

Construction of the Quality Evaluation System for Innovation and Entrepreneurship Teaching

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Abstract: With the advancement of the wave of innovation and entrepreneurship education reform, how to establish a perfect and efficient innovation and entrepreneurship education quality evaluation system has also been widely concerned by educators. On the basis of a comprehensive analysis of the composition of the innovation and entrepreneurship education system, we propose the indicator composition of an evaluation system based on the OBE education concept. In addition, with the goal of continuous improvement, we aim to construct a scientific, reasonable, and professional certification compliant evaluation plan for the quality of innovation and entrepreneurship teaching in universities. This will enhance the evaluation of teaching quality in universities and better implement the national requirements in this regard.

Keywords: Innovation and Entrepreneurship Education; Evaluation System; OBE Educational Philosophy; Educational Reform

1. Introduction

Our country proposes to "promote and protect entrepreneurship, encourage more social actors to engage in innovation and entrepreneurship, and speed up the construction of an innovative country"^[1]. This shows that the state attaches sufficient importance to the role of innovation and entrepreneurship education in cultivating talents. It is expected that higher education institutions, as an important medium for cultivating innovative and entrepreneurial talents, will actively respond to the government's call to promote the development of innovation and entrepreneurship education.

However, it should be noted that innovation and entrepreneurship education in higher education is a complex system consisting of a variety of interrelated links, not just a single closed environment. Therefore, an effective and comprehensive educational quality assessment system needs to be established to improve the quality of education and provide a basis for educational decision-making.

2. The Current Situation and Development of Domestic and Foreign Evaluation Systems

Educational evaluation is the process of collecting, collating, processing and analysing comprehensive and systematic information about educational activities, processes and outcomes on the basis of clear educational objectives, using scientific and feasible means, and assessing their value ^[2]. At present, there are certain gaps in the current state of research on the quality evaluation system of innovation and entrepreneurship education at home and abroad.

2.1 The Current Situation and Development of Foreign Evaluation Systems

In the field of entrepreneurship education, the development process abroad has spanned nearly 70 years, demonstrating its long historical legacy. In developed countries, entrepreneurship education is a new form of talent cultivation that has emerged from the combination of higher education and socio-economics. In 1947, Harvard University pioneered a course on entrepreneurship education that provided students with unprecedented learning opportunities. Entrepreneurship education refers to the cultivation of qualities such as innovation, entrepreneurship and social responsibility in

students through a range of activities and practices [3]. Since the early 1990s, relevant media magazines in the United States have conducted evaluation surveys of entrepreneurship education programmes to verify their effectiveness. The results show that entrepreneurship education is generally recognized and promoted in developed countries.

Foreign scholars have also gradually recognized that the implementation of innovation and entrepreneurship education is subject to the limitations of time and environment, the effect of the phenomenon of lagging, which is a new type of talent cultivation mode with the combination of higher education and social economy. For this trait, scholars present a variety of different views. Some believe that cultivating students with a certain entrepreneurial spirit and ability at the university level can effectively enhance students' interest in exploring new things and their ability to innovate. Clayton Christensen, a professor at Harvard Business School and an expert in the field of innovation management, put forward the concepts of "innovation theory" and "disruptive innovation". He has discussed how enterprises can achieve innovation from various perspectives such as product, technology and market [4]. He believes that in education there is a need to focus on the whole process of student growth and not just on single indicators. In addition, some scholars also suggest that the construction of the evaluation system of innovation and entrepreneurship education needs to be adjusted and improved according to the different stages in which it is located. So far, the evaluation of innovative talents includes many links and elements, and there are many different evaluation principles, evaluation ideas, evaluation indicators and evaluation methods according to the different objects and contents of evaluation.

2.2 The Current Situation and Development of Domestic Evaluation Systems

China started relatively late in the field of innovation and entrepreneurship education, and the quality evaluation research in this field is still in the exploratory stage, and the existing research results can be reviewed from two different stages of development. In the early research stage, the evaluation of innovation

and entrepreneurship education in China mainly focuses on theoretical research, including the design principles, influencing factors and system construction of innovation and entrepreneurship education evaluation. In terms of design principles, Guo Biyu (2003) believes that when establishing the evaluation system of innovation and entrepreneurship education in colleges and universities, the principles of subjectivity, innovativeness, advancement and practicability should be followed in order to ensure the comprehensiveness and effectiveness of the evaluation system [5]. In terms of influencing factors analysis, Li (2004) made a comprehensive analysis of the influencing factors of innovation and entrepreneurship education and proposed a fuzzy comprehensive evaluation method [6].

