



Developing an Extracurricular Course on Entrepreneurship Education for Vocational
College Student

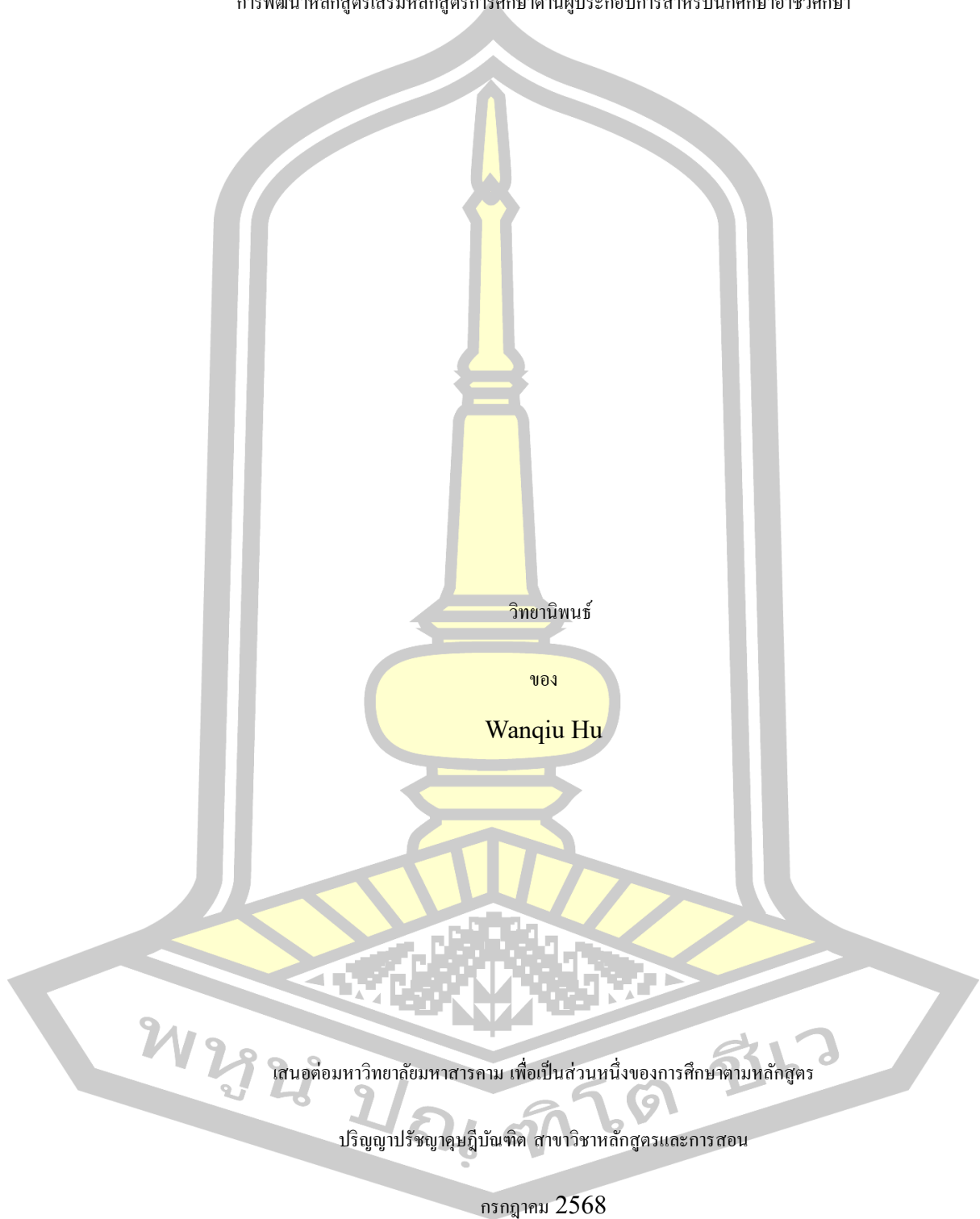
Wanqiu Hu

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Doctor of Philosophy in Curriculum and Instruction

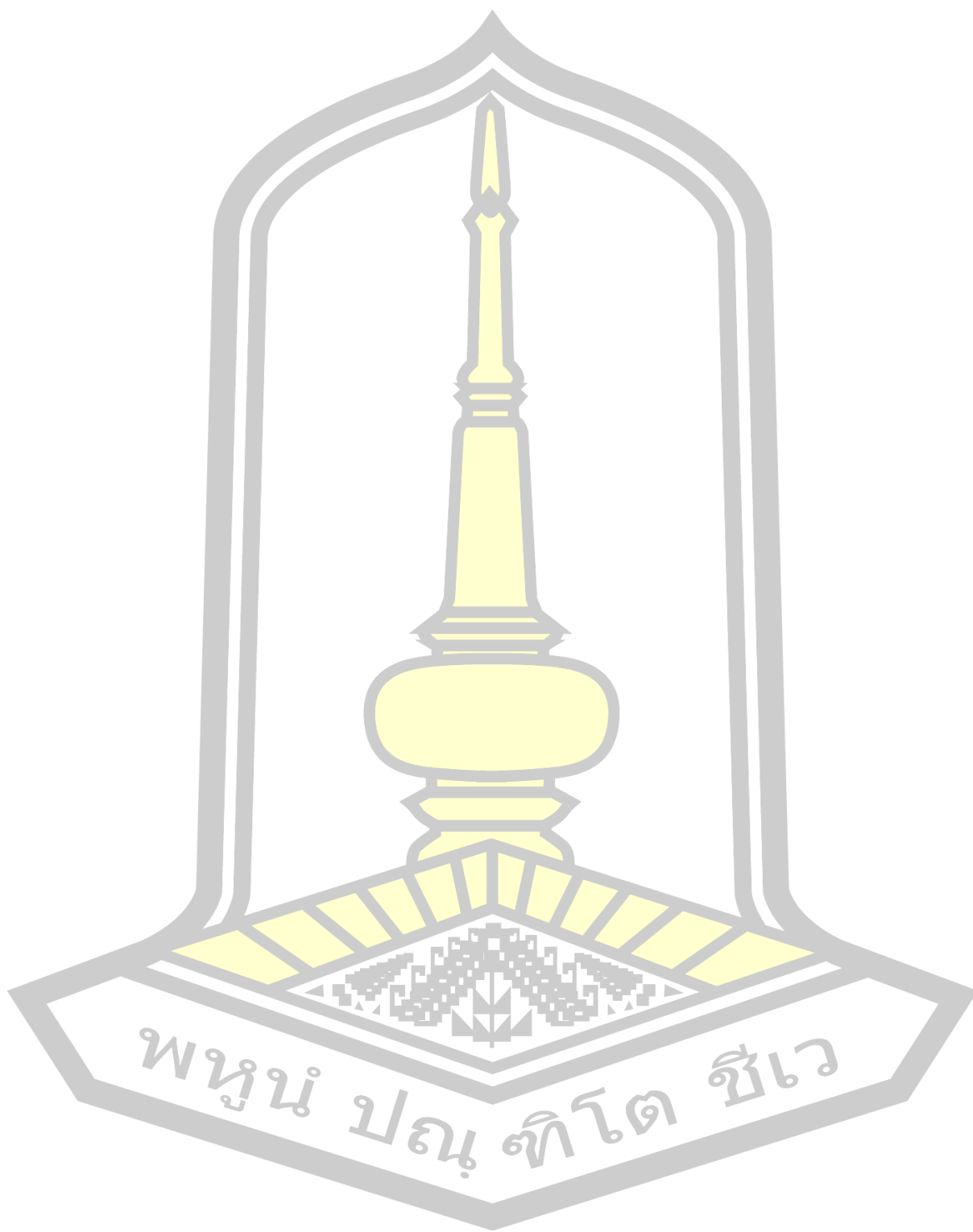
July 2025

Copyright of Mahasarakham University

การพัฒนาหลักสูตรเสริมหลักสูตรการศึกษาด้านผู้ประกอบการสำหรับนักศึกษาอาชีวศึกษา

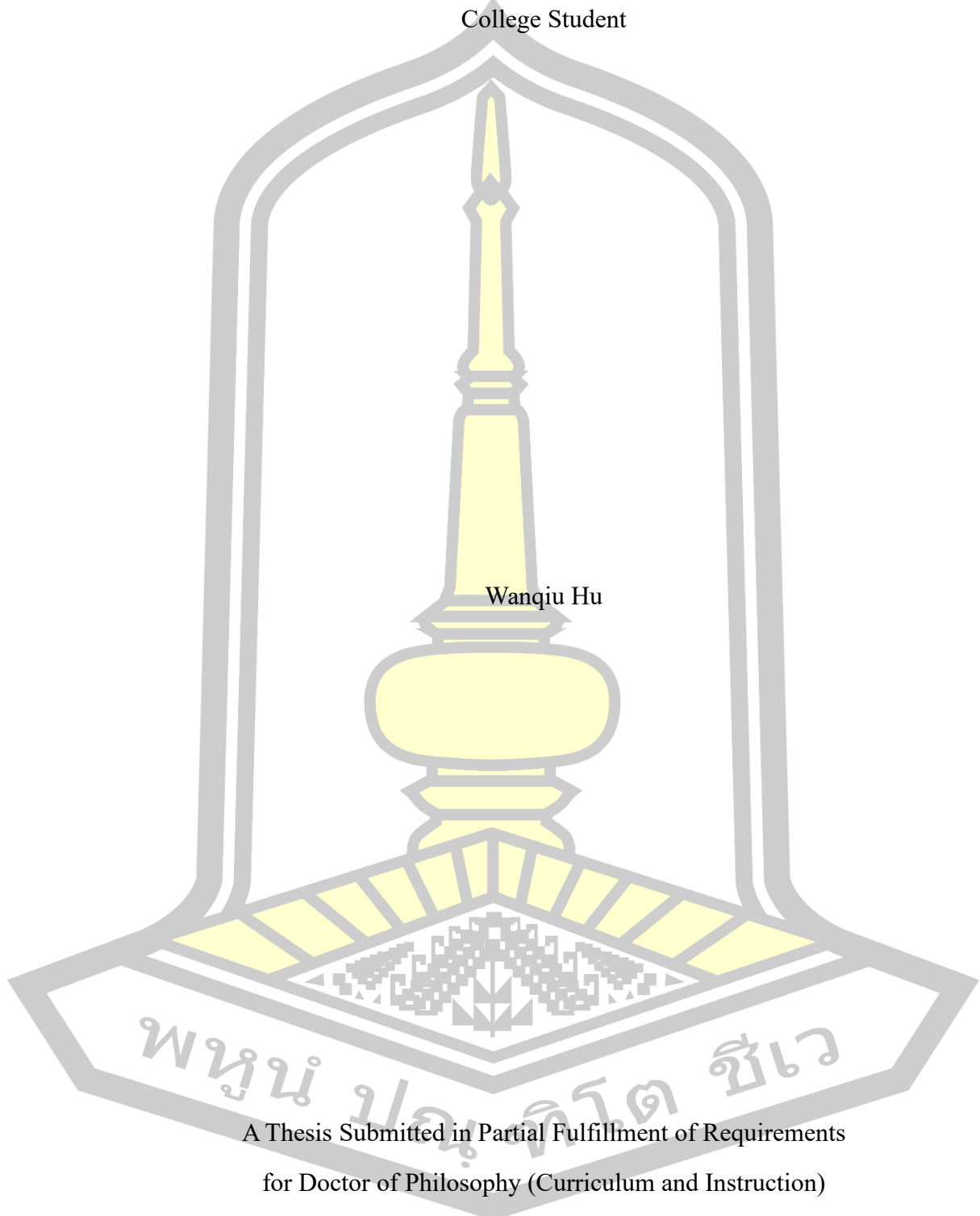


ลิขสิทธิ์เป็นของมหาวิทยาลัยมหาสารคาม



พหุมนุ ปณ ทิโต ชีเว

Developing an Extracurricular Course on Entrepreneurship Education for Vocational
College Student

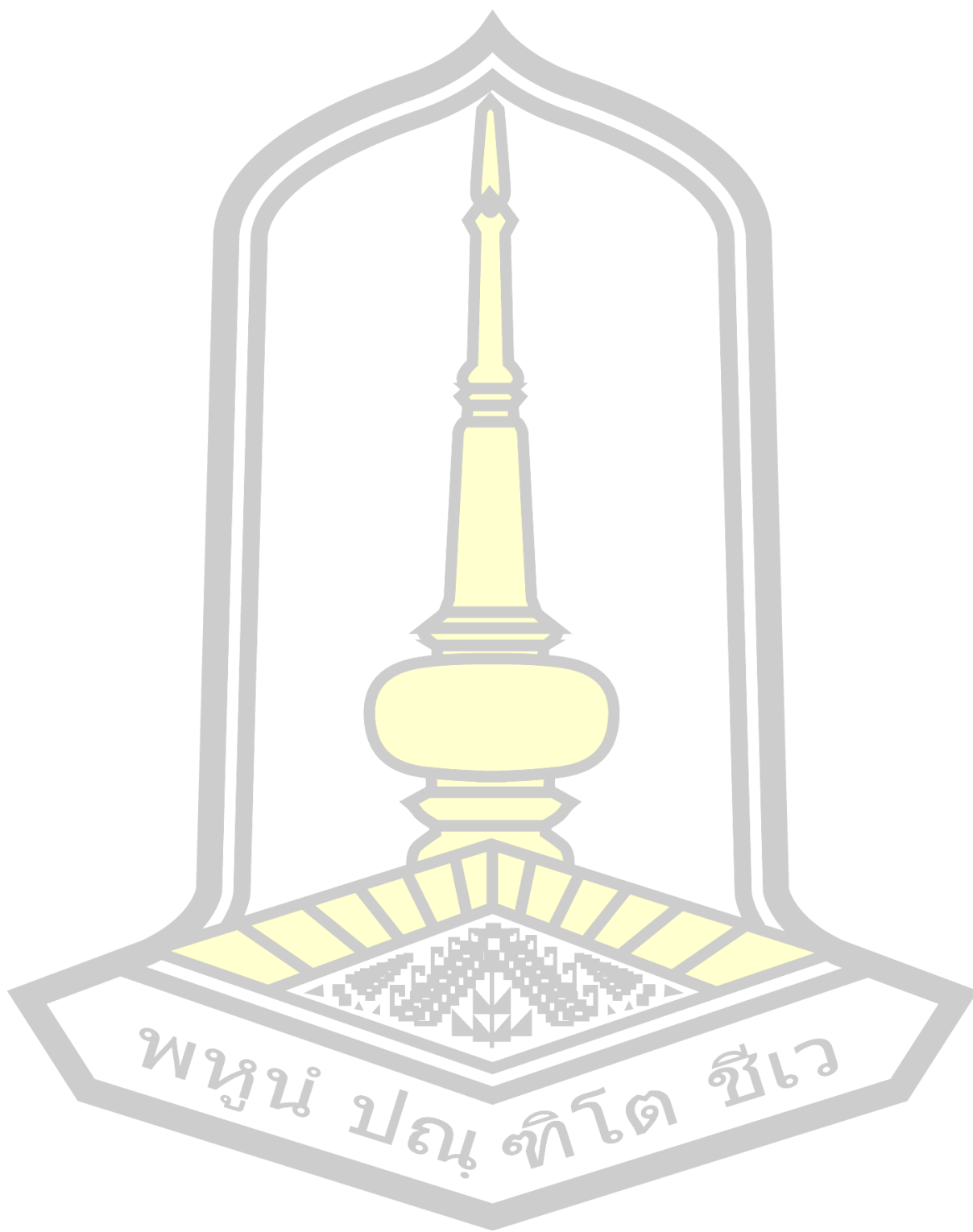


Wanqiu Hu

A Thesis Submitted in Partial Fulfillment of Requirements
for Doctor of Philosophy (Curriculum and Instruction)

July 2025

Copyright of Mahasarakham University



พหุณฺ์ ปณฺุ ทิตฺ สวี



The examining committee has unanimously approved this Thesis, submitted by Ms. Wanqiu Hu , as a partial fulfillment of the requirements for the Doctor of Philosophy Curriculum and Instruction at Maharakham University

Examining Committee

Chairman

(Assoc. Prof. Sutthiporn Boonsong ,
Ed.D.)

Advisor

(Assoc. Prof. Chowwalit
Chookhampaeng , Ph.D.)

Co-advisor

(Asst. Prof. Jiraporn Chano , Ph.D.)

Committee

(Assoc. Prof. Prasert Ruannakarn ,
Ph.D.)

Committee

(Asst. Prof. Denchai Prabjandee ,
Ed.D.)

Maharakham University has granted approval to accept this Thesis as a partial fulfillment of the requirements for the Doctor of Philosophy Curriculum and Instruction

(Assoc. Prof. Chowwalit
Chookhampaeng , Ph.D.)

Dean of The Faculty of Education

(Asst. Prof. Pondej Chaowarat , Ph.D.)

Dean of Graduate School

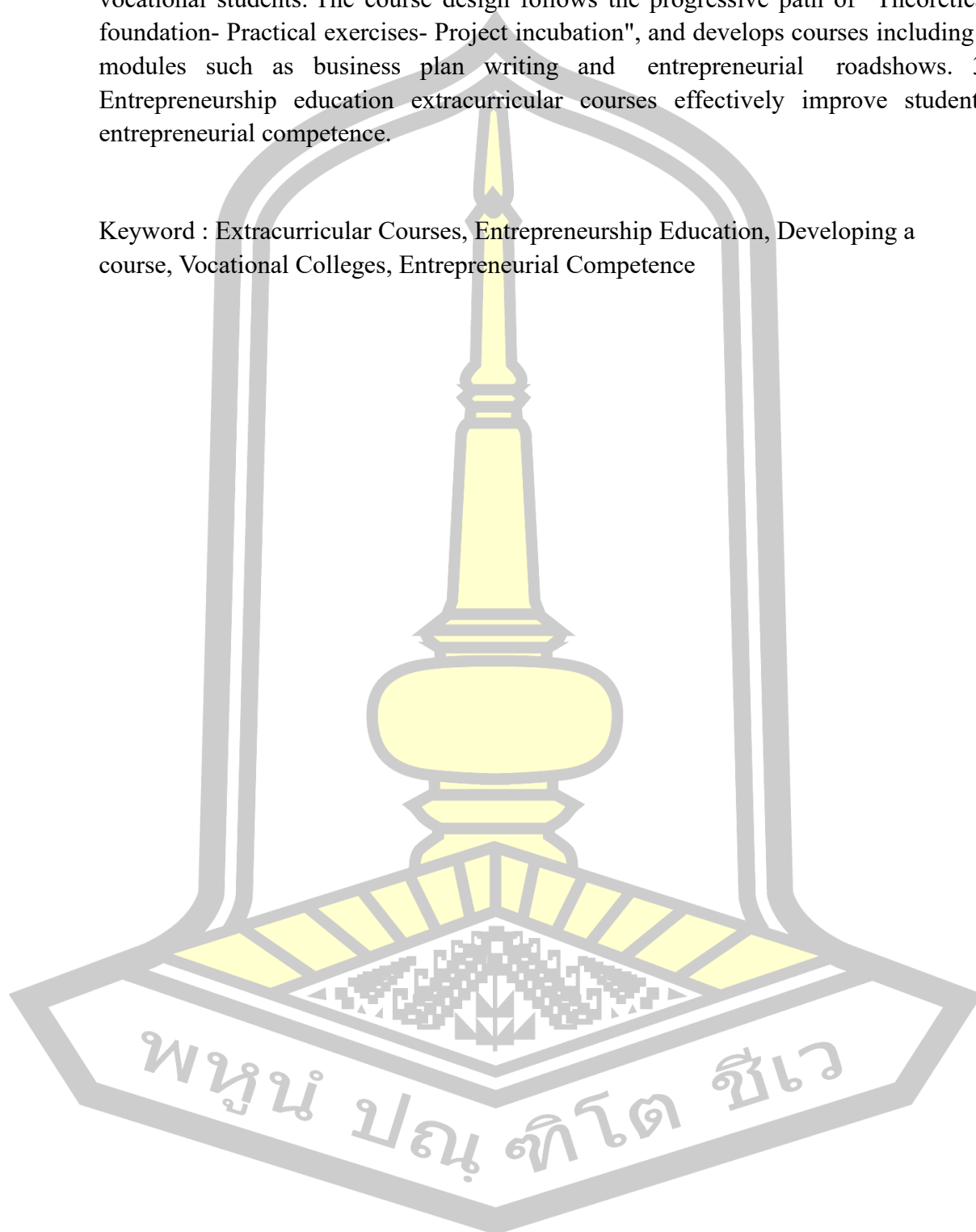
TITLE	Developing an Extracurricular Course on Entrepreneurship Education for Vocational College Student		
AUTHOR	Wanqiu Hu		
ADVISORS	Associate Professor Chowwalit Chookhampaeng , Ph.D. Assistant Professor Jiraporn Chano , Ph.D.		
DEGREE	Doctor of Philosophy	MAJOR	Curriculum and Instruction
UNIVERSITY	Maharakham University	YEAR	2025

ABSTRACT

The objective of this study is to develop an extracurricular course on entrepreneurship education to improve the entrepreneurial competence of vocational college students. The specific objectives include: 1) To investigate the basic information for developing an extracurricular course on entrepreneurship education for vocational college students. 2) To develop an extracurricular course on entrepreneurship education for vocational college students. 3) To compare the entrepreneurial competence before and after implementing entrepreneurship education. And this study used the R&D research method, which was conducted in 3 phases. Phase 1: Learning Basic Information (R1) The necessity and importance of the study were determined through the study of relevant theoretical, principles, interviews with teachers' views, and investigations on students' needs. Phase 2: Developing entrepreneurship extracurricular course (D1) Based on the information from the first phase, a draft of the extracurricular course on entrepreneurship was designed and submitted to five experts for consistency evaluation. The sample group was 30 student from Sichuan Health and Rehabilitation Vocational College. Phase 3: Experimental and Results of Extracurricular Course Development (R2) Comparing the entrepreneurial knowledge, entrepreneurial skills and entrepreneurial attitudes of the experimental group students before and after taking the course, it is confirmed that the entrepreneurship extracurricular course has a positive impact on the improvement of students' entrepreneurial competence. The research tools include document study, interview, questionnaire, consistency assessment, etc. The result of this research is: 1) Vocational colleges have a great demand and necessity to develop extracurricular courses for entrepreneurship education. 2) Design an extracurricular courses of "Demand oriented - Practice

driven- Multi collaborative"for entrepreneurship education based on the needs of vocational students. The course design follows the progressive path of "Theoretical foundation- Practical exercises- Project incubation", and develops courses including 6 modules such as business plan writing and entrepreneurial roadshows. 3) Entrepreneurship education extracurricular courses effectively improve students' entrepreneurial competence.

Keyword : Extracurricular Courses, Entrepreneurship Education, Developing a course, Vocational Colleges, Entrepreneurial Competence



ACKNOWLEDGEMENTS

The completion of this thesis marks the end of a long and memorable journey. Between 2021 and 2025, I shuttled between Thailand and China, from my first unfamiliar steps in Maha Sarakham to the warmth of returning there now. From libraries to 7-11 stores, from riverside diners to local cafés, every place carries fond recollections. The golden sunrises and cotton-candy skies of Maha Sarakham still take my breath away, and I can almost feel the warm monsoon wind from those motorcycle rides behind me. Along the way, I experienced moments of exhilaration and regret, tasted both freedom and loneliness. One thing is certain - I've undergone changes that will likely influence the rest of my life.

Without the support of my advisors and colleges, I wouldn't have been able to complete this journey. My heartfelt thanks go to my supervisor Prof. Chowwalit Chookhampaeng for his consistent and helpful support throughout my PhD studies. I'd want to thank him for his patience, help, empathy, and academic professions. He provided me with chances and advice in writing research papers. I consider myself lucky to have benefited from Prof. Chowwalit Chookhampaeng's knowledge and character. Furthermore, I am grateful to my co-advisor Prof. Jiraporn Chano, who encouraged me to focus on areas of interest to me and provided many resources to participate in international conferences and academic communications. And there is the teaching secretary Melinda. She is always very busy, but still enthusiastically helps me.

I also must thank my classmates for their academic and personal support, which rescued me from countless moments of helplessness during my study abroad journey.

Finally, I wish to express my deepest gratitude to my beloved partner and my little cat, who provided me with the ultimate companionship and emotional support. They stood firmly by me during countless moments when I wanted to give up. My family's encouragement has also been invaluable.

While this paper ends with Chapter five, my journey is far from over. May I always remain curious and keep moving forward in the future.

Wanqiu Hu

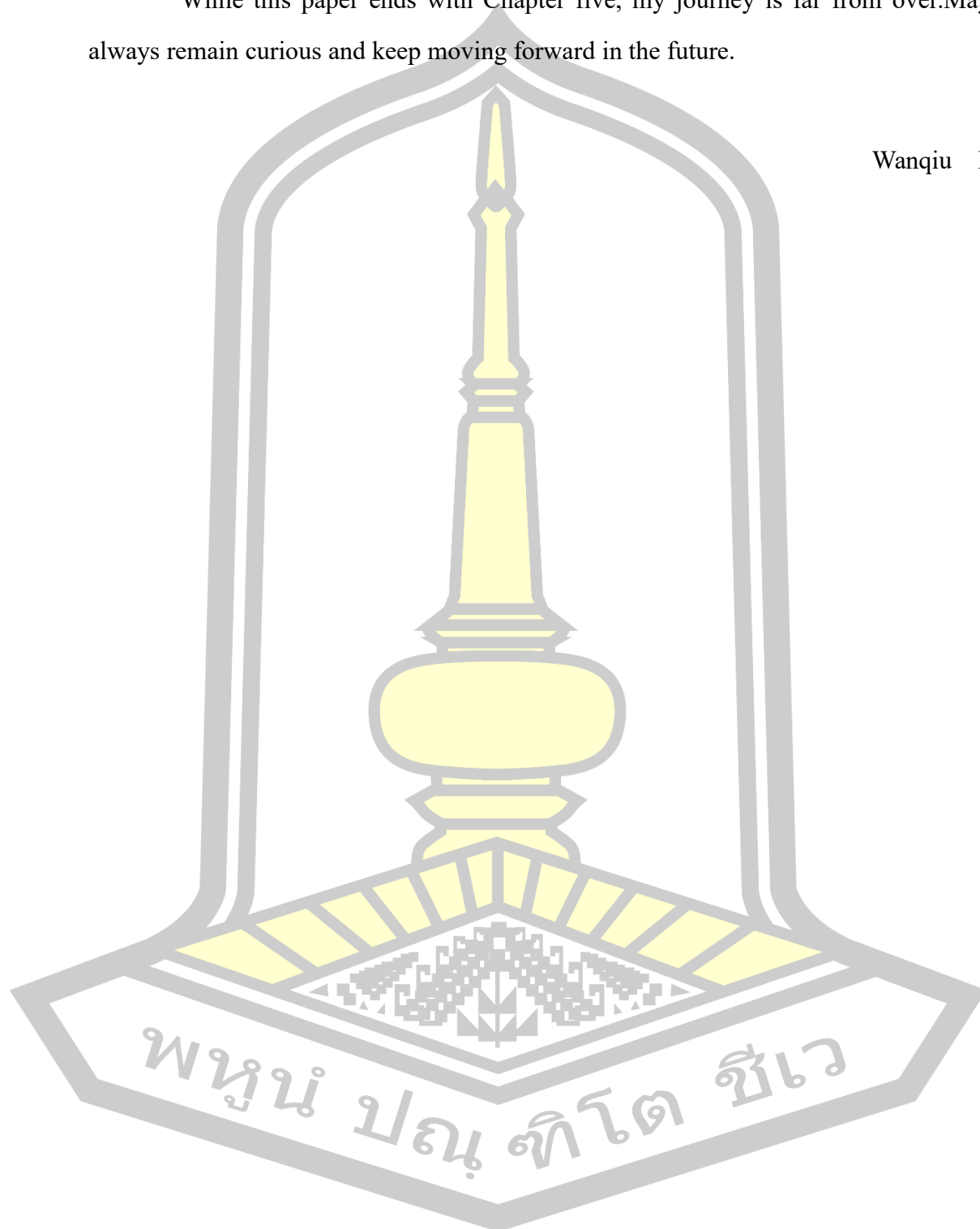


TABLE OF CONTENTS

	Page
ABSTRACT	D
ACKNOWLEDGEMENTS	F
TABLE OF CONTENTS	H
LIST OF TABLES	O
LIST OF FIGURES	Q
CHAPTER I INTRODUCTION	1
1.1 Background	1
1.2 Research questions	4
1.3 Purpose of the Research	4
1.4 Importance of the Research	5
1.5 Hypothesis of the Research	5
1.6 Research Design	5
1.6.1 Phase I Learning Basic Information (R1)	5
1.6.2 Phase II Developing the extracurricular course (D1)	5
1.6.3 Phase III Experimental and Results of Extracurricular Course Development (R2)	6
1.7 Scope of the Research	6
1.7.1 Research contents	6
1.7.2 Population and sample	6
1.7.3 Research Variables	6
1.7.4 Research duration	7
1.7.4.1 Research contents	7
1.7.4.2 Key person	7

1.7.4.3 Research Variable	7
1.7.4.4 Research duration	7
1.8 Definition	8
1.8.1 Entrepreneurship Education	8
1.8.2 Entrepreneurial competence	8
1.8.3 Extracurricular Course	9
1.8.4 Vocational college students	9
CHAPTER II LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK	10
2.1 Entrepreneurship education	11
2.1.1 Entrepreneurship	11
2.1.2 Entrepreneurship education	12
2.2 Entrepreneurial Competence	14
2.2.1 Definition of Entrepreneurial Competence	14
2.2.2 Components of Entrepreneurial Competence	16
2.2.3 Importance of Entrepreneurial Competence	17
2.2.4 Measuring Entrepreneurial Competence	18
2.3 Extracurricular course	20
2.3.1 Definition of Entrepreneurial Competence	20
2.3.2 Components of Entrepreneurial Competence	20
2.3.2.1 Topic	20
2.3.2.2 Activity	21
2.3.2.3 Objective	22
2.3.2.4 Evaluation	22
2.4 Constructivism theory	23
2.4.1 The components of constructivism theory	23
2.4.2 The influence of constructivism theory	24
2.4.3 The application of constructivism theory in this research	24

