Development of Training Curriculum to Enhance Undergraduate Student's Innovative Entrepreneurship Skills

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Abstract

This study introduced the principles, objectives, structure, teaching activities, and evaluation methods of curriculum development. Data collection was conducted through questionnaire surveys and structured interviews, employing corresponding methodologies. Statistical software was utilized to organize and analyze the collected data, leading to scientifically sound results. The study discussed the effectiveness of curriculum design in alignment with theoretical foundations, the efficacy of various components of curriculum design, and the incorporation of innovative and entrepreneurial elements. The findings supported the integration of constructivist and humanistic theories in enhancing innovation and entrepreneurship capabilities and addressing existing research gaps. The study provided valuable guidance and reference for teachers of undergraduate innovation and entrepreneurship courses in universities and external training personnel, aiming to enhance teaching quality and cultivate students' practical abilities, ultimately fostering substantial growth and development for both educators and students.

Keywords: Curriculum Design; Undergraduate Students; Innovation and Entrepreneurship; Constructivism

Introduction

Research on innovation and entrepreneurship can be traced back to economists and management scholars such as Joseph Schumpeter and Peter Drucker. Joseph Schumpeter introduced the theory of innovation, emphasizing its role as a driver of economic growth and development, referring to the introduction of new products, production methods, markets, and

resources. Peter Drucker, on the other hand, emphasized the importance of entrepreneurial spirit and entrepreneurship management. He defined entrepreneurs as creative individuals dedicated to identifying and leveraging new opportunities.

In the face of typical crises such as the 2008 financial crisis and the 2019 COVID-19 pandemic, research on innovation, entrepreneurship, employment, and their interrelationships has shown a growing trend (Yan, 2021). In the rapidly changing socio-economic environment, the innovative and entrepreneurial abilities of university students have become crucial for adapting to challenges and pursuing success. In response to this reality, the development of innovative entrepreneurship training courses can help students increase job opportunities and entrepreneurial prospects, alleviate employment pressures, and enhance employment rates (Wang, 2019). Innovation is regarded as a core driving force for social progress and economic development (Zhu, 2020), and university students should possess innovative awareness and practical abilities to promote industrial upgrading and social innovation. Furthermore, nurturing students' innovative and entrepreneurial capabilities aligns with society's demand for talent (Wei et al., 2020), enhancing their competitiveness in the job market and meeting the demand for high-quality talent in innovative enterprises and the technology sector (Di, 2019).

Although there has been extensive research on innovation and entrepreneurship, there are still some issues that require further exploration and resolution. Firstly, the majority of research is concentrated in developed countries and regions, leaving insufficient understanding of the innovation and entrepreneurship environment and practices in developing countries and regions. Secondly, existing research tends to focus on the macro level, lacking in-depth analysis of individual innovation capabilities and entrepreneurial behaviors.

Research objectives

1. To develop a systematic university student innovation and entrepreneurship training program aimed at enhancing their innovation awareness and practical abilities.

2. To alleviate university students' employment pressures and expand their job opportunities and entrepreneurial prospects by designing and implementing innovative entrepreneurship training courses.

3. To cultivate university students with innovative entrepreneurial skills to meet the growing demands of industries, thereby driving social and economic development and progress.

Literature Review

This study primarily introduces the core concepts, theoretical foundations, and relevant research of the training program. Initially, it systematically delineates the significance of innovation and entrepreneurship, training research, measurement standards, and components, establishing a sturdy foundation for the study's progression. Furthermore, it explores the integration of constructivism and humanism with innovation and entrepreneurship to support the theoretical framework of this paper. Finally, the study summarizes the training program from the perspectives of types, development, and related research, thus laying a robust groundwork for the development of innovative entrepreneurship training courses.

Innovation and Entrepreneurial Spirit

Research on innovation and entrepreneurship

In the early 20th century, Schumpeter (1991) proposed that innovation was a "new combination" of production factors and conditions. By the 1980s, the rapid development of the new technological revolution prompted Chinese scholars to associate entrepreneurship with innovation, encompassing knowledge and technological innovation (Hao, 1995). In the 21st century, Liu et al. (2018) highlighted that the concept of innovation should encompass elements such as implementing entities, basic conditions, goal-driven motives, and pursuit of interests. In the 1960s, Fernando and Zoltan (1968) defined entrepreneurship in their foundational work "Entrepreneurship in Basic Education" as a mindset, reasoning behavior, opportunities, comprehensive considerations, and harmonious leadership. Hisrich (1990) viewed entrepreneurship as a process of identifying and seizing opportunities, providing innovative products or services, and realizing their inherent potential and value. Scholars like Yang et al. (2014) regard entrepreneurship as a process of individuals integrating their original materials (ideas, capital, skills, etc.).

