



Computer Coupled Path Research on Endogenous Motivation of Students in Innovation and Entrepreneurship Education

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Abstract. Under the background of the popularization of higher education, the employment status of application-oriented undergraduate colleges and universities is becoming increasingly severe, and college students' independent entrepreneurship has become a new way to solve the employment problem. In this regard, colleges and universities should pay more attention to it and adopt the method of dual-innovation education to cultivate more innovative talents who meet market demand comprehensively. This paper puts forward several effective ways to implement entrepreneurship and entrepreneurship education in combination with the actual situation. Moreover, it puts forward the hypothesis that curriculum ideology and politics, dual-innovation integration and specialized innovation integration positively impact the endogenous power of high-skilled talents and entrepreneurship to construct a structural equation model. Empirical analysis shows that the coupling effect of the endogenous motivation of teachers in dual-innovation education has a direct positive impact on students' motivation for dual-creation. This research based on the questionnaire, test and other ways, through computer big data analysis pays attention to the "coupling role of internal forces", and strengthens teachers' leading role in integrating entrepreneurship and entrepreneurship to cultivate more outstanding talents for society.

Keywords: Computer Coupled Path · Teaching strategies · Innovation and Entrepreneurship Education · Model of structural equations

1 Introduction

Under the national strategic deployment of mass entrepreneurship, mass innovation and innovation-driven, society needs a large number of craftsmen and skilled craftsmen who can lead ideological progress and technological innovation, with innovative spirit and entrepreneurial consciousness [1, 2]. The 2019 Vocational Education Reform Implementation Plan clearly stated that "the development of higher vocational education is an important way to optimize the structure of higher education and cultivate craftsmen and skilled craftsmen in large countries" [3]. It can be seen that higher vocational education will undertake the mission of reforming the supply-side structural reform

of human resources in the new era and providing high-quality human resources support for improving national competitiveness [4–6]. Then, how to cultivate high-quality technical and skilled talents who can meet the national innovation-driven strategy and industrial upgrading needs. As the cultivation of college students' innovative spirit, entrepreneurial consciousness and innovation and entrepreneurship ability, entrepreneurship and entrepreneurship education has a high degree of coupling with higher vocational education required by high-quality development [7, 8]. However, there still needs to be understood and clarified in practice in higher vocational colleges. Therefore, the need for the high-quality development of higher vocational education in the future or the need to reform higher vocational education is worth researching. This paper sorts out the internal logic of entrepreneurship and entrepreneurship education to drive the high-quality development of higher vocational education and explore the corresponding implementation strategies and paths.

2 Problems in Talent Training Under the Current Educational Background

2.1 The Construction of the Innovation and Entrepreneurship Education System

Entrepreneurship and entrepreneurship education is a boom in undergraduate education in colleges and universities, but due to the need for top-level design and insufficient understanding of the overall structure of entrepreneurship and entrepreneurship education. As a result, the current goals of entrepreneurship and entrepreneurship education need to be clarified, so the teaching objectives of the school's academic affairs department, the innovation center, teachers and students are unclear, and only the goals are set by classroom teaching. The combination of professional and dual entrepreneurship education needs to be considered. Moreover, one-sidedly regarded dual-innovation education as the establishment of companies and other business activities, eventually resulting in the need for top-level design and complete construction of the target system. So, first of all, it is necessary to improve the top-level design and education target system, sort out domestic and foreign achievements, and improve the top-level design to ensure the pertinence of dual-innovation education.

2.2 The Practice Carrier of Innovation and Entrepreneurship

Conventional dual-innovation education for application-oriented talents is generally cultivated in the form of lectures, competitions and clubs, most of the students are passively participating and completing activities, only a small number of students are always involved, which causes a waste of educational resources, and the effect is average, and the expected effect is not achieved at all. Some schools only use simple methods such as grades, attendance, thesis patents, and awards in dual-innovation competitions to evaluate the teaching effect of students, which is even more unworkable. Therefore, it is necessary to strengthen systematic planning, build an all-round and three-dimensional collaborative talent training platform for enterprises, industries, governments and specific schools majors, and refine and concretize entrepreneurship education.

2.3 The Structure of Teachers in Innovation and Entrepreneurship Education is Unreasonable

Compared with one institution, the two colleges have insufficient investment or limited conditions in the construction of the teaching team, and there are even fewer opportunities for theoretical teachers to go to enterprises to receive engineering quality training, and there is no policy preference in the process of teacher title evaluation and evaluation. In addition, the need for more financial support for hiring engineering and technical personnel from industry enterprises to carry out dual-innovation activities in schools. A team of dual-innovation teachers with solid professional theory and engineering quality is needed. Moreover, often, theoretical teachers who seriously need more practical experience concurrently serve as dual-innovation teachers, resulting in low teacher participation. In-depth theory and practice of innovation and entrepreneurship education, a short introduction to part-time tutors in society, and failure to form a teaching team compatible with the cultivation of innovative and entrepreneurial talents could be more conducive to the effective development of dual-innovation practical activities.