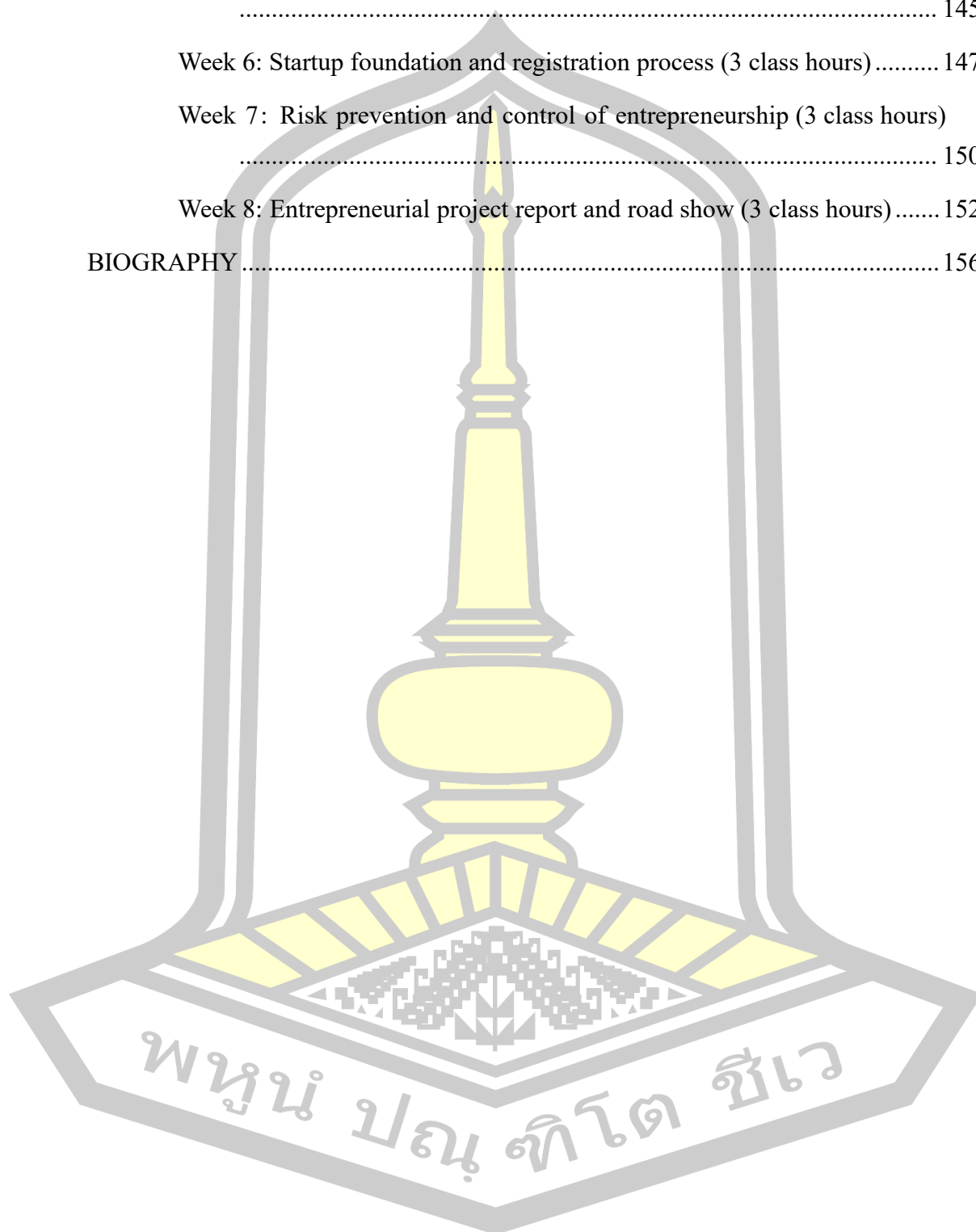
2.4.3.1 Core principles of course design	24
2.4.3.2 Innovative strategies for teaching implementation	25
2.4.3.3 Innovation path of evaluation system	25
2.5 Social learning theory	26
2.5.1 The components of social learning theory	26
2.5.2 The influence of social learning theory	27
2.5.3 The application of social learning theory in this research	28
2.6 Taylor curriculum development theory	29
2.6.1 The Main Viewpoints of Taylor Curriculum Development Theory	29
2.6.1.1 Determining educational objectives	30
2.6.1.2 Selecting learning experiences	30
2.6.1.3 Organizing learning experiences	31
2.6.1.4 Evaluating the achievement of educational objectives	32
2.6.2 The Influence of Taylor Curriculum Development Theory	32
2.6.3 The Application of Taylor's Curriculum Development Theory in this research	33
2.7 ADDIE Instructional Design Model	34
2.7.1 The meaning of ADDIE Instructional Design Model	34
2.7.2 The components of ADDIE Instructional Design Model	36
2.7.3 The Influence of ADDIE Instructional Design Model	39
2.8 Related Research	40
2.8.1 Domestic research	40
2.8.2 Foreign research	41
2.9 Conceptual Framework	44
CHAPTER III RESEARCH METHODS	45
3.1 Phase 1: Learning Basic Information (R1)	49
3.1.1 Population and Sampling	49

3.1.2 Instrument.....	50
3.1.2.1 Interview on vocational college extracurricular courses entrepreneurship education.....	50
3.1.2.2 Through the questionnaire to understand the vocational college students' demand for entrepreneurship education.....	50
3.1.2.3 Questionnaire reliability and validity test.....	50
3.2 Phase 2: Developing entrepreneurship extracurricular.....	51
3.2.1 Objective.....	51
3.2.2 Construct Innovation.....	51
3.3 Phase 3: Experimental and Results of Extracurricular Course.....	55
3.3.1 Population and Sampling.....	55
3.3.2 Instrument.....	55
3.3.3 Intervention.....	56
3.3.4 Construction and Quality of Instrument.....	56
CHAPTER IV RESULTS.....	57
4.1 Basic information analysis of entrepreneurship education extracurricular courses for vocational college students.....	57
4.1.1 Analysis on the importance of entrepreneurship education extracurricular courses for vocational college students.....	57
4.1.2 Analysis of teachers' views on extracurricular courses of entrepreneurship education.....	59
4.1.3 Demand analysis of extracurricular courses for vocational college students.....	61
4.2 Development of extracurricular courses for entrepreneurship in vocational colleges.....	69
4.2.1 Entrepreneurship extracurricular course design.....	69
4.2.1.1 Course top-level design.....	70
4.2.1.2 Course Objective Design.....	70

4.2.1.3 Course content design	71
4.2.1.4 Teaching activity design	72
4.2.1.5 Teaching Evaluation Design	72
4.2.2 Consistent evaluation of the course design of extracurricular entrepreneurship education	74
4.3 Analysis of the impact of extracurricular courses of entrepreneurship education on the entrepreneurial competence of vocational college students	74
4.3.1 Compare the knowledge test results of the experimental group before and after attending the extracurricular courses	75
4.3.2 Compare the skill test scores of the experimental group before and after attending the extracurricular courses	76
4.3.3 Compare the entrepreneurial attitude scores of the experimental group before and after attending the extracurricular courses	77
CHAPTER V CONCLUSION	78
5.1 Conclusion	78
5.1.1 Vocational colleges have a great demand and necessity to develop extracurricular courses for entrepreneurship education	78
5.1.2 Design extracurricular courses for entrepreneurship education based on the needs of vocational students	78
5.1.3 Entrepreneurship education extracurricular courses effectively improve students' entrepreneurial competence	79
5.2 Discussion	79
5.2.1 Investigate the needs of vocational colleges for developing extracurricular courses on entrepreneurship education in order to design courses	79
5.2.2 Design extracurricular courses for entrepreneurship education in accordance with the actual needs of vocational students	80
5.2.3 The impact of extracurricular courses of entrepreneurship education on the entrepreneurial competence of vocational students is significant ..	81
5.3 Suggestions	83

5.3.1 Suggestions on the application of research results	83
5.3.2 Suggestions for further research	83
REFERENCES	84
APPENDIXES	90
Appendix A: Student Registration Form	90
Appendix B: Questionnaire	91
Appendix C: Interview Outline	96
Appendix D: Knowledge Test	98
Appendix E: Skill Test Criteria	103
Appendix F: Consistent assessment of Course	107
Appendix G: Survey scale on entrepreneurial attitude of vocational college students	114
Appendix H: Conformity Assessment of Entrepreneurial Knowledge Test	120
Appendix I: Conformity Assessment of Entrepreneurial Skill Test	121
Appendix J: Conformity Assessment of Entrepreneurial Attitude Test	122
Appendix K: Entrepreneurship Knowledge Test Scores	123
Appendix L : Entrepreneurship Skill Test Scores	125
Appendix M: Entrepreneurial Attitude Scale Score	128
Appendix N: Lesson Plans for Entrepreneurship Extracurricular Courses	130
Week 1: Entrepreneurial Opportunity Identification and Analysis (3 classhours)	130
Week 2: Selection and evaluation of entrepreneurial projects (3 class hours)	134
Week 3: Entrepreneurial Team building and Management (3 class hours)	139
Week 4: Entrepreneurial resource integration and fund-raising (3 class hours)	143

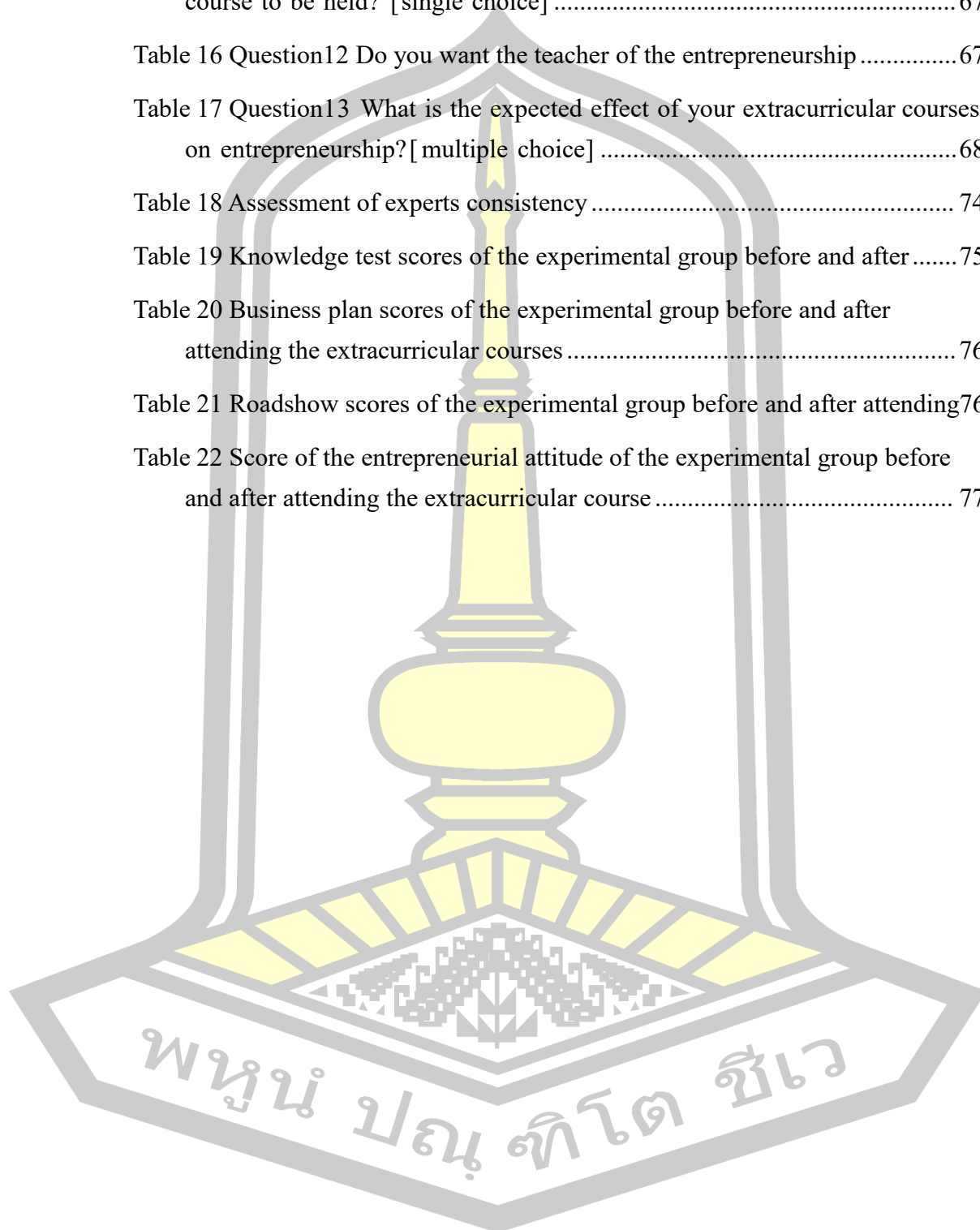
Week 5: Entrepreneurial project promotion and marketing (3 class hours)	145
Week 6: Startup foundation and registration process (3 class hours)	147
Week 7: Risk prevention and control of entrepreneurship (3 class hours)	150
Week 8: Entrepreneurial project report and road show (3 class hours)	152
BIOGRAPHY	156



LIST OF TABLES

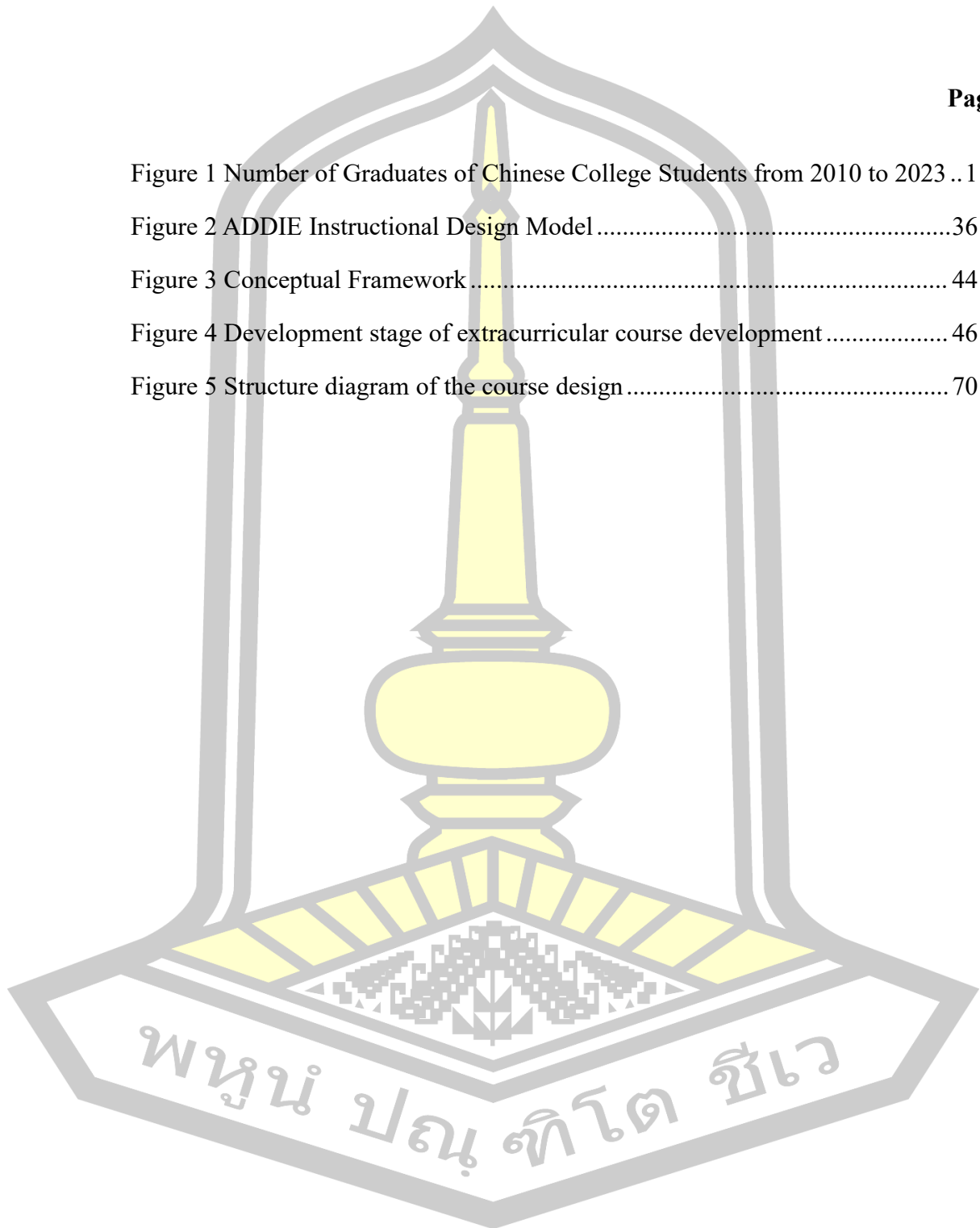
	Page
Table 1 Research Methods	47
Table 2 Reliability test	50
Table 3 Validity test	51
Table 4 Course outline	52
Table 5 Question 1 Are you interested in starting a business?[single choice]	61
Table 6 Question 2 Does the school's existing "Fundamentals of Entrepreneurship" course meet your needs for entrepreneurship? [single choice]	62
Table 7 Question 3 What's the biggest obstacle to starting a business for you?[multiple choice]	62
Table 8 Question 4 What is your need for extracurricular courses in entrepreneurship? [single choice]	63
Table 9 Question5 What do you want the duration of the entrepreneurship extracurricular course? [single choice]	63
Table 10 Question6 How often do you want to take entrepreneurship extracurricular course? [single choice]	64
Table 11 Question7 How many people do you think are suitable for a class of entrepreneurship extracurricular course? [single choice]	64
Table 12 Question8 What do you want to learn from entrepreneurship extracurricular courses?[multiple choice]	65
Table 13 Question9 What is the form of your preferred extracurricular course for entrepreneurship?[multiple choice]	66
Table 14 Question10 How do you want the entrepreneurship extracurricular training course to be taught? [single choice]	66

Table 15 Question11 Where would you like the entrepreneurship extracurricular course to be held? [single choice]	67
Table 16 Question12 Do you want the teacher of the entrepreneurship	67
Table 17 Question13 What is the expected effect of your extracurricular courses on entrepreneurship?[multiple choice]	68
Table 18 Assessment of experts consistency	74
Table 19 Knowledge test scores of the experimental group before and after	75
Table 20 Business plan scores of the experimental group before and after attending the extracurricular courses	76
Table 21 Roadshow scores of the experimental group before and after attending	76
Table 22 Score of the entrepreneurial attitude of the experimental group before and after attending the extracurricular course	77



LIST OF FIGURES

	Page
Figure 1 Number of Graduates of Chinese College Students from 2010 to 2023 ..	1
Figure 2 ADDIE Instructional Design Model	36
Figure 3 Conceptual Framework	44
Figure 4 Development stage of extracurricular course development	46
Figure 5 Structure diagram of the course design	70



CHAPTER I

INTRODUCTION

1.1 Background

The number of college graduates in China is increasing year by year, and the employment problem of college students is becoming increasingly serious. Solving the employment problem is to stabilize the foundation of people's livelihood, so the employment problem of college students has always been widely concerned by the whole society. "Priority development strategy and active employment policy to promote higher quality and broader employment opportunities" has become the consensus of the whole society. However, the employment situation of fresh college graduates is also basically showing a trend of tightening year by year.

Number of Graduates of Chinese College Students from 2010 to 2023

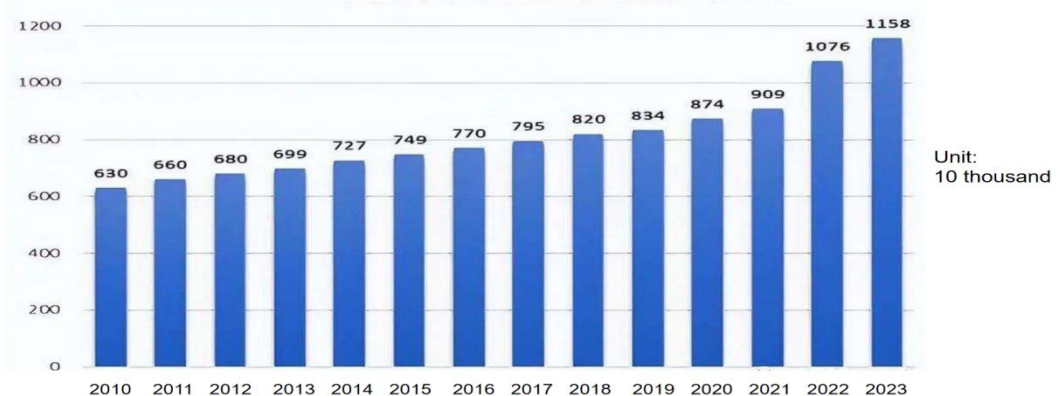


Figure 1 Number of Graduates of Chinese College Students from 2010 to 2023

Source : Hu Wanqiu (2025)

As can be seen from Figure 1, the total number of college graduates in 2023 reached 11.58 million, an increase of 820,000 over the same period last year. Due to the impact of COVID-19, the size of real enterprises has shrunk significantly from the pre-epidemic level, and the demand for college graduates is also declining. The current job market is far from accommodating a large number of college graduates, but the number of college graduates is gradually increasing (Hang Ruiyou, 2014). In order to solve the contradiction between social supply and demand, the state encourages college students to start their own businesses. It aims to solve the employment problem of college students and realize the higher value of college students. Promoting employment through entrepreneurship education can alleviate

social pressure, enhance social vitality, and provide more development space for college graduates to choose employment. Compared with ordinary undergraduate colleges, vocational colleges pay more attention to the cultivation of students' technical ability and the improvement of practical ability. At present, there are still some problems in vocational colleges, such as large regional differences in infrastructure level, shortage of practical teachers, disconnection between teaching courses and market demand, and difficulty in ensuring the quality of personnel training. In the context of the rapid development of the Internet, new technologies such as artificial intelligence are emerging rapidly, and more low-skilled jobs will be replaced by machines, which will further affect the employment of vocational graduates and exacerbate the employment situation (Liu, 2011).

As early as the last century, entrepreneurship education has become a trend in the world of higher education. With the promotion of entrepreneurship in developed countries, entrepreneurship education began to emerge in universities and developed into a trend in world higher education. In 1947, Harvard University's business school offered the world's first entrepreneurship education course, Management of New Enterprise. It is also regarded as a source of entrepreneurship education in universities (Gao Zhihong & Liu Yan, 2012). So far, entrepreneurship education has been very common in American colleges and universities, and many colleges and universities not only offer undergraduate education and entrepreneurship majors, but also offer graduate education and entrepreneurship majors.

In 1987, the British government launched the "Higher Education Entrepreneurship" program, which officially opened the era of entrepreneurship education in British universities. With the development of entrepreneurship education in universities in the United States and the United Kingdom, Finland, the Netherlands, France, Germany, Australia, Canada and other countries have joined the camp of entrepreneurship education in universities. In Asia, in the early 1980s, South Korean universities implemented entrepreneurship education earlier. Japan began to promote entrepreneurship education in universities in the late 1980s. Singapore is also an active explorer of entrepreneurship education in universities. In 2002, Nanyang Technological University in Singapore developed the "Technopreneurship and Innovation Program" (referred to as the "TIP course") and achieved good results (Hampden-Turner & Tan Teng-Kee, 2002). However, entrepreneurship education started too late in China, and it was not until the twentieth century that China began to develop entrepreneurship education.

Under this background, entrepreneurship education has been transformed into a national program. In 2003, the Ministry of Education of China issued several guiding opinions on vigorously promoting innovation and entrepreneurship education in colleges and universities, emphasizing the main position of college students in innovation and entrepreneurship, and the great significance of innovation and entrepreneurship education for talent cultivation (Ministry of Education of the People's Republic of China, 2023). In May 2015, The General Office of the State

Council issued the "Implementation Opinions on Deepening the Reform of entrepreneurship Education in Institutions of higher Learning" clearly pointed out that: "Deepening the reform of entrepreneurship education in institutions of higher learning is an urgent need for the country to implement the innovation-driven development strategy and promote the quality and efficiency of the economy, and an important measure to promote the comprehensive reform of higher education and promote higher quality entrepreneurship and employment of college graduates."(The State Council, 2015) The release of the implementation opinions marks that entrepreneurship education has been included in the development strategy of the national government, leading the university entrepreneurship education to enter a critical period of deepening development, and opening a new era of nationwide entrepreneurship education. Governments at all levels and colleges use entrepreneurship education policies to support the implementation of entrepreneurship education, which has steadily promoted the practical exploration of entrepreneurship education. Although most colleges have attempted to explore the establishment of innovation and entrepreneurship education models, which has improved the effectiveness of innovation and entrepreneurship education.

Compared with foreign entrepreneurship education, entrepreneurship education in Chinese colleges started relatively late. In many universities and vocational colleges, encouraging college students to start businesses is still in its infancy, and a complete organizational system has not yet been formed in the implementation process of entrepreneurship education. At present, entrepreneurship education in vocational colleges exists as a public compulsory course, and the teaching target is all students in the school. Its curriculum is positioned more as a general course that extensively cultivates innovation awareness and entrepreneurial spirit, enabling students to understand the basic knowledge and theories required for entrepreneurship, familiarize themselves with the basic processes of entrepreneurship, enhance students' sense of social responsibility, innovation spirit, and entrepreneurial competence, and promote students' entrepreneurship, employment, and comprehensive development. It is difficult to achieve classified teaching and lacks further education support for students who have entrepreneurial ideas. The Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Higher Education Institutions issued by the State Council once pointed out that there are problems in China's entrepreneurship education, such as lagging concepts, disconnection from practice, and single teaching methods. Meanwhile, from a practical perspective, the proportion of students who start their own businesses immediately after graduation is relatively low.

According to the 2022 Employment Report of Chinese College Students, the proportion of 2021 graduates starting businesses is only 1.2%, indicating that among potential entrepreneurial groups, the number of people directly converting their entrepreneurial intentions into actual entrepreneurial behavior is relatively small, and the entrepreneurial field is mainly concentrated in education, entertainment, and retail.

The above data is worth our deep consideration. As the main force of entrepreneurship, under the tide of the times, college students have experienced a new survival mode full of challenges and unknown factors, facing multiple difficulties, challenges, and interest choices. The new normal of economic and social development has also put forward new requirements for entrepreneurship education for college students.

Existing studies have formed three mainstream models in the field of vocational entrepreneurship education: curriculum embedment, practice platform, government, school and enterprise association (Smith et al., 2020; Li et al., 2021; Wang, 2022), although progress has been made in the level of entrepreneurship awareness enlightenment, it faces three structural contradictions: First, there is a significant mismatch of resources, and the universal curriculum for all students is seriously misaligned with the needs of only 12.7% of those who have clear entrepreneurial intentions (Ministry of Education, 2023); Second, capacity cultivation is fragmented, with excessive emphasis on individual skill training, which splits the ability chain of "opportunity identification, resource patchwork and risk management" (Davidsson, 2015). Third, the efficiency of education carrier is low, and the lack of curricular design in traditional extracurricular activities leads to the low survival rate of students in entrepreneurship (GEM, 2022). This paper starts with the entrepreneurship education of vocational colleges, takes the students of vocational colleges as the research object, and develops the extra extra-curricular courses needed for entrepreneurship. Providing more targeted and in-depth entrepreneurship education for some students with entrepreneurial interests and ideas is helpful to enrich the development of entrepreneurship education in vocational colleges and improve the entrepreneurial behavior of college students.

1.2 Research questions

In this research, the research questions were as follows:

1.2.1 What is the basic information for developing an extracurricular course on entrepreneurship education for vocational college students?

1.2.2 What does the extracurricular course on entrepreneurship education for vocational college students look like?

1.2.3 What are the effects of the extracurricular course on entrepreneurship education for vocational college students on entrepreneurial competence?

1.3 Purpose of the Research

The purpose of this research are:

1.3.1 To investigate the basic information for developing an extracurricular course on entrepreneurship education for vocational college students.

1.3.2 To develop an extracurricular course on entrepreneurship education for vocational college students.

1.3.3 To compare the entrepreneurial competence before and after

implementing entrepreneurship education.

1.4 Importance of the Research

1.4.1 Through the analysis of the basic data of entrepreneurship education, this study clarifies the current situation and existing problems of entrepreneurship education. Vocational college focus more on theoretical instruction while lacking practical training, which fails to meet students' needs.

1.4.2 The entrepreneurial competence of vocational college students can be improved through the development of extracurricular courses in entrepreneurship education. Also broaden future career options, alleviate societal employment pressures, and contribute to economic development.

1.4.3 The development of entrepreneurship extracurricular courses has completed the entrepreneurship education system, promoted the reform and innovation of entrepreneurship education, and promoted the integration of vocational education with social needs.

1.5 Hypothesis of the Research

This research takes curriculum objectives, curriculum contents, teaching activities, and curriculum evaluation as independent variables, and students' entrepreneurial competence as dependent variable to explore the impact of extracurricular development on the improvement of entrepreneurial competence of vocational college students. And construct a hypothesis that the development of extracurricular entrepreneurship education can improve the entrepreneurial competence of vocational college students.

1.6 Research Design

This research belongs to Research and Development(R&D), including three stages.

1.6.1 Phase I Learning Basic Information (R1)

In this phase, theories, concepts, and related principles are studied. As guideline for developing extra-curricular entrepreneurship education in vocational colleges. Through document study, Interviews and Questionnaire survey.

1.6.2 Phase II Developing the extracurricular course (D1)

In this phase, designing and developing extracurricular course based on the needs analysis from the first stage and the talent development plan of college. The quality of the development extracurricular course is determined through expert review.

1.6.3 Phase III Experimental and Results of Extracurricular Course

Development (R2)

This is the stage of applying the developed extracurricular course to the research target group. Self-contrast method was used to compare the entrepreneurial competence of the experimental group before and after participating in extracurricular course activities. Including the improvement of entrepreneurial knowledge, entrepreneurial skills and entrepreneurial attitude. Among them, the improvement of entrepreneurial knowledge will be evaluated by written knowledge test. Entrepreneurial skills will be measured by means of skills tests, including business plans and road shows. The scale was used to conduct a pre- and post-test comparison of students' entrepreneurial attitudes.

1.7 Scope of the Research

Phase I Learning Basic Information (R1)

1.7.1 Research contents

The first phase studies the basic data of the extracurricular course development of entrepreneurship education in vocational colleges. Ten teachers from Sichuan Health Rehabilitation Vocational College engaged in entrepreneurship education were interviewed to understand their views on entrepreneurship education in vocational colleges. At the same time, 500 students from Sichuan Health Rehabilitation Vocational College were surveyed to collect their demand for entrepreneurship education.

1.7.2 Population and sample

The population at this stage is:

- 1) Sichuan Health Rehabilitation Vocational College students from 2023 to 2024: 2,913.
- 2) Sichuan Health Rehabilitation Vocational College engaged in entrepreneurship education related teachers: 10.

Samples used in this stage:

- 1) Sichuan Health Rehabilitation Vocational College students from 2023 to 2024: Voluntary selection of 500 students.
- 2) Sichuan Health Rehabilitation Vocational College engaged in entrepreneurship education related teachers: 10 people.

1.7.3 Research Variables

1.7.3.1 The independent variable is student characteristics, educational environment, educational policies and standards.

1.7.3.2 The dependent variable is current situation of students learning

entrepreneurship education.

1.7.4 Research duration

This phase will last for 4 weeks and will study the basic situation of extracurricular entrepreneurship education in vocational colleges. It is expected to be from September 2024 to October 2024.

Phase II Developing the extracurricular course (D1)

1.7.4.1 Research contents

This phase is to study the construction of extracurricular courses of entrepreneurship education in vocational colleges. Tentative extracurricular course entrepreneurship education development. Based on the needs analysis from the first stage and the talent development plan, determine learning objectives and select learning experiences to develop a extracurricular course of entrepreneurship. Then determining the quality and applicability of the entrepreneurship extracurricular course by five experts which including educators and entrepreneurs.