Innovation and entrepreneurship are distinct but closely related. Research indicates that innovation is a key driver of entrepreneurial activities. Entrepreneurial success often requires entrepreneurs to possess an innovative spirit (Song, 2022). Innovation can manifest as novel ideas or practices in products, services, technologies, or business models, which typically form the core of entrepreneurial activities. Entrepreneurs frequently serve as drivers of innovation, transforming innovative ideas into tangible products or services through the establishment of new ventures or organizations. Entrepreneurial activities can stimulate market competition and encourage other firms to adopt innovative measures. The innovation ecosystem also influences entrepreneurial activities, comprising various organizations and institutions such as government policies, investors,

incubators, and universities, collectively fostering an environment supportive of innovation and entrepreneurship.

Research on entrepreneurial capability

Wang (2012) proposed that the entrepreneurial capabilities of university students mainly encompass seven dimensions: opportunity seizing ability, entrepreneurial perseverance, relational capability, entrepreneurial motivation, innovation and creativity, practical learning ability, and resource integration capability. Yang et al. (2014) categorized the entrepreneurial capabilities of university students into six dimensions: Opportunity Discovery Capability (ODC), Organizational Management Capability (OMC), Strategic Decision-Making Capability (SDC), Resource Intergration Capability (RIC), Innovative and Creative Capability (ICC), and Setback Endurance Capability (SEC). Zhu et al. (2015) argued that entrepreneurial capabilities consist of five dimensions: autonomy, social ability, survivability, management capability, and entrepreneurial skills. Zhao et al. (2016) suggested that entrepreneurial capabilities encompass professional skills and basic qualities, which can be divided into five dimensions: entrepreneurial opportunity seizing ability, psychological coping ability, organizational management capability, entrepreneurial learning ability, and innovative capability. Ma et al. (2016) identified five dimensions of entrepreneurial capabilities for university students: opportunity grasping, relational capability, innovation and creativity, organizational management, and commitment to learning. Chen and Chen (2016) proposed the elements of entrepreneurial capabilities from the perspectives of objective and psychological characteristics of entrepreneurs, and through theoretical and empirical research, they proposed and validated the impact of entrepreneurial capabilities on firm performance.

Constructivist theory

Constructivism can be traced back to the 18th-century Italian philosopher Giambattista Vico (1668-1744), who observed that "all knowledge is constructed by the learner" (Morey, 2005). People can only clearly understand what they have already constructed. Constructivism, also known as structuralism, posits that learning is not a disorderly accumulation; the acquisition of new knowledge depends on existing knowledge, which are interrelated and mutually influential.

There is a close relationship between constructivist theory and innovation and entrepreneurship, which is evident in both educational practices and practical applications. Constructivist theory posits that individuals actively construct their knowledge and understanding through interaction with the environment. This theory not only addresses cognitive issues and individual cognitive processes but also shifts the focus to the "individual," emphasizing the

subjective role of learners (Zhong, 2008). In the field of innovation and entrepreneurship, learning is not merely passive knowledge acquisition but an active, personalized process. Entrepreneurs need to construct knowledge from practice, understanding markets, user needs, and business models through continuous practice and reflection.

Constructivist theory emphasizes the influence of the social environment on individuals, with interactions between individuals and society forming the basis of knowledge and understanding. In the process of innovation and entrepreneurship, entrepreneurs need to collaborate and communicate with others continuously, jointly constructing ideas, business models, and solutions. Various ideas, cultures, and values in society also influence entrepreneurs' behavior and decision-making. Constructivist theory highlights that problem-solving and knowledge innovation are interactive processes, with individuals constantly adjusting and improving their cognitive structures through interaction with the environment. In the process of innovation and entrepreneurship, entrepreneurs need to face challenges and problems continuously and adjust and improve their business models, products, or services through collaboration and communication with others.

Humanistic theory

Humanistic theory is based on humanistic psychology and emphasizes how to create a conducive environment for learners to perceive, explore, and understand the world from their own perspectives, thereby achieving self-actualization. Represented primarily by Rogers, humanistic theory underscores individual autonomy, respect, development, subjective experiences, and emotions.