The later research stage began in 2010. With the gradual increase of research on the evaluation of innovation and entrepreneurship education, certain development and progress have been made in evaluation methods. Domestic scholars have also deepened their research and practice on the evaluation system of innovation and entrepreneurship education. Wang Wenqing and Zhang Na, professors of Beijing University of Posts and Telecommunications (BUPT), proposing an evaluation method that organically combines classroom teaching, practical teaching and social environment, and measures the innovation ability of students by analysing their innovative and entrepreneurial ideas and project plans. The contribution of the article is that it explores a three-in-one evaluation system and emphasises that innovation and entrepreneurship education requires comprehensive practice and social support.

2.3 Differences in Evaluation Systems at Home and Abroad

In the design and practice of evaluation systems for innovation and entrepreneurship education, there are some differences at home and abroad.

Firstly, the evaluation of innovation and entrepreneurship education in foreign countries pays more attention to the stimulation of students' creativity and ideas. For example, the entrepreneurship programme of Stanford University in the United States divides students into small groups and conducts an

idea sharing and discussion once every weekend for mutual inspiration, exchange and enhancement. Such an educational approach can effectively stimulate students' desire for exploration and cultivate their independent thinking and creative thinking ability. Secondly, the evaluation of innovation and entrepreneurship education in foreign countries pays more attention to the social and commercial value of practical projects. This practical approach to education not only enhances students' practical ability, but also leads them to focus on social issues and feel the value behind innovation and entrepreneurship.

In conclusion, it is necessary to continue to learn from and absorb the international advanced experience and concepts in the future development, in order to continuously improve the world standard of innovation and entrepreneurship education in China.

3. Problems in the Evaluation System of Innovation and Entrepreneurship Teaching Quality

Although innovation and entrepreneurship education has become an indispensable part of higher education, the evaluation is still in the development stage. This leads to the fact that the existing evaluation indicators and methods are not complete, and that academics do not pay enough attention to them. Also, the practical ability is difficult to measure with traditional exams and thesis evaluations, and more detailed needs more detailed evaluation standards and methods.

4. Conceptual Inquiry of Innovation and Entrepreneurship Teaching Quality Evaluation System

In the conceptual inquiry of the construction of innovation and entrepreneurship education evaluation system, by analysing the existing relevant theoretical guidance such as Performance Oriented Education (POE), as well as Bruner Cognitive Objective Hierarchy of Education Evaluation Theory and Heard's Feedback Theory, and by combining the relevant competency model with the support of dimensional analysis.

4.1 Principles of the Evaluation System

(1) Goal Orientation: the evaluation system should clearly define the goals and expected

outcomes of innovation and entrepreneurship education, and ensure that the evaluation is consistent with the set goals.

(2) Practice orientation: the evaluation system should attach importance to the performance of students in actual innovation and entrepreneurship projects, and encourage students to apply the knowledge and skills they have learnt in practice to promote the cultivation of innovation and entrepreneurship abilities.

(3) Sustainability: the evaluation system should be sustainable and able to adapt to social changes and the development of the innovation and entrepreneurship field, and constantly update and improve the evaluation contents and methods.

(4) Diversified measurement: the evaluation system should adopt a variety of methods and tools, such as case studies, project reports, presentation demonstrations, etc., in order to assess students' comprehensive abilities from multiple perspectives and at multiple levels.

(5) Continuous and progressive: the evaluation system should be designed as a series of successive links, from the elementary to advanced levels, to gradually improve students' innovation and entrepreneurship abilities, and to form a stage-by-stage assessment and feedback mechanism.

4.2 The Main Body of the Evaluation System

The comprehensive evaluation system of innovation and entrepreneurship should include the evaluation system of students, teachers and schools, with students' evaluation as the main part, teachers' evaluation as the supplementary part, and school evaluation as the supplementary part [7]. Among them, students, teachers and schools are both participants in the work of innovation and entrepreneurship education and evaluators of the quality of innovation and entrepreneurship education, and all three are interconnected and independently developing their own strengths and weaknesses, thus forming a multi-level teaching environment for innovation and entrepreneurship.