1.7.4.2 Key person

At this phase, key person are 5 experts. Five experts in the field of entrepreneurship education will be invited to evaluate the quality of the extracurricular course development.

1.7.4.3 Research Variable

The dependent variable is opinions of developing the entrepreneurship extracurricular course.

1.7.4.4 Research duration

This phase will take 4 weeks to develop the extracurricular course of entrepreneurship and is expected to last from October 2024 to November 2024.

Phase III Experimental and Results of Extracurricular Course Development (R2)

(1) Research contents

This course is an extracurricular course of entrepreneurship education and is aimed at vocational college students. In phase III, thirty students will be selected as experimental groups through voluntary enrollment among Sichuan Health and Rehabilitation Vocational College. Thirty students will take an eight-week, 24 class-hour extracurricular course on entrepreneurship. At the end of the course, students will take a knowledge test, a skills test, and an entrepreneurial attitude scale test.

(2) Population and sample

The population at this stage is:

Sichuan Health Rehabilitation Vocational College students from 2023 to 2024:2,913.

Samples used in this stage:

The target group of this stage is the voluntary selection of students from the Sichuan Health Rehabilitation Vocational College, grade 2023-2024: 30 people.

(3) Research variable

1) Independent variable

The independent variable is the extra-curricular entrepreneurial course to improve the entrepreneurial competence of vocational college students, which mainly includes teaching objectives, teaching experience, teaching activities and teaching evaluation.

2) Dependent variable

The independent variable is students' entrepreneurial competence, which is mainly reflected by written examination and skill tests. The written examination is mainly to test the student's mastery of theoretical knowledge, the total score of the paper is 100 points. The evaluation of entrepreneurial skills is through the completion of the business plan and the presentation of the report. The evaluation is based on innovation, feasibility, profitability, teamwork, defense performance, etc.

(4) Research duration

This stage needs 8 weeks to carry out the experiment of the extra-curricular courses, 3 lessons per week, a total of 24 lessons. This phase is expected to last from December 2024 to January 2025.

1.8 Definition

1.8.1 Entrepreneurship Education

Entrepreneurial education is a systematic education with entrepreneurial cognition, entrepreneurial ability and entrepreneurial spirit as the core, which is different from the traditional employment-oriented higher education. For college students' entrepreneurship education, the teaching content includes innovative thinking and awareness, entrepreneurial opportunity identification, entrepreneurial project selection, entrepreneurial team formation, entrepreneurial resources integration, entrepreneurial risk control, entrepreneurial plan writing, entrepreneurial project roadshow, etc.

1.8.2 Entrepreneurial competence

Entrepreneurship is the process of obtaining wealth by creating new value on the basis of the original. Entrepreneurial competence refers to the ability needed in the process of entrepreneurship. For college students, entrepreneurial competence can be subdivided into entrepreneurial knowledge, entrepreneurial skills, entrepreneurial

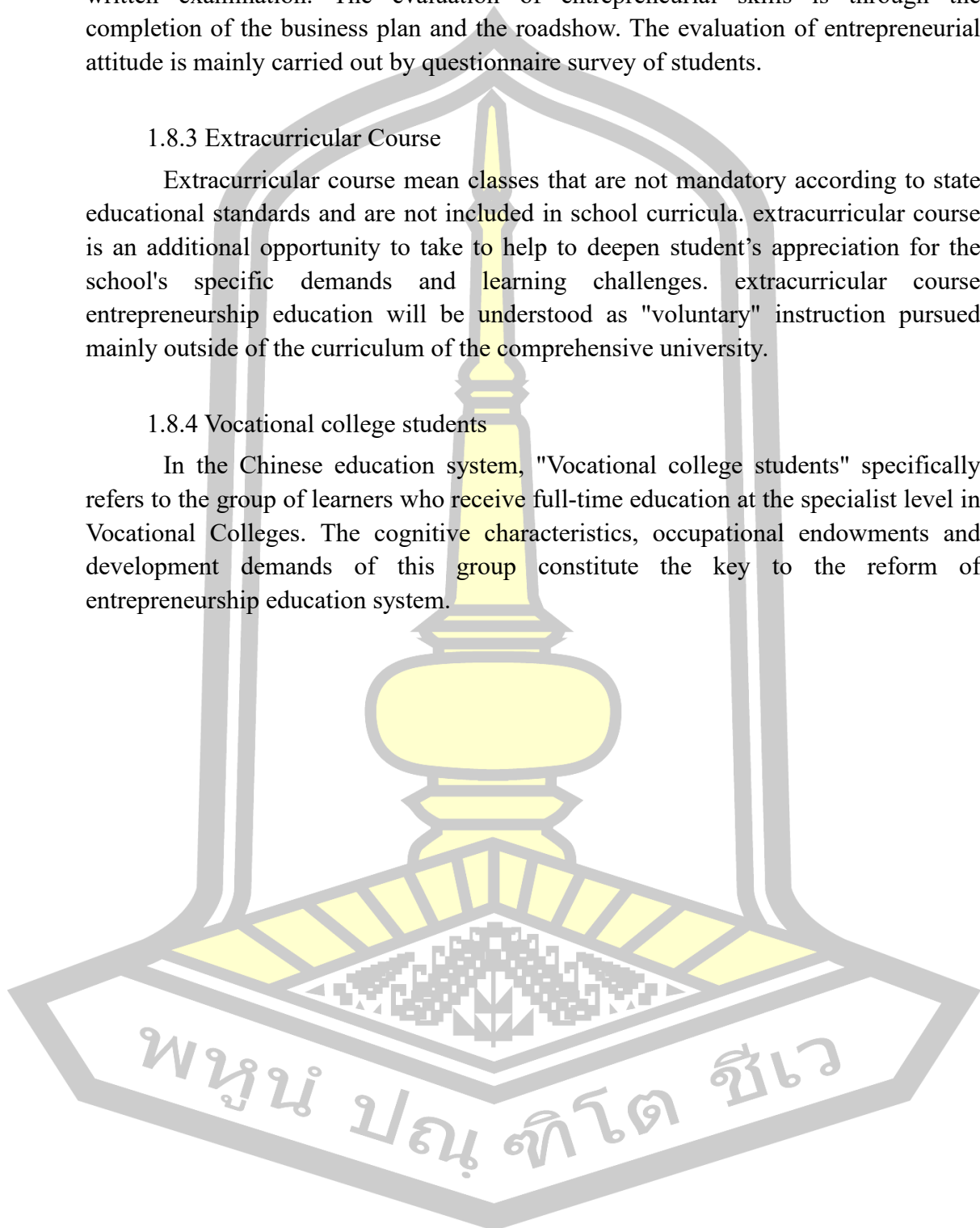
attitude. In this research, the evaluation tool for the entrepreneurship knowledge is written examination. The evaluation of entrepreneurial skills is through the completion of the business plan and the roadshow. The evaluation of entrepreneurial attitude is mainly carried out by questionnaire survey of students.

1.8.3 Extracurricular Course

Extracurricular course mean classes that are not mandatory according to state educational standards and are not included in school curricula. extracurricular course is an additional opportunity to take to help to deepen student's appreciation for the school's specific demands and learning challenges. extracurricular course entrepreneurship education will be understood as "voluntary" instruction pursued mainly outside of the curriculum of the comprehensive university.

1.8.4 Vocational college students

In the Chinese education system, "Vocational college students" specifically refers to the group of learners who receive full-time education at the specialist level in Vocational Colleges. The cognitive characteristics, occupational endowments and development demands of this group constitute the key to the reform of entrepreneurship education system.



CHAPTER II

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In the study to develop an extracurricular course to promote Entrepreneurial competence of vocational college students, the researchers studied these literature and related researches are as follows:

1. Entrepreneurship Education
 - 1.1 Entrepreneurship
 - 1.2 Entrepreneurship education
2. Entrepreneurial competence
 - 2.1 Definition of Entrepreneurial Competence
 - 2.2 Components of Entrepreneurial Competence.
 - 2.3 Importance of Entrepreneurial Competence
 - 2.4 Measuring Entrepreneurial Competence
3. Extracurricular course
 - 3.1 Definition of Entrepreneurial Competence
 - 3.2 Components of Entrepreneurial Competence.
4. Constructivism theory
 - 4.1 The components of constructivism theory
 - 4.2 The influence of constructivism theory
 - 4.3 The application of constructivism theory in this research
5. Social learning theory
 - 5.1 The components of social learning theory
 - 5.2 The influence of social learning theory
 - 5.3 The application of social learning theory in this research
6. Taylor curriculum development theory
 - 6.1 The components of Taylor Curriculum Development Theory
 - 6.2 The Influence of Taylor Curriculum Development Theory
 - 6.3 The application of Taylor's Curriculum Development Theory in this research
7. ADDIE Instructional Design Model
 - 7.1 The meaning of ADDIE Instructional Design Model
 - 7.2 The components of ADDIE Instructional Design Model
 - 7.3 The Influence of ADDIE Instructional Design Model
8. Related Research
 - 8.1 Domestic research
 - 8.2 Foreign research
9. Conceptual Framework

2.1 Entrepreneurship education

2.1.1 Entrepreneurship

Entrepreneurship has become the most powerful economic driving force for the development of human society so far, and there are different views on the definition of entrepreneurship from different angles. The term "entrepreneurship" was proposed by economists in the 18th century and evolved from the English word "entrepreneur". It means the process of taking risks and starting a new business. By the 20th century, the term entrepreneurship had become synonymous with free enterprise and capitalism. In fact, until the 1950s, the main definitions and explanations of entrepreneurship came from economists. For example, the French economist Jean Baptiste Say and the economist Joseph Schumpeter have published articles on entrepreneurship and its impact on the economy. After 1970s, more and more western scholars began to pay attention to the topic of entrepreneurship.

The economist Schumpeter defined entrepreneurship from the perspective of the essence of entrepreneurship, believing that entrepreneurship is the whole process of realizing innovation including new products, new processes, new raw materials, entering new markets and institutions(Joseph Schumpeter, 1912). The scholar Peter F.Drucker has a similar definition to Schumpeter, understanding entrepreneurship as those activities that can create something new and valuable that is different(Gu Shengzu, Xiao Dingguang, Hong Qunqiao, 2008). American scholar Gartner (1989) combined entrepreneurship research and understood entrepreneurship as a creative process of new organizations, which is consistent with the definition of "new enterprise creation" by other researchers. Robert C. Ronstadt argues that entrepreneurship is a dynamic wealth-creating process. Entrepreneurs create wealth by taking risks such as equity, time and career commitments to provide value for products and services. The products and services themselves may or may not be new and unique, but their value is certainly given by the entrepreneur by acquiring and allocating the necessary technology and resources. After the evolution of the 21st century, Donald F. Kuratko concluded that "entrepreneurship is a dynamic process of vision, change, and creation, which requires the energy and passion to create new ideas and new ideas and bring them to life."(Robert Herris & Michael Peters , 2004)

Domestic scholars' research on entrepreneurship is later than that of the west, and they define entrepreneurship on the basis of analyzing and drawing on the research results of foreign scholars. Chen Zhenhong and Dong Junwu (2004) argue that entrepreneurship is the creation of new enterprises and the integration of various resource elements to carry out a purposeful economic activity. Scholar Ge Jianxin put forward: "Entrepreneurship is an economic activity that combines the elements of classified innovation for profit purposes under certain economic risks."(Ge Jianxin, 2004) In a broad sense, domestic scholars believe that all groundbreaking human activities can be called entrepreneurship. In the narrow sense, it must be a human social activity aimed at creating material wealth.

To sum up, entrepreneurship is not only reflected in the spirit of the individual, but also requires a certain ability to execute. Entrepreneurs based on their own relevant skills, capital and human resources, constantly identify and discover market opportunities to start a new business and realize their own process.

2.1.2 Entrepreneurship education

In terms of foreign research results, the research on the concept of "entrepreneurship education" by foreign scholars mainly falls into two categories. One type is 'enterprise' The Chinese definition of "education", "enterprise", is usually "enterprise" or "career", focusing on cultivating the entrepreneurial spirit and corresponding technology of entrepreneurs. American scholars Jones and English (2004) believe that entrepreneurship education, as a new educational model, is a challenge to traditional mainstream teaching practices. This educational model aims to enhance students' observation, theoretical knowledge, and practical skills through entrepreneurship education, and enhance personal entrepreneurial awareness. The other type is "entrepreneurship education". The initial entrepreneurship education was mainly derived from British academia, Researchers define entrepreneurship education by using the term "Entrepreneurship education,"

It focuses more on practical operation, viewing entrepreneurship education as an education to cultivate entrepreneurial spirit, enhancing entrepreneurial willingness through entrepreneurship education, and ultimately achieving entrepreneurial practice. Entrepreneurship educators Bridge and Hegarty (2010) believe that entrepreneurship education is a teaching method in universities that can target individuals interested in engaging in business innovation or enterprise development, cultivate their entrepreneurial spirit, and establish new businesses. Winkel(2013) believes that entrepreneurship training is a training method that can use specialized education to cultivate the mentality of entrepreneurship, so as to improve people's entrepreneurial awareness and ability. It is proposed that the main purpose of developing the field of innovative education is to provide entrepreneurs with the experience of innovative spirit, and to train the skills of entrepreneurship and improve the understanding of the essence of technological innovation, so that they can better adapt to technological innovation activities. On the basis of empirical research, professor Katz proposed that the entrepreneurship training system is an interdisciplinary and cross-industry talent training system, aiming to train the professional knowledge, ability and mentality of the educated. In entrepreneurship training, the knowledge training of entrepreneurs no longer only refers to the cultivation of skills, but also includes the cultivation of the independent learning knowledge of entrepreneurial individuals and the attitude about entrepreneurship (Katz JA , 2003).

Afterwards, Researchers continue to improve, A multifaceted definition of entrepreneurship education. It is believed that it should include the cultivation of entrepreneurial ideas, entrepreneurial spirit and entrepreneurial cultural atmosphere of

entrepreneurs. Entrepreneurship education, as a major concern in the academic circles, has been the focus of scholars' research. Entrepreneurship education is a way to cultivate students' entrepreneurial competence and has gradually been recognized by the academic community. In the course of the education, to improve their ability, innovation ability, sense of responsibility and sense of achievement, to gain the ability to start entrepreneurial activities in the future. In the process of training, we should pay attention to the students' own unique quality and different ability compared with other ordinary people, through the school curriculum education of students' entrepreneurial competence to make students continue to enlarge their own certain endowment resources, make up for their own short board ability, so as to comprehensively improve the students' entrepreneurial competence and entrepreneurial quality (Entrepreneurship D W O, 2013).

Entrepreneurship education in China is more based on education, and the term 'entrepreneurship' is a modification of 'education'. Entrepreneurship education needs to be based on higher education. According to the search for articles with the theme of "College Entrepreneurship Education" in the database of China National Knowledge Infrastructure (CNKI), in the past five years, there have been over 6000 papers related to college entrepreneurship education. Scholars have different focuses on entrepreneurship education research, thus enriching the theory of entrepreneurship education. In domestic research, Hou Dingkai (2000) listed entrepreneurship education as a classroom teaching form that combines the essence of technological innovation with the essence of exploration, and integrates the comprehensive quality cultivation of entrepreneurship education and quality education.

Lei Jiayi (2007) pointed out that entrepreneurial culture education refers to the training of people with pioneering personality, rather than the training of business ability and job hunting ability. You Zhensheng (2011) pointed out that employment training is mainly aimed at teaching students professional knowledge, training professional skills, cultivating innovative ideas and abilities, and enabling learners to realize the transformation of values. It is a training method that makes full use of existing social capital while bearing corresponding risks to better realize its own value by establishing a company or commercializing intellectual property. Scholar Peng Gang believes that in order to understand the connotation of entrepreneurship education, exploration should be conducted from two levels: broad and narrow. Broadly speaking, entrepreneurship education is a relatively independent educational system aimed at stimulating the innovative spirit of young students. Narrowly speaking, entrepreneurship education is an education that enables learners to smoothly engage in entrepreneurial activities. It mainly involves professional and scientific methods to manage learners and impart the professional skills and skills needed to start a business (Peng Gang, 1995).

Based on the above theoretical research, the connotation of entrepreneurship education can be summarized into three points. Firstly, different entrepreneurial teaching models should be adopted for students of different age groups; The second is

that the cultivation objective of entrepreneurship education is to have a long-term impact on the educated, cultivate innovation and creativity, and enhance entrepreneurial willingness; Thirdly, entrepreneurship education should not only be used as an educational method, but also penetrate into the lives of the educated, making it a part of individual thinking and behavioral patterns. The entrepreneurship education in vocational colleges is mainly aimed at the student group of vocational colleges. Therefore, when carrying out entrepreneurship education, schools should strengthen the curriculum construction of innovation and entrepreneurship, enhance the professional knowledge required by college students for entrepreneurship, and thereby enhance their entrepreneurial competence and stimulate their entrepreneurial potential. On the other hand, it is necessary to strengthen the practice of entrepreneurship and create a cultural atmosphere, so that students can master the necessary knowledge and psychological qualities during the process of receiving entrepreneurship education, thereby enhancing their entrepreneurial willingness.

In summary, entrepreneurship education is a systematic education with entrepreneurial cognition, entrepreneurial competence and entrepreneurial spirit as the core, which is different from traditional employment-oriented higher education. Its objective is to cultivate entrepreneurs, constantly improve the innovative spirit of entrepreneurs, and encourage entrepreneurs to master more knowledge and skills related to entrepreneurship. For entrepreneurship education of college students, the teaching content includes innovative thinking and awareness, identification of entrepreneurial opportunities, selection of entrepreneurial projects, formation of entrepreneurial teams, integration of entrepreneurial resources, control of entrepreneurial risks, writing of entrepreneurial plans, and roadshows of entrepreneurial projects.

2.2 Entrepreneurial Competence

2.2.1 Definition of Entrepreneurial Competence

Foreign theoretical research on Chinese college students' entrepreneurial competence mainly started in the 1960s, when there were studies on college students' entrepreneurial personality and relevant research results on college students' entrepreneurial curriculum theory. With the vigorous economic development in the 1990s, the study on college students' entrepreneurial theory gradually transformed from the micro stage to the grand stage. Among them, the investigation of entrepreneurial competence has gradually evolved from the micro-scope to the macro-economic scope, which mainly reflects the investigation of influencing factors in the whole enterprise development stage. Representative scholars are Christian Luthje, Nikolaus Franke and Phan.

At present, the theoretical and experimental research on college students' entrepreneurship in foreign countries has been relatively mature, including crisis school, leadership school, innovation school, cognitive school, literature school,

economic school, strategic school and time school. In the process of basic theory and practical research of entrepreneurship education, the research results are mainly reflected in the curriculum system of entrepreneurship education, teacher training, teaching, curriculum implementation and other fields. Representative scholars include : JoAnn C.Garland and James WGarland. In the 1990s, the rapid growth of the country represented by China greatly promoted social reform. During this period, studies on entrepreneurs abroad mainly reflected the analysis of social impact factors of entrepreneurs, the analysis of venture capital support system and the comparative analysis of foreign investment of entrepreneurs(Jeffrey Timmons, 2008).

Wang Shanshan (2013)believes that most of the early foreign discussions on college students' entrepreneurial competence focus on the micro aspects, including the entrepreneurial spirit of entrepreneurs, the utilization of funds and the enterprise itself, as well as venture capital mechanism, resource utilization strategy, entrepreneur personal training and venture capital strategy. Overall, entrepreneurial competence refers to the various abilities that entrepreneurs need to possess during the entrepreneurial process. There are many and relatively complete studies on entrepreneurial competence both domestically and internationally, believing that professional skills only refer to the necessary knowledge, talents, and attitudes of college students in the actual process of entrepreneurship.

The specific definition of this viewpoint can be summarized and summarized from both individual and corporate perspectives. In terms of personal level research, foreign experts such as Chandler and Jansen et al. (1992) believe that the ability of entrepreneurs refers to the ability to identify, predict, and utilize opportunities, as well as the management ability, based on the role of innovation, management, and technology services that college students play in entrepreneurial activities. Man and Lau et al. (2002) defined creativity as the highest level of team intelligence resources that entrepreneurs should possess, including their personality, abilities, and technology. It is the overall driving force for entrepreneurs to successfully fulfill their responsibilities. Domestic researchers Tang Jing and Jiang Yanfu (2008) used exploratory factor analysis to establish a second-order and six dimensional definition model for entrepreneurial talent, proposing that entrepreneurial talent is opportunity recognition, innovation talent, and operational management talent.

Zhang Yuli and Wang Xiaowen (2011) analyzed previous experience and learning style from two perspectives through a series of data quantification methods, and proposed that learning style is a key indicator that affects the formation of entrepreneurial abilities. From an institutional perspective, foreign scholars such as Rule and Irwin (1988) define innovative thinking as the means and methods of identifying new ideas, products, and concepts within institutions.

Zahra et al. (2011) believe that technological innovation is a dynamic technology that includes a comprehensive understanding of enterprise development, technological innovation, making choices, and realizing growth opportunities. Domestic experts such as Ma Hongjia (2010) proposed that innovation awareness

consists of two levels: opportunity awareness and business management awareness. Cai Li et al. (2014) pointed out that the innovation process is the fusion of opportunity recognition ability and opportunity utilization ability. Opportunity recognition ability is mainly reflected in the enterprise's innovation process by recognizing opportunities and exploring them; The ability to utilize opportunities is reflected in the process of enterprises obtaining innovative opportunities through the development of new business and the development of new products. Entrepreneurial competence can be divided into three levels: individual entrepreneurial competence, group entrepreneurial competence and enterprise entrepreneurial competence. The main focus of this research is on entrepreneurial competence at the physical level. According to previous studies, although scholars have their own unique views and opinions on entrepreneurial competence, there are some common points. For example, entrepreneurship is a practical activity, so entrepreneurial competence has the characteristics of practicality; At the same time, entrepreneurial activity is an innovative activity, which needs to develop new business opportunities or create new production methods, so entrepreneurial competence is also creative. The most important thing is that entrepreneurial activities require a combination of abilities, so entrepreneurial competence also reflects the synthesis.

To sum up, entrepreneurial competence is the ability to create social and economic value by integrating professional knowledge and skills with innovation and entrepreneurship. The entrepreneurial competence of college students emphasizes the development, which is the ability cultivated to prepare for the future entrepreneurship or employment. At the same time, the entrepreneurial competence of college students also emphasizes showing the personality characteristics of college students, paying attention to the integration of innovation and professionalism, and emphasizing the change of college students' thinking, consciousness and concepts, so as to realize the development of college students' entrepreneurial competence. In a word, college students' entrepreneurial competence is a comprehensive ability of college students to realize innovation and entrepreneurship by combining their existing professional knowledge and skills in the process of entrepreneurship, creating various values and reflecting their unique personality traits.

2.2.2 Components of Entrepreneurial Competence.

In 1993, scholars Chandler and Hanks proposed the term Entrepreneurial Competency, and defined entrepreneurial competency as "the ability to identify, anticipate and utilize opportunities", which is regarded as the core competence that entrepreneurs must possess. And this ability is developmental and will be continuously improved in the process of entrepreneurial practice(Chandler , G.N.& Hanks, 1993). Since then, researchers have conducted various explorations on the structure of entrepreneurial competence. Lau and Man proposed a six-dimensional structural model of entrepreneurs' ability characteristics(Man, T.W.Y. & Theresa Lau,

2000). March divided entrepreneurial competence into two factors: exploration ability and development ability(JAMES G MARCH, 1991).

Lyv Rong believes that entrepreneurial competence includes six kinds of abilities, such as self-learning ability, opportunity identification ability and management communication ability(Lyv Rong, 2011). entrepreneurial competence refers to the ability to explore and create a new production method, as well as to strive to research and create things (new products, new fields, new processes or raw materials, methods for carrying out existing processes), and adopt various methods to apply and research these, thus forming a certain innovative scientific and technological achievement. Innovation includes hardware and software, while hardware includes time, funding, and manpower; Software ability refers to the personal qualities of entrepreneurs, mainly including professional knowledge and creative ability. Innovative qualities can be divided into pioneering and innovative spirit, values, abilities, and technology. Each of these areas can be subdivided. In this research, entrepreneurial competence is preliminarily divided into entrepreneurial qualities, entrepreneurial knowledge, and entrepreneurial skills.

2.2.3 Importance of Entrepreneurial Competence

Entrepreneurship, as a serious social and economic activity, has its inherent logic and laws, and entrepreneurial behavior conforms to the general consensus of economics and management, that is, entrepreneurship, as a market-oriented behavior, requires entrepreneurs to have a capacity structure that meets the needs of entrepreneurship. Blind entrepreneurship, ignoring the factors of ability, can hardly guarantee the smooth development of entrepreneurs and gain benefits continuously, and it is even more difficult to guarantee the national approval of college students The strategic objective of high-quality entrepreneurship to achieve social stability and economic development can be successfully realized. Therefore, systematic responses to practical issues such as the structure of college students' basic entrepreneurial competence, whether contemporary college students have entrepreneurial competence, how to master their entrepreneurial competence, and how to improve college students' entrepreneurial competence have become major issues that cannot be avoided in the field of entrepreneurial research.

In terms of school, "our country is still in the process of exploring entrepreneurial education, and the structuralization and confidentiality of the curriculum is relatively low"(Zhang Ling, Sun Yanan, 2017). The entrepreneurial knowledge and skills taught in entrepreneurship education are not systematic and comprehensive enough, which eventually leads to students' vague cognition of entrepreneurship and lack of comprehensive development of entrepreneurial competence. In terms of students, college students generally have a simple and simple understanding of entrepreneurship, believing that entrepreneurship is to find business opportunities and scientifically integrate and apply all resources. However, society is

changing rapidly, and opportunities are fleeting. In such a social environment, perfect business philosophy and management methods, innovative integration of skilled entrepreneurial skills and professional skills, and strong psychological quality have become the deep pursuit of college students to start businesses. However, the entrepreneurial competence of college students is obviously unable to meet the current social requirements, and their entrepreneurial competence needs to be improved urgently. The need of the construction of an innovative society has spawned the country's pursuit of innovative talents, and the important place for the cultivation of innovative talents is various colleges and universities. This need for innovative and entrepreneurial talents has further promoted the development of innovation and entrepreneurship education in colleges and universities with the objective of cultivating and improving the entrepreneurial competence of college students, and entrepreneurial education has gradually become an important aspect of the construction of double-first-class universities. In this big environment, the methods and ways to improve the entrepreneurial competence of college students have become the core issues that scholars from all walks of life pay attention to and think about.

The main teaching objective of this research is to enhance the entrepreneurial competence of vocational college students. The level of students' entrepreneurial competence largely affects the success or failure of entrepreneurial activities. Carrying out entrepreneurial education in vocational colleges to improve students' entrepreneurial competence is in response to the call of the country to encourage entrepreneurship, laying the foundation for students to carry out entrepreneurial activities. This article takes entrepreneurial competence as the dependent variable and reflects the achievement of teaching objectives by comparing students' entrepreneurial competence before and after the course.

2.2.4 Measuring Entrepreneurial Competence

Entrepreneurial competence has both individual and social attributes. It is not an isolated mental ability, but a comprehensive system with certain psychological and quality characteristics around entrepreneurial behavior. With regard to the determination of indicators to measure entrepreneurial capacity, the work completed by different objects is therefore different in terms of indicators. In terms of evaluation methods after the index is determined, self-efficacy or self-assessment is generally used to measure competence in the existing research of strategic management, psychology and entrepreneurship. According to Wood & Bandura, the ability to self-assess is central to an individual's belief in self-efficacy (Wood & Bandura, 1989).

Entrepreneurial self-efficacy evaluation dimensions. At present, there are two kinds of indicators of entrepreneurial self-efficacy that have been empirically tested. One is the entrepreneurial self-efficacy structure proposed by Chen C.C. and Greene P.G. And Crick A (1998), which can predict the possibility of an individual becoming

an entrepreneur. It is believed that entrepreneurial self-efficacy is reflected in five dimensions: market, innovation, management, risk tolerance and financial control. Second, DeNoble considers that entrepreneurial self-efficacy is mainly reflected in six dimensions: risk and uncertainty management skills; Innovation and product development skills dimension; Dimensions of interpersonal and network management skills; Opportunity recognition skill dimension; Skills in handling and allocating critical resources; Skills to develop and maintain an innovative environment.

The practice of self-assessment of entrepreneurial competence. Chandler G.N is a typical representative of analyzing the concept of entrepreneurial competence with the method of entrepreneur self-assessment. And Man T. W.Y. Chandler (1994) believes that individuals need to complete the work of three roles in the entire entrepreneurial process, namely, the role of entrepreneurship, the role of management and the role of technical functions. This requires the ability to: identify exploitable opportunities; Drive the enterprise to complete the entire process from creation to harvest; Conceptual ability; Human capacity; Policy capacity; The ability to use tools and techniques within a specific domain. ManT.W.Y. (2002) proposed six dimensions of entrepreneurial competence, namely, opportunity ability, relationship ability, conceptual ability, organizational ability, strategic ability and commitment ability. He Xiaogang et al. (2005) learned from ManT. W.Y. et al. 's concept of entrepreneurial competence, conducted an empirical test based on 277 valid questionnaires, and determined six dimensions of capability factors to measure entrepreneurial competence, namely, strategic ability, management ability, relationship ability, learning ability, innovation ability and opportunity ability. Based on ManT.W.Y. et al., Tang Jing and Jiang Yanfu (2008) constructed a second-order and six-dimension conceptual model of entrepreneurial capability through the analysis of the two major tasks of entrepreneurial capability concept and entrepreneurial process. When Ma Hongjia, Dong Baobao and Chang Guanqun (2010) studied the impact of enterprise network capability on entrepreneurial capability, they also carried out factor analysis to extract two factors, opportunity capability and operation management capability, through a set of entrepreneurial capability measurement indicators.

In summary, Entrepreneurship is the process of obtaining wealth through the creation of new value on the basis of the original. Entrepreneurial competence refers to the abilities that need to be possessed during the entrepreneurial process. Specifically, for college students, entrepreneurial competence can be subdivided into entrepreneurial knowledge, entrepreneurial skills, entrepreneurial consciousness. In this research, the evaluation tool for the entrepreneurship knowledge is written examination, which Including 10 single choice questions, 10 multiple choice questions, 15 decision questions and 5 short answer question, a total of 100 points. The evaluation of entrepreneurial skills is through the completion of the business plan and the presentation of the report which is based on innovation, feasibility, profitability, teamwork, defense performance, etc. The evaluation of entrepreneurial consciousness is mainly carried out by questionnaire survey of students.

2.3 Extracurricular course

2.3.1 Definition of Entrepreneurial Competence

Extracurricular course is one of extracurricular education. Extracurricular education has different names, which can also be called off-campus education, off-campus activities, etc. Different scholars have different definitions of extra-curricular education. Chinese scholar Zhang Yincheng believes that off-campus education refers to various, purposeful, planned and organized educational activities carried out by off-campus education institutions such as children's palace, youth palace, children's activity center, youth science and technology museum, and youth home (Zhang Yincheng, 1997). The Utah Department of Services believes that after-school programs are for children and adolescents in kindergarten through eighth grade and their parents, and therefore after-school programs should be designed to meet the needs of both children and parents (Utah State University, 2000).