Humanistic theory emphasizes the freedom and self-realization of individuals, encouraging them to pursue their interests and passions. In the field of innovation and entrepreneurship, individual autonomy and independent thinking are paramount. Entrepreneurs should thoroughly understand their strengths, interests, and values, identifying suitable entrepreneurial fields and projects, and wholeheartedly immerse themselves in them. Nurturing innovative entrepreneurial capabilities requires stimulating individuals' creativity and innovation awareness, enabling them to freely explore and pursue their entrepreneurial dreams. Humanistic theory highlights the importance of emotions and emotional expression in individual development. In the process of innovation and entrepreneurship, leadership and teamwork skills are crucial. Humanistic theory encourages individuals to understand and respect others' emotions, fostering good interpersonal relationships through emotional communication and resonance, which are essential for

entrepreneurs' leadership and collaboration within teams. Humanistic theory posits that individuals' values and beliefs are significant drivers of their behavior and decisions. In the realm of innovation and entrepreneurship, individuals' values and goals influence their entrepreneurial motivations and behaviors (Dai & Liu, 2018). Cultivating innovative entrepreneurial skills requires guiding individuals to deeply reflect on their values and goals, integrating them with entrepreneurial practices, thereby realizing self-worth while also creating value for society.

Research on training courses

Research has found that there are some issues with innovation and entrepreneurship courses in Chinese universities. For instance, Wu (2016) suggests that the faculty engaged in innovation and entrepreneurship education in universities is relatively weak. Although the trend of innovation and entrepreneurship education is flourishing in China, some universities have not changed their mindset towards innovation and entrepreneurship education teachers. They lack practical capabilities. Qin et al. (2018) point out that domestic universities lack innovation and entrepreneurship venues and environments. University innovation and entrepreneurship courses still adopt a "teaching, demystifying" teaching method, with paper-based exams as the main assessment method, emphasizing exams rather than investigation. Even if some universities choose to cooperate with enterprises to carry out innovation and entrepreneurship education, the opportunities for students to practice in related enterprises are scarce. Most internship positions remain at the technical level, making it difficult to cultivate students' innovative thinking and entrepreneurial abilities. Li et al. (2013), after studying the evolution, problems, and system construction of entrepreneurship education in Chinese universities over the past decade, proposed that China's entrepreneurship education has problems such as unreasonable course design, insufficient teaching staff, insufficient support funds for entrepreneurship practice, lack of space for entrepreneurship incubators, and imperfect policies for entrepreneurship practice.

This study proposes some preliminary opinions on the above issues: universities need to strengthen the training and introduction of innovation and entrepreneurship education teachers. Enhance teachers' practical capabilities and knowledge of innovation and entrepreneurship to cultivate a group of teachers with practical experience and industry backgrounds to better guide students' innovation and entrepreneurship practices. Universities should actively create an environment and atmosphere for innovation and entrepreneurship, build innovation and entrepreneurship practice bases and incubators, and provide students with sufficient practical opportunities and resource support. At the same time, the design of innovation and

entrepreneurship courses should be more practical, focusing on cultivating students' innovative thinking and practical abilities, reducing traditional paper-based exam forms, and adopting more project practices and case analyses. Universities can also strengthen cooperation with enterprises, carry out joint innovation and entrepreneurship projects between universities and enterprises, and provide students with more internship and practical opportunities. In addition, the government and relevant departments should also increase support for innovation and entrepreneurship education and tilt policies, provide more financial support and policy guarantees, and promote the comprehensive development of innovation and entrepreneurship education.

