

Research on the Training Program of Engineering Management Professional Applied Talents Based on Innovation and Entrepreneurship Education

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Abstract: In the plan of 《The Action Plan for Education Revitalization in the 21st Century》, it clearly proposes to strengthen entrepreneurship education for teachers and students, and encourage them to independently establish high-tech enterprises. Carrying out innovation and entrepreneurship education in colleges and universities is also an inevitable requirement of the development of The Times and the reality. The cultivation of innovative talents has risen to the height of national strategy, and it is the key to improve the comprehensive national strength. This paper through the enterprise demand and student feedback research analysis, explore the applied engineering management talent training mode, build based on innovative entrepreneurship education, the curriculum system reform, the final implementation of applied talent training program, improve the students' scientific research practice ability and level, so as to cultivate the innovation practice ability of advanced applied talents.

Keywords: Research; Innovation and entrepreneurship; Project management; Talent training mode; Application; Curriculum system reform

Fund Project:

1. University-level "Research on the Talent Training Model of the Integration of Innovation and Entrepreneurship Education and Engineering Management Education" (X2020007).
2. Construction Science and Technology Project of Hubei Provincial Housing and Urban-Rural Development Department, No. 2020171185-25.

1. Research and analysis on the training needs of engineering management professionals

According to the data released by the National Bureau of Statistics: the construction industry business activity index in August 2020 was 60.2%, lower than the previous month by 0.3 percentage points, among which the civil engineering construction industry was 57.7%, lower than the previous month by 4.8 percentage points; Home construction and building installation and decoration were 59.9 percent and 66.8 percent, up from 0.3 and 7.8 percentage points respectively last month. In terms of market demand and expectations, the new orders index was 56.4%, up 1.8 percentage points from the previous month; The business activity expectation index was 66.6%, staying above 66.0% for four consecutive months. With the steady progress of infrastructure construction and the decrease of high temperature and rainfall, the construction industry is expected to maintain rapid development in the near future. Through visits and questionnaires, we investigated "Wuhan Wujian Machinery Construction Co., LTD., Wuhan River Engineering Supervision Consulting Co., LTD., Hubei Xinhongtai Group and other enterprises". It can be seen that the whole construction industry is still very strong, and the traditional construction industry is also undergoing technological innovation, green, energy-saving, intelligent, information and sustainable development direction.

2. Necessity of innovation and entrepreneurship education training for engineering management professionals

In June 2019, Mycos Research Institute released the Employment Report of Chinese College Students 2019 (Employment Blue Book) after tracking and evaluating the training quality of 152,000 college students six months after graduation. The best undergraduate majors are Information security, software engineering, Network engineering, Internet of Things engineering, digital media technology, communication engineering, energy and power engineering, and Engineering management. These undergraduate majors have the highest employment rates, and the top three majors with the highest employment rates for graduates are software engineering (96.8 percent), Energy and power Engineering (96.8 percent), and Engineering management (95.8 percent).

According to the Architecture Talent network, the distribution of engineering management personnel education is 9.6% without requirement, 5.6% below college level, 40.8% above college level, 51.2% with bachelor level or above, and 0.8% with master level or above. It can be seen from the educational demand that the major is mainly in junior college and undergraduate, and the major of engineering management is in the greatest demand.

With China's entry into the WTO, the influx of a large number of foreign investment and the activation of private capital will greatly promote the development of our engineering construction industry and real estate industry, which will add more opportunities to the demand for engineering management talents and also put forward higher requirements for the professional quality of innovation and entrepreneurship of engineering management talents .

3. Current situation of talent training for engineering management

Through the survey, the students think that it is necessary to strengthen the cultivation of basic knowledge, broaden the scope of knowledge, strengthen the cultivation of professional quality, strengthen the cultivation of professional knowledge, and strengthen the cultivation of practical ability and professional skills. The suggestion to the classroom content is to strengthen the contract management teaching, coordination relationship training. Computer software is commonly used office software EXCEL, WORD, PPT, CAD, as well as professional Glodon software, BIM software and so on. 10 is a full score. Students evaluate and score the main core courses, 8 points for "Architectural Drawing and Construction", which is the highest score and students hope to strengthen the drawing reading training, followed by "Engineering Budget", 7 points, and then bidding and contract management, construction courses. In the future, our core courses need to be adjusted to strengthen the amount of practical courses. It is suggested to offer installation engineering budget estimate, data management, BIM modeling, BIM collaborative management and other courses that need to be added in the future. In the end, I also gave a lot of suggestions, focusing on cultivating knowledge of budget and cost, strengthening school-enterprise cooperation, and exploring technical discussion and new technological innovation .