Apart from the national structures that have contributed immensely to achieving SDG , schools, parents, students, and indeed the general public has put innumerable measures into the provision of positive learning environments aimed at the improvement in the status of their children and their learning outcomes (Hulela, Mukuni, Abreh, Kasozi, & Kraybill, 2021; Abreh, 2017, 2019). Among these innumerable measures is the engagement of students in extra class teaching and learning – a situation which is taken differently in Asia. For instance, additional tuition in the Programme for International Student Assessment (PISA) attracts enormous household spending in Singapore, with its attendant benefits (Wise, 2016). However, there is a vast social and cultural value attached to accessing extra classes (Ansong et al., 2023) regardless of the quantum of funds involved or the associated opportunity cost.

In summary, extracurricular course mean classes that are not mandatory according to state educational standards and are not included in school curricula. extracurricular course is an additional opportunity to take to help to deepen their appreciation for the school's specific demands and learning challenges. extracurricular course entrepreneurship education will be understood as "voluntary" instruction pursued mainly outside of the curriculum of the comprehensive university.

2.3.2 Components of Entrepreneurial Competence

2.3.2.1 Topic

The subject matter of extracurricular courses is wide-ranging, and its core is to supplement and extend the deficiencies of school education and meet the needs of students' personalized development. According to the definition of Chinese scholar Zhang Yincheng, the educational activities provided by extracurricular education institutions (such as Children's Palace, Youth Science and Technology Museum, etc.) have clear purpose and organization, and their themes usually cover multiple

dimensions such as academic improvement, interest cultivation, social practice, and scientific and technological innovation (Zhang Yincheng, 1997). For example, academic extracurricular courses may focus on mathematics competition training, language ability enhancement, or scientific experimental exploration; interest courses involve art and sports such as music, fine arts, and sports; and social practice courses cultivate students' sense of social responsibility through activities such as volunteer service and career experience.

From an international perspective, different regions have different emphases on the subject matter of extracurricular courses. Taking Singapore as an example, its families have invested heavily in extracurricular tutoring related to the International Student Assessment Program (PISA), and the themes are mostly around the content expansion of standardized tests, aiming to improve students' academic competitiveness through intensive training (Wise, 2016). In contrast, extracurricular courses in the United States emphasize "holistic education". For example, Utah's after-school programs not only focus on academic support, but also involve topics such as mental health counseling and family relationship building to meet the multi-level needs of children and parents (Utah State University, 2000). This diversity of topics reflects the diversity of social and cultural backgrounds and educational goals. Entrepreneurship education, as an important part of extracurricular courses, has gradually emerged in colleges and universities in recent years. Such courses are usually practice-oriented, covering business plan design, market research, financing strategies and other content, helping students transform theoretical knowledge into practical operation capabilities (Ansong et al., 2023). Its subject design breaks through the boundaries of traditional disciplines, emphasizes interdisciplinary integration and the cultivation of innovative thinking, and becomes a bridge connecting academia and society.

2.3.2.2 Activity

There are various forms of extracurricular activities, and their essence is to promote the all-round development of students through planned and organized practice. According to the functions of extracurricular education institutions, activities can be divided into three categories: academic support, interest development, and social practice.

Academic support activities aim to make up for the deficiencies of school education. Common forms include after-school tutoring, subject competition training, and learning method guidance. For example, China's "Olympiad Class" improves students' logical thinking ability through high-intensity training; while Singapore's PISA extra courses use a combination of simulation tests and personalized feedback to help students adapt to the examination mode (Wise, 2016). Such activities usually emphasize systematicity, and the content needs to be designed according to the national curriculum standards, while incorporating innovative teaching methods (such

as project-based learning) to avoid becoming an extension of "cramming" education. Interest development activities aim to explore students' potential and interests, covering areas such as art, sports, and technology. For example, the robot programming course of the Children's Palace stimulates creativity through construction and competition; the music workshop cultivates teamwork ability through ensemble training. Utah's after-school programs even extend activities to the family level, such as parent-child cooking classes and outdoor adventure camps, which not only promote skill development but also strengthen family ties (Utah State University, 2000). The design of such activities should focus on participation and fun, and avoid excessive structuring that may cause students to lose interest. Social practice activities are an indispensable part of extracurricular courses, including volunteer services, community research, and career experience. For example, extracurricular programs in some African countries organize students to participate in environmental protection initiatives and cultivate civic awareness through activities such as cleaning rivers and planting trees (Hulela et al., 2021). Such activities not only enhance students' sense of social responsibility, but also provide reference for their future career choices.

2.3.2.3 Objective

The objective system of extracurricular courses can be divided into three levels: individual development, educational equity, and social progress. Its core lies in promoting the improvement of students' comprehensive quality through informal learning environments. Extracurricular courses are seen as an important means to make up for the uneven distribution of educational resources. For example, students from low-income families acquire digital skills through free programming courses to narrow the "digital divide"; science and technology museum tours in rural areas provide remote children with the opportunity to access cutting-edge science (Hulela et al., 2021). In addition, art therapy courses designed for children with special needs (such as autism) reflect educational inclusiveness. Extracurricular courses help social development by spreading cultural values and cultivating civic awareness. For example, environmental protection activities guide students to pay attention to sustainable development; entrepreneurship education promotes the formation of an innovative economic ecology (Ansong et al., 2023). At the macro level, such courses also promote intergenerational exchanges, such as the "Silver Mentor" project, which allows retirees to participate in teaching and enhance social cohesion.

2.3.2.4 Evaluation

The evaluation of extracurricular courses needs to break through the traditional score orientation and adopt a multi-dimensional evaluation system covering three aspects: student growth, course quality and social impact. Student growth evaluation includes academic performance improvement rate, skill level

certificate acquisition, number of competition awards, etc. For example, Singapore's PISA extracurricular classes track student progress through simulation test scores (Wise, 2016). Soft skills such as creativity and cooperation are evaluated through observation records, learning logs, and portfolios. For example, art courses may use "growth portfolios" to record students' creative process. Course quality evaluation includes the scientific nature of course design (whether it conforms to the laws of cognitive development), the adequacy of resources (teachers, facilities, etc.) and the safety of activities. The process dimension evaluates teaching effectiveness through classroom observation and student participation surveys (such as attendance rate and interaction frequency).

For example, Utah's after-school program uses parent satisfaction surveys to optimize activity design (Utah State University, 2000). Social impact evaluation includes environmental improvement data brought about by community service projects (reduced garbage, number of trees planted). Track the career development path of participants and analyze the impact of extracurricular courses on their life choices. For example, whether graduates of entrepreneurship education are more inclined to start their own businesses (Ansong et al., 2023). The evaluation subjects need to be diversified, including student self-evaluation, peer evaluation, teacher feedback, parent evaluation and third-party agency evaluation. For example, science and technology competition courses may introduce industry experts to review works to ensure the professionalism of the evaluation; social practice activities rely on feedback from community organizations to measure social value.

As an important part of the educational ecology, the content design of extracurricular courses must take into account the diversity of themes, the innovation of activities, the hierarchy of goals and the comprehensiveness of evaluation. In the context of globalization and technological innovation, extracurricular education will continue to evolve and become a dynamic link connecting school education, family education and social needs, providing support for the comprehensive development of individuals and the sustainable progress of society.

2.4 Constructivism theory

2.4.1 The components of constructivism theory

Taking Piaget's theory of cognitive development as the core, it emphasizes that individuals actively construct knowledge system through "assimilation-adaptation" mechanism. This theory reveals the process by which learning subjects form cognitive schemas through interaction with the environment, with special emphasis on the driving role of experience reorganization and cognitive conflict (Guo Gaoping, 2022). On the level of knowledge view, it holds that knowledge is dynamic and situational. In the view of learning, the characteristics of learners' active construction are highlighted. In terms of teaching concept, the importance of building cognitive scaffolding is advocated. Vygotsky's sociocultural theory expanded the theoretical

boundaries of constructivism, proposed the concept of "zone of proximal development", and emphasized the mediating role of social interaction and cultural tools in cognitive development. According to this school, linguistic symbol system, cultural tradition and social practice constitute the ecological environment of knowledge construction, and the formation of collective intelligence is superior to individual isolated cognition (Yu Jinxun, 2020). This social cognitive mechanism provides a theoretical basis for collaborative learning. The radical constructivism proposed by von Glassfeld emphasizes the absolute initiative of the cognitive subject, and maintains that knowledge is the survival tool constructed by the subject to adapt to the environment rather than the reflection of objective truth. This epistemological breakthrough shifts the teaching focus to promoting learners to construct effective cognitive models rather than simply transferring knowledge, and provides a philosophical basis for innovative education.

2.4.2 The influence of constructivism theory

Constructivism promotes the educational objective to shift from knowledge accumulation to ability cultivation, and the teaching focus shifts from teacher teaching to students' active inquiry (Wang Qin, 2019). This shift reshapes the perception of the essence of education: learning is a process of making meaning rather than the result of receiving information. According to a survey conducted by the American Educational Research Association (2005), students' problem-solving ability increased by 37% in classrooms using constructivist methods. New teaching models such as situational teaching, project-based learning and case teaching came into being. The success of Harvard Business School's case teaching method proves the effectiveness of situational construction, and the success rate of its graduates' entrepreneurship is 42% higher than that of traditional teaching method. The introduction of collaborative learning mechanism has significantly improved students' teamwork ability. The interdisciplinary project team model of Stanford School of Design (d.school) is a typical example. Teachers are transformed from knowledge authorities to learning facilitators, and students are transformed from passive receivers to active constructors. This role shift is fully reflected in the MIT Media Lab's "Lifelong Kindergarten" project, where tutors only provide resource support, learners complete project construction independently, and the technology companies founded by its graduates are valued at more than 10 billion dollars (Zhou Zigang, 2019).

2.4.3 The application of constructivism theory in this research

2.4.3.1 Core principles of course design

(1) Authenticity principle: Build a simulated entrepreneurial ecosystem, such as the "Student Entrepreneurial Park" established by Shenzhen Vocational and Technical College, which provides a real operating environment such as business

registration and tax declaration.

(2) Progressive support: The three-level advanced system of "creative workshop - project incubation - enterprise operation" was designed. According to the entrepreneurship curriculum of Beijing Vocational College of Electronic Science and Technology, the project survival rate increased to 65%.

(3) Social interaction mechanism: The establishment of cross-professional entrepreneurial teams, and the "Maker Marathon" activity of Zhejiang Vocational College of Finance promoted 37 cross-faculty cooperation projects (Wang Yanru, 2017).

2.4.3.2 Innovative strategies for teaching implementation

(1) Problem-oriented Learning (PBL) : set up real business challenges, such as Guangzhou Panyu Vocational and Technical College and local enterprises to carry out product innovation competition, resulting in 14 patented technologies within two years.

(2) Cognitive apprenticeship: Entrepreneurs are hired as mentors, and the "double tutorial system" in Wuhan Vocational and Technical College improves the quality of student project business plans by 80%.

(3) Reflective practice: Establishment of entrepreneurial log system. Tracking data of Ningbo Vocational and Technical College show that the success rate of second entrepreneurship of students who adhere to reflective record is 3 times higher (Qi Hang, 2016).

2.4.3.3 Innovation path of evaluation system

A process evaluation matrix was adopted, covering 12 capability indicators such as opportunity identification, resource integration and risk response. The "entrepreneurial competence Radar" assessment tool developed by Suzhou Industrial Park Vocational and Technical College has realized the visual presentation of learning results. By introducing a 360-degree evaluation mechanism and integrating multi-dimensional data such as self-evaluation, peer evaluation and mentor evaluation, Shanghai Vocational College of Arts and Crafts showed that the accuracy of this system in predicting the success rate of entrepreneurship reached 82% (Liu Zhiming, 2014).

According to the Ministry of Education's 2019-2022 report on the quality of vocational Education, the entrepreneurship rate of college graduates adopting the constructivist model reached 4.7%, significantly higher than the national average of 2.1%. Typical cases include 27 public welfare enterprises cultivated by the "Social Enterprise incubation Program" of Changsha Civil Affairs Vocational and Technical College, which have served more than 100,000 people in total. However, in practice, there are challenges such as insufficient integration of teaching resources and difficulties in the transformation of teachers' roles, which need to be continuously

improved through establishing a university-industry knowledge sharing platform and carrying out teachers' constructivism teaching ability certification. Constructivism provides theoretical foundation and practical framework for vocational entrepreneurship education. By building a community of practice of "learning by doing", creating an authentic learning situation and establishing a dynamic evaluation system, entrepreneurial talents with innovative thinking and practical ability can be effectively cultivated (Hang Ruiyou, 2014). The future development direction is to deepen the integration of production and education, use digital technology to build a virtual simulation entrepreneurial system, and ultimately form a new entrepreneurial education ecology that ADAPTS to the needs of the digital economy era.

2.5 Social learning theory

2.5.1 The components of social learning theory

Social Learning Theory (SLT) is a theory of learning developed by psychologist Albert Bandura. It emphasizes that learning is carried out through social interaction and imitating the behavior of others (Xiao Sijia, 2023). Unlike traditional behaviorist theories, social learning theory states that individuals learn not only through direct experience and reinforcement, but also through observing the actions of others and their consequences, forming their own cognitive patterns and behavioral responses. In the field of education, especially in entrepreneurship education, social learning theory provides a new perspective and method, which promotes the growth of learners through imitation and role model, especially in vocational students' entrepreneurship education, social learning theory has important application value.

The core idea of social learning theory is that "learning is achieved by observing and imitating the behavior of others", and its theoretical framework consists of four main components: attention, retention, replication, and motivation. These four aspects are the basic elements of Bandura's theory, and each part plays a crucial role in the completion of the learning process (Wang Zhicong, 2023).

Attention is the first step and the most fundamental component of social learning. The premise of social learning is that students can pay enough attention to an action or demonstration. In this process, students observe the behaviors of others, identify the key elements, and then develop interest and concern for these behaviors (Han Tianyao, 2021). The attraction of the behavior, the authority of the demonstrator and the performance skills of the demonstrator all affect the degree of students' attention. For example, in entrepreneurship education, if students can see the entrepreneurial stories of successful entrepreneurs or learn from successful business practices, they will be more easily attracted, and thus stimulate their interest in entrepreneurship. Retention means that the learner can retain the information in memory after noticing and understanding the demonstration behavior. Social learning is not equivalent to instant imitation, but requires the learner to store and recall behaviors in the brain.

The key to retention is the learner's ability to translate the observed behavior into mental representations, store them in memory, and be able to recall them when necessary. In entrepreneurship education, students observe and remember successful entrepreneurial cases, management skills, team building and other important information to lay the foundation for subsequent imitation and application. This process can help students maintain the integrity and operability of information through classroom explanation, video display, case analysis, etc. Replication is the third step of social learning, which refers to the practice of the learned behavior after the student has memorized and understood the model behavior.

At this time, students not only have to imitate external behaviors, but also need to rely on their own abilities and skills to show these behaviors. In entrepreneurship education, students gradually reproduce the observed entrepreneurial behaviors by simulating entrepreneurial activities, actually operating business plans, participating in team projects, etc. The success of the replication phase is directly dependent on the degree to which the student applies the knowledge and skills acquired during the maintenance process. For example, by simulating marketing activities, students can transform theoretical knowledge into practical operation and improve their practical ability. Motivation is an important factor in determining whether social learning can produce practical results. In social learning, learner's internal motivation and external reward and punishment mechanism have an important influence on the completion of imitation behavior. Bandura noted that motivation is not only influenced by external rewards or punishments, but also driven by students' expectations of their own success and sense of accomplishment. In entrepreneurship education, students' motivations are expressed as expectations for entrepreneurial success, interest in innovation and risk management, and pursuit of personal achievement (Wang Junqiang, 2019). In the curriculum, teachers should stimulate students' intrinsic motivation and encourage them to take the initiative in entrepreneurial practice through appropriate incentive mechanisms, such as showing successful entrepreneurial cases, setting project rewards, and organizing practical activities.

2.5.2 The influence of social learning theory

The influence of social learning theory is far-reaching, especially in the field of education. It not only affects the research of educational psychology, but also has important implications for the design of teaching methods (Wang Liang, 2015). The core idea of social learning theory is to promote learning through observation, imitation and interaction, and this way of learning has the following effects.

Social learning theory emphasizes that learners actively participate in the learning process by observing the actions of others, assessing their consequences, and imitating them. This learning mode is different from the traditional one-way knowledge imparting mode and can promote students' active learning. Students no

longer passively accept the teaching content of teachers, but actively build their own knowledge and skills through social interaction, teamwork and practical operation. This initiative not only helps students better grasp the course content, but also stimulates their interest in exploration and innovation. The "role model effect" in social learning theory emphasizes that by observing the behavior of others, learners can not only imitate the behavior of others, but also adjust their own behavior by evaluating the successes and failures of others. Teachers and outstanding classmates can serve as role models and lead students to success. In entrepreneurship education, teachers can share experiences by inviting entrepreneurs or entrepreneurs who have started successful businesses, so that students can draw strength and inspiration from these practical experiences. Peer interaction is also a part of social learning, and students can learn from each other through group cooperation and project discussion. Social learning theory emphasizes that learning is not only an intrinsic cognitive process, but also needs to take place in real situations. By interacting with others in real learning situations, students are able to better understand and apply what they have learned. In the entrepreneurship education of vocational students, situational learning and practical operation are very important. Through participating in practical activities such as market research, product development and business plan writing, students can combine theoretical knowledge with practice to improve their entrepreneurial competence.

2.5.3 The application of social learning theory in this research

Entrepreneurship education programs at vocational colleges are designed to equip students with the basic knowledge and skills needed to start a business. Social learning theory provides a theoretical basis for the design and implementation of these courses, especially in the development of extracurricular courses, which can enhance students' entrepreneurial competence through various learning methods (Wang Cuirong, 2013). The following is the specific application of social learning theory in the extracurricular courses of vocational students' entrepreneurship education.

By inviting successful entrepreneurs or entrepreneurs to the school to give lectures and share their experiences, students can learn from real success stories. In these courses, teachers can guide students to observe the way of thinking, decision-making process and entrepreneurial experience of successful people, and stimulate students' interest and desire to explore. For example, by showing how a start-up overcame market competition, secured funding, or scaled, students are able to understand the key elements of the entrepreneurial process and use these experiences as models for themselves. The peer learning model of social learning theory can be fully utilized in the entrepreneurship education of vocational students.

Through group learning, students can interact and share knowledge and experience in common entrepreneurial tasks. In group projects, students play different roles in market research, teamwork, product development, etc., learning each other's

strengths and making up for each other's shortcomings. This type of collaborative learning not only improves students' ability to work as a team, but also helps them better understand and master the skills of entrepreneurship. Through situational simulation, students are able to conduct entrepreneurial attempts in a safe environment and understand the complexities and challenges of the entrepreneurial process. For example, schools can design a series of entrepreneurship simulation games, such as "entrepreneurship contest" or "business simulation experiment," in which students role-play, make decisions and operate. Through these simulated situations, students can concretize the "replication" link in social learning theory, translating observed entrepreneurial behavior into practical operations. Motivational factors mentioned in social learning theory play an important role in entrepreneurship education. By providing students with innovation rewards, entrepreneurial practice opportunities and demonstration platforms, their motivation to learn can be enhanced. For example, through activities such as business plan competitions and project presentations, students are encouraged to actively participate and feel their own sense of accomplishment and expectations of success through these activities. Teachers should create a positive learning atmosphere, stimulate students' interest and motivation through positive incentives, and make students more involved in the practice of entrepreneurship education.

The application of social learning theory in vocational students' entrepreneurship education is of great value. By integrating components such as attention, retention, replication and motivation into the course design, students' mastery of entrepreneurial knowledge and skills can be effectively promoted. In and out of the classroom, through example, peer learning, situational simulation and other ways, students can continuously improve their entrepreneurial competence in practice. At the same time, the motivation theory of social learning theory provides guidance for stimulating students' enthusiasm for learning. Through effective incentive mechanism, students can maintain high enthusiasm and innovative spirit in the learning process.

2.6 Taylor curriculum development theory

The curriculum development theory proposed by Ralph W. Tyler is the most important theory in the field of curriculum development that cannot be ignored. Taylor himself is also regarded as the epitome of curriculum theory, an important founder of modern scientific curriculum theory, and is known as the "father of modern curriculum theory". In 1949, he published *The Basic Principles of Curriculum and Instruction*, a book that systematically discussed his theory of curriculum development. The core of Taylor's curriculum development theory is closely related to the four basic issues of curriculum development he proposed. In the introduction section of *"Basic Principles of Curriculum and Teaching"*, Taylor proposed that the development of any type of curriculum Four basic questions must be answered: First,

what educational objectives should schools pursue? Second, what educational experiences should we offer to achieve these objectives? Third, how can these educational experiences be effectively organized? Fourth, how can we be sure that these objectives are being achieved?

2.6.1 The Main Viewpoints of Taylor Curriculum Development Theory

The four fundamental questions that Taylor raises around the relationship between educational objectives and educational experience are in fact what he considers to be the four elements or stages of curriculum development(Taylor,2008):

2.6.1.1 Determining educational objectives

Taylor emphasized the leading role of educational objectives and advocated that a broad educational philosophy should be used as the guiding principle to make a wise choice of educational objectives. He said, "Objectives are ultimately a matter of choice, and therefore a value judgment made after careful consideration by those responsible for the school"(Taylor,2008). He integrated the strengths of various schools of American educational philosophy at that time, and advocated that the school curriculum objectives should be determined by considering the needs of learners themselves, contemporary social life, and the suggestions of subject experts. Taylor believes that education is a process of changing human behavior, and curriculum development should consider the needs of learners themselves. This requires research on learners themselves, by investigating their current situation and comparing it with acceptable norms, to determine which behavioral changes education should cause in students. In addition to considering the needs of learners, we also need to consider contemporary off campus life. We need to use the data obtained from surveys to determine which ones are more important in life, as a basis for determining objectives. We also need to consider the opinions of subject experts, whose knowledge about a certain discipline or field is of great significance or function for contemporary life.

Secondly, "filter" educational objectives. Taylor believes that the objectives obtained from the above three sources need to be "filtered" in order to obtain a smaller number of internally consistent and important objectives. Taylor proposed two "filters": firstly, the school's educational policy and social philosophy removed some objectives that did not meet the requirements; The second is to use learning psychology to remove or make grade adjustments to objectives that learners cannot achieve through learning or do not meet the age characteristics of students. The remaining objectives after the two "filters" mentioned above is the educational objectives that the school aims to achieve. The educational objectives should not be too many, and the appropriate number should be 7- 15.

Finally, state the educational objectives. Taylor advocates that objective statements should help select learning experiences and guide teaching. The expression

of school education objectives must convey various behavioral changes that will develop in students. These behavioral changes are not only the objectives that school education aims to achieve, but also the changes that teachers hope students will experience. Therefore, each educational objective should include two aspects: "behavior" and "content".

2.6.1.2 Selecting learning experiences

Taylor believes that only by choosing a specific educational experience can a specific educational objective be achieved. "In designing an educational program to achieve a specific objective, we are faced with the problem of deciding which specific educational experiences to provide, because it is through these experiences that the learning behavior will arise that will lead to the achievement of the educational objective," Taylor noted (Taylor, 2008). Taylor emphasized that the learning experience is generated in the interaction between the learner and the external environment. When schools choose learning experiences, they should provide students with opportunities to practice the behaviors implied by the objectives and make students feel satisfied by practicing the behaviors implied by the educational objectives. The expected changes in students' behaviors should be within the scope of students' ability (Taylor, 2008).

Taylor uses examples to outline the characteristics of the learning experience that contribute to the achievement of various objectives. These characteristics include: learning experiences that develop thinking skills; Learning experiences that facilitate access to information; Learning experiences that foster social attitudes; A learning experience that helps develop interest (Taylor, 2008).

According to Taylor, the role of the teacher is to arrange the circumstances in such a way that they are sufficient to induce the behavior expected of the student. Therefore, the central issue in the selection of learning experiences is how to arrange situations in order to elicit or provide the kind of learning experience desired from students. Teachers should be good at helping students combine new knowledge with the old.

To reconstruct knowledge, it is necessary to create an effective problem situation, guide students to actively explore the problems they are interested in, cultivate students' creative thinking ability and critical thinking ability, and help students form a good social attitude and learning interest (Taylor, 2008).

2.6.1.3 Organizing learning experiences

According to Taylor, the organization of a productive learning experience should adhere to three criteria: Continuity, Sequence and Integration. He said, "When compiling an effectively organized set of learning experiences, it is necessary to meet three major standards: continuity, sequence, and integration" (Taylor, 2008). "Continuity" refers to the curriculum design that allows students to have the

opportunity to repeatedly practice and continue to develop the knowledge and skills they have learned. "Sequential "(or" phased ") refers to the ability to broaden and deepen the experience of the previous stage based on the experience of the subsequent stage. "Integration "refers to considering the correlation, unity, and coherence between various learning experiences. Taylor further pointed out that when organizing learning experiences, it is also necessary to consider how to identify the most basic concepts, principles, abilities, etc. of each discipline, and use them as the longitude and latitude for organizing courses.

When organizing learning experiences, one should also consider the basic principles of the organization. Taylor believes that organizing learning experiences through methods such as "era" is often unsatisfactory. He proposed some other organizational principles, including: increasing application breadth; Expand scope; Using the method of first describing and then analyzing; Provide examples first, then basic principles; First, form "parts" into "whole" and then establish a unified "worldview".

In addition, the organizational learning experience also needs to consider the course organizational structure. Taylor proposed that "structure" can be divided into several levels: individual subjects, namely subject centered courses or subject based courses; Wide area courses, such as social sciences, Chinese language, mathematics, and natural sciences; Core courses plus wide area courses or subject based courses; Experience courses.

2.6.1.4 Evaluating the achievement of educational objectives

Taylor emphasized the need to evaluate the achievement of educational objectives. He believes that curriculum evaluation is important to conduct a more comprehensive test to see whether the programs that provide students with learning experiences can actually guide teachers to achieve the desired results(Taylor,2008). It is necessary to measure the changes in students' behavior caused by educational objectives in the curriculum and teaching program, and to what extent these changes actually occur. The purpose of evaluation is to comprehensively test how many expected results the course learning has brought and how much effect it has actually played in order to determine the degree to which the course and teaching have actually achieved the objectives. He said, "The process of evaluation is essentially the process of judging to what extent the curriculum and teaching plan have achieved educational objectives."(Taylor, 2008)

In order to be able to measure the degree to which a program changes students, Taylor believes that the program should be evaluated at least twice, once before the program is implemented and once after the program is implemented. Taylor believes that curriculum evaluation itself is a process of letting relevant personnel understand the effectiveness of the curriculum, and should not only reflect scores or descriptive terms, but also reflect the overall changes that have occurred after students learn the

curriculum plan. He suggested that course evaluation could be carried out by written examination, observation, conversation and collection of students' works. He suggests that curriculum evaluation can be conducted through written tests, observations, conversations, and collecting student works. If necessary, curriculum developers can also modify, design or invent new methods to obtain evidence of whether students have achieved educational objectives.

2.6.2 The Influence of Taylor Curriculum Development Theory

Taylor's theory of curriculum development, also known as the "Taylor Principle" or "Taylor Model," marks the transition from immaturity to maturity in curriculum research. Taylor's four stage theory of curriculum development, which emphasizes the importance of objectives, is also known as the "objective model" of curriculum development. After Taylor, scholars have continuously developed and supplemented the "objective model". H. Taba, Taylor's student and assistant, expanded the Taylor model to a "seven stage model" and proposed that curriculum development includes seven stages: conducting investigation and analysis of needs, determining objectives, selecting content, organizing content, selecting learning experience, organizing learning experience, establishing evaluation standards, and conducting evaluations. In 1967, British curriculum expert D.

Wheeler revised Taylor's linear form to a circular form in his book "Curriculum Process", and revised the four stages of objective, content, implementation, and evaluation to a five stage model, namely objective and objective, selection of learning experience, selection of content, organization and synthesis of learning experience and content, and evaluation. J. Merritt expanded the Taylor model to an "eight stage model", which includes objectives, objectives, strategies, tactics, methods, techniques, evaluation, and consolidation (Wang Weilian, 1988). Although these models have made varying degrees of revisions to the Taylor model and enriched course research, overall they have not deviated from the core of Taylor's thinking and still fall within the scope of the "target model". Some course scholars have proposed other course development models while reflecting and criticizing Taylor's theory of course development. For example, in 1959, Bruner proposed the "process-objective" model for curriculum development in his book "The Educational Process"; In 1975, Stenhouse proposed the famous "process model" of curriculum development in his book "Introduction to Curriculum Research and Development"; American curriculum theorist Schwab proposed the "practical model" of curriculum development in his book "Curriculum Design and Evaluation"; British scholar M. Skilbeck proposed the 'environmental model' (Wang Weilian, 1988); American psychologist Robert Mills Gagne proposed a "gradient sequence" model for curriculum development (Robert M. Gagne, 1967). Although these curriculum development models have made revisions to the Taylor curriculum model from different perspectives, the Taylor curriculum development theory remains the most influential,

widely used, and well-known due to their complex operation and high requirements for teachers.

2.6.3 The Application of Taylor's Curriculum Development Theory in this research

The application of Taylor's curriculum development theory in this research has strong applicability. Taylor's theory of curriculum development has principles, and the development of entrepreneurship education extracurricular course in vocational college also needs to consider the four basic issues proposed by Taylor. After the birth of Taylor's theory of curriculum development, it was called the "Taylor Principle". One important reason is that Taylor explored the issues of "what educational objectives should schools pursue", "what educational experiences should be provided to achieve these objectives", "how can these educational experiences be effectively organized", and "how can we determine that these objectives are being achieved", which are all issues that need to be considered in curriculum development.

The International Encyclopedia of Education, edited by Swedish scholar Husen, T. and others, points out that "Taylor's basic principles of curriculum have had an impact on curriculum experts around the world... Regardless of whether people agree with the 'Taylor principle' or what philosophical views they hold, it is impossible to comprehensively explore curriculum issues without exploring the four basic issues proposed by Taylor." (Shi Liangfang, 1996). In the development of extracurricular course for entrepreneurship education in vocational colleges, it is impossible not to consider and answer the four basic questions proposed by Taylor. Taylor's theory of curriculum development has actually discussed and analyzed four issues of curriculum development, systematically discussing the four elements or stages of curriculum development, providing a basic framework for curriculum development research, namely objectives determination, content organization, curriculum implementation, and curriculum evaluation. Taylor's curriculum development theory has become an easy to remember and still widely discussed framework for curriculum development work. This article will build a curriculum construction framework based on Taylor's curriculum development theory, and determine the four independent variables of this research, which are (1)Curriculum Objectives (2)Curriculum Content (3) Teaching activities (4)Curriculum Evaluation. Develop extracurricular course for entrepreneurship education in vocational colleges from four aspects: (1)Curriculum Objectives (2)Curriculum Content (3) Teaching activities (4)Curriculum Evaluation.

According to Taylor's theory of curriculum development, extracurricular course development, like curriculum development, is the entire process of determining course objectives through demand analysis, and then selecting teaching content and related teaching activities based on this objective to plan, organize, implement, evaluate, and continuously improve, in order to ultimately achieve course

objectives.