Conceptual Framework

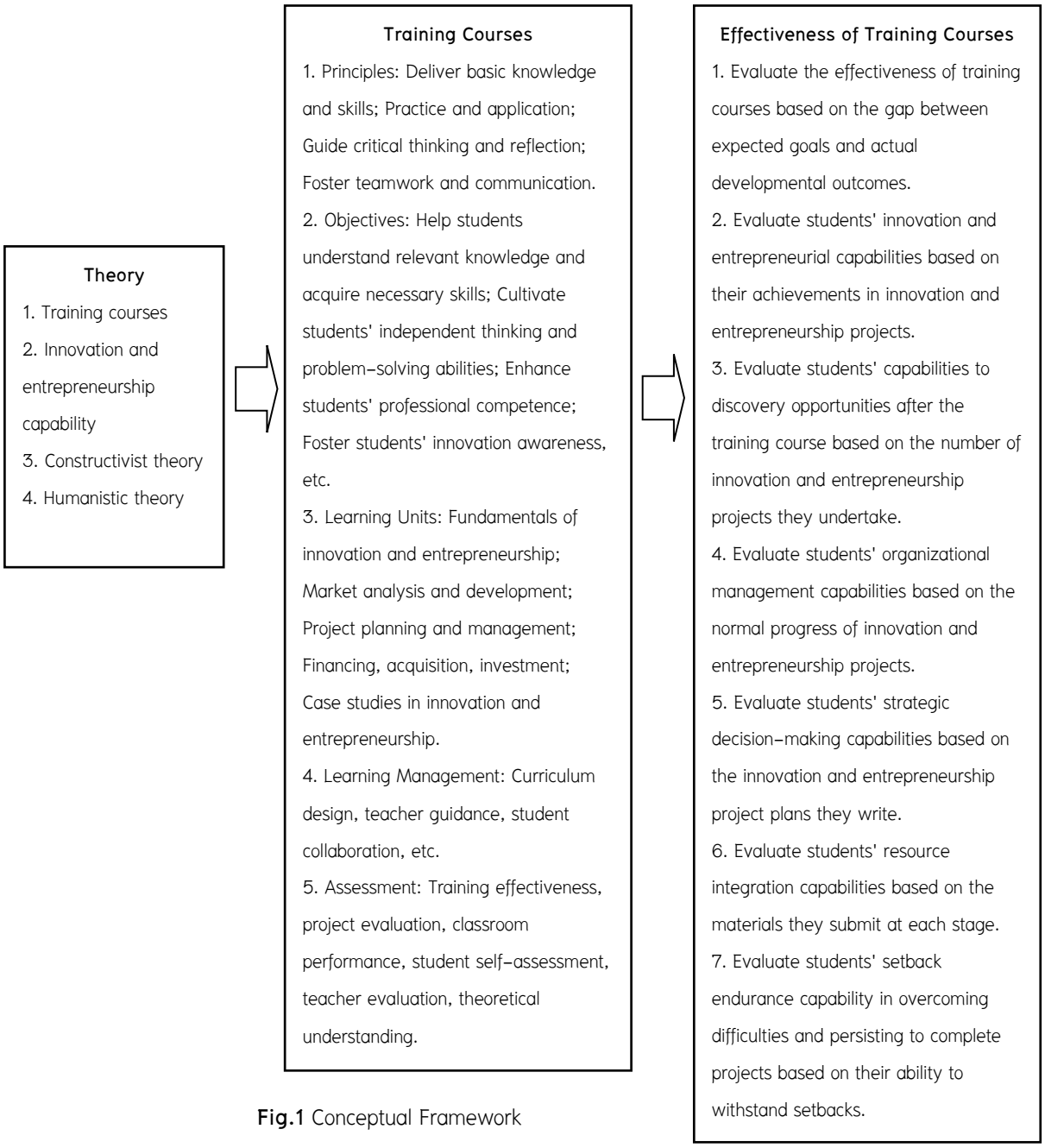

Fig.1 Conceptual Framework

Research Methodology

Course development involves the following four steps.

The first step is foundational information research. The survey method refers to the use of controlled measurements by researchers to collect reliable data on the issue under study. It is mainly used to investigate the current status of a particular issue. In this study, before the course

commenced, a questionnaire survey was conducted on senior students from 20 different types of universities to gain detailed insights into their basic information, gender, grade, and major. The selection of these 20 universities was based on a simple random sampling method while ensuring representation from various types of universities. Senior students were chosen because they have already completed foundational learning in their major courses and have acquired professional skills, thus having more time compared to students in other grades. Additionally, investigating innovation and entrepreneurship among senior students is of typical significance given the employment prospects they face upon graduation.

The second step is curriculum design. To ensure the effectiveness of the innovation and entrepreneurship course design, the design process should involve research on market demand, adhere to the principle of "teaching according to students' abilities," develop diversified course content, emphasize practical application, establish evaluation mechanisms, and continually improve these methods. The specific steps are as follows:

(1) Research on market demand: Understand the trends in innovation and entrepreneurship markets and industries, analyze the needs of audiences and target users, and determine the types, content, methods, and formats of education and training provided.