3 Construction of a Training System for Entrepreneurship and Entrepreneurship

According to the curriculum ideological and political education system, the specialized integrated education system, the innovation and entrepreneurship education system and the endogenous driving force of innovation and entrepreneurship [9]. This paper proposes an innovation power model, as shown in Fig. 1. The model has four variables, which are explained as follows:

3.1 Innovative Internal Power Model

The endogenous driving force of innovation can be explored from three aspects: cognitive internal drive, self-improvement internal drive and subsidiary internal drive. Drawing on many scholars' endogenous dynamics research literature and questionnaires, five questions were designed: DL1. Regardless of the results of the innovation and entrepreneurship project, if I feel that I have gained a new experience, I will be satisfied; DL2. I hope my work can provide me with opportunities to increase my knowledge and skills; DL3

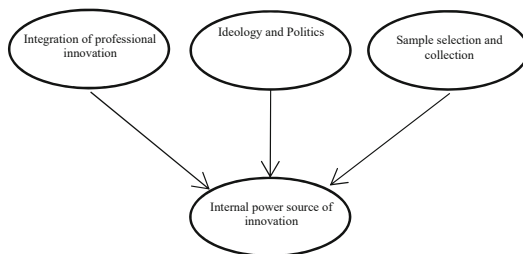


Fig. 1. Innovative internal power source modeling

curiosity is my motivation to do many things; DL4. Earning more money is my strong motivation for innovation and entrepreneurship; DL5. Innovation and entrepreneurship is a very important opportunity for student to express himself.

According to the direction of ideology and politics for innovation and entrepreneurship, this paper refines and transforms the ideological and political elements, and the transformation results are as follows: LC1. Craftsman spirit is the foundation of innovation and entrepreneurship; LC2. Green development concept education provides direction for innovation and entrepreneurship; LC3. Home and country feelings are responsible for innovation and entrepreneurship; LC4. Ideological and political education and innovation and entrepreneurship spirit make me pay more attention to learning professional and innovative and entrepreneurial knowledge and skills; LC5. Scientific outlook on development should be attached to innovation and entrepreneurship; LC6. Dialectical theory, the concept of practice and seeking truth from facts, require paying attention to the practice of innovation and entrepreneurship and the summary of experience.

1) Professional innovation integration.

According to the current teaching characteristics and modes in professional innovation, the following exceptional innovation and integration characteristics are proposed and transformed into related topics: QC1. Professional teachers often innovate and solve problems with students in teaching; QC2. Professional teachers can often use innovative projects as cases in teaching; QC3. Professional teachers often innovate teaching methods to enhance learning interest; QC4. Professional teachers often introduce cutting-edge knowledge and innovative skills in teaching; QC5. Lecturers can stimulate my learning potential and make me strive to do my best.

2) Sample selection and collection.

In this paper, offline and online methods were used for sample collection, the test subjects were randomly selected by class selection in the pilot schools, and the online questionnaire survey was conducted online. A total of 1215 questionnaires were received by sending the QR code of the questionnaire star questionnaire by email, QQ group, WeChat group, etc., and 934 valid questionnaires were received, meeting the requirement that the sample size was at least 5 times the measurement items. Among the valid samples, 516 were males (56.68%) and 418 were females, accounting for 43.32%. 100% of students completed the business plan; 20.27% participated in the departmental or college-level innovation and entrepreneurship selection competition. Transform relevant questions according to sample selection and collection: MC1. More than 80% of students have participated in departmental or college-level innovation and entrepreneurship selection competitions; MC2. More than 70% of students have participated in departmental or college-level innovation and entrepreneurship selection competitions; MC3. More than 60% of students have participated in departmental or college-level innovation and entrepreneurship selection competitions; MC3. More than 50% of students have participated in departmental or college-level innovation and entrepreneurship selection competitions.

3.2 PLS Diameter Model

In this paper, the use of PLS path model has the advantage that there is no need to do a specific probability distribution hypothesis of the observed variables, there is no so-called model unidentifiable problem, the requirements for sample size is also very loose. This model is a more practical and effective linear statistical modeling method, which is briefly introduced in the following two aspects: model setting and model estimation.

In the measurement model, there are three forms for the association between explicit variable X and corresponding latent variable: reflective ways, formative ways and MIMIC ways. In reflection mode, each explicit variable is associated with a unique latent variable. Their relationship is expressed by the unitary linear regression equation:

$$x_{jh} = \lambda_{jh}\xi_j + \varepsilon_{jh} \quad (1)$$

In Eq. (1), ε_{jh} is the random error term which have to satisfy the assumptions.

$$E(x_{jh} | \xi_j) = \lambda_{jh}\xi_j \quad (2)$$

Formula (2) indicates that the mean value of ε_{jh} is 0 and not relevant to ξ_j which called the predictive designation condition. In the mode of reflection, a group of explicit variables only reflect the characteristics of a certain aspect of a thing, that is, the latent variables reflected by this group of explicit variables are unique. Explicit variables that satisfy this assumption are considered to be uniquely dimensional, and there are usually 3 methods: principal component analysis of the explicit variable set, cronbach a value, and Dillon-Goldstein p value. If the explicit variable group does not meet the requirement of unique dimension, you can delete some variables or split the variable group.