2.7 ADDIE Instructional Design Model

Curriculum development requires comprehensive consideration of various aspects to ensure that the design and implementation of the curriculum can achieve the intended educational objectives and meet the needs of students, schools, and society. The curriculum development model is a systematic approach used to plan, design, and implement educational programs.

2.7.1 The meaning of ADDIE Instructional Design Model

ADDIE is a curriculum development and teaching design model. In 1975, the US military commissioned Florida State University to develop and design. Once this model was developed, it was widely used in the field of organizational training and received unanimous praise. ADDIE Model is an effective strategy for course design for various teaching activities. Through analysis, design, development, implementation, evaluation and other five stages, a set of effective teaching design is systematically developed. So far, the ADDIE curriculum development model has become a methodology, providing ideas for solving the problems of educational technology, and becoming a common model for most people who design and develop teaching projects. In curriculum development and teaching design, ADDIE five-step analysis can ensure the effectiveness of curriculum development, and in each step of analysis, the actual situation and other teaching design concepts can be combined to ensure the pertinence and practicability of the developed curriculum.

ADDIE Is also called the five-step teaching system design model, will be divided into five stages, namely Analysis, Design, development, Implementation and Evaluation. ADDIE Among the five stages, analysis and design belong to the premise, development and implementation are the core, and evaluation is the guarantee, the five stages are interrelated and inseparable (Xu Jin, 2017:125). The whole model is not a simple linear process but a dynamic cyclic process, with a logical connection between each two parts. The model designer can return to any steps for introspection and refinement. ADDIE From the initial analysis, design to the final implementation and evaluation, the model is designed to develop a set of courses that can give learners the best learning experience, which reflects the learner-centered student standard idea. For course development, the ADDIE model has two outstanding advantages: systematic and targeted.

(1) The ADDIE model is systematic. ADDIE The model divides the teaching design into five parts: analysis, design, development, implementation and evaluation. These five parts are connected to each other and are a systematic process in the process of teaching design.

(2) The ADDIE model is targeted. According to different learning objects and different course types, the comprehensive analysis and exploration through the

preliminary analysis of ADDIE model can be formed. Therefore, the course design developed under this model is targeted and targeted.

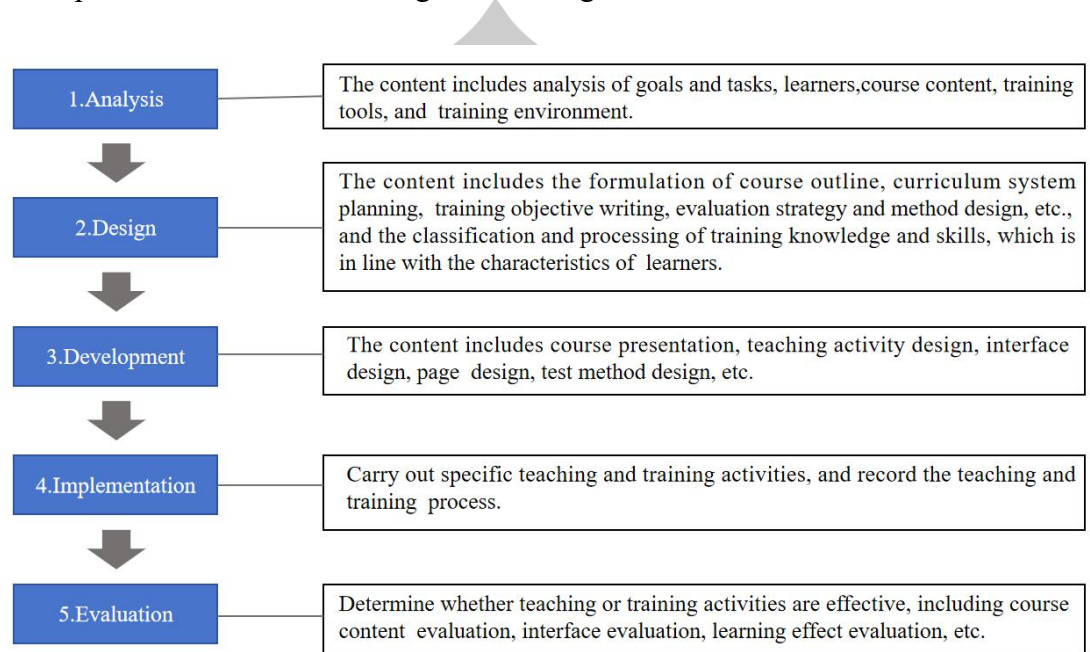


Figure 2 ADDIE Instructional Design Model
Source : Hu Wanqiu (2025)

2.7.2 The components of ADDIE Instructional Design Model

ADDIE The framework is a cyclical process that develops over time and continues throughout teaching planning and implementation. The framework consists of five stages, each with its own unique purpose and function in the development of the instructional design (Peterson, 2003:228).

Stage 1: Analysis

Analysis is the precursor of teaching design, and the most important stage of the whole model. The main consideration for instructional designers is the target audience. First, a needs analysis was conducted to determine the needs of the audience by distinguishing between what the students already know and what they need to know at the end of the course. Aldoobie (2015) felt that in order to conduct the analysis stage, we must analyze four things:

- (1) We must analyze learners (we need to understand the needs and problems of learners. To determine this, we can conduct questionnaires, interviews, pretests, or pre-evaluate learners to collect data about them);
- (2) We need to establish teaching objectives (what do we want learners to learn? Designers will save a lot of time and resources to clearly identify their specific objectives.)
- (3) Develop a teaching analysis (when we set our objectives, we will begin

writing out all the important steps and details needed to achieve them. In this complex stage, we also need to edit back and forth);

(4) Develop learning objectives (how to measure the achievement of the objectives. This step is to define what the learner should be able to do after teaching.)

At this stage, the designers have been able to roughly outline the blueprint of the course, and can continue to deepen according to the proceeds of this stage.

Stage 2: Design

The work of this stage is based on the results obtained in the analysis stage, which requires designers to clarify the course objectives or teaching objectives on the basis of the analysis, design the activities to be carried out, and also consider the course implementation methods and teaching strategies. ADDIE The design phase mainly covers the overall planning of teaching activities and the necessary decisions related to the arrangement of learning (e. g., teaching side, social interaction, media and delivery systems, organization of the environment, interface design, etc.) Important activities at this stage are:

- (1) Choose the theme
 - (2) Establish appropriate methods and procedures
 - (3) Determine a series of specific activities to support learning
 - (4) Determine a specific set of learning skills.
- (Seal, Lehmann, Blumschein and Podolskiy, 2017:70)

Peterson (2003) reminds that thorough planning must be performed in the first two phases, which will reduce further studies later stages of this procedure. Another aspect of the design process is the evaluation. As an important part of the teaching plan, the designers determine how to assess objectives and which form of assessment will be used before implementation. Objectives and assessments should be consistent and meaningful. The design results of this stage will directly affect the development stage of the course. The design results of this stage will directly affect the development stage of the course.

Stage 3: Development

The development stage is an important stage for the application of ADDIE model, and the analysis stage and the design stage are needed as the premise. The main purpose of the development stage is to apply the teaching resources and develop the teaching content. When the course designer grasps the learning situation and clarifies the course objectives, to "generate the course plan and course materials, which must develop the media applied to the teaching, teaching and any supporting resources." In other words, it is necessary to fill the proposed curriculum framework according to the elements obtained in the previous two stages, especially the selection and design of the course content should be taken seriously, and the learning content and learning task of learners should be built. In the third stage, the instructional designers integrate the technology with the teaching context and process.

According to the Aldoobie description (2015), at this stage we will first create a sample of the facts of our material. When we get feedback from the overall sample of creating the instructional design, we can work smoothly and identify our weaknesses without having to redo all the material. After we have completed the sample and were satisfied with its design, we can begin to develop our course materials. We can provide the review section of the course material to friends to view any comments and suggestions. After developing the course materials, we can do practical or preliminary experiments. This was the actual time to rehearse our course using all the material we created.

According to Peterson (2003), the development phase emphasizes three areas: draft, production and evaluation. Teaching designers at this stage develop or select materials and media and perform formative assessments (Seels & Glasgow, 1998). The evaluation during the development phase is not the actual assessment that occurred during phase 5 of the ADDIE process. Evaluation of the development phase requires attention to the product and product specifications. The teaching designer will determine whether students will learn from the product and how they will improve on it prior to implementation.

Stage 4: Implementation

In this stage, the curriculum that has been developed should be practiced according to the design of the development stage, and the necessary conditions for the implementation of the curriculum should be given. The implementation stage refers to the actual transfer of knowledge, which can be classroom teaching or distance teaching (Li Jianan, 2019:190). The group involved in this stage is also teachers and learners. At this stage, students can better understand and master knowledge through scene teaching.

In the implementation stage, the teaching designers must play an active role. In order to effectively implement the process, the teaching designers should continue to enhance the product. If the product or course operates in its natural state, it may react to the implementation of the program. No product, course, or plan will be effective without the evaluation and necessary revisions throughout the implementation phase. In detail, the stage contains three important steps:

- (1) Train teachers
- (2) Prepare students
- (3) Organize a learning environment

Why are the teachers being trained? Because sometimes teachers may not be the ones who create textbooks. Training for faculty included the materials we identified, course objectives, multimedia, assessments and activities. After the training, the teacher will understand the materials to be used before the actual course begins. In the process of preparation, we need to confirm that the students have all the materials, tools and knowledge to help the course. Finally, we need to organize the learning environment, which does not refer to chairs, tables, and whiteboards. According to the

course needs prepared by the teaching designer, what kind of place (such as laboratory, music room, etc.) should be arranged for teaching, what equipment is needed, etc.

Stage 5 : Evaluation

ADDIE In the model, the evaluation stage is mainly to detect the learning situation and analyze the effectiveness of the developed curriculum resources. The evaluation stage is mainly divided into formative, summarizing and confirming three types (Morrison, Ross, Kalman & Kemp, 2012).

Formative evaluation: formative evaluation is the quality control of the development process.(Morrison, Ross, Kalman & Kemp, 2012:254) Formative evaluation is mainly for the implementation stage and is part of the implementation. It is crucial to trying to understand why the teaching system is effective or ineffective, and what internal and external factors play in the learning environment.

The summative evaluation is aimed at the evaluation after the teaching plan, and evaluates the final effect of teaching. Therefore, this type of evaluation can also be called "ex-post evaluation". Summative assessments aim to measure instructional outcomes, such as increased knowledge and improved skills as defined by instructional objectives at the beginning of the instructional design process. Strategies such as surveys, observations, interviews, and focus groups are often used to collect data, which is then analyzed to determine program success or required changes. (Giberson, Tracey, & Harris, 2006)

Conidation evaluation is the type of evaluation to support special improvement. The confirmation evaluation introduced by Misanchuk in 1978 is the next step in the formative and summative evaluation. Valmatory assessment builds on findings and recommendations generated during the formative and summative assessment process.

Similar to formative and summative assessments, confirmatory assessments rely on multiple data collection tools. The evaluation result is the feedback to the stages of curriculum design and implementation, and the result is an important basis for the evaluation and improvement of curriculum plan and teaching strategy. The evaluation phase should be an integral part of the continued analysis and effective implementation of the future curriculum and planning.

2.7.3 The Influence of ADDIE Instructional Design Model

Bates (2016) describes the advantages of the ADDIE model in his book "Teaching in Digital Age" -Guidelines for designing teaching and learning: " One of the reasons why ADDIE, the model is so successful is that it is closely related to high-quality design, It has clear learning objectives, carefully designed structured content, controllable workload for staff and students, integrated media, related student activities, And the assessment is closely linked to the expected learning results. Although these good design principles can be applied or not applied to ADDIE models, the ADDIE model is still a model that identifies design principles and

implements them on a systematic and comprehensive basis. It is also a very useful management tool for bringing the design and development of a large number of courses to a high quality standard.”

It is not difficult to find that the ADDIE model reflects the linear process of curriculum development, that is, analyzing the existing abilities and learning needs of learners, designing corresponding learning objectives, developing and arranging learning content, implementing learning activities, and making evaluation and summary. ADDIE The model has a strong response ability, it is up and down linkage, active, interactive. The connection between the five stages of the development of this model is more close, flat, and more reasonable and efficient. Now, this curriculum development model is being widely used in online learning, enterprise training, and other fields.

2.8 Related Research

2.8.1 Domestic research

At present, many Chinese researchers have discussed the positioning of entrepreneurship course in the curriculum system of colleges and universities. Li Pingyuan (2013) pointed out that "the cultivation of innovative talents should be supported by different curriculum systems, and the concept of innovation and entrepreneurship education should be integrated into each link of the existing talent training program and various curriculum systems". Tan Xiaohui (2015) believes that entrepreneurship courses are the deepening and embodiment of quality education and reflect the concept and mode of diversified talent training. Zhao Feng (2011) believes that the entrepreneurship curriculum system in colleges and universities is not isolated or closed, but needs to take professional education as the background, serve the personality development of all students, integrate original teaching resources and run through the whole process of talent training. Wei Liangui (2016) mentioned in his Opinion on the curriculum of Innovation and Entrepreneurship for College Students that "Innovation and entrepreneurship education courses in colleges and universities must take cultivating college students' innovation and entrepreneurial literacy as the ultimate objective, enhance college students' innovation and entrepreneurial competence, enhance their creativity in vocational positions, and further cultivate entrepreneurial talents with pioneering and innovative spirit".

In the Course System Construction of College Students' Innovation and Entrepreneurship Education, Shang Dajun (2015) takes the quality model of college students' entrepreneurship education as the course objective of college students' entrepreneurship education, which includes three aspects: entrepreneurial quality and personality, entrepreneurial competence and leadership, and entrepreneurial knowledge and skills. Huang Zhaoxin and Guo Liying(2012) based on Taylor's "target source" theory and the selection principle of entrepreneurship education objectives, orientate the common objective of college entrepreneurship education

courses to improve the overall quality of college students, and the individual objective to cultivate their entrepreneurial practice ability.

As far as the curriculum of entrepreneurship education is concerned, the main purpose of entrepreneurship education courses in colleges and universities is to cultivate students' entrepreneurial consciousness, entrepreneurial psychological quality, build entrepreneurial knowledge structure, and improve entrepreneurial competence. Wen Na and Tian Xianzong (2018) advocated defining the key objectives of the course according to the educational needs of college students at different levels, and then setting up the course system according to the course objectives, that is, the hierarchical course system setting, dividing the demands of college students for innovation and entrepreneurship courses into three levels: basic needs, medium needs and higher needs, and using this as the basis for the course setting of entrepreneurship education. In order to effectively improve the learning interest of college students at different levels of needs, promote entrepreneurship education to be more targeted, and improve the teaching effect of innovation and entrepreneurship education.

From the perspective of the relationship between professional courses and general courses, Chang Guoliang(2013) pointed out in his article "Thoughts on the Construction of Innovation and entrepreneurship education curriculum System from the Perspective of Integration" that it is necessary to explore the entrepreneurship curriculum model integrating general courses, professional courses and entrepreneurial experience. The general courses are mainly used to cultivate the entrepreneurial spirit, good professional quality and social responsibility consciousness of college students, so that they can establish a scientific concept of entrepreneurship; On this basis, further explore the professional innovation and entrepreneurship curriculum.

2.8.2 Foreign research

Jeffry A. Timmons, A professor at the Bieson School of Business, famously described the objective of entrepreneurship education as "setting the entrepreneurial genetic code for future generations," and that the school needed to help students develop entrepreneurial skills. Gerald E. Hills (1988) pointed out in his research that the most important objective of entrepreneurship courses is to improve students' cognition and understanding of the process of establishing enterprises and managing them. Vesper and Gartner (1999) investigated the entrepreneurship courses of 128 universities in the United States and concluded that the objectives of entrepreneurship courses mainly include personal development and enterprise development. The main purpose of personal development course is to cultivate students' entrepreneurial spirit and entrepreneurial psychological quality; The main purpose of the Business Development course is to introduce the skills needed to start and manage a business.

Taking enterprise development as the curriculum objective of entrepreneurship

education: For example, Fernand G. Alberti et al. (2007) believe that an effective curriculum objective of entrepreneurship education should have the following elements: learning knowledge related to entrepreneurship; Master the application of technology, analyze business situation and comprehensive action plan; Identify entrepreneurial talents and skills to stimulate entrepreneurial motivation; Eliminate adverse bias in analytical techniques; Fostering empathy and supporting the unique aspects of entrepreneurship; Encourage new startups; Stimulate the "emotional socialization element." McMulla et al. (1987) summarized the curriculum objectives of entrepreneurship education as follows: political risk and opportunity assessment; The merger and development of enterprises; Identifying and evaluating future entrepreneurs; Integrate resources and create a business.

Taking human development as the objective of entrepreneurship education curriculum: For example, Fuchs et al. (2008) believe that entrepreneurship education curriculum contains three objectives; The first is to encourage and cultivate people's entrepreneurial spirit, and the second is to cultivate people's awareness of self-employment as a career choice. The third is to teach the relevant knowledge of entrepreneurship and business management. Vesper and Gartner (1999) conducted an empirical survey of 100 universities in the United States and found that: from the perspective of personal development, the course objective of entrepreneurship education is mainly to cultivate students' entrepreneurial spirit and entrepreneurial literacy.

The curriculum often determines the specific planning and implementation methods of the curriculum. From the perspective of the structure of entrepreneurship education courses, Dr. Shailendra Vyakarnam once took the University of Cambridge as an example and proposed to build an entrepreneurial course ecosystem and strengthen the connection of entrepreneurial communities in order to provide students with more entrepreneurial opportunities. At the same time, entrepreneurship courses for entrepreneurial students and credit courses for social people should also be established. Roger (2006) proposed that we should attach great importance to practical courses in entrepreneurship courses, and entrepreneurship education should not stop at courses, but can be truly effective through continuous practice.

From the perspective of entrepreneurship education curriculum content setting, the entrepreneurship education curriculum content setting of American colleges and universities has its own characteristics, among which the most representative ones are Babson Business School and Stanford University. The curriculum of entrepreneurship education in BBS is mainly composed of two modules: core curriculum and elective curriculum. The core curriculum is divided into five modules: strategy and business opportunities, entrepreneurs, resource needs and business plans, start-up financing and rapid growth.

The elective courses are divided into three small modules: foundation courses, professional courses and support courses (Babson College, 2016). The entrepreneurship education course of Stanford University has a certain

interdisciplinary nature, and each school sets up compulsory and elective courses of entrepreneurship according to its own teaching needs, including entrepreneurship courses of general education. The most complete entrepreneurship courses of the school are mainly in the business school and the School of Engineering, among which the business school divides entrepreneurship courses into five categories: basic courses of entrepreneurship, elective courses of strategy, elective courses of finance, elective courses of market and operation and general elective courses. The Technical Entrepreneurship Program (STVP Program for short) is established in the College of Engineering, which aims to provide different students with technical entrepreneurship courses related to their majors.

The curriculum system of entrepreneurship education in American universities is characterized by modular design and interdisciplinary integration, and presents systematic, hierarchical and practical advantages in course content setting. However, although the American curriculum system attaches great importance to interdisciplinary integration (such as STVP project), its target group is still mainly college students, especially learners in technology-intensive fields, and it lacks targeted design for vocational college students' career orientation and technology application-oriented entrepreneurship needs. The American model emphasizes the modular imparts of the business knowledge system, but does not clearly answer the core question of how professional and technical competence can be transformed into entrepreneurial competitiveness. The breakthrough direction of this research is to learn from the structured thinking of modular curriculum design in the United States, but break through the limitations of "discipline orientation" and "group universality", and construct extracurricular curriculum content for vocational college students. This exploration not only makes up for the neglect of occupational groups in the existing studies, but also provides a new way to upgrade the paradigm of entrepreneurship education curriculum content from "knowledge transfer" to "ability transformation".



2.9 Conceptual Framework

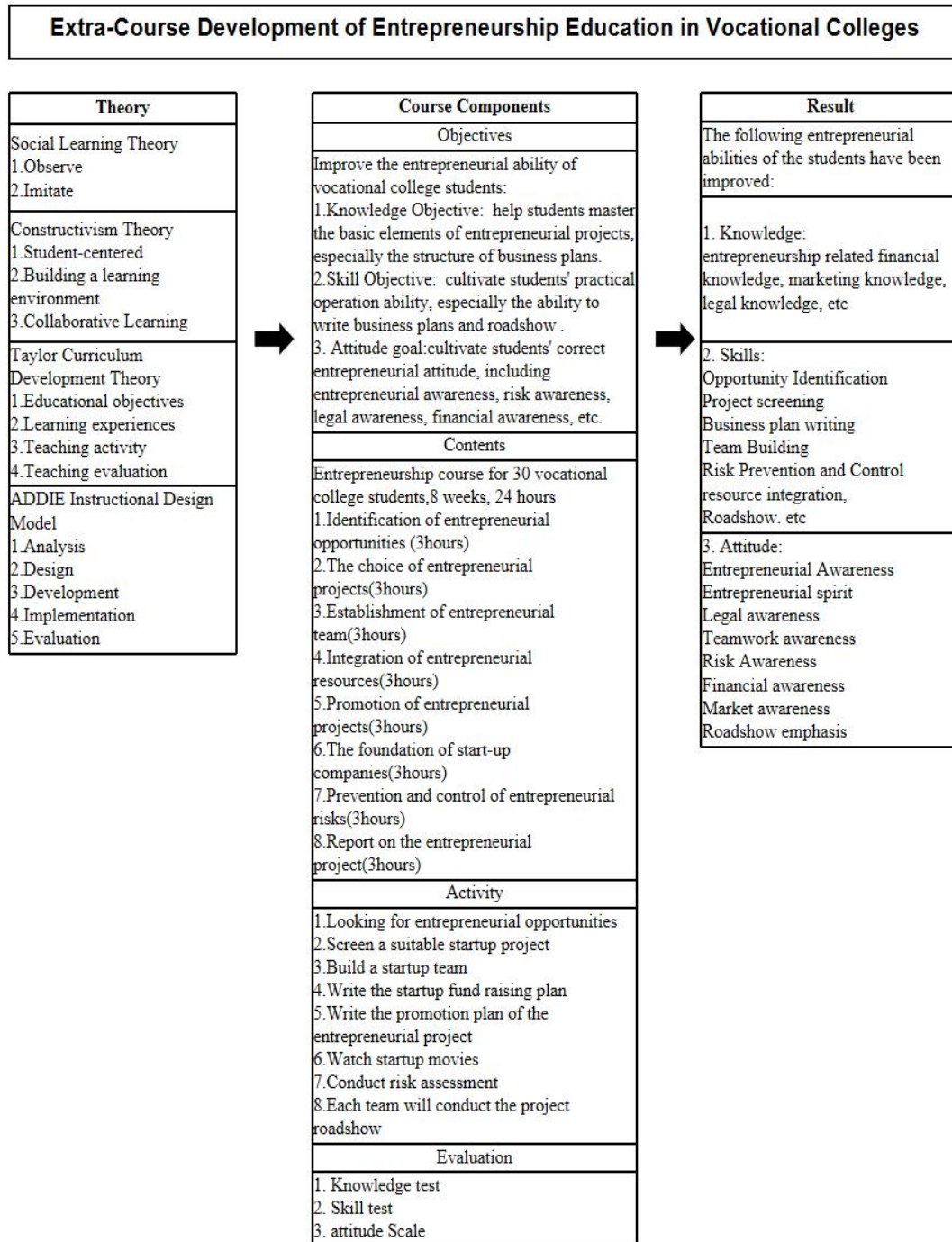


Figure 3 Conceptual Framework
Source : Hu Wanqiu (2025)

CHAPTER III

RESEARCH METHODS

Research Framework

This research is the extracurricular course development of entrepreneurship education in vocational colleges to improve the entrepreneurial competence of vocational college students. This research and development(R&D) consists of three phases:

Phase 1 : Learning Basic Information (R1)

The purpose of phase I is to understand correlation theory and the current situation of entrepreneurship education in vocational colleges, and the necessity of developing entrepreneurship extracurricular courses.

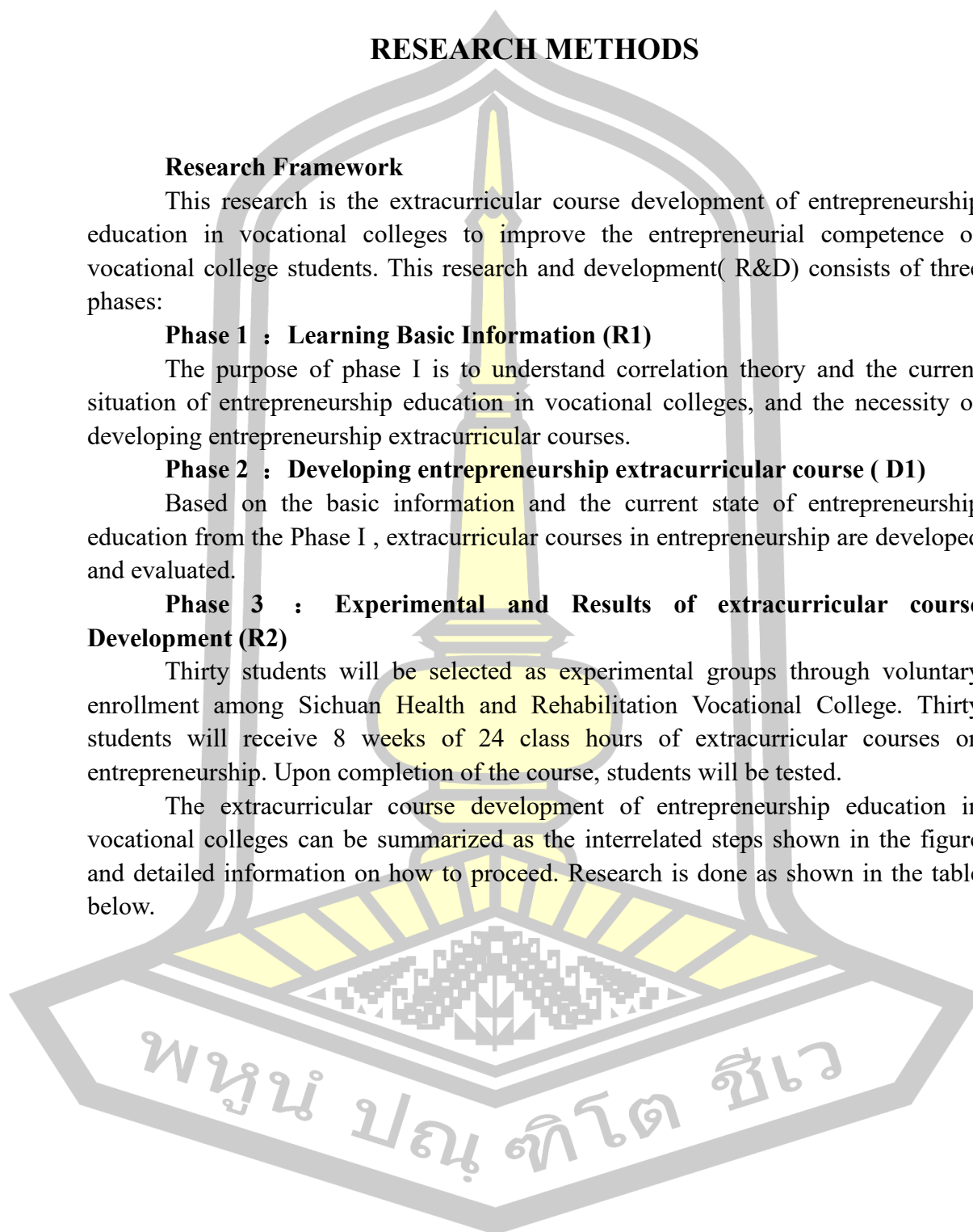
Phase 2 : Developing entrepreneurship extracurricular course (D1)

Based on the basic information and the current state of entrepreneurship education from the Phase I , extracurricular courses in entrepreneurship are developed and evaluated.

Phase 3 : Experimental and Results of extracurricular course Development (R2)

Thirty students will be selected as experimental groups through voluntary enrollment among Sichuan Health and Rehabilitation Vocational College. Thirty students will receive 8 weeks of 24 class hours of extracurricular courses on entrepreneurship. Upon completion of the course, students will be tested.

The extracurricular course development of entrepreneurship education in vocational colleges can be summarized as the interrelated steps shown in the figure and detailed information on how to proceed. Research is done as shown in the table below.