(2) Adherence to the principle of "teaching according to students' abilities": Develop education and training programs tailored to the characteristics of students at different levels, majors, and disciplinary backgrounds. Adopt teaching methods that are suitable for students' levels and majors, which will greatly enhance the effectiveness of the innovation and entrepreneurship course.

(3) Design diversified course content: Design a comprehensive curriculum system based on foundational knowledge, practical operational skills, team cooperation management, coordination, etc., to provide comprehensive support for students' innovation and entrepreneurship.

(4) Emphasize practical application: Establish practical components in projects, guiding students to transform theoretical knowledge into practical experience through hands-on activities, deepening their understanding of innovation and entrepreneurship, and simulating specific implementation plans.

(5) Establish evaluation mechanisms: Establish a scientific and reasonable evaluation system with clear grading criteria and open and transparent evaluation methods. This helps students fully grasp the course knowledge and develop skills for self-planning, self-improvement, and self-implementation.

The third step is the implementation of the course. This step employs a convenient random sampling method, randomly selecting 20 students from a class in 20 different types of schools using paper questionnaires. During self-study periods, students are briefed on the purpose of the survey and given approximately 20 minutes to respond, after which the questionnaires are collected on-site. Strict screening is applied to the collected questionnaires to obtain valid responses, and all subsequent data analysis is based on these valid responses.

The pre-test and post-test method is an experimental design used to evaluate the effectiveness of interventions. The main idea is to measure relevant variables before and after a specific intervention among a particular audience, allowing for a comparison of the differences between the two sets of measurements to evaluate the intervention's effects. This method is applicable to various types of research and can be used to assess educational outcomes.

During the questionnaire survey, data recovery and surveying may be influenced by various subjective factors, such as researchers arbitrarily filling in answers or the loss of some input results during data collection. Therefore, reliability analysis of the questionnaire information collected so far is needed to ensure the reliability of the data after the questionnaire survey. Reliability analysis is conducted using SPSS software, and when the result is higher than 0.7, the data's reliability after the survey is considered high. According to current empirical analysis, when the coefficient is greater than 0.8, the reliability of the data collected through the questionnaire is high, approaching 0.90.

The fourth step is about course evaluation and final version improvements.

Research Results

The effectiveness of improving student capabilities

This study designed a questionnaire to assess the improvement of student capabilities before and after participating in a university-level innovation and entrepreneurship course. The research subjects were 400 students from 20 universities in Henan province. The survey questionnaire comprised 15 questions covering areas such as knowledge acquisition, opportunity exploration, organizational management, strategic decision-making, resource integration, and resilience in the face of setbacks.

Table 1 Results of the effectiveness of improving student capabilities

Entrepreneurship skills	Pretest		Posttest		t	p
	M	SD	M	SD		
1. Explore opportunities capability	2.00	0.97	2.92	0.88	7.388	.01**
2. Organizational management capability	2.08	0.91	3.111	0.71	9.212	.01**
3. Strategic decision-making capability	2.02	0.92	3.17	1.06	8.546	.01**
4. Resource integration capability	1.88	0.92	3.50	0.85	12.652	.01**
5. Setback Endurance capability	2.00	0.84	3.14	0.99	9.238	.01**
Total	2.01	0.78	3.12	0.40	13.283	.01**

** p<0.01

Improvement Results of Training Courses (Final Version)

1. Introduction

The innovation and entrepreneurship course for university students is an introductory course in university innovation and entrepreneurship education. The course content mainly covers two aspects: innovation and entrepreneurship. The course is divided into 8 units, with the first unit outlining the basic knowledge of innovation; the second unit summarizing the fundamental skills of innovation; the third unit synthesizing the practical abilities of innovation; the fourth unit summarizing the basic knowledge of entrepreneurship; the fifth unit explaining market research and competitive analysis. The sixth unit outlines basic entrepreneurial skills; the seventh unit outlines entrepreneurial practical abilities. The eighth unit of the course explains content related to financing and investment, as shown in the structure diagram.

2. Course Principles

Constructivist views on knowledge, learning, and teaching have significant value for this study. This is primarily reflected in the guidance based on a knowledge perspective, which allows us to develop the innovation and entrepreneurship course with a task-driven approach, providing students with a solid theoretical foundation. Guided by learning principles, our developed course is more actionable, enhancing students' teamwork skills as they engage in practical activities. Teacher guidance based on teaching principles enables students to more adeptly cultivate the five major capabilities of innovation and entrepreneurship. Humanism holds significant value for this research topic, mainly emphasizing attention to individuals' potential abilities, respecting individuals' thoughts, and considering individuals as complete personalities. Guided by these theoretical insights, we can make the innovation and entrepreneurship course developed in this

study more applicable. The course content aims to cultivate students' innovative thinking and entrepreneurial capabilities, with the principle of respecting students' personal beliefs, and conducting practical activities.

