Development of an Entrepreneurship Training Model for Student in the Liuzhou Institute of Technology

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Abstract:

In the wave of the new technological revolution, leaders in the technology innovation industry will steer the direction of future development. The realization and application of technological innovation is closely linked to the cultivation and development of talent. Entrepreneur training models play a crucial role in universities, as they not only help cultivate students' entrepreneurial spirit and enhance their innovation capabilities and practical competencies but also provide vital support for their development in new technological fields. This study focuses on Liuzhou Institute of Technology as the research subject, to identify and develop an entrepreneur training model. Through in-depth interviews with 9 industry experts and evaluations by an additional 21 experts, the key elements of the model, including 9 main elements and 66 sub-elements, were identified. The findings contribute to a deeper understanding of the composition of entrepreneur training models, providing guidance for universities in training talent with innovative thinking and entrepreneurial skills, thus promoting the cultivation and development of students' innovation and entrepreneurial abilities.

Keywords : Elements of entrepreneur training, entrepreneur training model, Liuzhou Institute of Technology

1. Introduction

In recent years, China has been implementing a strategy of innovation-driven development, accelerating the transition from cost-effectiveness to innovation-driven advantages, and seeking new sources of sustainable development (China Commission. 2012-2022). This new source of momentum is rooted in innovative technologies and entrepreneurial talents.

However, over the past decade, the achievements of entrepreneur training in Chinese universities have not been significant. According to the Michael Page 2023 China Graduate Employment Report from 2018 to 2022, the average self-employment rate of university graduates was 1.42%, with a success rate of 2-3% (Mycos Research Institute. 2022).

In contrast, according to the Global Entrepreneurship Monitor (GEM) reports in recent years, the entrepreneurship rate among American university students reached a notable 20.1% (Hill, S et al., 2022), while the global average success rate of student entrepreneurship stands at approximately 9.2% (Hill, S et al., 2024).

This disparity underscores the pressing need for Chinese universities to reassess and enhance their entrepreneur training models. While China has made strides in fostering innovation-driven development, the current approach to entrepreneur training falls short in producing the high-quality entrepreneurial talents demanded by society.

To enhance college students' ability for independent entrepreneurship, increase the proportion and success rate of graduates engaging in independent entrepreneurship, and cultivate more innovative talents for national economic transformation, it is necessary to conduct systematic research on the entrepreneurship training model for college students and propose effective suggestions and strategies.

The current research on entrepreneurship training models has made some progress, but there are still some research gaps worth exploring and filling. An & Xu (2021) conducted research on training entrepreneurial talents in higher education institutions through virtual entrepreneurship practice, providing new ideas and methods for entrepreneurship training. However, their study mainly focused on the application of virtual practice and did not delve into specific training objectives and content. Tian (2023) focused on the entrepreneurial mindset and talent training of English majors, providing valuable insights for entrepreneurship training in specific professional fields, but the study lacked a comprehensive analysis of the specific elements and implementation methods of entrepreneurship training models.

In comparison, Lv (2023) and Zhang (2021) focused more on the specific elements and influencing factors of entrepreneurship training models, but their studies mainly concentrated on the discussion of college students' entrepreneurial intentions and cultivation of entrepreneurial mindset, with less emphasis on implementation methods and evaluation mechanisms of entrepreneurship training models. Additionally, Yang et al. (2018) studied the cultivation mode and innovation of entrepreneurial talents; however, they lacked in-depth discussion on the specific elements and implementation methods of entrepreneurship training models.

Therefore, future research can further explore the research gaps in entrepreneurship training models in the following aspects. Firstly, there can be a deeper exploration of the specific elements of entrepreneurship training models, including training objectives, content, methods, teachers, environment, practice, policy, evaluation, etc., to comprehensively understand the core content and elements of entrepreneurship training. Secondly, personalized entrepreneurship training programs can be developed by conducting in-depth research on the training needs and effects of students in different majors and disciplines. Finally, further exploration of the implementation methods and evaluation mechanisms of entrepreneurship training models can ensure the effectiveness and sustainability of entrepreneurship training.