Students: participate in the evaluation process to understand their personal growth and deficiencies in innovation and entrepreneurship competence through self-evaluation and reflection, while writing

learning insights and growth plans on time to assess their understanding and motivation for the innovation and entrepreneurship process. Finally students make goal setting and self-adjustment based on the evaluation results. Teacher: as a guide and participant of the evaluation, is responsible for guiding the students' learning process. They also provide guidance and support, and use the evaluation results to develop personalised learning plans and training programmes for students. At the same time, teachers will also be evaluated through certain evaluations, such as the performance of teaching methods and through student evaluation and project results review. Higher education institutions: with professional knowledge and experience in the field of innovation and entrepreneurship education, they participate in the evaluation of students and ensure the accuracy and objectivity of the evaluation through professional assessment and guidance. The assessment of the implementation of relevant innovation and entrepreneurship education policies and plans, including the design of teaching programmes, curriculum and training mechanisms can be assessed through document analyses and evaluation reports to obtain data.

4.3 Structure of the Evaluation System

- (1) Objectives and Standard Setting: Define the objectives of innovation and entrepreneurship education, for example, to cultivate the students' ability of innovative thinking, teamwork, and market insight, etc, and formulate the corresponding evaluation standards.
- (2) Performance indicators and indicator system Establish specific performance indicators according to the objectives, such as project management ability, market research ability, creative expression ability, etc., and construct an indicator system to measure the development of students in different competency areas.
- (3) Evaluation tools and means: Select appropriate evaluation tools and means for data collection, such as questionnaires, evaluation forms, personal reports, demonstrations and presentations, etc., which will be used to obtain data on students' performance in each competency.
- (4) Data analysis and feedback: Analyse and interpret the evaluation data collected to help

students understand their strengths and areas for improvement in each competency, and provide targeted feedback and suggestions for improvement.

5. Design of Indicators for the Evaluation System of Innovation and Entrepreneurship Teaching Quality

The index design of the innovative and entrepreneurial teaching quality evaluation system is based on the OBE concept, which actively carries out the three-dimensional evaluation of teachers, students and schools in the teaching process, effectively highlighting the interconnectedness of teaching quality evaluation. At the same time, the student-centred teaching concept highlights the students' expectation and willingness to teach, which makes the teaching work really become an important part of the teaching service, and further makes the teacher's assessment of teaching and learning and the student's assessment of teaching and learning equally important [8]. The index design also breaks the common shortcomings of internal teaching quality evaluation in the past teaching process, introduces the school evaluation into the evaluation system, and makes the teaching quality evaluation more scientific and effective by integrating the factors of cooperative enterprises, local policies, etc.

The subject is analysed from the three levels of students, teachers, and colleges and universities, and puts forward 3 first-level indexes, 8 second-level indexes, 27 third-level indexes, and a total of 29 indexes and observations. tertiary indicators, a total of 29 indicator observation points.

5.1 Student Performance

Student performance will be assessed through the three aspects of innovative and entrepreneurial awareness, innovative and entrepreneurial skills and achievement, with specific level 3 indicators as follows.

- (1) Entrepreneurial awareness: to assess the extent of students' knowledge and understanding of entrepreneurship.
- (2) Entrepreneurial thinking: to assess students' understanding and ability in business model, market research and competitive analysis.
- (3) Creative Ability: It is an important factor for the success of entrepreneurship, assess the students including the ability to think

creatively, problem solving ability and idea generation ability, and so on.

(4) Technical ability: to assess the students' mastery of relevant technical fields, including programming, design, engineering, and so on.

(5) Project management ability: to assess students' ability to plan, execute and monitor the process of implementing innovation and entrepreneurship projects.

(6) Entrepreneurial practice ability: . It refers to the ability of students to cope with changes in the real business environment. By assessing students' customer focus, marketing strategy development and management skills, etc.

(7) Teamwork Ability: Assesses students' ability to cooperate and communicate in diverse teams.

(8) Communication and presentation skills: to assess students' ability to present and communicate innovative entrepreneurial ideas and results.

(9) Students' self-employment rate after graduation: the rate of self-employment one year, five years and ten years after graduation.

(10) Students' self-satisfaction: students' self-satisfaction after receiving innovation and entrepreneurship education ^[9].