3. Course Objectives

The course objectives combine three levels of basic knowledge, basic skills, and practical abilities, along with five capabilities: opportunity discovery, organizational management, strategic decision-making, resource integration, and setbacks endurance.

4. Curriculum structure

Table 2 Curriculum structure

Unit	Topic	Class hour arrangement
1	Introduction to innovation and entrepreneurship	1 Class hours
2	Innovative thinking and innovative entrepreneurship methods	1Class hours
3	Innovation practices and creative evaluation	1 Class hours
4	Innovation and entrepreneurship practice and case analysis	2 Class hours
5	Team building and leadership	3 class hours
6	Market research and competition	3 class hours
7	Business plans and road shows	3Class hours
8	Financing and investment	2 Class hours
	Total	16 hours

5. Teaching Activities

The design of teaching activities is divided into four stages: stimulation, support, exploration, and sharing.

Stimulation Link Activity Design:

This chapter employs two stimulation strategies to provoke questions. The questions are set as follows: "Why should college students receive innovation and entrepreneurship education?" and "What advantages do college students have in innovation and entrepreneurship?" By bridging the gap between learners' existing entrepreneurial knowledge and the new knowledge they need to learn, it stimulates learners' interest in learning and generates learning motivation. Together with the students, learning objectives are established, and the course content is oriented towards work. The final task is the project business plan that runs through the entire teaching process.

Support Link Activity Design:

This chapter provides support to learners through the construction of interpersonal and material environments, allowing learners to choose freely according to their needs. Interpersonal support includes intangible entrepreneurial knowledge support, direct discussions with learners, explanatory dialogues, and personalized entrepreneurial spirit and belief support. The structured material environment provides learners with abundant resources, including content charts from the first chapter, corresponding course software, micro-lessons, and video resources such as "Silicon Valley Legends". It also offers electronic reference books for the course, organizational management methods, strategic management methods, resource integration skills, and resilience-building techniques.

Exploration Link Activity Design:

Through assignments like "Researching Innovation and Entrepreneurship Policies for College Students" and "Researching Processes for College Students", students' sensitivity and decision-making abilities are enhanced. Then, students select team members to jointly or individually complete business projects, while simultaneously testing students' organizational and management skills, resource integration abilities, resilience, and strategic decision-making. The exploration content set in this chapter is the "Project Business Plan", serving as a carrier for the combination of new knowledge. Learners explore products, stories, and projects of interest, understand the entrepreneurial process of college students, and grasp innovation and entrepreneurship policies for college students, laying the foundation for completing the major project's business plan.

6. Course Evaluation

(1) Achievement Distribution:

Total Score for this Course = 20% Attendance + 25% Regular Assignments + 55% Completion Assignments.

A. Attendance: 2 points * 10 times. Each late arrival or early leave deducts 1 point, each absence deducts 2 points, and each time being absent without permission deducts 4 points.

B. Regular Assignments: 15 points (Knowledge Cards), Classroom Assignments: 10 points.

C. Final Distribution: Entrepreneurship Plan: 30 points, Roadshow PPT: 10 points, Roadshow Video: 15 points.

(2) Operational Evaluation Criteria:

The types of assignments in this course consist of three parts: Classroom Assignments, Regular Assignments, and Final Assignments, each with specific forms of assessment.