Building upon previous research, this study identified nine main elements and 66 sub-elements of the entrepreneurship training model at Liuzhou Institute of Technology through literature review, expert interviews, and evaluations, and established a model accordingly. The findings of this research will not only facilitate the improvement of entrepreneurship training models for college students at Liuzhou Institute of Technology and other universities but also foster the development of entrepreneurial skills and mindset among students. Furthermore, it will have significant theoretical and practical implications for the emerging economic development and transformation.

2. Material and Methods

The materials of this study include the main elements of the entrepreneurship training model extracted through literature review, as well as the expert interview outline developed based on these elements. We conducted semi-structured interviews and collected the interview results from 9 experts, covering both primary and secondary elements of the entrepreneurship training model. Subsequently, we analyzed the data and conducted consistency analysis of the expert interviews to confirm the model's elements. Additionally, we prepared an expert assessment form for evaluating the entrepreneurship training model and invited 21 experts to rate the model elements using a five-point scale. The experts invited for the study come from various fields, including innovation and entrepreneurship coaches, teachers of innovation and entrepreneurship courses from other schools, and CEOs of startup companies. Finally, we conducted data analysis to determine the model elements and, combined with the experts' modification suggestions, ultimately confirmed the construction of the model.

Step 1: Study the elements of the entrepreneurial training model for students at Liuzhou Institute of Technology.

Firstly, the main elements of the entrepreneurial training model were extracted through a literature review, and an expert interview outline was developed based on these 9 elements.

Secondly, semi-structured interviews were conducted to collect input from 9 experts regarding the main elements and sub-elements of the entrepreneurial training model for students at Liuzhou Institute of Technology. These 9 experts included 3 CEOs of entrepreneurial companies who graduated from Liuzhou Institute of Technology and have been in operation for over 8 years,

3 entrepreneurship coaches on campus with more than 10 years of experience, and 3 teachers of innovation and entrepreneurship courses with over 10 years of teaching experience.

Thirdly, data analysis was conducted, and expert interview consistency analysis was performed to confirm the model elements.

Step 2: Evaluate the elements and create the entrepreneurial training model for students at Liuzhou Institute of Technology.

Firstly, an expert assessment form for the Liuzhou Institute of Technology entrepreneurial training model was prepared.

Secondly, 21 experts were invited to rate the model elements using a five-point scale. These experts included 7 Innovation and Entrepreneurship Coaches with over 9 years of working experience, 7 Teachers of Innovation and Entrepreneurship Courses in other schools with over 10 years of teaching experience, and 7 CEOs with at least 7 years of experience in operating startup companies. Additionally, the experts were asked to provide feedback on modifying the model elements and offer suggestions for model construction.

Then, data analysis was conducted on the collected data, analyzing the median and interquartile range of expert ratings to confirm the model elements.

Finally, based on some experts' modification suggestions, the opinions of the remaining experts were solicited to confirm whether they agreed with the modifications, thus finalizing the model elements.

3. Results

3.1 The main elements of the entrepreneurship training model at Liuzhou Institute of Technology were obtained through literature analysis, with the nine elements of the entrepreneurship training model listed in Table 1.

Table1 Entrepreneurship training elements analysis

Entrepreneur Training Element	Blesia (2021)	Olutuase (2023)	An, H (2021)	Liu (2021)	Zhao (2022)	Zhu (2023)	Chu (2018)	Zhang (2018)	Li (2020)	Wu (2018)	Total
Training objective	√	√	√	√	√	√	√	√	√	√	10
Training content	√	√	√	√	√	√	√	√	√	√	10
Training method	√		√	√	√	√	√			√	7
Training teacher	√	√	√		√		√	√		√	7

Table1 (Continued)

Entrepreneur Training Element	Blesia (2021)	Olutuase (2023)	An, H (2021)	Liu (2021)	Zhao (2022)	Zhu (2023)	Chu (2018)	Zhang (2018)	Li (2020)	Wu (2018)	Total
Training environment		√	√		√		√	√	√	√	7
Entrepreneur practice		√		√	√	√			√	√	6
Entrepreneur policy			√	√	√	√	√	√	√	√	8
Training evaluation	√			√	√	√	√	√			6
Ongoing learning		√		√		√		√	√		5

