

Research on the Training Mechanism of Innovative and Entrepreneurial Talents in Network Security Direction

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Abstract: Under the background of new engineering, there are many problems in the training objectives, training mode, curriculum system and other aspects. This paper addresses these problems, combined with years of graduate training experience, exploring the scientific positioning of graduate innovation and entrepreneurship. Taking the direction of network security as an example, this paper expounds from the aspects of multidimensional mode of cultivating innovative curriculum system, strengthening discipline cooperation, building a mentor team and building an all-round characteristic innovation platform. Under the background of new engineering, the requirements, importance and existing problems of graduate students' innovative and entrepreneurial talents are comprehensively and objectively analyzed.

1. Introduction

Under the background of new engineering, the professional knowledge of contemporary postgraduates is relatively solid, but the knowledge of innovation and entrepreneurship is relatively weak. Innovation and entrepreneurship courses in some colleges and universities do not keep up with the development of The Times, resulting in the disconnection between teaching content and job demand, lack of teachers, teaching materials and experimental resources, insufficient combination of theory and actual combat, and lack of skill evaluation technology and standardization. At the same time, the guarantee and incentive system is too rigid, and it does not pay attention to the needs of The Times of keeping pace with The Times, which leads to students' inflexible innovative thinking and lack of initiative in entrepreneurship^[1].

The school of Computer Science or the School of Cyberspace Security is the main carrier of innovation and entrepreneurship education in the direction of network security^[2]Should always serve all graduate students for already, adhere to improve the quality of graduate training as the core, strengthen the "scientific research inquiry activities as the main line teaching" training concept, closely around the creative, innovation, entrepreneurship "three gen" content form, multi-channel, diversified vigorously promote innovative entrepreneurial talent training, formed the exploration "school", practice "do", "school" competition ", " entrepreneurship " innovation entrepreneurship

education closed-loop concept, as shown in figure 1.

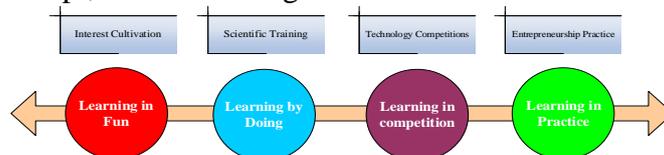


Figure 1 New closed-loop concept of innovation and entrepreneurship education

2. Training system for innovative and entrepreneurial talents

For the training of innovative and entrepreneurial talents, the multi-dimensional combination mode of industry, university and research is adopted. In view of the background and problems existing in the existing talent training, the pain points should be solved from three aspects: curriculum system, tutor team construction and innovation platform, as shown in Figure 2.

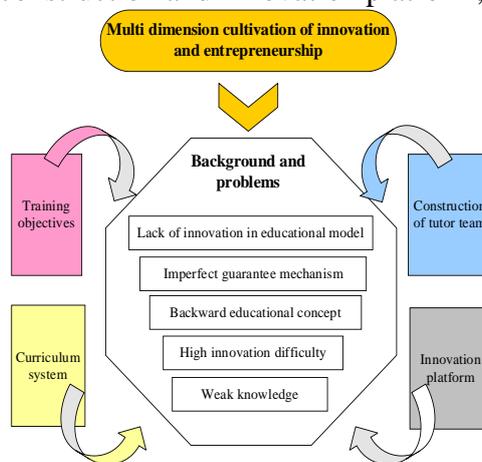


Figure 2 Multi-dimensional training mode for innovation and entrepreneurship graduate students

2.1 Curriculum system construction

The scientific nature of the curriculum system is the premise of multi-dimensional training of graduate students^[3]. The curriculum system of innovative and entrepreneurial talent training is shown in Figure 3. In addition to the traditional professional courses, to appropriately increase the cross-professional elective courses, and liberal arts cross, allow students to choose freely according to their own career planning or research interests, such as open big data analysis and economic mathematical model, etc., to improve students on the current social form related network security problems, cultivate students' ability to use the computer to solve problems. For general courses, the whole school plans the compulsory courses of innovation and entrepreneurship education to cultivate students' entrepreneurship. For professional courses, cultivate innovation-based entrepreneurs, strengthen the main responsibility of professional departments, and integrate innovation and entrepreneurship into professional courses, including elective courses based on innovation and entrepreneurship and innovation and entrepreneurship based on major categories. For degree courses, we should strengthen the training of talents with innovation and entrepreneurship characteristics, establish entrepreneurship management degree courses and minor courses, and strengthen the discipline support of entrepreneurship education.