4 Application Example Analysis

4.1 Data Analysis

In this paper, SPSS was used to descriptive statistics of the data [10]: the maximum value of the standard third-order center distance of the sample was 1.89 and the minimum value was 0.08; the maximum value of the standard fourth-order center distance was 1.78 and the minimum value was 0.02. The statistical results are below the requirements of the 1.89 critical value, and the data conform to a normal distribution. The comparison between the simple correlation coefficient and the partial correlation coefficient between the variables shows that the KMO test statistic is above 0.86, which proves that the item discrimination between the overall and local quantities is in a good state, the distinction validity test finds that there is a good distinction between the hypothesis and the verification, and the internal consistency analysis obtains the consistency between multiple targets.

4.2 Measurement Model Validation and Optimization

Each measurement model is verified to fit the index to the optimal value before the structural model measurement. Through verification and analysis of the results, it is found that the innovation's internal power source indicators reach the ideal value after

deleting DL2 and DL3. The ideological and political model reached the ideal value after deleting LC4 and LC5. The professional innovation fusion model reached the ideal value after deleting questions QC2 and QC4.

SEM model verification each measurement model is verified to fit the index to the optimal value before the structural model measurement. Through verification and analysis of the results, it is found that the innovation's internal power source indicators reach the ideal value after deleting DL2 and DL3. The ideological and political model reached the ideal value after deleting LC4 and LC5. The professional innovation fusion model reached the ideal value after deleting questions QC2 and QC4.

1) Model analysis and hypothesis testing.

Considering the reliability and validity between the SEM model adaptability index, the rising fit index, and the simplified fit index, this paper uses AMOS software to verify first, and the results are all in accordance with the requirements according to Table 1.

The model has met the requirements in terms of the adaptation index and belongs to the standard range, so the final fitting effect is basically appropriate. Because the path coefficient is greater than zero, we need to correct the model index value to remove the correlation of the error variables, and the corrected model adaptation degree is shown in Table 2.

Students benefit from a wide range of profound benefits, and the quality of application-oriented personnel training has been significantly improved. In the past five years, 278 innovative and entrepreneurial activities have been conducted for students, covering 68,322 students, 11,758 students have participated in scientific research, 2,861

Table 1. Reliability and validity analysis of variables

variable	Factor loading	Measure reliability	Combined reliability	Square difference extraction
DL1	0.762	0.419	0.8513	0.4852
DL3	0.771	0.406		
LC1	0.694	0.406	0.8628	0.4672
LC2	0.683	0.451		
QC1	0.756	0.518	0.8473	0.4789
QC2	0.756	0.534		

Table 2. Overall sample covariance relationships and the corresponding MI values

covariance relationship	Q1	covariance relationship	Q1	covariance relationship	Q1
E22→E22	11.849	E22→E22	11.849	E22→E22	11.84
E22→E22	11.849	E22→E22	11.849	E22→E22	11.84

students have participated in innovation and opening up projects, and 5,153 students have participated in innovation and opening up experiments annually. Discipline competitions covered 50,610 people, and 2215 provincial and above awards were won. Students have published 461 papers in core journals such as “Hydropower Energy Science” and obtained 166 intellectual property rights and 2,667 qualification and training certificates. It has supported students to start businesses relying on core technologies, successfully incubated more than 30 innovative enterprises of college students such as Yuntu Technology, and directly led more than 600 people to start businesses. Its graduates have been widely recognized by the society and favored by the industry, and its employment work has successively won the title of “Advanced Collective of Graduates’ Employment in Colleges and Universities of Jilin Province”. 4 students won the honorary title of “Innovation Star of Jilin Province” and 3 students won the honorary title of “Entrepreneurship Star of Jilin Province”.

5 Summary

This paper aims at the hypothesis that in application-oriented undergraduate colleges and universities under the background of higher education popularization. The integration of ideology and politics, mass entrepreneurship and innovation. It will positively impact the endogenous driving force of mass entrepreneurship and innovation of high-skilled talents to construct a structural equation model. According to the empirical analysis, the coupling effect of the endogenous motivation of mass entrepreneurship and innovation education teachers has a direct and positive impact on the endogenous motivation of mass entrepreneurship and innovation teachers. Therefore, we should pay attention to the “internal force coupling role”, and strengthen the leading role of teachers on the basis of the integration of mass entrepreneurship and innovation, so as to cultivate more excellent talents for society.

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