3.2 Results of Expert Consistency Analysis are shown in Table 2.

Table2 Consistency Analysis of Expert Interviews

Indicator	Scope	Frequency	Percentage
Expert Consensus	Below 50%	2	3.03%
	50%-74%	12	18.18%
	75%-99%	31	46.97%
	100%	21	31.82%
	Total	66	100%

Overall, the expert interview data analysis provides valuable insights into the essential elements of the entrepreneurship training model at Liuzhou Institute of Technology. Across various dimensions including training objectives, content, methods, environment, and evaluation, there is a remarkable level of consensus among experts. Key findings reveal unanimous agreement on critical aspects such as cultivating innovative thinking, providing practical training opportunities, and establishing evaluation criteria. Additionally, there is strong support for elements like mentorship, interdisciplinary learning, and ongoing support for entrepreneurs. However, slight variations in agreement exist regarding certain aspects such as specific training content or policy measures. These findings underscore the importance of a comprehensive and dynamic approach to entrepreneurship

education, catering to the diverse needs of aspiring entrepreneurs while ensuring alignment with industry trends and demands.

3.3 The data from 9 expert interview and 21 expert evaluation analyses can be found in Table 3.

Table 3 9 expert interview and 21 expert evaluation data analysis

Element	Element detail	Mdn	IQR
Training objective	1. Cultivate innovative thinking and enhance entrepreneurial willingness	5.00	1.0
	2. Learn the basic processes and required skills for entrepreneurship	5.00	1.0
	3. Practical to up skills and teamwork capabilities	4.00	1.0
	4. Practice and apply learned professional knowledge to solve problems	5.00	1.0
	5. Cultivate entrepreneurial insight and adaptability	5.00	1.0
	6. Develop comprehensive entrepreneurial management and leadership abilities	5.00	1.0
	7. Learning continuous innovation and personal development	4.00	1.0
	8. Adapt to change market environments and technological trends	5.00	1.0
	9. Offer ongoing learning courses and industry research projects	4.00	1.00
Training content	1. Provide theoretical knowledge and case studies of entrepreneurship	5.00	0.50
	2. Integrated entrepreneurship thinking into a variety of subjects.	4.00	0.0
	3. Encourage to knowledge and skills related to entrepreneurship process management	5.00	1.0
	4. Learning entrepreneurship project incubation and guideline services	4.00	1.0
	5. Entrepreneurship practice courses and internship in entrepreneur	5.00	1.0
	6. Encourage to knowledge and skills related to business management	4.00	1.0
	7. Share innovative entrepreneurship cases by seminars and others	4.00	1.00
Training method	1. Teaching in classroom and group discussions	5.00	1.0
	2. Use simulation and entrepreneurship sandbox methods	4.00	0.50
	3. Guide student entrepreneurship teams through mentors	5.00	1.0
	4. Enterprise internships and facilitate industry exchange activities	5.00	1.0
	5. Continue guide student entrepreneurship projects	5.00	1.0
	6.Provide short course training by expert lectures and discussion	5.00	1.00
	7. Provide an online learning and cross-disciplinary cooperation platform	4.00	1.00

Table 3 (Continued)

