologies to achieve the sustainable development of the machinery industry and realize the historic change from "Made in China" to "Created in China".

Choosing "intelligent robots" as the subject of innovation and entrepreneurship for college students, introduce cutting-edge knowledge and technology into the student training mechanism, enrich students' knowledge system, strengthen practical ability, stimulate innovation and entrepreneurship enthusiasm, and improve college students' innovation and entrepreneurship capabilities.

2. The Shortcomings in the Cultivation of Innovation and Entrepreneurship for College Students in My Country at This Stage.

2.1 The university has a weak sense of innovation and entrepreneurship and lacks orientation

At present, the overall enthusiasm of innovation and entrepreneurship in our country's college students is not high, they do not have a deep understanding of the connotation of innovation and entrepreneurship, do not understand the development of their industry, have low recognition, and lack confidence in the practice of innovation and entrepreneurship.

As far as machinery majors are concerned, college students generally don’t understand the latest developments in the machinery industry, leading to a disconnect from the society. They have no goals to carry out innovative and entrepreneurial activities, and they lack plans for future career development. They are in a negative state of taking one step at a time. Because the school's old talent training mechanism can no longer meet the current development demands of students.[3].

2.2 The single knowledge system of college students leads to insufficient innovation and entrepreneurship capabilities.

The setting of college students’ courses is unreasonable, professional knowledge is outdated, knowledge system is single, it is not suitable for the current integration and development of disciplines, and the support for innovation and entrepreneurship is insufficient.

2.3 Lack of innovation and entrepreneurship practice platform

At present, most undergraduates are more engaged in professional knowledge learning, with weak practical and hands-on skills, fewer participation in innovation and entrepreneurship projects, and lack of training. Especially for engineering majors, a large number of practical links are needed to cultivate the comprehensive ability of college students.

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3. Starting from the Topic of "Intelligent Robots", Explore Ways to Improve College Students' Innovative and Entrepreneurial Capabilities

3.1 Reform the student training model and create a new type of curriculum system of "Trinity"

The point of this article is that higher education should improve the existing education model, add innovative and entrepreneurial education courses and improve teaching methods.

Beforelaunching professional courses, carry out "Innovation and Entrepreneurship Courses" education for the purpose of stimulating students' enthusiasm for innovation and entrepreneurship. The advantage of doing so is that students can take professional courses more seriously, realize the availability of professional knowledge, provide knowledge support for innovation and entrepreneurship activities[2].

The "Intelligent Robot" topic combines students' professional knowledge with cutting-edge technology, and makes students aware of the powerful functions and huge development space of industrial robots and intelligent robots, as well as the key role and wide application in industry in the new era. The innovation and entrepreneurship activities of this subject are of great significance to prepare for the creation of one's own business in the future.

3.2 Disciplinary integration helps to improve the innovation and entrepreneurship capabilities of college students

In the context of the information revolution and Industry 4.0, high-tech and various fields of industrial development continue to integrate, and new technologies derived from the cross-fusion of existing disciplines can often overcome problems and challenges that could not be solved in the past. Disciplinary boundaries have gradually blurred. Under the new industrial development situation, more comprehensive talents are needed, and talents are required to have a richer knowledge system and rapid learning ability.

Intelligent robots are the product of the integration of disciplines, involving professional fields such as mechanical design, electrical and electronic, computer control, software programming, etc.; taking "smart robots" as the subject, the following three specific implementation methods are used to improve college students' innovation and entrepreneurship capabilities:

(1) Build a modular curriculum

Modular course setting means that college students participate in the selection of courses. The course setting is divided into two modules: compulsory module and elective module.