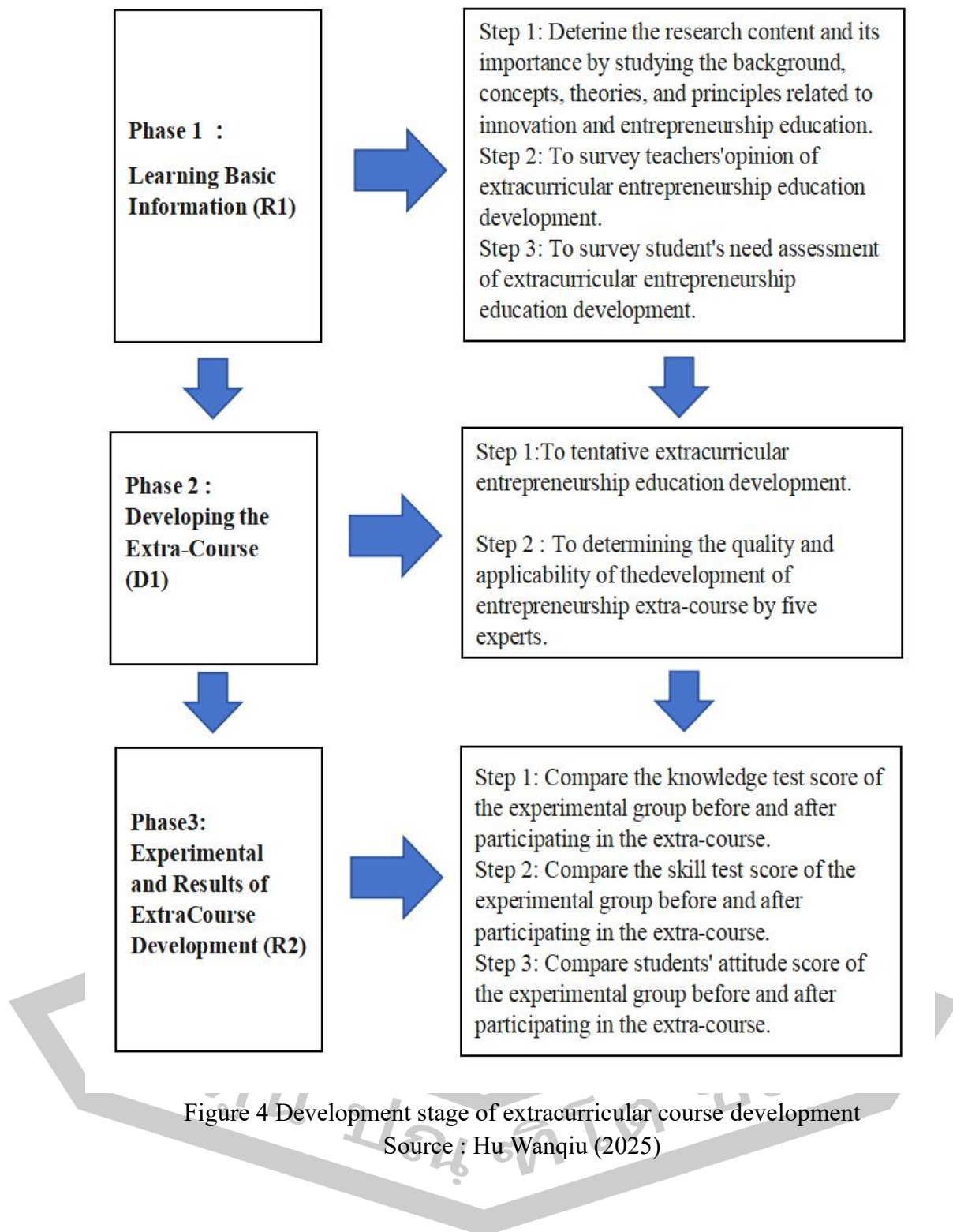


Table 1 Research Methods

Research Phase	Objective	Methods	Source /Sample	Analysis	Result
Phase I Learning Basic Information (R1)	1.1 Determine the research content and its importance by studying the background, concepts, theories, and principles related to entrepreneurship education.	Document study	Relevant literature and books	Content Analysis	Conceptual Summary
	1.2 To study teachers' opinion of extracurricular course entrepreneurship education development	Interviews	10 teachers of vocational college entrepreneurship education	Content Analysis	teachers' opinion
	1.3 To study students' need assessment of extracurricular course entrepreneurship education development	survey questionnaire	500 vocational college students	Descriptive analysis	students' need
Phase II Developing the Extracurricular	2.1 To tentative extracurricular course entrepreneurship education development	Based on the needs analysis from the first stage and the talent	data from the Phase I	Content Analysis	extracurricular course development draft

ar course (D1)		developmen t plan of college			
	2.2 To pilot study of extracurricular course entrepreneurshi p education development	Experiment al design	5 experts	Descriptive analysis	A extracurricul ar course of entrepreneurs hip education
Phase III Experimental and Results of extracurricula r course Development (R2)	1.1 Compare the written test score of the experimental group before and after participating in the extracurricular course	written examination	30 student as experiment al group	Paired samples T test	entrepreneuri al competence enhancement
	3.2 Compare the skill test score of the experimental group before and after participating in the extracurricular course	Skill test	30 student as experiment al group	Paired samples T test	entrepreneuri al competence enhancement
	3.3 To survey students' attitude with entrepreneurshi p	Questionnai re Survey	30 student	Descriptive analysis	students' attitude

Source : Hu Wanqiu (2025)

3.1 Phase 1: Learning Basic Information (R1)

Theories, concepts, principles involved were studied in this phase. To be a guideline for the development of extracurricular course. The teachers' opinions and students' needs are also investigated. By using Documentary Research, Interviews and Survey Research, the details of each step are as follows.

Step 1: Study the theories, concepts and principles related to entrepreneurship education.

Determine the research content and its importance by studying the background, concepts, theories, and principles related to innovation and entrepreneurship education, and develop a preliminary research plan. The methods of document study and investigation research, interviews and questionnaire survey are used in this part. Data from ERIC, CNKI Scholar, Sciencedirect, and Google Scholar. Library of China and foreign information, as well as selected studies related to entrepreneurship education teaching and development. From 2000 to 2023, a total of 28 papers, including research papers by teachers or educators and postgraduate, master's and doctoral thesis, to analyze developing trends based on entrepreneurship education.

Step 2: To study teachers' opinion of extracurricular entrepreneurship education development.

At this part will adopt an interview research method to investigate ten teachers who are conducting entrepreneurship education in Sichuan Health and Rehabilitation Vocational College in Zigong, Sichuan. To collect the views of entrepreneurship teachers on the current situation of entrepreneurship education in vocational colleges and probes into the existing problems of entrepreneurship education in vocational colleges.

Step 3: To study student's need assessment of extracurricular course entrepreneurship education development.

This part will use a survey questionnaire to investigate 500 students who receive entrepreneurship education in Sichuan Health and Rehabilitation Vocational College in Zigong, Sichuan. To investigate the demand of students for entrepreneurship education in vocational colleges.

3.1.1 Population and Sampling

The population at this stage is:

- 1) Sichuan Health Rehabilitation Vocational College students from 2023 to 2024: 2,913.
- 2) Sichuan Health Rehabilitation Vocational College engaged in entrepreneurship education related teachers: 10.

Samples used in this stage

- 1) Sichuan Health Rehabilitation Vocational College students from 2023 to 20234: Voluntary selection of 500 students.
- 2) Sichuan Health Rehabilitation Vocational College engaged in

entrepreneurship education related teachers: 10 people.

3.1.2 Instrument

3.1.2.1 Interview on vocational college extracurricular courses entrepreneurship education

Around the three dimensions of Entrepreneurial competence, this interview outline designed 4 open questions as the content of the interview. During the interview, ten vocational college entrepreneurship education related teachers were purposive selected as the subjects of the interview. In order to relax the atmosphere of the interview, afternoon tea was used to interview and record.

3.1.2.2 Through the questionnaire to understand the vocational college students' demand for entrepreneurship education

Thirteen multiple choice questions and one open question are designed for vocational college students around entrepreneurship education. A questionnaire survey was sent to 2913 students of Sichuan Health Rehabilitation Vocational College via questionnaire online. Aim to collect 500 valid questionnaires.

3.1.2.3 Questionnaire reliability and validity test

Table 2 Reliability test

Test items	Score
Cronbach's Alpha	0.88
test-retest reliability (Pearson Correlation)	0.82

Source : Hu Wanqiu (2025)

Table 2 shows the reliability test results. The overall Cronbach's Alpha value is 0.88, indicating that the questionnaire has high internal consistency and can reliably measure the various dimensions of students' demand for entrepreneurship extracurricular courses. The retest reliability (Pearson correlation coefficient) is 0.82, indicating that the questionnaire has good stability at different time points and the measurement results have high repeatability. Therefore, the questionnaire has high reliability and can be used as an effective tool to study students' demand for entrepreneurship courses.

Table 3 Validity test

KMO and Bartlett's Test	
KMO	0.91
Bartlett's Test of Sphericity	Approximate chi-square
	df
	P
	1442.66
	352.78
	.000*

Source : Hu Wanqiu (2025)

Table 3 shows the validity test results. The KMO value is 0.91, indicating that the data is suitable for factor analysis, because the KMO value is greater than 0.7, indicating that the correlation in the data is strong. The result of the Bartlett sphericity test is 352.78, and the significance is 0.000, indicating that the correlation of the data is statistically significant, supporting factor analysis. This shows that the questionnaire has good performance in structural validity.

3.2 Phase 2: Developing entrepreneurship extracurricular

course(D1)

STEP 1: To tentative extracurricular course entrepreneurship education development

Based on the needs analysis from the first stage and the talent development plan, determine learning objectives and select learning experiences to develop a extracurricular course of entrepreneurship.

3.2.1 Objective

Based on the basic information and needs studied in the first stage, identify the conceptual framework and components of the course development outline.

3.2.2 Construct Innovation

Preparation of the draft extracurricular course, through access to relevant literature and research materials, understanding of teachers' opinions and students' needs, starting with phase 1 communication and completion of the draft extracurricular course.

The elements for extracurricular course drafting are as follows:

Objectives of the extracurricular course, content of the extracurricular course,

activities of the extracurricular course, and evaluating the extracurricular course.

Table 4 Course outline

week	topic	Activity	objectives	Class hours
1	Identification of entrepreneurial opportunities	Looking for entrepreneurial opportunities	1.Knowledge: Understand the main sources of entrepreneurial opportunities 2. Skills: Look for at least three entrepreneurial opportunities 3.Attitude: Establish a correct outlook on entrepreneurship	3
2	The choice of entrepreneurial projects	Screen a suitable startup project	1.Knowledge: Understanding the criteria for selecting a startup project 2.Skills: Ability to choose a startup project 3. Attitude:Establish a correct concept of entrepreneurship and law-abiding consciousness	3
	Establishment of entrepreneurial team	Build a startup team	1.Knowledge: Understand the methods of team building	

3			<p>2. Skills: Ability to build a team</p> <p>3. Attitude: Cultivate a good sense of teamwork</p>	3
4	Integration of entrepreneurial resources	Write the startup fund raising plan	<p>1. Knowledge: Understand the channels for raising venture capital</p> <p>2. Skills: start-up capital raising scheme</p> <p>3. Attitude: Cultivate the right attitude towards money</p>	3
5	Promotion of entrepreneurial projects	Write the promotion plan of the entrepreneuria 1 project	<p>1. Knowledge: Understand the marketing theory</p> <p>2. Skills: Writing promotion plans</p> <p>3. Attitude: Establish a correct market view</p>	3
6	The foundation of start-up companies	Watch startup movies	<p>1. Knowledge: Understand the company registration process</p> <p>2. Skills: Choose a suitable form of legal organization</p> <p>3. Attitude: Establish a strong sense of law</p>	3
7	Prevention and control of entrepreneurial	Conduct risk assessment	1. Knowledge: Understand the common risks of starting a business	3

	risks		2.Skills: Capable of initial risk prevention and control 3.Attitude: Establish appropriate risk awareness	
8	Report on the entrepreneurial project	Each team will conduct the project roadshow separately	1.Knowledge: Understand the requirements of project roadshow 2. Skills: Able to conduct project roadshows 3. Attitude: Practice presentation skills and flexibility	3

Source : Hu Wanqiu (2025)

STEP 2:Determining the quality and applicability of the entrepreneurship extracurricular course.

After modifying the created teaching and learning according to the tutor's recommendations, the researchers examine the quality and suitability of the extracurricular course development. This stage need to invite 5 experts which including educators and entrepreneurs.

3.2.2.1 Analyze the quality and applicability of the created extracurricular course. Has basic statistics, including mean and standard deviation.

3.2.2.2 Results of the quality assessment of the Entrepreneurship extracurricular course created. All 5 experts analyzed the suitability according to the assessment criteria of the assessment level(Boonchom Srisaard, 2000), as follows:

The average value of 4.51- 5.00 means the highest quality and suitability. The average value of 3.51- 4.50 means very high quality and suitability. The average value of 2.51- 3.50 indicates medium quality and suitable. The average value of 1.51- 2.50 indicates poor quality and applicability. The average value of 1.00- 1.50 indicates the worst quality and suitability.

3.2.2.3 Based on expert opinions and recommendations, improving the development of entrepreneurship extracurricular courses for vocational college

students.

3.3 Phase 3: Experimental and Results of Extracurricular Course

Development (R2)

Thirty students will be selected as experimental groups through voluntary enrollment among Sichuan Health and Rehabilitation Vocational College. Thirty students will receive 8 weeks of 24 class hours of extracurricular courses on entrepreneurship. This stage of research including three steps:

STEP 1: After completing 8 weeks of study, the experimental group will be given written examination to test students' entrepreneurial knowledge. Then compare the entrepreneurial knowledge score of the experimental group before and after participating in this extracurricular course. The aim is to study how extracurricular courses on entrepreneurship can improve students' knowledge of entrepreneurship.

STEP 2: After completing 8 weeks of study, the experimental group will be given skill test to test students' entrepreneurial skill. Then compare the entrepreneurial skill score of the experimental group before and after participating in this extracurricular course. The purpose is to study how extracurricular courses on entrepreneurship can improve students' entrepreneurial skills.

STEP 3: After completing the 8-week study, the experimental group will complete the Entrepreneurial Attitude Scale to measure the entrepreneurial attitudes. The entrepreneurial attitude scores of the experimental group before and after taking this extracurricular course will then be compared. The purpose is to study how extracurricular entrepreneurship courses can have a positive impact on students' entrepreneurial attitudes.

3.3.1 Population and Sampling

The population at this stage is:

Sichuan Health Rehabilitation Vocational College students from 2023 to 2024: 2,913.

Samples used in this stage:

The target group of this stage is the voluntary selection of students from the Sichuan Health Rehabilitation Vocational College, grade 2023-2024: 30 people.

3.3.2 Instrument

The research in this stage is to implement extracurricular courses on entrepreneurship, and use knowledge test, skill test and entrepreneurial attitude quantitative data before and after the course to assess the entrepreneurial competence of students in the experimental group. The tools used in the process include knowledge test, skill test and entrepreneurial attitude scale. Knowledge test includes 10 single choice questions, 10 multiple choice questions, 15 decision questions and 5

short answer questions, with a total of 100 points. Entrepreneurial skills is by completing business plans and roadshow based on innovation, feasibility, profitability, teamwork, defensive performance, etc. The evaluation of entrepreneurial consciousness is mainly carried out through the entrepreneurial attitude scale of students.

3.3.3 Intervention

Consistency assessment time: October 10, 2024 - October 20, 2024.

The content validity and appropriateness of the knowledge test, skill test and attitude scale were determined by five experts using the consistency assessment. (Appendixes H, Appendixes I and Appendixes J)

After the expert consistency assessment, the experimental indicators used in this research, knowledge test (0.92), skill test (0.97), and attitude scale (0.91), met the experimental needs.

3.3.4 Construction and Quality of Instrument

In the study, the three indicators of written test scores, skill test scores and entrepreneurial attitude are the indicators for evaluating the experimental effect in This research. The written test scores are mainly used to evaluate the students' mastery of entrepreneurial-related theoretical knowledge, including knowledge of business plan writing, market analysis, financial management, etc. The written test can objectively measure students' understanding and memory of entrepreneurial theory, ensure that students have the necessary theoretical foundation to provide support for practical operations. The skill test evaluates students' operational capabilities in actual entrepreneurial activities, such as market research, product design, teamwork, etc. The skill test can reflect students' ability to apply theoretical knowledge to practice and reflect their level of solving practical problems. Entrepreneurial attitude evaluates students' psychological qualities such as interest, enthusiasm, risk tolerance and innovative spirit in entrepreneurship. A positive entrepreneurial attitude is an important factor in successful entrepreneurship, which can affect students' coping methods and persistence when they encounter difficulties in the entrepreneurial process.

CHAPTER IV

RESULTS

This research studies the development of extracurricular courses for entrepreneurship education in vocational colleges to improve the entrepreneurial competence of vocational students. It understands the relevant theories and the current status of entrepreneurship education in vocational colleges, as well as the necessity of developing extracurricular courses for entrepreneurship. Based on the basic information and current status of entrepreneurship education in the first phase, an extracurricular course for entrepreneurship is developed and evaluated, and experiments and results analysis of extracurricular course development are conducted.

The specific results are as follows:

4.1 Basic information analysis of entrepreneurship education extracurricular courses for vocational college students

4.1.1 Analysis on the importance of entrepreneurship education extracurricular courses for vocational college students

(1) Curriculum development theory

The curriculum development theory proposed by Taylor is one of the classics with far-reaching influence in educational theory. The theory expounds the basic principles of curriculum design and emphasizes that curriculum development should be centered on student needs and improve the quality of education through scientific objective setting and evaluation. Taylor's curriculum development theory mainly focuses on how to reasonably design courses, clarify teaching objectives, and evaluate teaching effectiveness. In entrepreneurial education, learning is not only about acquiring knowledge, but also involves the accumulation of practice. The learning theory emphasizes deepening students' understanding of the entrepreneurial process through reflection, practice and experience, especially emphasizing the learning model of "unity of knowledge and action", that is, combining theory with practice.

(2) Constructivism theory

With Piaget's theory of cognitive development as the core, constructivism emphasizes that individuals actively construct knowledge system through "assimilation-adaptation" mechanism. Constructivism provides theoretical foundation and practical framework for vocational entrepreneurship education. Through building a practice community of "learning by doing", creating authentic learning situations and establishing dynamic evaluation system, effectively cultivate entrepreneurial talents with innovative thinking and practical ability. The future development

direction is to deepen the integration of production and education, use digital technology to build a virtual simulation entrepreneurial system, and ultimately form a new entrepreneurial education ecology that ADAPTS to the needs of the digital economy era.

(3) Social learning theory

Social learning theory emphasizes that learning is carried out through social interaction and imitating the behavior of others. The entrepreneurship education courses in vocational colleges are designed to help students acquire the basic knowledge and skills required for entrepreneurship. Social learning theory provides a theoretical basis for the design and implementation of these courses, especially in the development of extracurricular courses, which can enhance students' entrepreneurial competence through a variety of learning methods.

(4) The ADDIE teaching design model

In the design process of this research course, the combination of ADDIE teaching design model and Taylor's curriculum development theory can effectively ensure the scientificity and practicality of the course. The five stages of the ADDIE model are consistent with the four core elements of Taylor's curriculum development, forming a complete teaching design and implementation process. The ADDIE model provides a systematic framework for the design of this article, while Taylor's curriculum development theory provides theoretical guidance for course objective setting, learning experience organization and evaluation at each stage. The combination of the two can effectively improve the design quality and teaching effect of the course, and ensure that vocational students acquire practical knowledge and skills in entrepreneurship education. Through the systematic design of the ADDIE model, the scientificity, practicality and effectiveness of extracurricular courses in entrepreneurship education can be ensured, and students' innovation and practical abilities can be improved.

(5) Practice-oriented principle

The practice-oriented principle emphasizes that entrepreneurial education should be centered on practical operations, focusing on "learning by doing" to help students accumulate experience in real or simulated entrepreneurial environments. In This research, this principle is reflected in the course design that is closely integrated with actual needs, allowing students to experience the entrepreneurial process in person through case analysis, entrepreneurial simulation, project practice, etc.

(6) Student-centered concept

The student-centered concept emphasizes that entrepreneurial education should respect students' individual differences and provide flexible learning paths and diverse course content. In This research, this principle is reflected in the course design that fully considers students' interests, professional backgrounds and career plans, and provides different levels of course modules and diverse teaching methods.

With the acceleration of economic globalization, innovation has gradually become the core driving force for promoting social progress and enhancing national

competitiveness. In this context, the status of entrepreneurship education has become increasingly prominent. Entrepreneurship education refers to the process of cultivating students' entrepreneurial awareness, entrepreneurial competence and innovative thinking through a systematic education system, helping students master the necessary entrepreneurial skills, and motivating them to actively participate in entrepreneurial practice. Entrepreneurship education is not only about imparting knowledge, but also emphasizes the accumulation of practical experience, aiming to promote the transformation of students' entrepreneurial competence from theory to actual practice. It includes content in many fields such as entrepreneurial awareness, entrepreneurial opportunity identification, business plan writing, market analysis, and financing management. Entrepreneurship education in vocational colleges usually focuses more on the cultivation of skills and techniques, especially in the design of courses with strong practicality and operability.

4.1.2 Analysis of teachers' views on extracurricular courses of entrepreneurship education

Question 1: What is your specific work content in entrepreneurship education?

From the interviews, interviewees are all engaged in entrepreneurship education in vocational colleges. The specific work content includes the teaching and design of entrepreneurship education courses, the guidance of entrepreneurship projects, and the organization and guidance of entrepreneurship competitions.

Teacher 1 said in the interview that "as a teacher of entrepreneurship education courses, my work mainly focuses on three aspects: first, designing and teaching entrepreneurship education courses, including formulating teaching plans and preparing teaching materials; second, guiding students to participate in entrepreneurial projects and helping them with the whole process from creativity to implementation; third, organizing and coaching students to participate in entrepreneurial competitions, such as the 'Internet +' College Students' Innovation and Entrepreneurship Competition. Although these tasks are heavy, I feel very meaningful to see the growth and progress of students."

Question 2: How do you think of the current entrepreneurship education in vocational colleges?

Most teachers generally believe that there are certain deficiencies in the current entrepreneurship education in vocational colleges, especially in the integration of theory and practice, the depth and breadth of course content, and the accumulation of practical experience. Teachers generally believe that the current entrepreneurship education courses focus on theory, with few opportunities for practical operation and skill training, and students' entrepreneurial abilities have not been fully developed.

For example, Teacher 2 said in the interview that "there are still some deficiencies in entrepreneurship education in vocational colleges. The biggest problem is that there is a disconnect between theory and practice, and the course

content focuses on theory, with too few opportunities for practical operation. Although many students have learned a lot of entrepreneurial knowledge, they do not know how to deal with real problems. I think we should add more practical links, such as simulated entrepreneurship and enterprise internship, so that students can accumulate experience in practice and really improve their entrepreneurial competence."

Question 3: How do you think about the development of entrepreneurship extracurricular education in vocational college?

Teachers unanimously agreed that extracurricular entrepreneurship education is an important way to make up for the current shortcomings of entrepreneurship education, especially in providing practical operation opportunities and training students' entrepreneurial competence. Teachers generally believe that extracurricular education can provide students with more practical operation opportunities, especially helping students improve their entrepreneurial practice ability through a real entrepreneurial environment.

For example, Teacher 3 said in the interview, "I think entrepreneurship extracurricular education is an important way to make up for the current lack of entrepreneurship education." Extracurricular education can provide students with more practical opportunities, such as business incubation programs, business salons, etc. Through these activities, students can exercise themselves in a real entrepreneurial environment and improve their practical skills. Extracurricular education is not only a supplement to classroom education, but also a key link in the cultivation of students' entrepreneurial competence."

Question 4: What are your suggestions for developing extracurricular courses for entrepreneurship in vocational colleges?

Teachers' suggestions focused on strengthening practical courses, corporate cooperation, and innovative activity design. Some teachers suggested adding more practical courses, such as entrepreneurial incubation projects and simulated entrepreneurial competitions, to help students accumulate experience in the actual market environment. Some teachers suggested combining entrepreneurial projects with corporate internships and providing more real cases and mentor guidance to help students understand the challenges and opportunities of entrepreneurship.

As teacher 4 said in the interview, "I suggest that extracurricular courses for entrepreneurship should pay more attention to practicality and innovation. For example, we can organize more entrepreneurial competitions, simulated entrepreneurial activities, or cooperate with enterprises to let students participate in real entrepreneurial projects. At the same time, curriculum design should also pay attention to the cultivation of soft skills, such as teamwork, communication skills and so on. These skills are very important in actual entrepreneurship, but are often overlooked. In short, entrepreneurship extracurricular courses should be student-centered and help them truly master the core abilities of entrepreneurship."

In general, from the interview of entrepreneurship education and

extracurricular education in vocational colleges, it can be seen that the current entrepreneurship education in vocational colleges is faced with problems such as insufficient combination of theory and practice, and insufficient curriculum depth and breadth.

Teachers generally believe that the existing entrepreneurship courses focus on theory and few practical links, resulting in students' entrepreneurial competence and practical experience can not be fully improved. In general, the teachers believe that although the entrepreneurship education in vocational colleges has made some progress, there are still some problems that the teaching content is out of line with the actual needs of students. In order to improve this situation, the teachers agreed that more emphasis should be placed on practicality, innovation and enterprise cooperation, and diversified entrepreneurial extracurricular activities and practical opportunities should be provided to cultivate students' comprehensive abilities and enhance their true entrepreneurial qualities.

4.1.3 Demand analysis of extracurricular courses for vocational college students

In order to better understand student demand for extra-curricular courses in entrepreneurship education, researcher has designed an exhaustive questionnaire covering student interest in entrepreneurship, feedback on existing entrepreneurship courses, and expectations for extra-curricular courses in entrepreneurship. The results of the survey provide a wealth of data support for analyzing the demand for extracurricular courses of entrepreneurship education in vocational colleges. This is the report of the questionnaire on demand for entrepreneurship extracurricular courses.

Table 5 Question 1 Are you interested in starting a business?[single choice]

选项	小计	比例
a.Very interested in非常感兴趣	317	63.4%
b.Have a little interest有一点兴趣	134	26.8%
c.No interest没有兴趣	49	9.8%
本题有效填写人次	500	




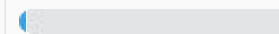
Source : Hu Wanqiu (2025)

Table 6 Question 2 Does the school's existing "Fundamentals of Entrepreneurship" course meet your needs for entrepreneurship? [single choice]

选项	小计	比例
a.Meet it, and I can start a business 满足, 可以进行创业	42	 8.4%
b. I learned some, but I couldn't start a business 学习了一些, 但无法进行创业	411	 82.2%
c.Unable to master the course content 无法掌握课程内容	47	 9.4%
本题有效填写人次	500	



Source : Hu Wanqiu (2025)

Table 7 Question 3 What's the biggest obstacle to starting a business for you?[multiple choice]

选项	小计	比例
a.Don't understand the startup process 不了解创业流程	413	 82.6%
b.Can't find a suitable entrepreneurial project 找不到合适创业项目	455	 91%
c.Lack of venture capital 缺少创业资金	453	 90.6%
d.There are no entrepreneurial partners 没有创业伙伴	371	 74.2%
e. Do not know how to prevent and control entrepreneurial risks 不知道如何防控创业风险	416	 83.2%
f. Other (please fill in) 其他 (请填写)	13	 2.6%
本题有效填写人次	500	

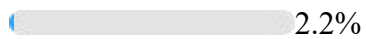
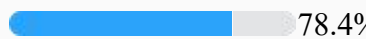
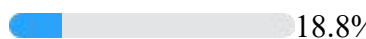
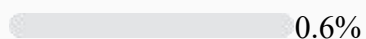
Source : Hu Wanqiu (2025)

Table 8 Question 4 What is your need for extracurricular courses in entrepreneurship?
[single choice]

选项	小计	比例
a. In great request 非常需要	122	 24.4%
b. Willing to try 愿意试试	264	 52.8%
c. No need 不需要	114	 22.8%
本题有效填写人次	500	


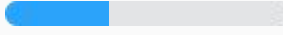
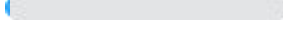
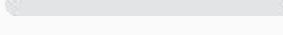
Source : Hu Wanqiu (2025)

Table 9 Question5 What do you want the duration of the entrepreneurship
extracurricular course? [single choice]

选项	小计	比例
a. Within 1 hour of each class 每次课 1 个小时内	11	 2.2%
b. Each class lasts for 1-2 hours 每次课 1-2 小时	392	 78.4%
c. Each class lasts for 2-3 hours 每次课 2-3 小时	94	 18.8%
d. Each class lasts for 3-4 hours 每次课 3-4 小时	3	 0.6%
本题有效填写人次	500	


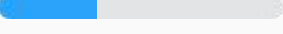
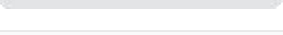
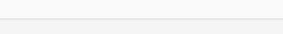
Source : Hu Wanqiu (2025)

Table 10 Question6 How often do you want to take entrepreneurship extracurricular course? [single choice]

选项	小计	比例
a. Once a week for 2 -3months每周一次, 持续 2-3 个月	306	 61.2%
b. Twice a week for 1 month每周两次, 持续 1 个月	186	 37.2%
c. Three times a week, within 1 month每周三次, 1 个月以内	8	 1.6%
d. Other (please fill in)其他(请填写)	0	 0%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)


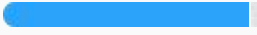



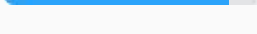

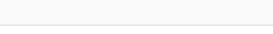
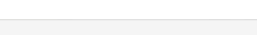
Table 11 Question7 How many people do you think are suitable for a class of entrepreneurship extracurricular course? [single choice]

选项	小计	比例
a.30 People 30 人	321	 64.2%
b.40 People 40 人	176	 35.2%
c.50 People 50 人	3	 0.6%
d. 60 People 60 人	0	 0%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)




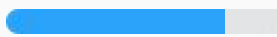


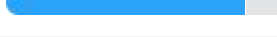
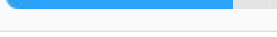
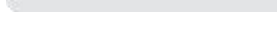
Table 12 Question8 What do you want to learn from entrepreneurship extracurricular courses?[multiple choice]

选项	小计	比例
a. Choice of entrepreneurial projects 创业项目选择	468	 93.6%
b. Business model design 商业模式设计	440	 88%
c. Market research and analysis 市场调研与分析	385	 77%
d. Financing and investment 融资与投资	443	 88.6%
e. Entrepreneurship case sharing 创业案例分享	454	 90.8%
f. Entrepreneurship team building 创业团队建设	390	 78%
g. Entrepreneurship opportunity to find 创业机会寻找	465	 93%
h. Risk prevention and control 创业风险防控	441	 88.2%
I. Others (please fill in) 其他 (请填写)	0	 0%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)


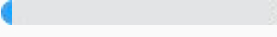
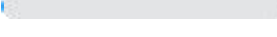
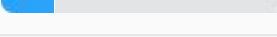


Table 13 Question9 What is the form of your preferred extracurricular course for entrepreneurship?[multiple choice]

选项	小计	比例
a. Classroom explanation 课堂讲解	450	 90%
b. Field visit 实地参观	389	 77.8%
c. Panel discussion 小组讨论	460	 92%
d. Case analysis 案例分析	461	 92.2%
e. Guest speech 嘉宾演讲	419	 83.8%
f. Sand play 沙盘游戏	399	 79.8%
g. Other (please fill in) 其他 (请填写)	2	 0.4%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)

Table 14 Question10 How do you want the entrepreneurship extracurricular training course to be taught? [single choice]

选项	小计	比例
a. Offline teaching 线下授课	378	 75.6%
b. Live online 线上直播	21	 4.2%
c. Online recording 线上录播	5	 1%
d. no limit 不限制	96	 19.2%
本题有效填写人次	500	


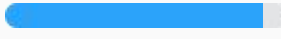

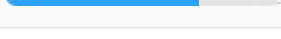
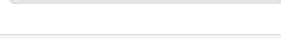
Source : Hu Wanqiu (2025)

Table 15 Question11 Where would you like the entrepreneurship extracurricular course to be held? [single choice]

选项	小计	比例
a. Mainly on campus 主要在校内	484	 96.8%
b. Mainly outside school 主要在校外	10	 2%
c. no limit 不限制	6	 1.2%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)


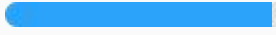




Table 16 Question12 Do you want the teacher of the entrepreneurship extracurricular course?[multiple choice]

选项	小计	比例
a. Entrepreneurship mentor 创业导师	478	 95.6%
b. Business man 企业家	455	 91%
c. Industry expert 行业专家	353	 70.6%
d. College professor 学院教授	351	 70.2%
e. Other (please fill in) 其他 (请填写)	0	 0%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)



Table 17 Question13 What is the expected effect of your extracurricular courses on entrepreneurship?[multiple choice]

选项	小计	比例
a.Improve entrepreneurial ability提升创业能力	471	 94.2%
b.Increase entrepreneurial opportunities增加创业机会	468	 93.6%
c.Accumulate entrepreneurial resources积累创业资源	412	 82.4%
d.Learn more about entrepreneurship了解更多创业相关信息	424	 84.8%
e.Build a correct concept of entrepreneurship培养正确的创业观	403	 80.6%
f.Other (please fill in)其他 (请填写)	1	 0.2%
本题有效填写人次	500	

Source : Hu Wanqiu (2025)

Through the descriptive statistical analysis of the questionnaire survey results, according to Table 5, that about 90% of the students show varying degrees of interest in entrepreneurship, which shows that the entrepreneurial awareness and entrepreneurial spirit of vocational college students have been initially awakened, laying a good foundation for the development of entrepreneurship education. Although students are passionate about entrepreneurship, the existing "Foundations of Entrepreneurship" course fails to meet their needs.