Element	Element detail	Mdn	IQR
Training teacher	1. Employ teachers with entrepreneurship knowledge and educational backgrounds	5.00	1.0
	2. Teachers should be experience and guidance capabilities with project management	4.00	1.00
	3. Teachers should be professional backgrounds and problem-solving abilities	4.00	1.0
	4. Mentors should be industry backgrounds and project guidance capabilities	5.00	0.0
	5. Employ mentors who are experts in specific fields in laws, finance, tax and another related	4.00	0.00
Training environment	1. Provide facilities for entrepreneurial learning spaces and communities	5.00	0.0
	2. Provide simulation technology to simulate the entrepreneurial process	4.00	0.0
	3. Provide entrepreneurship incubators and laboratory facilities	5.00	1.0
	4. Provide shared entrepreneurship resources and periodic mentor guidance	5.00	1.0
	5. Provide entrepreneurship internships and office space for entrepreneurial practice projects	5.00	0.50
	6. Provide startup networks and connections for early-stage enterprises	4.00	1.0
	7. Cooperation between university and enterprise (entrepreneurship practice projects on campus)	4.00	1.0
	8. Create a favorable ecosystem for innovation and entrepreneurship (culture, public opinion)	4.00	1.00
Entrepreneur practice	1. Encourage and guide students to participate in university entrepreneurship training programs	4.00	1.00
	2. Encourage and guide students to explore university science and technology project proposals	4.00	0.00
	3. Encourage and guide students to engage in virtual simulation entrepreneurship training courses	4.00	0.50
	4. Encourage and guide students to participate in entrepreneurship competitions	5.00	0.50
	5. Encourage and guide students to engage in university-enterprise cooperation practice projects	5.00	1.00

Table 3 (Continued)

Element	Element detail	Mdn	IQR
Entrepreneur practice	5. Encourage and guide students to engage in university-enterprise cooperation practice projects	5.00	1.00
	6. Encourage and guide students in executing personal entrepreneurial plans	5.00	1.00
	7. Provide guidance on managing the entrepreneurial process for students	4.00	1.00
Entrepreneur policy	1. Provide entrepreneurship learning materials and platform resources	5.00	1.00
	2. Formulate entrepreneurship policies and support measures	4.00	1.00
	3. Provide startup funding and funding policies for entrepreneurship projects	5.00	0.50
	4.Establish entrepreneurship training subsidies and incentive policies	4.00	0.50
	5. Offer funding support and tax incentives for entrepreneurship incubation projects	5.00	1.00
	6. Develop entrepreneurship project selection and certification policies	4.00	1.00
	7. Provide funding for continuous entrepreneurship development and technology transfer policies	4.00	0.50
	8. Formulate entrepreneurship mentor and professional service subsidy policies	4.00	0.00
	9. Develop incentive policies for internal entrepreneurship mentors	3.00	1.00
Ongoing learning	1. Provide ongoing learning opportunities and resources for entrepreneurs	5.00	0.00
	2. Offer entrepreneurs platforms for interdisciplinary learning and exchange	5.00	1.00
	3. Provide entrepreneurs with industry updates and trend analysis	5.00	1.00
	4. Offer entrepreneurs mentorship, guidance, and coaching services	5.00	1.00
	5. Facilitate the sharing of innovative entrepreneurship cases and seminars for entrepreneurs	4.00	1.00
	6.Provide industry research and project support for entrepreneurs	4.00	1.00

Based on the data obtained from the first round of interviews with 9 experts, a total of 21 elements such as Cultivating Innovative Thinking and Enhancing Entrepreneurial Willingness, Providing Theoretical Knowledge and Case Studies of Entrepreneurship, and Teaching in Classroom and Group Discussions were unanimously approved by the experts (100%). Additionally, 31 elements including Practice and Applying Learned Professional Knowledge to Solve Problems, Integrating Entrepreneurship Thinking into Various Subjects, and Guiding Student Entrepreneurship Teams through Mentors were highly approved by the experts (75%-99%). Furthermore, 12 elements such as Adapting to Changing Market Environments and Technological Trends, Providing an Online Learning and Cross-disciplinary Cooperation Platform, and Providing Startup Networks and Connections for Early-stage Enterprises received partial approval from the experts (50%-75%). However, the approval rate for two elements, Learning Continuous Innovation and Personal Development, and Developing Incentive Policies for Internal Entrepreneurship Mentors, was less than 50%.

According to the data from expert evaluation, a total of 8 elements received approval from the experts (Mdn=5, IQR≤0.5), including Providing Theoretical Knowledge and Case Studies of Entrepreneurship, Mentors Should Have Industry Backgrounds and Project Guidance Capabilities, and Providing Facilities for Entrepreneurial Learning Spaces and Communities.