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Modular curriculum design means that college students participate in the selection of courses. The curriculum is divided into two modules: compulsory module and elective module; the compulsory module is determined by the teacher of the college to determine the professional courses that mechanical engineering students must learn (mechanical principles, mechanical design, etc.); On the other hand, some of the elective modules are selected by students according to their own development intentions. For example, students interested in robotics can choose courses such as automatic control principles, single-chip microcomputers, and electronic circuits; for the other part, students can choose according to what they are about to participate in. Innovation and entrepreneurship topics to choose, for example, students participating in the "intelligent robot" topic can choose high-level language programming, modern control theory and other courses.[4].

The advantage of this is to ensure that students learn the basic professional knowledge, but also allow students to choose courses in a personalized way according to their own development intentions, avoiding the disconnection between curriculum settings and innovation and entrepreneurship practice activities, and better use of the services they learn.

(2) Based on "intelligent robots", integrated professional groups

Intelligent robots involve majors in mechanical engineering, electrical engineering, and control engineering, and our school, as an advanced science and engineering college, has a relatively high level. Taking advantage of the favorable congenital conditions, we can carry out related projects based on "smart robots" Professional group collection.

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On the basis of the original faculties and departments, with the subject of "intelligent robots" as the main body of practice, and to improve the innovation and entrepreneurship capabilities of college students as the orientation, the three majors involved have been formed into a professional group, and the development of innovation and entrepreneurship topics will be uniformly responsible People management, students from the three majors participate at the same time, discuss with each other, promote the enrichment of the knowledge system, and the school selects outstanding teachers from the three majors to help students carry out the innovation and entrepreneurship activities[3].

Disciplinary integration has many advantages. Firstly, it promotes the innovation and entrepreneurship of college students, and secondly promotes the good development of the three majors. At the same time, it promotes the integration of disciplines and builds a group of disciplines based on industry integration, which is in line with the development direction of higher engineering education under the background of "new engineering". And to improve students' comprehensive ability and innovation and entrepreneurship ability, in line with the expectations of college students in the new economic era.

3.3 Adopt a flexible credit and school system training model

Focusing on improving the initiative and ability of college students in innovation and entrepreneurship, highlighting the important position of innovation and entrepreneurship practice activities in the student training mechanism, taking innovation and entrepreneurship courses and practical activities as compulsory courses for college students' training, and increasing the credits of this link, encouraging students to grasp everything Opportunities to participate in innovation and entrepreneurship projects to enhance students' initiative in innovation and entrepreneurship.

At present, intelligent robots are developing rapidly and have broad development space. There are many companies outside the school that are conducting related research, and there are also many related innovation spaces. Students participate in such off-campus innovation and entrepreneurship practice[4]. Our school assesses the quality and cycle of their innovation and entrepreneurship practice activities. If it has practical value, the school system can be adjusted, the school system can be flexible, and credits will be given to the innovation and entrepreneurship links outside the school.

3.4 Implement experiential innovation and entrepreneurship practice activities

In the selection of innovation and entrepreneurship topics, teachers' guidance and students' discussions are adopted to determine topics. It is necessary to ensure that the topics are closely related to the majors of the participating students, and everyone's participation is ensured. For the topic of "intelligent robots", mechanical engineering and electrical engineering Students of control engineering can give full play to their knowledge and abilities; secondly, ensure that the difficulty of the subject is moderate, that is, if there are challenges, they can overcome them through hard work.

Secondly, an experiential practice method is adopted. The teacher can give a problematic robot to the innovation and entrepreneurship team, and the team members will find the problem and then carry out secondary development. Finally, the robot can complete a certain set of functions and have intelligent characteristics. In this way, give full play to the initiative of college students in the practice of innovation and entrepreneurship, and cultivate their methods of discovering and solving problems. Semi-open topics can also help cultivate the creativity of college students.

3.5 Promote the integration of production, education and research, and broaden the innovation and entrepreneurship practice platform

The mission of colleges and universities is to provide qualified personnel for the socialist modernization drive. After graduation, college students must move to their respective jobs. Colleges and universities should firmly grasp the development and changes of the society and adjust the corresponding talent training programs. As my country's industrial development and economic development enter a new historical stage, in the era of Industry 4.0, colleges and universities should create all opportunities, make use of all resources, implement the country's call for "integration of production, education and research", and expand the innovation and entrepreneurship practice platform for college students.[4].