Discussions

Alignment of Course Design Effectiveness with Theoretical Foundation

This study integrates humanism and constructivism, combining student research with expert interviews to refine the innovation and entrepreneurship curriculum. The research objectives serve as a bridge between the educational objectives of the school and the orientation of entrepreneurial education courses, aligning the objectives of entrepreneurship education with those of the school, thereby enabling students to participate in innovation and entrepreneurship education, acquiring both learning and life skills. Karl argues that students can gain a solid theoretical foundation and practical case studies from the school's innovation and entrepreneurship education, enhancing their ability to grasp the market and thus increasing their interest in innovation and entrepreneurship. On the other hand, successful university entrepreneurs are more willing to give back to the school's innovation and entrepreneurship education, assisting in its development. Some scholars have studied entrepreneurship education in British universities, emphasizing the cultivation of entrepreneurial qualities and entrepreneurial practice in course objectives, dividing course objectives into four aspects: entrepreneurial logic, entrepreneurial thinking, entrepreneurial skills training, and entrepreneurial practice. Through empirical analysis of Wenzhou University, Heilongjiang University, and Zhejiang University, Zhao G et al. (2015) believe that the utilitarian orientation of entrepreneurship education in universities is gradually shifting towards training students' qualities, focusing on students' practical needs. Therefore, the objectives of innovation and entrepreneurship education courses should be updated to: starting from a macro perspective, promote entrepreneurship education to cultivate students' innovative awareness and entrepreneurial ideas as the core, focusing on the dual foundation of knowledge and entrepreneurial practical skills education, aiming to cultivate practitioners of entrepreneurship for business students. In the design of objectives, according to Zhao (2015), we need to combine utilitarian objectives with non-utilitarian objectives, while Yu and Zhong (2017) mainly consider the influence of social and student needs, as well as the reality of resources and teaching tasks on the course objectives. In setting objectives, consideration should be given to students' learning and interest requirements.

Effectiveness of Various Components in Course Design

In terms of course content design, this study mainly follows Huang and Wang (2023)'s views on course content design, and prioritizes practical courses as the focus of university innovation and entrepreneurship courses. In terms of course evaluation, this study is mainly

consistent with the evaluation methods of Tian Xia and Cui Jun. They combine formative evaluation with final evaluation and adopt interdisciplinary and diversified evaluation methods. In terms of course inspection, this study uses test scores from the experimental group to verify the effectiveness of the course.

Various Elements with Innovative and Entrepreneurial Spirit

This study, through the comparison of test data before and after, scientifically and effectively measures five innovative abilities: exploring opportunities, organizing management, strategic decision-making, resource integration, and improving resilience. Through data analysis, the developed innovation and entrepreneurship training courses are highly effective and have strong applicability.

Conclusion

The Effective Alignment of Course Design with Theoretical Foundations

This study meticulously reviewed relevant books and papers on innovation and entrepreneurship, analyzed the concept of innovation and entrepreneurship capabilities, and identified the theoretical underpinnings necessary for designing a curriculum. Drawing on constructivism and humanism theories, the study established a university-level innovation and entrepreneurship course. Through methods such as questionnaire surveys, interviews, and expert evaluations, the study ultimately demonstrated the effectiveness of the development of a learning model for university students' innovation and entrepreneurship capabilities. The research findings supported the effective combination of constructivism and humanism theories in enhancing innovation and entrepreneurship capabilities, helping to fill existing research gaps. Therefore, the learning model constructed in this study can be directly utilized by other university teachers for teaching objectives.

Course Structure

This course is suitable for higher education instructors responsible for undergraduate innovation and entrepreneurship courses. The author incorporated constructivist and humanist theories into the course design to interconnect and link course content. When other teachers use this course for teaching, they need to integrate learning with individual teaching habits to better encourage students' active participation in classroom activities, facilitate knowledge construction, and cultivate critical thinking and problem-solving abilities. The teaching of this course is primarily aimed at enhancing students' innovation and entrepreneurship capabilities, manifested in the

improvement of students' abilities in exploring opportunities, organizing management, making strategic decisions, integrating resources, and coping with setbacks. It was found that while individual course units may not fully enhance students' five abilities, implementing all eight units of this course design comprehensively by teachers can significantly improve students' five abilities. This further confirms the value of innovation and entrepreneurship training courses in teaching, which can bring benefits to teachers, students, and the educational institution, not only in ensuring the achievement of teaching objectives, teaching quality, and teaching efficiency but also in enhancing students' learning experience. Overall, the innovation and entrepreneurship training course system developed in this study is relatively comprehensive and highly practical. To enhance students' course capabilities, it is recommended that others using this course ensure the integrity of the course.

Replicability of Teaching Methods

This course can be used by higher education instructors responsible for undergraduate innovation and entrepreneurship courses and businesses related to innovation and entrepreneurship themes. Due to the novel form, teaching resources, teaching steps, and pre-course design of the innovation and entrepreneurship training course, it is recommended to conduct teacher training on innovation and entrepreneurship courses before the course starts to help teachers or corporate external training acquire the necessary knowledge, skills, and resources to effectively organize and teach course content. This mainly includes the application of textbooks, reference books, teaching tools, and multimedia resources, training in teaching methods and evaluation strategies, and how to choose the most appropriate teaching methods according to students' characteristics and needs.