Additionally, 26 elements were highly endorsed by the experts (Mdn=5, 1≤IQR≤1.5), such as Cultivating Innovative Thinking and Enhancing Entrepreneurial Willingness, Learning the Basic Processes and Required Skills for Entrepreneurship, Entrepreneurship Practice Courses and Internship in Entrepreneurship, and Teaching in Classroom and Group Discussions.

Furthermore, 30 elements received relatively high levels of approval from the experts (Mdn=4, 0≤IQR≤1.5), but some modifications were suggested for certain elements, such as Practical to up skills and teamwork capabilities, learning continuous innovation and personal development, Integrated entrepreneurship thinking into varieties subjects, and Learning entrepreneurship project incubation and guideline services.

However, there was significant divergence among the experts regarding the element Develop incentive policies for internal entrepreneurship mentors (Mdn=3, IQR=1), with some suggesting deletion or modification of this element.

3.4 Modification suggestions proposed by experts during the evaluation process.

Table4 Modification Results of Model Elements

Element	Original Item	New Item
Training Objective	Practical to up skills and teamwork capabilities	Provide practical opportunities to enhance skills and teamwork capabilities

Table4 (Continued)

Element	Original Item	New Item
Training content	Integrated entrepreneurship thinking into varieties subjects	Integrate entrepreneurial thinking across various subjects
Training Method	Use simulation and entrepreneurship sandbox methods	Implement simulation exercises and entrepreneurship sandbox activities to simulate real-world entrepreneurial scenarios
Entrepreneur practice	Encourage and guide students to explore university science and technology project proposals	Encourage and guide students to explore university science and technology projects with entrepreneurial potential
Entrepreneur policy	Develop entrepreneurship project selection and certification policies	Develop policies for selecting, certifying, and grading support for entrepreneurship
	Develop incentive policies for internal entrepreneurship mentors	Develop incentive policies for internal entrepreneurial mentors (such as title evaluation, workload, and policies supporting collaborative creation by teachers and students)
Training evaluation	Evaluate entrepreneurship achievements and societal impacts	Assessing entrepreneurial achievements and societal impacts, and providing recognition and rewards

The expert's suggestions include emphasizing the provision of practical opportunities to enhance skills and teamwork capabilities, promoting interdisciplinary integration of entrepreneurial thinking across various subjects, implementing simulation exercises and entrepreneurship sandbox activities to simulate real-world scenarios, guiding students to explore university science and technology projects with entrepreneurial potential, developing comprehensive policies for selecting, certifying, and supporting entrepreneurial projects, specifying the details of incentive policies for internal entrepreneurial mentors, and underscoring the importance of providing recognition and rewards when evaluating entrepreneurial achievements and societal impacts.

After conducting interviews with 9 experts and evaluations from 21 experts, and making modifications based on their feedback, a total of 7 items were revised. This resulted in 9 main elements and 66 sub-elements for the entrepreneur training model.