5.2 Faculty Strength

The faculty strength will be evaluated through both the overall level of the faculty and the management mode, with the following specific level 3 indicators.

(1) Ability to share practice cases: To assess the ability of teachers to share practice cases related to entrepreneurship to stimulate students' interest in learning and innovative thinking.

(2) Ability to guide entrepreneurial resources: to assess teachers' ability to guide students to make use of entrepreneurial resources (e.g., capital, network contacts, etc.).

(3) Teaching quality of innovation and entrepreneurship: to assess the quality of teachers' teaching and the level of innovation in teaching methods.

(4) Guidance and Counselling Ability: to assess teachers' ability to provide students with innovative and entrepreneurial guidance and personal development support.

(5) Teachers' experience and influence: to assess teachers' experience and influence in guiding students in the process of innovation and entrepreneurship.

(6) Industry-academia-research integration ability: to assess teachers' ability to collaborate with industries and research institutes to promote students' innovation and entrepreneurship practices.

(7) Teachers' curriculum plan: to assess whether teachers have a scientific and perfect curriculum system.

(8) Teachers' course quality supervision: to assess whether the system of teachers' course quality supervision system is perfect or not.

5.3 Inputs from Universities

Inputs from universities can be evaluated from three aspects: educational environment, policy guidance, and relevant achievements, and the specific third-level indicators are as follows.

(1) Innovation and entrepreneurship practice environment: assess the practice platforms, incubators and other resource support provided by universities as well as university-enterprise cooperation.

(2) Assessment of innovation and entrepreneurship courses: assess the coverage, depth and teaching quality of innovation and entrepreneurship courses provided by universities.

(3) Innovation and entrepreneurship competitions and incentive mechanism: to assess the innovation and entrepreneurship competitions and incentives organised by universities to stimulate students' motivation for innovation and entrepreneurship.

(4) Innovation and entrepreneurship mentor team building: assess the innovation and entrepreneurship mentor teams established by universities to provide targeted guidance and support.

(5) Construction of innovation and entrepreneurship bases: assessing the number of innovation and entrepreneurship bases in universities and the accommodation of students.

(6) Policy guidance on innovation and entrepreneurship in the location of universities: assess the extent of policy guidance on innovation and entrepreneurship in the location of universities.

(7) The importance of universities to innovation and entrepreneurship education and policy guidance: to assess the importance of universities to innovation and entrepreneurship and the amount of policy guidance they provide.

(8) Project Cooperation with Enterprises: to assess the cooperation projects between universities and enterprises as well as the satisfaction of enterprises with the cooperation.

(9) Publication of innovation and

entrepreneurship related papers and books; to assess the academic ability of universities in innovation and entrepreneurship.

The evaluation index model of innovation and entrepreneurship education is shown in Table I.

Table 1. Evaluation System for the Quality of Innovation and Entrepreneurship Teaching for College Students

Level 1 Indicator	Level 2 Indicator	Level 3 Indicator	Observation Points
Student performance	Innovation and entrepreneurial awareness	Entrepreneurial awareness	Whether students are generally entrepreneurially minded
		Business mindset	Whether students have basic business mindset
	Innovation and entrepreneurial ability	Innovation ability	The rate of students' own innovation ability meeting the standard
		Technical competence	Rate of students' own professional competence
		Project Management	Students' achievement rate of project management competence
		Entrepreneurial Practice Competence	Achievement rate of students' entrepreneurial practice competence
		Teamwork Ability	Achievement rate of students' teamwork skills
	Practical results of innovation and entrepreneurship education	Communication and Expression Skills	Achievement rate of students' communication and expression skills
		Self-employment rate of students one year, five years and ten years after graduation	Achievements of Innovation and Entrepreneurship Education
		Students' self-satisfaction after receiving innovation and entrepreneurship education	The rate of students' self-employment
Teachers' strength	Overall level of faculty	Ability to share practice cases	Level of teachers' ability to share practice cases
		Ability to guide entrepreneurial resources	Teachers' ability to guide students to make use of resources
		Teaching Quality of Innovation and Entrepreneurship	Teachers' quality of teaching and innovation of teaching methods
		Guidance and Supporting Ability	Teacher's ability to guide and support students
		Teacher Experience and Influence	Teachers' experience and influence in related fields
		Ability to integrate industry-academia-research	The level of the teacher's industry-academia-research capability
	Management Mode	Curriculum Plan	Whether there is a scientific and complete curriculum plan
		Curriculum quality supervision	Whether to set up a perfect quality control system for the courses
Inputs from higher education institutions	Educational environment	Innovation and entrepreneurship practice environment	Whether there is a good practice environment
		Evaluation of Innovation and Entrepreneurship Courses	Whether there are scientific principles of programme evaluation
		Innovation and Entrepreneurship	Whether there are relevant