Since the learning situations of different schools vary, although the course system is complete, specific activities need to be adjusted according to students' interests, abilities, and personalities. During the course design and implementation process, teachers should flexibly use different teaching methods and strategies to meet students' diverse needs. During execution, teachers should encourage students to reflect on the learning process, identify shortcomings, provide guidance and support, while also providing various resources and tools for students to broaden their learning channels and methods, encouraging students to integrate knowledge with practice, actively engage in work and life, set goals and milestones, continue to track and evaluate students' progress, help students overcome difficulties and challenges, and maintain a positive learning attitude and enthusiasm. Finally, in the summary stage, teachers should guide students to

summarize and review, organize and consolidate learning knowledge, summarize learning experiences and courses, provide extracurricular assessment and feedback, and contribute to the improvement and optimization of the course. Through the teaching of this course, both professional teachers and corporate leaders will gain certain benefits, demonstrating that teachers can directly imitate designers, saving a considerable amount of preparation and teaching workload; corporate leaders can not only apply the teaching methods designed in the course to corporate training but also improve the overall effectiveness of training through practical course content and case guidance.

Diversity in Course Evaluation

This course is suitable for higher education instructors responsible for undergraduate innovation and entrepreneurship courses. The diversity of course evaluation is reflected in both teachers and students, as follows:

From the perspective of teachers, most teachers who apply this course evaluate the course design from the aspects of teaching content design, diversity of teaching methods, interaction, and feedback mechanisms. Among them, most teachers believe that the teaching content of this course is more suitable, covering various aspects of innovation and entrepreneurship, such as creative stimulation, business model design, marketing strategies, etc., which can provide strong support for students to acquire comprehensive knowledge. Secondly, most teachers believe that the teaching methods designed in this course are diversified and better meet the requirements of effective classroom teaching methods. Teachers can flexibly use methods such as case analysis, group discussions, and practical projects to stimulate students' interest in learning and cultivate their innovative thinking. Additionally, most teachers believe that the interaction and feedback mechanisms designed in this course are more appropriate, and many thought-provoking questions set by the teachers are conducive to meeting the interaction between teachers and students in actual teaching.

From the perspective of students, most students who have taken the course evaluate the course design from the aspects of practicality of teaching content, learning experience, performance display, and evaluation. Among them, most students reported that the course has good practicality. After learning theoretical knowledge of innovation and entrepreneurship, it is beneficial for entrepreneurial practice. Secondly, after receiving the teaching of this course, most students have a good learning experience and feel that the learning tasks are very clear. After learning, they can clearly feel the improvement of their skills and gain positive experience and

harvest. Additionally, most students believe that the performance display and evaluation in the course design are very valuable.

Through diversified course evaluation, both teachers and students will gain some benefits, indicating that teachers can promote students' learning effectiveness and abilities through interaction, and students can test the development and progress of innovation and entrepreneurship, laying a solid foundation for future planning and entrepreneurship.

Suggestions

Other dimensions in the structure of innovation and entrepreneurship capabilities can also be explored in depth, such as the five dimensions identified by scholars like Zhu et al. (2015) and the seven dimensions identified by scholars like Wang and Zhang (2012). A more detailed analysis of different types of innovation and entrepreneurship activities can be conducted to reveal the importance and characteristics of different capabilities in various domains.

Efforts should be devoted to developing effective evaluation tools and measurement indicators, such as assessments of innovation and entrepreneurship capabilities for vocational students. These assessments can accurately measure the level of entrepreneurial competence and provide targeted feedback and suggestions for them.

We can understand the long-term impact of innovation and entrepreneurship capabilities by remembering the subsequent entrepreneurial endeavors and careers of students. This can reveal the key factors influencing entrepreneurial success and highlight the role of innovation and entrepreneurship capabilities in shaping career trajectories.

While optimizing entrepreneurship education curriculum development, emphasis should be placed on practical experience and cultivating practical skills. Sufficient support in terms of entrepreneurial resources should be provided to students, including entrepreneurial guidance, startup funds, and business incubators. Collaborations with businesses, investment firms, and entrepreneurs should be established to provide students with practical entrepreneurial opportunities and resources, thus promoting their development in the field of entrepreneurship.

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