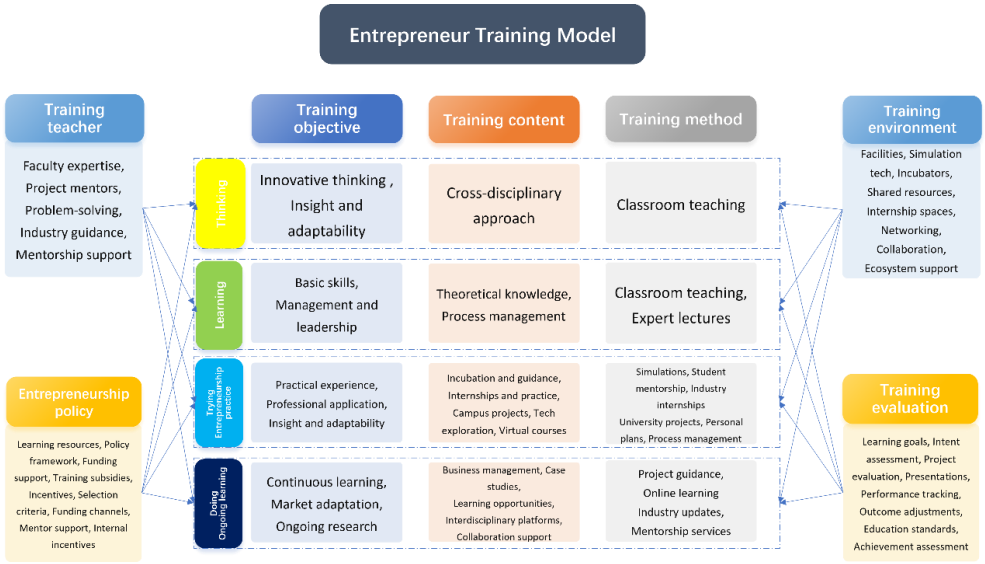

Fig 1. The Entrepreneur Training Model for Liuzhou Institute of Technology Student

Training objective guides the benchmarks and directions for Training content, Training method, Training teacher, Training environment, Entrepreneur practice, Entrepreneur policy, Training evaluation, and Ongoing learning. The Training objective possesses characteristics such as specificity, measurability, achievability, relevance, and timeliness.

Training content aligns with the Training objective, meeting the needs and levels of entrepreneurs, reflecting the philosophy and characteristics of entrepreneurial education, and exhibiting practicality, innovativeness, and flexibility.

Training method adapts to the Training content, ignites the interests and motivations of entrepreneurs, fosters their participation and interaction, embodies the process and outcomes of entrepreneurial training, and features effectiveness, diversity, and personalization.

Training teacher possesses the cognition and understanding of Training objective and Training content, master the application and design of Training method, have entrepreneurial and teaching experience, and demonstrate professionalism, affinity, and guidance.

Training environment supports the realization of Training objective, provides resources for Training content, coordinates the implementation of Training method, and facilitates the performance of Training teacher, with characteristics of safety, comfort, and openness.

Entrepreneur practice serves as the verification of Training objective, application of Training content, extension of Training method, and assistance to Training teacher, characterized by authenticity, challenge, and feedback.

Entrepreneur policy facilitates the achievement of Training objective, encourages innovation in Training content, standardizes operations in Training method, safeguards the rights of Training teacher, and provides opportunities for Entrepreneur practice, with features of rationality, fairness, and transparency.

Training evaluation, based on the standards of Training objective, covers the scope of Training content, considers the characteristics of Training method, incorporates the opinions of the Training teacher, reflects the performance of Entrepreneur practice, influences the formulation of Entrepreneur policy, and possesses objectivity, comprehensiveness, and timeliness.

Ongoing learning is the continuation of Training objective, updating of Training content, improvement of Training method, interaction of Training teacher, optimization of Entrepreneur practice, response to Entrepreneur policy, and driving force for Training evaluation, characterized by autonomy, proactivity, and persistence.

4. Conclusion

The study of the elements of the entrepreneurship training model at Liuzhou Institute of Technology yields the following conclusions:

The elements of the entrepreneurship training model at Liuzhou Institute of Technology include training objectives, training content, training methods, training faculty, training environment, entrepreneurship practice, entrepreneurship policy, training evaluation, and ongoing learning and post-training services. These elements form a comprehensive entrepreneurship training system, facilitating students' acquisition of the knowledge, skills, and practical experience necessary for entrepreneurship within the campus environment.

Throughout the research process, we emphasized the importance of defining training objectives and developing appropriate training content to ensure the cultivation of students with innovative thinking and entrepreneurial capabilities. The selection of training methods and the qualification of training faculty were also deemed critical factors that can influence the realization of training outcomes. Furthermore, providing a conducive training environment and practical opportunities were seen as essential for students' entrepreneurial development.

Entrepreneurship policy, training evaluation, and the duration of training were identified as key factors in ensuring the effective operation of the entrepreneurship training model. The formulation of entrepreneurship policies and the implementation of training evaluations can assist the institute in better managing and optimizing the entrepreneurship training model. Additionally, ongoing learning and training services enable students to continue learning about entrepreneurship and enterprise management after establishing their companies, gaining access to industry trends, accumulating industry resources, and expanding their networks.

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