At present, the cultivation of talents has risen to the height of the entire society. Our school firmly implements the "coordinated education" model, actively develops cooperation within the school,

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school-enterprise, school-school, school and scientific research units, and builds a diversified platform for college students' innovation and entrepreneurship to achieve mutual benefit Apartments, complementary advantages.

The school takes the "discipline integration" professional group as the main body, and integrates the resources of different colleges and different majors. College students participating in the "intelligent robot" topic can use the relevant three professional laboratories and equipment. For example, the School of Mechanical Engineering can provide robot mechanical structure Various kits, single-chip computers, etc. The School of Electric Power can provide various sensors and integrated circuits required by intelligent robots; at the same time, teachers from the two colleges provide tutoring for students; improve college students' innovative and entrepreneurial practice activities from both hard and soft power quality.

Our school actively communicates and cooperates with other colleges and universities. For the field of intelligent robots, many colleges and universities have researches. Organizing "robot" innovation and entrepreneurship teams from different colleges and universities to conduct seminars is very helpful to broaden the perspective of innovation and entrepreneurship of college students and promote exchanges; Different universities have different research focuses, and they can complement resources and borrow experimental platforms.

In recent years, the cooperation and exchanges between schools and enterprises have been increasing[1]. Their cooperation can complement each other's advantages. The advantages of enterprises are rich resources, complete industrial structure, faster technology, and advanced equipment and concepts. Relatively speaking, universities have a stronger academic atmosphere and are good at conducting basic research. Therefore, a very important aspect of industry-university-research is school-enterprise cooperation. Its advantages are mutual benefit and win-win, and complementary advantages.

Intelligent robot technology is widely used. At present, users' requirements for product intelligence are also increasing. Robots, drones, and smart wheelchairs such as sweeping robots, drones, and smart wheelchairs have entered the lives of ordinary people. Many companies are also constantly exploring the development of this field. It needs the support of intelligent robot technology. For these companies, our school can explore ways to cooperate with them, build an open and socialized college student innovation and entrepreneurship platform, let college students carry out innovation ship entrepreneurship practice in actual projects, and practice the innovation-driven development of higher education Strategies to enhance college students' independent innovation and entrepreneurship capabilities and cultivate experience, and lay a solid foundation for future innovation and entrepreneurship.

4. Conclusion

In summary, we can clearly see the importance of higher education in cultivating college students' sense of innovation and entrepreneurship under the new industrial development period and economic situation.

The discussion in this article is in line with the national innovation-driven development strategy. The "new engineering" talent training model is applied to the practice of "intelligent robot" college students' innovation and entrepreneurship projects, so as to enhance college students' creativity, optimize college students' knowledge system, and Explore new ways to cultivate the enthusiasm and ability of college students to innovate and start businesses, and create new types of talents who can take on the important tasks of socialist modernization.

In order to solve the common problems in the current practice of innovation and entrepreneurship of college students, this article will continue to strengthen the construction of innovation and entrepreneurship courses based on the topic of "intelligent robots" and the "Trinity of discipline construction", carry out interdisciplinary development, and try different innovation and entrepreneurship practices and promote the integration of academic research and manufacturing. Colleges should comprehensively explore how to enable college students to establish a correct concept of innovation and entrepreneurship, how to strengthen the use of knowledge, and how to improve the ability of innovation and entrepreneurship.

All in all, improving the comprehensive ability of college students with innovation and entrepreneurship as the core is the current focus of higher engineering education. Colleges and

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universities should closely follow the national innovation-driven development strategy, implement the new engineering model in various engineering fields, cultivate new scientific and technological talents, and let our country become the leader of the future world industrial development

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