According to Table 6, nearly 90% of students believe that the course content is too theoretical and lacks practical links. Only 8.4% of students believe that they can start a business directly through classroom learning, while 82.2% of students find it difficult to apply the knowledge they have learned to actual entrepreneurship. This result reflects the shortcomings of the current entrepreneurship education courses in combining theory with practice. According to Table 7, the main obstacles faced by students in the process of entrepreneurship include "not understanding the entrepreneurial process" (82.6%), "lack of entrepreneurial investment" (91%) and "no entrepreneurial partners" (74.2%). These problems further highlight the importance of practical courses. Students have a strong demand for extracurricular entrepreneurial courses. According to Table 6, about 77% of students said that they "very much need"

or "willing to try" extracurricular courses, especially hoping to obtain more practical opportunities, entrepreneurial skills and resource support through extracurricular courses. According to Tables 9 and 10, in terms of course duration and frequency, 78.4% of students hope that each class will last 1-2 hours, and 61.2% of students hope to arrange a course once a week, which shows that students prefer flexible, short-term and efficient learning methods.

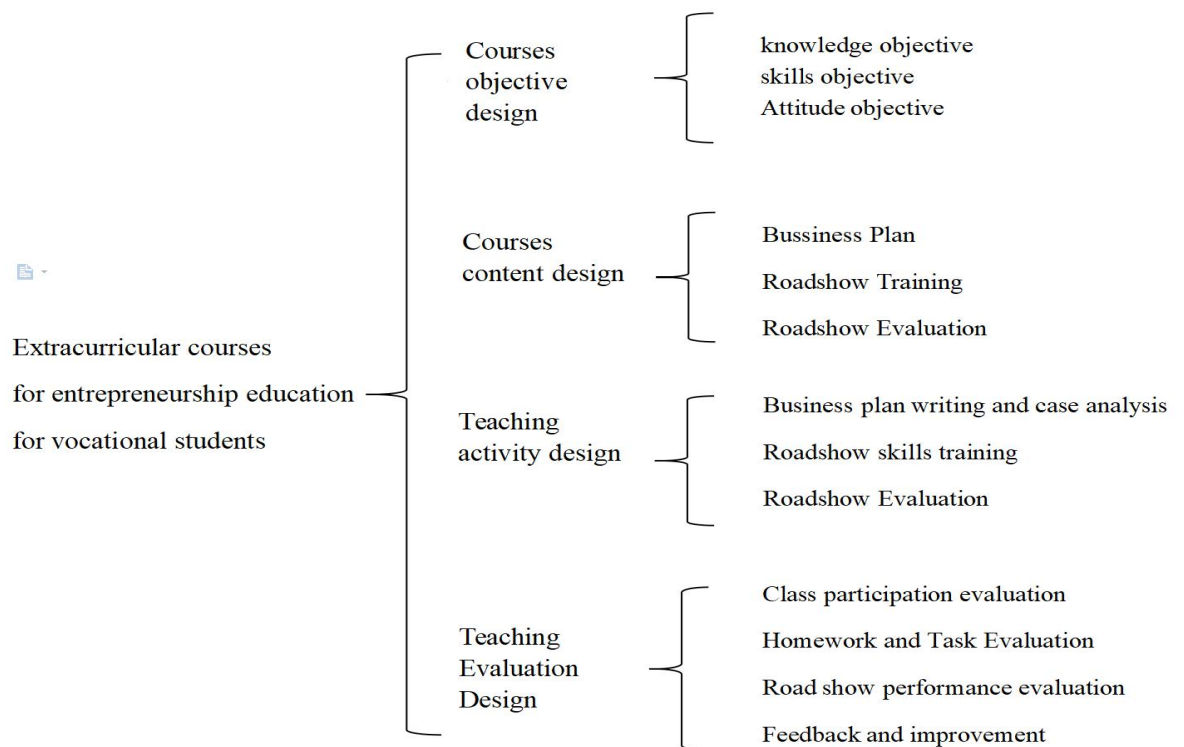
According to Table 12, students showed great interest in practical content in terms of course content, such as entrepreneurial project selection (93.6%), entrepreneurial opportunity search (93%), business model design (88%), financing and investment (88.6%), and entrepreneurial risk prevention and control (88.2%). At the same time, according to Table 16, students are more inclined to accept the guidance of lecturers with actual entrepreneurial experience, such as entrepreneurial mentors (95.6%) and entrepreneurs (91%), while the demand for college professors (70.2%) and industry experts (70.6%) is relatively low. Finally, according to Table 17, students hope to improve their entrepreneurial competence (94.2%), increase entrepreneurial opportunities (93.6%), accumulate entrepreneurial resources (82.4%), and learn more about entrepreneurship (84.8%) through courses.

In general, students hope to improve their practical ability, accumulate entrepreneurial resources, increase entrepreneurial opportunities, and cultivate correct entrepreneurial concepts through entrepreneurship extracurricular courses. Therefore, vocational colleges should pay attention to practicality, innovation and resource support when designing and carrying out extra-curricular courses on entrepreneurship, and help students solve practical problems and improve their entrepreneurial competence through simulated entrepreneurship, enterprise cooperation and entrepreneurship competitions. At the same time, the course content should be closely combined with the needs of students, focusing on the cultivation of soft skills, such as teamwork and communication skills, in order to comprehensively improve the comprehensive quality of students and entrepreneurial competitiveness.

4.2 Development of extracurricular courses for entrepreneurship in vocational colleges

4.2.1 Entrepreneurship extracurricular course design

The design of this course is based on the combination of theory and practice, aiming to provide vocational students with systematic entrepreneurship extracurricular course, and help students comprehensively improve their entrepreneurial awareness and practical ability through activities such as business plan writing and entrepreneurial project roadshows. The following is a detailed summary from five aspects: course top-level design, course objective design, course content design, teaching activity design, and teaching evaluation design, and an in-depth explanation from a theoretical perspective.



4.2.1.1 Course top-level design

Figure 5 Structure diagram of the course design

Source : Hu Wanqiu (2025)

The top-level design of the course is the overall framework and directional planning of the extracurricular courses of entrepreneurship education, which determines the core objectives, teaching concepts and implementation paths of the course. This course takes vocational students as the main target group, and combines their relatively weak theoretical foundation but strong practical needs to design a practice-oriented entrepreneurship education course. As shown in Figure 5, the design of this course includes four aspects: course objectives, course content, teaching activities and teaching evaluation. The core objective of the course is to help students improve their entrepreneurial awareness, innovation ability and practical operation ability in real entrepreneurial scenarios through systematic extracurricular activities, thereby laying the foundation for future entrepreneurship or career development. And through the method of "learning by doing", gradually build your own knowledge system. This design can not only improve students' practical skills, but also enhance their learning motivation and self-efficacy.

4.2.1.2 Course Objective Design

Course objective design is the core part of the extracurricular course of entrepreneurship education, which determines the specific direction and expected results of the course. The objective design of this course is divided into three levels: knowledge objectives, skill objectives and attitude objectives, aiming to comprehensively cultivate students' entrepreneurial awareness, practical ability and comprehensive quality.

Knowledge objectives: The primary objective of the course is to help students master the basic components of entrepreneurial projects, especially the structure and writing skills of business plans. According to cognitive load theory, the transmission of knowledge should be progressive to avoid students being confused by information overload.

Skill objectives: The core objective of the course is to cultivate students' practical operation ability, especially the ability to write business plans and roadshow entrepreneurial projects. According to social cognitive theory, students' self-efficacy (i.e. confidence in their own abilities) is an important factor affecting learning outcomes.

Attitude objectives: The ultimate objective of the course is to cultivate students' correct entrepreneurial attitude, including entrepreneurial awareness, risk awareness, legal awareness and financial awareness, etc. According to social cognitive theory, students' learning motivation and behavior are not only influenced by knowledge, but also driven by their expectations and beliefs about the results.

4.2.1.3 Course content design

Course content design is the concrete implementation plan of the extra-curricular course of entrepreneurship education, which determines the teaching content and learning path of the course. The content design of this course follows the principle of step-by-step and in-depth, from theoretical knowledge to practical skills, and then to the whole process of project presentation, to help students gradually master the core elements of entrepreneurship. The course is divided into three modules: Business plan writing, entrepreneurial roadshow skills, and project roadshow and evaluation.

Business plan writing module: Business plan writing is a crucial link in entrepreneurship education, and its theoretical basis comes from strategic management theory and marketing theory. Business plans are not only a tool for communication between entrepreneurs and investors, but also an important means to demonstrate the feasibility and market potential of entrepreneurial projects.

Entrepreneurship roadshow skills module: Entrepreneurship roadshow is not only a process of project presentation, but also a key link for entrepreneurs to express confidence and convey project value. From a theoretical perspective, the training of roadshow skills incorporates communication and public speaking theories. By

explaining the basic principles of PPT production, the structure and skills of speeches, students can effectively improve the clarity and attractiveness of their information transmission.

Project roadshow and evaluation module: This is the practical part of the course. Students need to test their mastery of business plans and roadshow skills through project presentation and evaluation. The evaluation not only includes the professional evaluation of teachers, but also helps students fully understand their shortcomings in presentation skills, business plan content and market analysis through peer review, thereby improving their ability to improve. This module is based on feedback learning theory, emphasizing that students improve themselves in the process of continuous feedback and improvement.

4.2.1.4 Teaching activity design

Teaching activity design is the specific implementation method of extracurricular courses in entrepreneurship education, which determines the teaching methods and learning experience of the course. The teaching activity design of this course is based on experiential learning theory and task-driven teaching, emphasizing students' reflection and learning in real situations. Through the cycle of "learning-practice-feedback", the course helps students form in-depth learning through practical activities.

Activity 1: Business plan writing and case analysis: This activity helps students master the writing skills of business plans by combining teacher explanations with student independent writing.

Activity 2: Entrepreneurship roadshow skills training: Simulated roadshow is an important part of teaching activities, aiming to help students become familiar with presentation skills, PPT design, investor interaction, etc. In the activity, students conduct simulated exercises in teams through role-playing.

Activity 3: Project roadshow and evaluation: Students test their application of business plans and roadshow skills through actual roadshow presentations and interactive feedback. This activity is based on constructivist learning theory and promotes students' internalization of knowledge and improvement of skills through participatory learning and feedback. The evaluation not only considers the content and logic of the students' speeches, but also focuses on their ability to respond to investors' questions, helping students identify their shortcomings and improve them in practice.

4.2.1.5 Teaching Evaluation Design

The course evaluation design is an important part of the extracurricular curriculum of entrepreneurship education, which determines the evaluation standard and feedback mechanism of the curriculum. The evaluation design of this course focuses on multi-dimensional and multi-level evaluation system, including both the process evaluation of students and the comprehensive evaluation of their final results. The evaluation includes four dimensions: class participation evaluation, homework

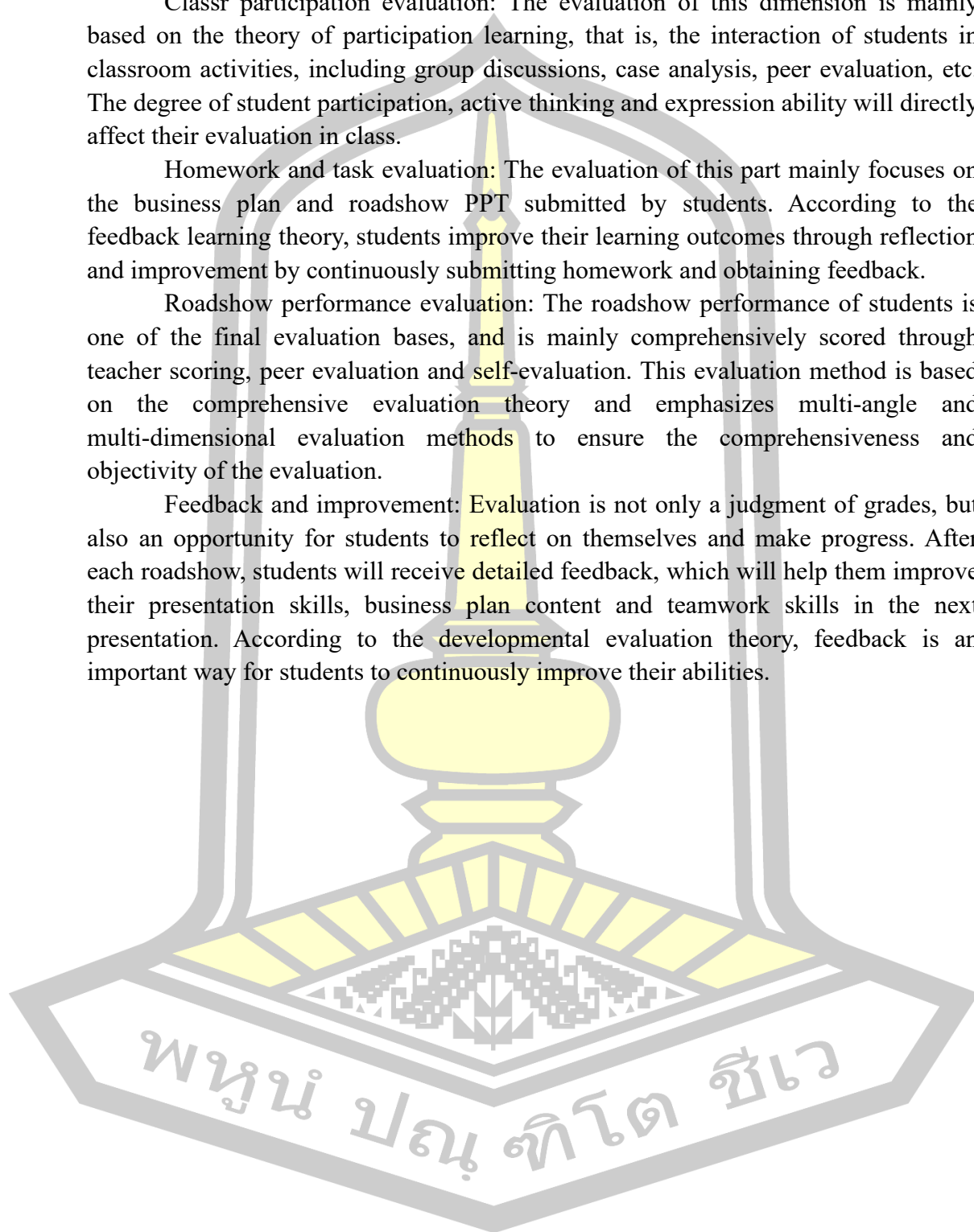
and task evaluation, roadshow presentation evaluation and peer evaluation.

Classr participation evaluation: The evaluation of this dimension is mainly based on the theory of participation learning, that is, the interaction of students in classroom activities, including group discussions, case analysis, peer evaluation, etc. The degree of student participation, active thinking and expression ability will directly affect their evaluation in class.

Homework and task evaluation: The evaluation of this part mainly focuses on the business plan and roadshow PPT submitted by students. According to the feedback learning theory, students improve their learning outcomes through reflection and improvement by continuously submitting homework and obtaining feedback.

Roadshow performance evaluation: The roadshow performance of students is one of the final evaluation bases, and is mainly comprehensively scored through teacher scoring, peer evaluation and self-evaluation. This evaluation method is based on the comprehensive evaluation theory and emphasizes multi-angle and multi-dimensional evaluation methods to ensure the comprehensiveness and objectivity of the evaluation.

Feedback and improvement: Evaluation is not only a judgment of grades, but also an opportunity for students to reflect on themselves and make progress. After each roadshow, students will receive detailed feedback, which will help them improve their presentation skills, business plan content and teamwork skills in the next presentation. According to the developmental evaluation theory, feedback is an important way for students to continuously improve their abilities.



4.2.2 Consistent evaluation of the course design of extracurricular entrepreneurship education

Table 18 Assessment of experts consistency

Items	\bar{x}	SD	level
Objective	3.0	1.41	Middle
Content	4.8	0.45	Best
Activity	5.0	0.00	Best
Evaluation	3.8	0.45	Good

Source : Hu Wanqiu (2025)

According to the expert consistency evaluation results in Table 16, Table 16 presents the results of the expert consistency assessment of the extracurricular entrepreneurship course design, covering four dimensions: objective, content, activity and evaluation. From the assessment results of the content dimension, the experts gave a high mean of 4.8 and a low standard deviation of 0.45, and rated it as "best". In the activity dimension, the evaluation mean was 5.0, the standard deviation was 0.00, and the evaluation was "best". Regarding the objective dimension, the evaluation mean was 3.0, the standard deviation was 1.41, and the evaluation was "middle". The mean of the evaluation dimension was 3.8, the standard deviation was 0.45, and it was rated as "good".

In summary, the expert consistency assessment shows that the extracurricular entrepreneurship education course design performs well in content and activities, while there is space for improvement in the objective and evaluation dimensions. In particular, in the setting of course objectives, it needs to be clearer and more specific to ensure that the implementation effect of the course is more in line with the learning needs of vocational students.

4.3 Analysis of the impact of extracurricular courses of entrepreneurship education on the entrepreneurial competence of vocational college students

After eight weeks of extracurricular course study, the entrepreneurial abilities of the 30 vocational college students selected in This research have improved to a certain extent. The following will conduct a specific analysis from three aspects: knowledge test scores, skill test scores and entrepreneurial attitude scores.

4.3.1 Compare the knowledge test results of the experimental group before and after attending the extracurricular courses

Table 19 Knowledge test scores of the experimental group before and after attending the extracurricular courses

Statistical indicators	\bar{x}	SD	df	t	P
Pre- test	54.53	4.59	29	15.58	0.000
post- test	70.67	4.62	29		

Source : Hu Wanqiu (2025)

According to the data in Table 19, the written test scores of the experimental group students before and after participating in the extracurricular course have changed significantly. The mean before the experiment was 54.53, and the mean after the experiment increased to 70.67, indicating that the students' scores improved after the course, and the fluctuation was small. Further analysis of the T value and P value showed that the T value was 15.58 and the P value was 0.000, indicating that the difference in written test scores before and after the experiment reached a statistically significant level ($P < 0.05$). This means that extracurricular courses have a significant impact on students' written test scores, and the improvement effect is reliable.

The written knowledge test scores of the experimental group students improved significantly after the extracurricular course, indicating that the course played a positive role in imparting knowledge and improving students' abilities. The students in the experimental group have enhanced their abilities in understanding, memorizing and applying knowledge, and the course content has a positive impact on students' academic performance.

พหุ ประถมศึกษา

4.3.2 Compare the skill test scores of the experimental group before and after attending the extracurricular courses

The skill test in this research includes two aspects: business plan and roadshow. The test scores of business plan and roadshow are analyzed separately below.

Table 20 Business plan scores of the experimental group before and after attending the extracurricular courses

Items	\bar{x}	SD	df	t	P
Pre-test	29.9	3.14	29	10.12	0.000
Post-test	42.8	7.39	29		

Source : Hu Wanqiu (2025)

Table 21 Roadshow scores of the experimental group before and after attending the extracurricular courses

Items	\bar{x}	SD	df	t	P
Pre-test	16.8	2.91	29	15.3	0.000
Post-test	27.2	2.91	29		

Source : Hu Wanqiu (2025)

According to the data in Tables 20 and Table 21, the scores of business plans and roadshows in the experimental group increased significantly after participating in extracurricular courses. Specifically, the scores of business plans increased from 29.9 to 42.8, and the scores of roadshows increased from 16.8 to 27.2. These differences are statistically significant (P values are all 0.001), indicating that extracurricular courses have a significant effect on improving students' skills. The standard deviation is relatively small, indicating that the dispersion of the scores is low and the data is more stable. After participating in extracurricular courses, the scores of business plans and roadshows in the experimental group increased significantly, and the data stability is good, indicating that extracurricular courses have a positive impact on improving students' entrepreneurial skills.

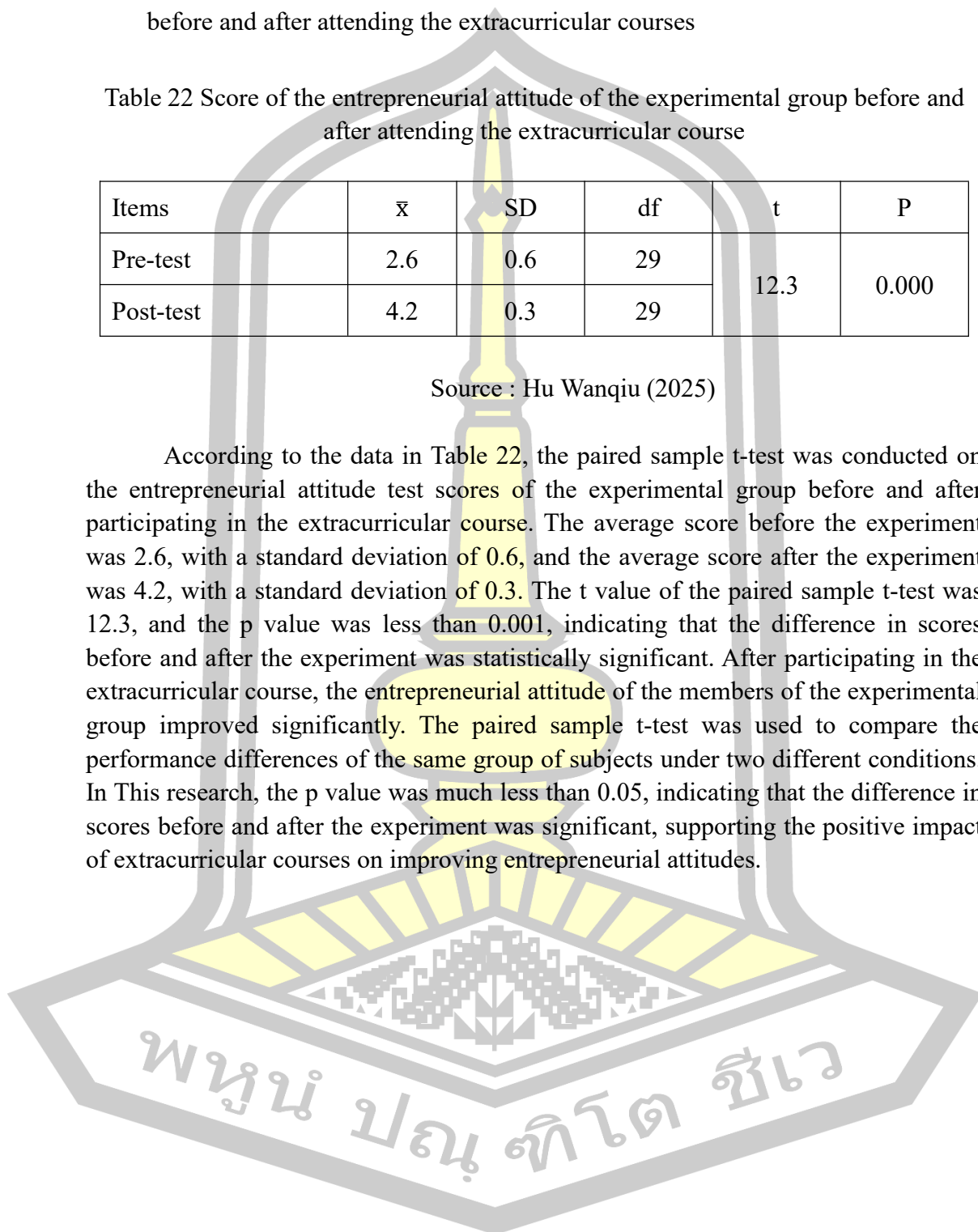
4.3.3 Compare the entrepreneurial attitude scores of the experimental group before and after attending the extracurricular courses

Table 22 Score of the entrepreneurial attitude of the experimental group before and after attending the extracurricular course

Items	\bar{x}	SD	df	t	P
Pre-test	2.6	0.6	29	12.3	0.000
Post-test	4.2	0.3	29		

Source : Hu Wanqiu (2025)

According to the data in Table 22, the paired sample t-test was conducted on the entrepreneurial attitude test scores of the experimental group before and after participating in the extracurricular course. The average score before the experiment was 2.6, with a standard deviation of 0.6, and the average score after the experiment was 4.2, with a standard deviation of 0.3. The t value of the paired sample t-test was 12.3, and the p value was less than 0.001, indicating that the difference in scores before and after the experiment was statistically significant. After participating in the extracurricular course, the entrepreneurial attitude of the members of the experimental group improved significantly. The paired sample t-test was used to compare the performance differences of the same group of subjects under two different conditions. In This research, the p value was much less than 0.05, indicating that the difference in scores before and after the experiment was significant, supporting the positive impact of extracurricular courses on improving entrepreneurial attitudes.



CHAPTER V

CONCLUSION

5.1 Conclusion

5.1.1 Vocational colleges have a great demand and necessity to develop extracurricular courses for entrepreneurship education

Students in vocational colleges show strong interest in the development of extracurricular entrepreneurship education courses. However, in-depth interviews with vocational college teachers reveal that most students believe the existing courses fail to adequately support real-world entrepreneurship. Teachers generally report that the curriculum over-relies on theoretical instruction and lacks practical skill training in authentic scenarios. The depth of industry-academia collaboration remains limited, resulting in few opportunities for students to engage with real entrepreneurial projects and restricted access to resources. Additionally, the courses are primarily led by college professors, with low participation from entrepreneurs and industry experts, making it difficult to provide hands-on guidance. To overcome these bottlenecks, teachers suggest building a "Three-Integration" system (specific meaning to be clarified based on context, e.g., "theory-practice-resource integration" or "school-enterprise-student integration") through extracurricular courses.

5.1.2 Design extracurricular courses for entrepreneurship education based on the needs of vocational students

This course is aimed at vocational students. Considering their weak theoretical foundation and strong practical needs, a practice-oriented entrepreneurship education course is designed.

The core objective of the course is to help students improve their entrepreneurial competency in real entrepreneurial scenarios through extracurricular courses, laying the foundation for future entrepreneurship or career development.

The course content is divided into multiple modules, and through school-enterprise cooperation, entrepreneurial mentors and industry experts are invited to participate in teaching to provide students with entrepreneurial experience and resource support. The course objectives are divided into three levels: knowledge, skills and attitudes, aiming to comprehensively improve students' entrepreneurial competence.

The course content follows the design principle from theory to practice and then to project presentation. The writing of the business plan involves core content

such as market analysis and financial forecasting, while the roadshow helps students improve their ability to convey information and express themselves confidently. At the same time, timely feedback and evaluation of students' learning situation are given. Through the "learning-practice-feedback" cycle, the course promotes students to learn in depth and master the core elements of entrepreneurship.

5.1.3 Entrepreneurship education extracurricular courses effectively improve students' entrepreneurial competence

The extracurricular courses of entrepreneurship education for vocational students have a significant impact on students' entrepreneurial competence. By analyzing the knowledge test scores, skill test scores and entrepreneurial attitude scores of 30 vocational college students before and after the eight-week extracurricular courses, the results show that students' entrepreneurial competence has improved in all aspects. And the t-values of each dimension are significant, which further proves that the improvement effect is reliable. These results provide strong support for vocational colleges to further optimize the entrepreneurship education curriculum system and improve students' entrepreneurial competence.

5.2 Discussion

5.2.1 Investigate the needs of vocational colleges for developing extracurricular courses on entrepreneurship education in order to design courses

Vocational colleges have a great demand and necessity to develop extracurricular courses for entrepreneurship education. Through interviews with teachers and student demand questionnaires, it was found that students have a great interest in entrepreneurship. However, for the "Foundations of Entrepreneurship" course provided by vocational colleges, 82.2% of students said that although they learned entrepreneurship knowledge in class, they could not apply it to actual entrepreneurship knowledge, and students generally felt "unable to start" in entrepreneurial practice. Teachers believe that the course content is too theoretical and lacks practical operation and practice. Students believe that the knowledge provided by existing courses is mostly "empty theory" and lacks case analysis and practical projects. Another major problem is insufficient resource support. 90.6% of students believe that insufficient funds are the biggest problem in the entrepreneurial process, 74.2% of students believe that they lack entrepreneurial partners, and 83.2% of students do not know how to deal with risks in the entrepreneurial process.

The current curriculum design has obvious deficiencies in combining theory with practice. The existing courses are mainly theoretical courses such as "Foundations of Entrepreneurship", lacking in-depth training in core practical modules such as market analysis (88% demand) and financing strategies (88.6%

demand). Only 8.4% of students in school-enterprise cooperation get real project opportunities, and the participation of industry mentors is less than 30%, making it difficult for students to access key resources such as funds and connections in the entrepreneurial ecosystem. 72% of students lack interest in traditional lecture-style classrooms, case teaching only covers 15% of the course content, and most of them use outdated cases (such as business models before 2017). Although vocational colleges teach certain entrepreneurial theories in class, existing courses still lack practical operations. Students have certain theoretical knowledge, but they lack practical experience and often feel uncertain when facing real entrepreneurial experience. The course content is too basic and lacks in-depth discussion of areas such as business model design, market analysis, and financing strategies. The lack of practice and theory in the course design makes students lack the ability and confidence to solve complex problems in the actual entrepreneurial process.

The design of entrepreneurship education courses should be based on solid educational theories. Taylor's curriculum design theory provides scientific guidance for the design of entrepreneurship education courses. Taylor emphasized that courses should be centered on students' needs, course objectives must be clear, and educational effects must be verified through a scientific evaluation system. Taylor's curriculum theory believes that course objectives do not focus on students' "practical transformation capabilities", resulting in a disconnect between knowledge and application. Constructivist theory believes that students need to construct knowledge through "learning by doing" (93.6% of student needs), but the current curriculum practice accounts for less than 20%. Social learning theory emphasizes learning through imitating the behavior of others and social interaction.

In the extracurricular courses of entrepreneurship education, students can gain more intuitive entrepreneurial experience through interaction with mentors, entrepreneurs and classmates, especially gaining practical inspiration from the stories of mentors and entrepreneurs. This model emphasizes the systematic and continuous design of courses, and its five stages (analysis, design, development, implementation and evaluation) provide a clear framework for the entrepreneurship education courses of higher vocational colleges. Through the additional model, schools can design course content more scientifically to ensure that the courses can be used.

5.2.2 Design extracurricular courses for entrepreneurship education in accordance with the actual needs of vocational students

This study addresses the characteristics of vocational students—weak theoretical foundation but strong practical needs. By designing a practice-oriented extracurricular entrepreneurship education curriculum. The course aims to effectively enhance students' entrepreneurial capabilities through a multi-dimensional and modular teaching approach.

Based on domestic and international research on vocational and

entrepreneurship education, vocational students generally report that traditional classroom instruction overemphasizes theory while lacking practical components, making it difficult to meet real-world entrepreneurial demands. In response, this course was designed with these challenges in mind, offering modularized content tailored to vocational students. Participants can select different modules based on their interests and career development needs, thereby improving the relevance and flexibility of their learning experience. At the same time, through school-enterprise cooperation, entrepreneurship mentors and industry experts are introduced to provide students with real entrepreneurship experience and resource support, breaking the traditional single classroom teaching model and achieving an effective integration of theory and practice.