		Competition and Reward Mechanism	competitions and reward mechanisms
		Innovation and Entrepreneurship Mentor Team	Whether there is a team of innovation and entrepreneurship mentors
		Innovation and entrepreneurship base construction	Number of innovation and entrepreneurship bases
	Policy Guidance	Policy guidance for innovation and entrepreneurship in the location of universities	Number of relevant support policies
			Investment of Funds
		Degree of importance and incentives for innovation and entrepreneurship education in the university	Whether relevant education organisations have been established
	Project Cooperation with Enterprises	Number of co-operation projects	Relevant achievements
		Innovation and entrepreneurship related papers, publications	Number of Publications

6. Design of Indicators for the Evaluation System of Innovation and Entrepreneurship Teaching Quality

Improvement analysis of innovative and entrepreneurial teaching quality evaluation system The construction of innovative and entrepreneurial teaching quality evaluation system is not static, in the actual application, it needs to be constantly optimised and adjusted, so as to inject a more scientific, specific and practical power to promote innovative and entrepreneurial education in China. At this stage, taking the OBE concept as a guide and combining the research methods of literature research, survey research, and master-component analysis, we put forward the following five points to improve the countermeasures.

6.1 Introducing the Mechanism of Independent Evaluation and Mutual Evaluation

Encourage students to carry out independent evaluations, and introduce the mechanism of mutual evaluation by their peers. Students can conduct regular self-evaluation according to their own cognition, and they can also evaluate each other's innovation and entrepreneurship ability and performance, so as to improve the participation and objectivity of evaluation. At the same time, independent evaluation encourages students to take the initiative to think and participate, and develops their self-knowledge and self-management ability. Through independent evaluation, students can reflect on their own learning and growth process, actively look for deficiencies and

make improvements. The mutual evaluation mechanism emphasizes mutual evaluation and feedback among students and stimulates students' sense of teamwork.

6.2 Strengthen Teacher Training and Guidance

Provide teachers with relevant training and guidance to enhance their evaluation capacity and professionalism. The training can include knowledge and skills on the concept of innovation and entrepreneurship education, teaching design and methods, course evaluation and feedback. At the same time, experts or entrepreneurs with a background and practical experience in innovation and entrepreneurship can be invited to give lectures and share their experiences to provide teachers with practical cases and inspiration.

6.3 Periodic Evaluation and Improvement

Periodically evaluate the effectiveness of the evaluation system, collect opinions and suggestions from students and teachers, and adjust and improve the evaluation indexes and methods in time. The evaluation system should keep pace with the times, adapt to the development needs of innovation and entrepreneurship education, and maintain its scientificity and reliability. The specific steps are as follows: firstly, determine the time interval of the evaluation, which can be conducted every semester, quarter or year. According to the object and purpose of the assessment, choose an appropriate assessment cycle. Secondly, identify the content and indicators of the assessment and select

appropriate assessment tools and methods according to the specific situation. Next, collect relevant assessment data, which can be obtained through questionnaires, tests, observations, interviews and other ways to obtain information. Ensure the authenticity and comprehensiveness of the assessment data.

7. Conclusion

The establishment of an innovative and entrepreneurial teaching quality evaluation system is a key link in the implementation of the higher education system. In recent years, the state and universities also further understand that university innovation and entrepreneurship education is not only a favourable means to cultivate students' innovative consciousness and subjective initiative, but also an important way to adapt to the process of globalization and promote national economic development. On the basis of analyzing the assessment system of innovation and entrepreneurship education and its status quo, this paper combines the background of the era of "mass entrepreneurship and innovation", studies the main problems existing in the assessment system of domestic innovation and entrepreneurship education in many aspects, and finally formulates the assessment system of innovation and entrepreneurship education in colleges and universities based on the concept of OBE education, which provides references to the current reform of dual-creation education in China.

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