According to the random survey of graduates in recent three years, it is necessary to conduct in-depth discussion on the curriculum setting and cultivation, and strengthen the cultivation of students' ambition and sense of responsibility. The cultivation of these abilities needs to be realized through the curriculum design and comprehensive practical training, which also points out the direction for the reform of training methods and modes in the future.

4. Pilot Achievements of Talent Training Program Reform - Taking the course reform of Engineering Economics as an example

Innovation and entrepreneurship education is aimed at cultivating talents with basic entrepreneurial quality and pioneering personality. It not only focuses on cultivating students' entrepreneurial consciousness, innovative spirit and innovative and entrepreneurial ability, but also guides students to actively participate in actual enterprise projects and initially acquire practical innovative and entrepreneurial ability . Class 1 of 19gb Engineering Management major adopts the original old talent training program, and Class 1 of 20gb Engineering Management major is divided into new talent training program and new talent training program. The students' vocational education courses of innovation and entrepreneurship run through the whole four years of university, and the starting time and class amount of some professional courses and practical courses are optimized. The BIM course of digital intelligent construction in the new era has been introduced . Take the course of Engineering Economics as an example. By modifying the talent training program, the start time of this course is advanced to the third semester. With the help of the Superstar information platform, the online and offline class allocation is optimized. The rate of excellent performance in the comprehensive examination of the two classes increased from 25% to 48.57%. Through comparative analysis, it can be concluded that the new talent training program can better stimulate students' consciousness of innovation and entrepreneurship, and the new talent training program is more in line with the needs of digital construction and digital economy development in the new era.

5. Closing Remarks

5.1 Adjustment of training objectives and orientation of Engineering management major

According to the above survey results, on the basis of the National Standards for Teaching Quality of Undergraduate Majors and centering on the training requirements for application-oriented talents, the major training objectives and direction are determined. According to the training policy of “43211” of the school and combined with the characteristics of engineering management, the training target of “skilled, innovative and diversified” compound talents is determined, and the training mode of skills education, innovation education and diversified talents is implemented [Du Huihui, 2019]. Skill education: Establish modern engineering consciousness, implement skill education, highlight project cost, project management, investment training, pay attention to engineering practical operation skills. Innovative education: taking the cultivation of students’ innovative spirit as the essence, cultivating innovative skills through discipline competitions, carrying out innovative education with innovative practice as the carrier, giving play to students’ main role, cultivating students’ personality and talents. Diversified education: Through the horizontal combination of the economics department and the management department of the university, the cross-discipline training program is implemented to diversify students’ thinking and knowledge structure. The reform direction of training objectives is to adhere to the policy of “application-oriented” talent training, increase the quality training of practice and innovation, and cultivate outstanding artisan talents with strong practical ability, creativity and persistence [Xu Xia & Wu Xia, 2019].

5.2 Adjustment of Engineering Management curriculum

With the industrialization, digitalization and intelligent upgrading of buildings and the acceleration of the transformation of construction methods, the engineering management major needs to pay attention to connotation construction, adhere to the student-oriented, promote quality through reform, seek development through quality, and strive to form a high-quality major [Cui Shumei & WU Jingxia, 2021]. At the same time, it is also necessary to reform the current engineering management curriculum system, structure and content by strengthening school-enterprise cooperation and teacher team construction, and build a modular professional curriculum system that conforms to local economic development, the needs of construction enterprises, the reality of students, the post ability as the standard, the occupation practice as the main line, and the project curriculum as the main body, so as to improve the quality of education and teaching. Train high - quality technical application talents.

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