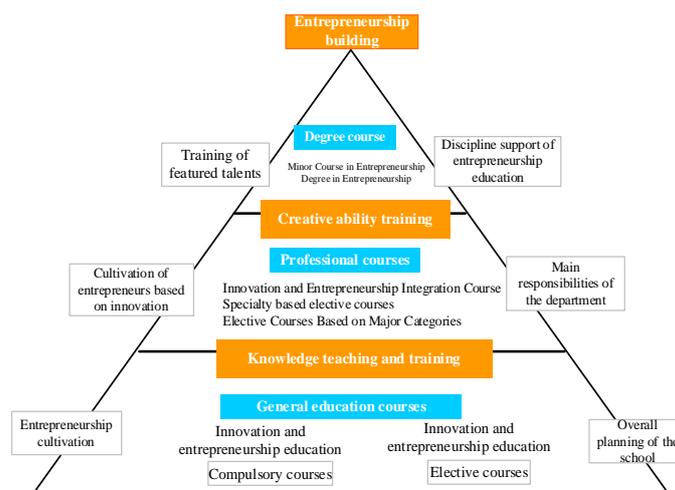


Figure 3 Curriculum system of innovative and entrepreneurial talent training

2.2 Construction of interdisciplinary cooperative mentor team

Combine the advantages and characteristic majors of the school with the network security direction teaching for interdisciplinary teaching, strengthen the cooperation of the superior disciplines of the same school, integrate the discipline resources, carry out the discipline penetration, explore the interdisciplinary tutor resources, and establish and improve the selection, evaluation and elimination system of tutors and tutors. Scholars with a good interdisciplinary background can be invited to give special lectures, conduct laboratory rotations or adopt other educational forms in order to broaden their academic horizons and cultivate their interest in interdisciplinary research. Can also regularly hold academic international and domestic expert meetings, emerging technology lectures, lectures, and actively carry out interdisciplinary interest group activities, constantly create open inclusive interdisciplinary academic atmosphere, to stimulate students' research interest, activate students' academic thinking, improve students' academic innovation ability and fully tap each student's research potential.

2.3 Construction of the industry-university-research innovation and entrepreneurship platform

Build a new platform with innovative characteristics^[4]To strengthen the relationship between academic research and social development, and to create a new idea of "introducing research through the industry and guiding learning through research", so as to improve the rationality and feasibility of learning and research. The platform and the tutor jointly formulate supporting policies to fully mobilize students' enthusiasm for research and innovation. Connections to industries, universities, research institutes, and enterprises need to continue to strengthen. At each stage, both sides must jointly discuss, examine, and jointly propose innovative ideas and find solutions. Enterprises can set up joint laboratories in universities, provide advanced equipment and sufficient funds, send senior engineers to universities to give lectures, exchange internship techniques, and provide opportunities for graduate students to visit, research and exchange, conduct more large-scale competitions, and allow graduate students to practice in enterprises. For some graduate students, the dual tutorial system can be adopted both internally and externally to jointly develop students' innovation ability training programs. With their own advantages to guide graduate students, so that graduate students' innovation and entrepreneurship ability to be developed.

2.4 Cultivate characteristics

Students' independent characteristics: Being student-centered, students should independently study, design and manage by themselves, develop students' potential, guide students to take the initiative to practice, and actively find and solve problems.

Intersecting features: to create a multi-disciplinary education environment, so that students and teachers of different disciplines can conduct team learning, team research and teamwork.

Open school-running characteristics: let the students go to the society, introduce the entrepreneurial models into the team for guidance, let the successful innovative people enter the university classroom or forum, and jointly cultivate innovative talents.

Characteristics of ideological and political education: broaden students' knowledge, guide students to pay attention to the major issues of the country, the people and the human society, enhance students' sense of responsibility and overall awareness, and improve students' ability to grasp the major social issues.

3. We will establish a mechanism to ensure innovation and entrepreneurship

3.1 Policy Guarantee

Strengthen the school top-level policy guarantee design, for students, for entrepreneurship medal, course replacement system, innovation credit system, for teachers' evaluation, going abroad, investigation, workload calculation, and evaluation activities, and annual innovation and entrepreneurship benchmarking group. Through newspapers, radio, television and the Internet and other new media publicity, fully mobilize the enthusiasm of the three types of objects, show the power of example.

3.2 Personnel support

Appointment and training professional teachers, student work cadres and counselors as innovation entrepreneurship instructors, combined with students' professional background, teaching innovation entrepreneurship general education courses, cultivate students have the correct professional values, enhance students' sense of responsibility and mission, form a stable entrepreneurial innovation basic quality and pioneering personality characteristics. We will explore the establishment of a new mechanism for collaborative education between schools, enterprises and governments, establish a talent pool of excellent innovation and entrepreneurship mentors, and employ hundreds of international and domestic famous professors, entrepreneurs and social professionals as innovation and entrepreneurship instructors, providing whole-process guidance and one-to-one services for students' innovation and entrepreneurship.

3.3 Site Guarantee

Provide exclusive practice space, establish an innovation and entrepreneurship industrial park, specially build a student innovation and entrepreneurship base, and provide students with physical space for innovation and entrepreneurship activities such as maker space, maker book bar and entrepreneurship studio, which can accommodate many student teams to carry out innovation and entrepreneurship activities at the same time.

4. Conclusions

Under the background of new engineering, the society has a huge demand for innovative and entrepreneurial application graduate students. This paper analyzes the current research background and existing problems of innovation and entrepreneurship in colleges and universities, taking the training of network security graduate students as an example, combined with the characteristics of the subject for in-depth discussion, and provides new ideas from the three aspects of curriculum system, mentor team construction and the construction of an all-round innovation platform. This mode makes full use of the existing resources and talents to reflect the characteristics of interdisciplinary subjects, and it also provides a new training mode for the development of science and engineering, which is of great significance for the multi-dimensional cultivation of innovative and entrepreneurial graduate students.

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References

- [1] Jieru Chen. *The "Trinity" training system of college students' innovation and entrepreneurship ability [J]. Education and Career*, 2018 (6): 60-63.
- [2] Shao Defu, Li Chunjiang, Ma Xiaojun. *Research on the Training Mode of Innovation and Entrepreneurship Ability of New Engineering Talents in Local Universities [J]. Technology Entrepreneurship Monthly*, 2017, 30 (19): 62-64.
- [3] Xie Xujing. *Research on innovation and Entrepreneurship Ability Training of Applied University Students [J]. Education and Teaching Forum*, 2019 (39): 112-113.
- [4] Li Danhong, Lu Min. *The Construction of University Innovation and Entrepreneurship Education Platform based on the Training of New Engineering Talents [J]. Educational Observation*, 2018, 7 (15): 47-48,115.