The course objectives are structured across three dimensions - knowledge, skills, and attitudes - which not only aligns with Tyler's curriculum development theory regarding clear objectives, but also corresponds with the "theory-to-practice-to-demonstration" instructional model identified in multiple international studies. Starting from foundational theories including business plan writing, market analysis, and financial forecasting, the course progressively incorporates case studies, hands-on tasks, and entrepreneurship pitch competitions, establishing a closed-loop instructional system of "learning-practice-feedback." This hierarchical and progressive design serves dual purposes: it reduces cognitive load while improving knowledge absorption efficiency, while simultaneously enhancing students' practical operational capabilities and problem-solving confidence.

Tracking data from the experimental group demonstrates significant improvements across all three dimensions—knowledge, skills, and attitudes—validating the course's efficacy while providing an empirical foundation for future optimization. Building upon action learning and developmental evaluation research (both domestic and international), the course incorporates a continuous improvement feedback mechanism. This system enables timely adjustments after each instructional session based on student performance metrics, systematically addressing limitations of traditional entrepreneurship education.

5.2.3 The impact of extracurricular courses of entrepreneurship education on the entrepreneurial competence of vocational students is significant

Students in the experimental group showed significant improvements in three dimensions: knowledge (written test score +17.4%), skills (business plan score +33.6%), and attitude (risk awareness +38.5%). Through the analysis of the data of the experimental group, there was a significant positive correlation between extracurricular entrepreneurship education courses and the improvement of students' academic performance. Specifically, the course has achieved the following effects through innovative strategies such as hierarchical training, embedding in real situations, and dynamic feedback mechanisms.

The stratified training adopts a three-stage teaching framework of "basic - advanced - practical", enabling students to progress from initial exposure to entrepreneurial theories, to gradual case analysis and strategy formulation, and finally to participation in actual project operations. Data shows that this progressive teaching model has increased students' theoretical knowledge (written test scores) by an average of 17.4%, indicating that stratified training not only helps students build a systematic entrepreneurial knowledge system but also effectively avoids the problem of excessive cognitive load, ensuring the internalization and transfer of knowledge. Real situation embedding has enhanced students' perception and analysis abilities of industry data and market environment by introducing 12 real entrepreneurial projects. Experimental data shows that in practical operations, the scores of business plans by students have increased by 33.6%, which reflects that practical training in real situations has significantly improved their ability to solve practical problems and decision-making levels. Furthermore, the increase in the exposure density of industry data (3.8 times) also proves the prominent role of contextualized learning in enhancing students' market sensitivity and practical judgment. The dynamic feedback mechanism, through multiple iterations of the project plan and real-time guidance from entrepreneur mentors, prompts students to continuously improve through repeated practices. The research found that within 8 weeks, students completed an average of 3.2 program iterations, reflecting the law of "cognitive conflict - reconstruction" in constructivist theory.

Meanwhile, there was a positive correlation between the guidance duration of entrepreneur mentors and students' opportunity recognition ability ($r=0.73$), verifying the important role of role models in social learning theory. This timely feedback and adjustment not only significantly improve students in risk assessment and problem-solving (for example, the failed project team outperformed the successful group by 12.3% in risk assessment ability), but also further enhance students' rational judgment and innovation ability when facing uncertainties. The course evaluation results also show that the explanatory degree of business plan writing ability for financing ability reaches 64% ($\beta=0.8$), and when the score of students' entrepreneurial attitude exceeds 4.2 (on a 5-point scale), the occurrence probability of their actual entrepreneurial intention can increase to 82%. These data fully demonstrate that extracurricular entrepreneurship education courses have not only made remarkable progress in terms of knowledge and skills, but also prompted students to establish correct entrepreneurial concepts and risk awareness at the attitude level, laying a solid foundation for future entrepreneurship.

This study demonstrates that the implementation of systematic curriculum reform and multidimensional instructional strategies has significantly enhanced vocational students' comprehensive entrepreneurial competencies, including theoretical knowledge, practical operational skills, and risk awareness. The findings provide empirical support for entrepreneurship education reform while validating the critical role of extracurricular courses in improving academic performance and

fostering holistic competency development.

5.3 Suggestions

5.3.1 Suggestions on the application of research results

The development of extracurricular courses for entrepreneurship education in vocational colleges should be based on educational theory, combining the characteristics of vocational education with the laws of entrepreneurship education, and strengthening practice-oriented course content.

The entrepreneurship education courses of vocational colleges should be based on the core concept of "industry-education integration, unity of knowledge and practice", and build a three-level progressive curriculum system of "theoretical foundation-skill enhancement-practical incubation". Construct a three-level case library of "classic cases + local cases + real-time cases" to strengthen theoretical cognition through case analysis.

The entrepreneurship education courses of vocational colleges should establish a systematic evaluation and feedback mechanism, based on modern education evaluation theory, integrating the three concepts of process evaluation, developmental evaluation and result-oriented evaluation. Multi-dimensional evaluation system construction plan, dynamic feedback mechanism construction strategy.

5.3.2 Suggestions for further research

The development of extracurricular entrepreneurship education courses in vocational colleges must be grounded in educational theory, integrating the characteristics of vocational education and the principles of entrepreneurship education to construct a scientific and systematic curriculum system. Vocational college entrepreneurship education courses should be based on the core concept of "industry-education integration and the unity of knowledge and practice," establishing a three-stage progressive curriculum system consisting of "theoretical foundation—skill enhancement—practical incubation." A three-tier case library should be built, incorporating "classic cases + localized cases + real-time cases," to strengthen theoretical understanding through case analysis. The design of assessment and feedback mechanisms for vocational college entrepreneurship education courses should be based on modern educational evaluation theories, integrating three key concepts: process-oriented evaluation, developmental evaluation, and outcome-based evaluation. A multi-dimensional evaluation system should be established, along with strategies for a dynamic feedback mechanism, ensuring the implementation of a quality assurance system and the design of a continuous improvement mechanism.

REFERENCES



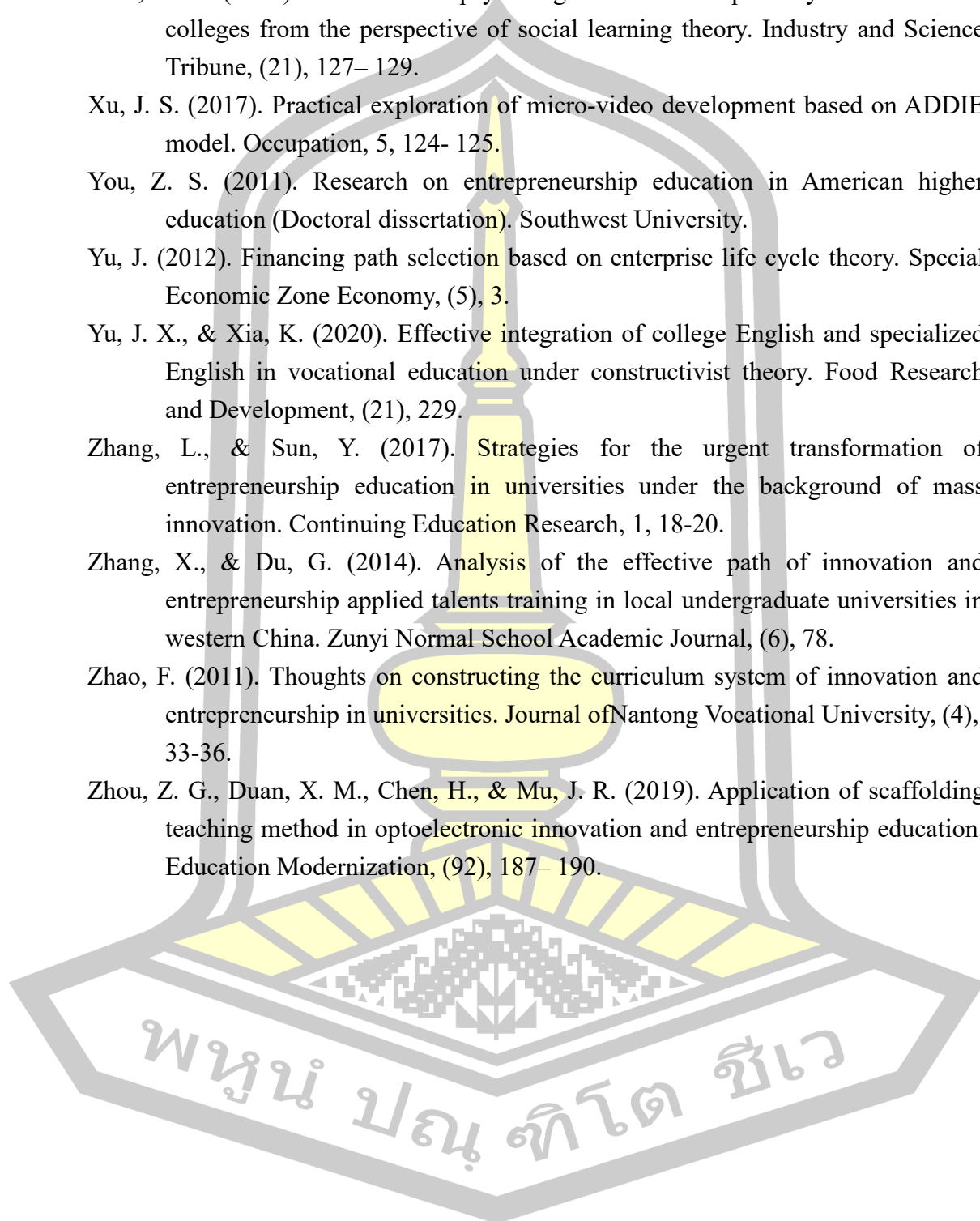
- Abreh, K. M. (2023). Teaching in extra classes settings in Cape Coast Metropolis: Implication for improved learning outcomes. *Social Sciences & Humanities Open*, 7(1).
- Alberti, F. G., Sciascia, S., & Poli, A. (2007). Exploring the effects of corporate venturing on new business creation. *New England Journal of Entrepreneurship*, 10(1),13-24.
- Aldoobie, N. (2015). ADDIE model. *American International Journal of Contemporary Research*, 5(6), 68-72.
- Bates, A. W. (2019). *Teaching in a digital age* (2nd ed.). Tony Bates Associates Ltd.
- Boyatzis, R. E. (2013). The competent manager: A model for effective performance. *Journal of Management Development*, 33(7), 17-29.
- Chandler, G. N., & Hanks, S. H. M. (1993). Measuring the performance of emerging businesses: A validation study. *Journal of Business Venturing*, 8(5),391-408.
- Chandler, G. N., & Hanks, S. H. (1994). Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal of Business Venturing*, 9(4), 331-349.
- Chang, G. (2013). Thoughts on the construction of innovation and entrepreneurship education curriculum system under the perspective of integration. *Continuing Education Research*, (12), 112.
- Chen, R., & Gu, Z. (2010). Entrepreneurship education in Japanese high schools in the new century: Current situation and topic. *Research on Higher Engineering Education*, (2), 57.
- Chen, Z., & Dong, J. (2004). Research on entrepreneurship abroad and analysis methods for the development of emerging disciplines. *Science and Technology Management Research*, 24(05), 96-99.
- Fletcher, C. (1993). *Appraisal: Routes to improved performance* (2nd ed.). Institute of Personnel and Development.
- Fuchs, K., Werner, A., & Wallau, F. (2008). Entrepreneurship education in Germany and Sweden: What role do different school systems play? *Journal of Small Business and Enterprise Development*, 15(2), 365-381.
- Gao, Z., & Liu, Y. (2012). *Theory and practice of innovation and entrepreneurship education* (p. 3). Southeast University Press.
- Gartner, W. B. (1989). Some suggestions for research on entrepreneurial traits and characteristics. *Entrepreneurship Theory and Practice*, 13(1), 27-38.
- Ge, J. (2004). *Entrepreneurship science*. Tsinghua University Press.
- Giberson, T. R., Tracey, M. W., & Harris, M. T. (2006). Confirmative evaluation of training outcomes. *Performance Improvement Quarterly*, 19(4), 43–61.

- Gu, S., Xiao, D., & Hong, Q. (2008). Countermeasures to improve China's entrepreneurship policy system. *Population Science of China*, (1), 19-20.
- Guo, G. P., & Chai, C. (2022). Reflections on achieving quality expansion in higher vocational colleges from the perspective of constructivist learning theory. *Education and Vocation*, (5), 56–60.
- Hampden-Turner, C., & Tan, T.-K. (2002). Six dilemmas of entrepreneurship. *Singapore Nanyang Business Review*, (12), 78-96.
- Han, T. Y., & Cai, G. W. (2021). Enhancing innovation and entrepreneurship capabilities of vocational college students through innovative volunteer service activities. *Employment and Social Security*, (11), 65–67.
- Hang, R. Y. (2014). Theoretical foundations for cultivating technical talents through industry-academia-research integration in vocational education. *Journal of Shanxi University of Finance and Economics*, (S2), 105– 108.
- He, X. (2005). Evaluation of entrepreneurial competence: A qualitative research method and framework. *Journal of Graduate School of Chinese Academy of Social Sciences*, 11, 127- 132.
- Hills, G. E. (1988). Variations in university entrepreneurship education: An empirical study of an evolving field. *Journal of Business Venturing*, 3(1), 29-39.
- Hou, D. (2001). Entrepreneurship education in universities is committed to cultivating entrepreneurship. *Higher Education Studies*, (5), 89.
- Huang, Z., & Guo, L. (2012). The core problem of the construction of entrepreneurship education curriculum system in colleges and universities. *Education Development Research*, (9), 81-84.
- Jones, C., & English, J. (2004). A contemporary approach to entrepreneurship education. *Education and Training*, 46(8/9), 416-423.
- Katz, J. A. (2003). The chronology and intellectual trajectory of American entrepreneurship education: 1876- 1999. *Journal of Business Venturing*, 18(2), 283-300.
- Lei, J. S. (2007). Analysis on the development of innovation and entrepreneurship education at home and abroad. *China Youth Science and Technology*, (2), 26-29.
- Li, P. (2013). Thinking on integrating innovation and entrepreneurship education into the whole process of talent training. *Innovation and Entrepreneurship Education*, (4), 31-33.
- Liu, Z. M. (2014). Situational creation in vocational classrooms from a constructivist perspective. *Education and Vocation*, (33), 160– 161.

- Lüthje, C., & Franke, N. (2003). The 'making' of an entrepreneur: Testing a model of entrepreneurial intent among engineering students at MIT. *R&D Management*, 33(2), 135- 147.
- Maccos China College Students Employment Research Group, & Wang, B.(2018). 2018 Employment Report of Chinese College Students.
- Ma, H., Dong, B., & Chang, G. (2010). Network competence and entrepreneurial competence: An empirical study of new start-ups in Northeast China. *Research in Science of Science*, 7, 50-56.
- Ma, J. (2015). Innovation and entrepreneurship are the new normal of education in the 21st century (p. 327). Shandong Education Press.
- Man, T. W. Y., & Lau, T. (2000). Entrepreneurial competencies of SME owner/managers in the Hong Kong services sector. *Journal of Enterprising Culture*, 8(3), 235-254.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- McClelland, D. C., & Boyatzis, R. E. (1980). Opportunities for counselors from the competency assessment movement. *The Personnel and Guidance Journal*, 24, 368-372.
- McClelland, D. C., & Boyatzis, R. E. (1980). Opportunities for counselors from the competency assessment movement. *The Personnel and Guidance Journal*, 58(5),368-372.
- McMullan, W. E., & Long, W. A. (1987). Entrepreneurship education in the nineties. *Journal of Business Venturing*, 2(3), 261-275.
- Morrison, G. R., Ross, S. M., Kalman, H. K., & Kemp, J. E. (2012). *Designing effective instruction* (7th ed.). John Wiley & Sons, Inc.
- Niu, C. (2009). University of entrepreneurship education research in British universities (p. 239). Xuelin Publishing House.
- Peterson, C. (2003). Bringing ADDIE to life: Instructional design at its best. *Journal of Educational Multimedia & Hypermedia*, 12(3), 227-241.
- Phan, P. H., Wong, P. K., & Wang, C. K. (2002). Antecedents to entrepreneurship among university students in Singapore: Beliefs, attitudes, and background. *Journal of Enterprising Culture*, 10(2), 151- 174.
- Qi, H., & Li, T. (2016). Research on entrepreneurship foundation classroom teaching based on constructivist theory. *Exam Weekly*, (A0), 166– 167.
- Rothwell, W. J., & Lindholm, J. E. (1999). Competency identification, modeling, and assessment in the USA. *International Journal of Training and Development*, 3(2),90- 105.

- Seel, N. M., Lehmann, T., Blumschein, P., & Podolskiy, O. A. (2017). *Instructional design for learning: Theoretical foundations*. Sense Publishers.
- Sørheim, R. (2006). Action-based entrepreneurship education. *Technovation*, 26(2), 185- 194.
- Taylor, P. (2008). *Basic principles of curriculum and teaching* (L. Kang & Y. Zhang, Trans.). China Light Industry Press.
- Taylor, R. W. (2008). *Basic principles of curriculum and teaching* (L. Kang & Y. Zhang, Trans.). China Light Industry Press.
- Tian, L., & Long, D. (2009). Analysis of the role of previous experience in the entrepreneurial process: A review of the latest research results. *Economic Theory and Economic Management*.
- Timmons, J. A., Spinelli, S., & Zacharakis, A. (2008). *New venture creation: Entrepreneurship for the 21st century* (6th ed.). McGraw-Hill.
- Vari, F. (1981). *İzlemde program geliştirme: Teori ve teknikler*. Ankara Üniversitesi Basımevi.
- Vesper, K. H., & Gartner, W. B. (1999). *University entrepreneurship programs— 1999*. Lloyd Greif Center for Entrepreneurial Studies, University of Southern California.
- Wang, C. R. (2013). Implications of Bandura's social learning theory for professional ethics education in vocational colleges. *Education and Vocation*, (6), 181– 182.
- Wang, J. Q. (2019). Enhancing learning motivation of post-00s vocational students: Based on Bandura's social learning theory. *Foreign Trade and Economy*, (1), 136– 137+ 146.
- Wang, L., & Qian, Q. L. (2015). Empirical research on campus culture construction in vocational colleges from the perspective of social learning theory. *Vocational and Technical Education*, (23), 65–68.
- Wang, Q. (2019). Analysis of teaching reform paths for "College Student Innovation and Entrepreneurship" courses based on constructivist theory. *Journal of Chengdu Technological University*, (4), 72–76.
- Wang, S. (2013). *Entrepreneurship* (Doctoral dissertation). Beijing Jiaotong University.
- Wang, Y. R. (2017). Research on entrepreneurship education instructional design based on constructivist theory. *Journal of Nanjing Tech University (Social Science Edition)*, (2), 109– 114.
- Wise, D. (2016). Behind the world's best students is a soul-crushing billion dollar private education industry. *Quartz Journalism*.
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational

- management. *Academy of Management Review*, 14(3), 361-384.
- Xiao, S. J. (2023). Research on psychological education pathways in vocational colleges from the perspective of social learning theory. *Industry and Science Tribune*, (21), 127– 129.
- Xu, J. S. (2017). Practical exploration of micro-video development based on ADDIE model. *Occupation*, 5, 124- 125.
- You, Z. S. (2011). Research on entrepreneurship education in American higher education (Doctoral dissertation). Southwest University.
- Yu, J. (2012). Financing path selection based on enterprise life cycle theory. *Special Economic Zone Economy*, (5), 3.
- Yu, J. X., & Xia, K. (2020). Effective integration of college English and specialized English in vocational education under constructivist theory. *Food Research and Development*, (21), 229.
- Zhang, L., & Sun, Y. (2017). Strategies for the urgent transformation of entrepreneurship education in universities under the background of mass innovation. *Continuing Education Research*, 1, 18-20.
- Zhang, X., & Du, G. (2014). Analysis of the effective path of innovation and entrepreneurship applied talents training in local undergraduate universities in western China. *Zunyi Normal School Academic Journal*, (6), 78.
- Zhao, F. (2011). Thoughts on constructing the curriculum system of innovation and entrepreneurship in universities. *Journal of Nantong Vocational University*, (4), 33-36.
- Zhou, Z. G., Duan, X. M., Chen, H., & Mu, J. R. (2019). Application of scaffolding teaching method in optoelectronic innovation and entrepreneurship education. *Education Modernization*, (92), 187– 190.



APPENDIXES

Appendix A: Student Registration Form

Student Registration Form 学员登记表	
Name 姓名:	Age 年龄:
Major 专业:	Contact 联系方式:
Are you interested in starting a business? 你是否对创业有兴趣?	Yes 是 No 否
Do you have a completed business Plan? 你是否已有完成的创业计划书?	Yes 是 No 否
1. Do you have any preliminary entrepreneurial ideas? If so, please provide a brief description. 你是否有初步的创业想法? 如果有请简述。	
2. Have you started entrepreneurial activities? If so, please provide a brief description. 你是否已开始创业活动? 如果有请简述。	
3. What skills, experiences, and resources do you think you possess related to entrepreneurship? Please provide a brief description. 你认为你具备哪些与创业相关的技能、经验与资源? 请简述。	

Appendix B: Questionnaire

Questionnaire on Demand for Entrepreneurship extracurricular course

创业课外课程需求的调查问卷

Dear students:亲爱的同学:

Hello ! In order to develop extracurricular courses for entrepreneurship, please fill in the following contents as a reference for course design. The information in your questionnaire will be kept. Not disclosed to the public on an individual basis, only the overall research results will be reported. Researcher will destroy relevant information after the research is completed. Thank you for your cooperation!

你好！为开发创业课 外课程，请填写以下内容，作为课程设计的参考。您的调查问卷中的信息将会被 保存下来。不以个人向公众披露，只报告总体研究结果。研究完成后，研究者将 销毁相关信息。谢谢您的合作！

Gender 性别 [填空题] *

Age 年龄 [填空题] *

Major 专业 [填空题] *

พหุบัณฑิต ชีวะ

1. [single choice] Are you interested in starting a business?

你对创业是否感兴趣? [单选题]

- a. Very interested in 非常感兴趣
- b. Have a little interest 有一点兴趣
- c. No interest 没有兴趣

2. [single choice] Does the school's existing "Fundamentals of Entrepreneurship" course meet your needs for entrepreneurship?

学校目前的《创业基础》课程是否能够满足你对于创业课程的需求? [单选题] *

- a. Meet it, and I can start a business 满足, 可以进行创业
- b. I learned some, but I couldn't start a business 学习了一些, 但无法进行创业
- c. Unable to master the course content 无法掌握课程内容

3. [multiple choice] What's the biggest obstacle to starting a business for you?

阻碍你创业的最大障碍是什么? [多选题] *

- a. Don't understand the startup process 不了解创业流程
- b. Can't find a suitable entrepreneurial project 找不到合适创业项目
- c. Lack of venture capital 缺少创业资金
- d. There are no entrepreneurial partners 没有创业伙伴
- e. Do not know how to prevent and control entrepreneurial risks 不知道如何防控创业风险
- f. Other (please fill in)其他 (请填写)

4. [single choice] How is your need for extracurricular courses in entrepreneurship?

您对创业课外课程的需求程度是多大? [单选题] *

- a. In great request 非常需要
- b. Willing to try 愿意试试
- c. No need 不需要

5. [single choice] What do you want the duration of the entrepreneurship extracurricular course?

您希望创业课外课程的时长安排是怎样? [单选题] *

- a. Within 1 hour of each class 每次课 1 个小时内
- b. Each class lasts for 1-2 hours 每次课 1-2 小时
- c. Each class lasts for 2-3 hours 每次课 2-3 小时
- d. Each class lasts for 3-4 hours 每次课 3-4 小时

6. [single choice] How often do you want to take entrepreneurship extracurricular course?

您希望创业课外课程的上课频率是? [单选题] *

- a. Once a week for 2 -3months 每周一次, 持续 2-3 个月
- b. Twice a week for 1 month 每周两次, 持续 1 个月
- c. Three times a week, within 1 month 每周三次, 1 个月以内
- d. Other (please fill in)其他 (请填写)

7. [single choice] How many people do you think are suitable for a class of entrepreneurship extracurricular course ?

你认为创业课程一个班级多少人比较合适? [单选题] *

- a. 30 People 30 人
- b. 40 People 40 人
- c. 50 People 50 人
- d. 60 People 60 人

8. [multiple choice] What do you want to learn from entrepreneurship extracurricular courses?

您希望创业课外课程的教学内容包括哪些? [多选题] *

- a. Choice of entrepreneurial projects 创业项目选择
- b. Business model design 商业模式设计
- c. Market research and analysis 市场调研与分析
- d. Financing and investment 融资与投资
- e. Entrepreneurship case sharing 创业案例分享
- f. Entrepreneurship team building 创业团队建设
- g. Entrepreneurship opportunity to find 创业机会寻找
- h. Risk prevention and control 创业风险防控
- i. Others (please fill in)其他 (请填写)

พหุ ประถมศึกษา

9. [multiple choice] What is the form of your preferred extracurricular course for entrepreneurship?

您希望创业课外课程的形式是? [多选题] *

- a. Classroom explanation 课堂讲解
- b. Field visit 实地参观
- c. Panel discussion 小组讨论
- d. Case analysis 案例分析
- e. Guest speech 嘉宾演讲
- f. Sand play 沙盘游戏
- g. Other (please fill in)其他 (请填写)

10. [single choice] How do you want the entrepreneurship extracurricular training course to be taught?

您希望创业课外培训课程的授课方式是? [单选题] *

- a. Offline teaching 线下授课
- b. Live online 线上直播
- c. Online recording 线上录播
- d. No limit 不限制

11. [single choice] Where would you like the entrepreneurship extracurricular course to be held?

您希望创业课外课程的上课地点是哪里? [单选题] *

- a. Mainly on campus 主要在校内
- b. Mainly outside school 主要在校外
- c. no limit 不限制

12. [multiple choice] Do you want the teacher of the entrepreneurship extracurricular course?

您希望创业课外课程的授课老师是? [多选题] *

- a. Entrepreneurship mentor 创业导师
- b. Business man 企业家
- c. Industry expert 行业专家
- d. College professor 学院教授
- e. Other (please fill in)其他 (请填写)

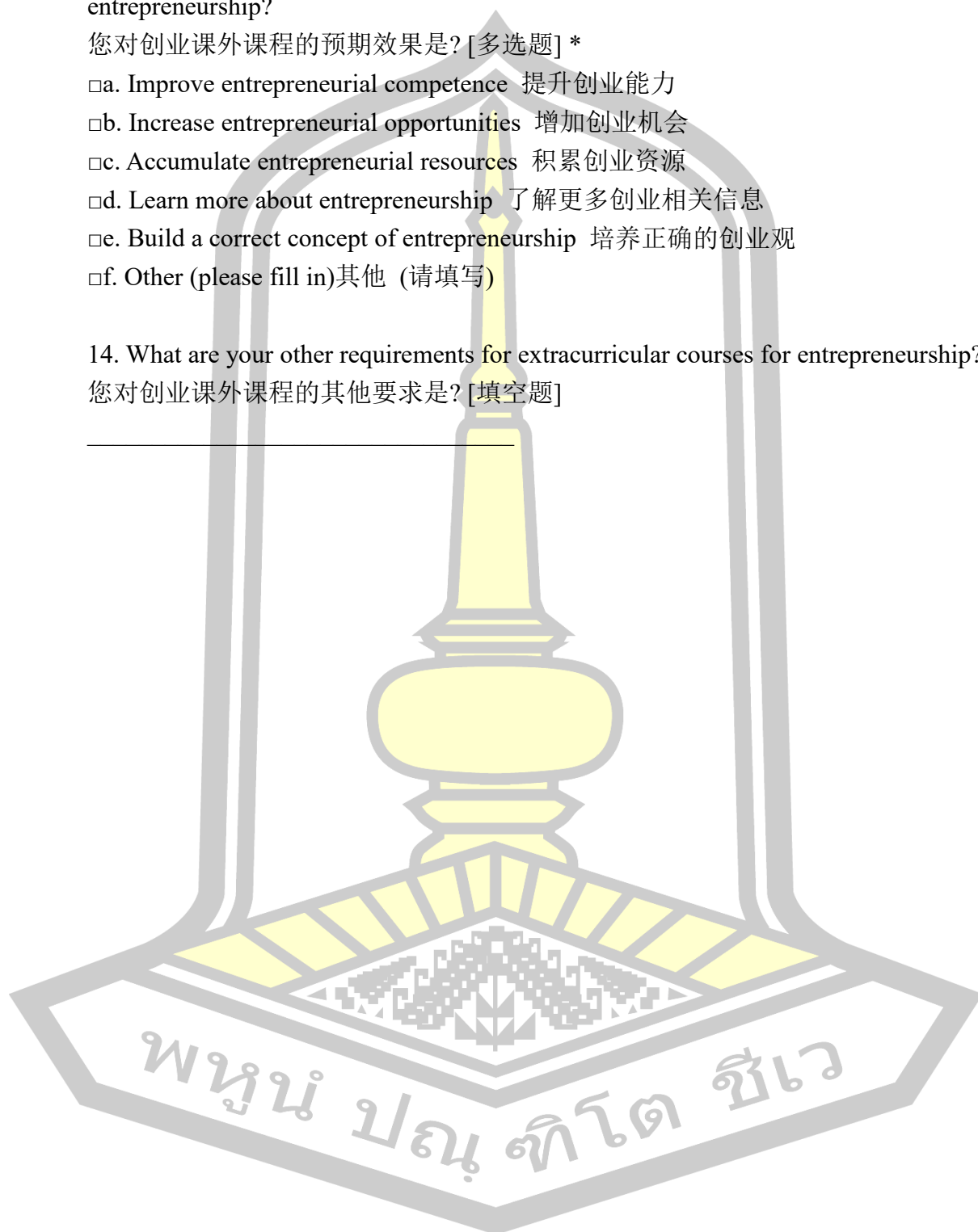
13. [multiple choice] What is the expected effect of your extracurricular courses on entrepreneurship?

您对创业课外课程的预期效果是? [多选题] *

- a. Improve entrepreneurial competence 提升创业能力
- b. Increase entrepreneurial opportunities 增加创业机会
- c. Accumulate entrepreneurial resources 积累创业资源
- d. Learn more about entrepreneurship 了解更多创业相关信息
- e. Build a correct concept of entrepreneurship 培养正确的创业观
- f. Other (please fill in)其他 (请填写)

14. What are your other requirements for extracurricular courses for entrepreneurship?

您对创业课外课程的其他要求是? [填空题]



Appendix C: Interview Outline

Interview Outline on Demand for Entrepreneurship Extracurricular Courses

关于“创业课外课程的需求”的访谈提纲

Hello, I am a doctoral student majoring in Curriculum and Instruction of Faculty of Education, Mahasarakhan University. I am researching about the development of extracurricular courses of entrepreneurship education in vocational college. I would like to make an interview with you to understand your views on developing an extracurricular course on entrepreneurship education for vocational college student. Thank you for your cooperation.

你好，我是马哈沙拉堪大学教育学院课程与教学专业的博士生，正在研究职业院校创业教育课外课程的开发，想对你做一个访问来了解你对创业教育课外课程开发的看法。谢谢您的配合。

Interview Purpose 访谈目的

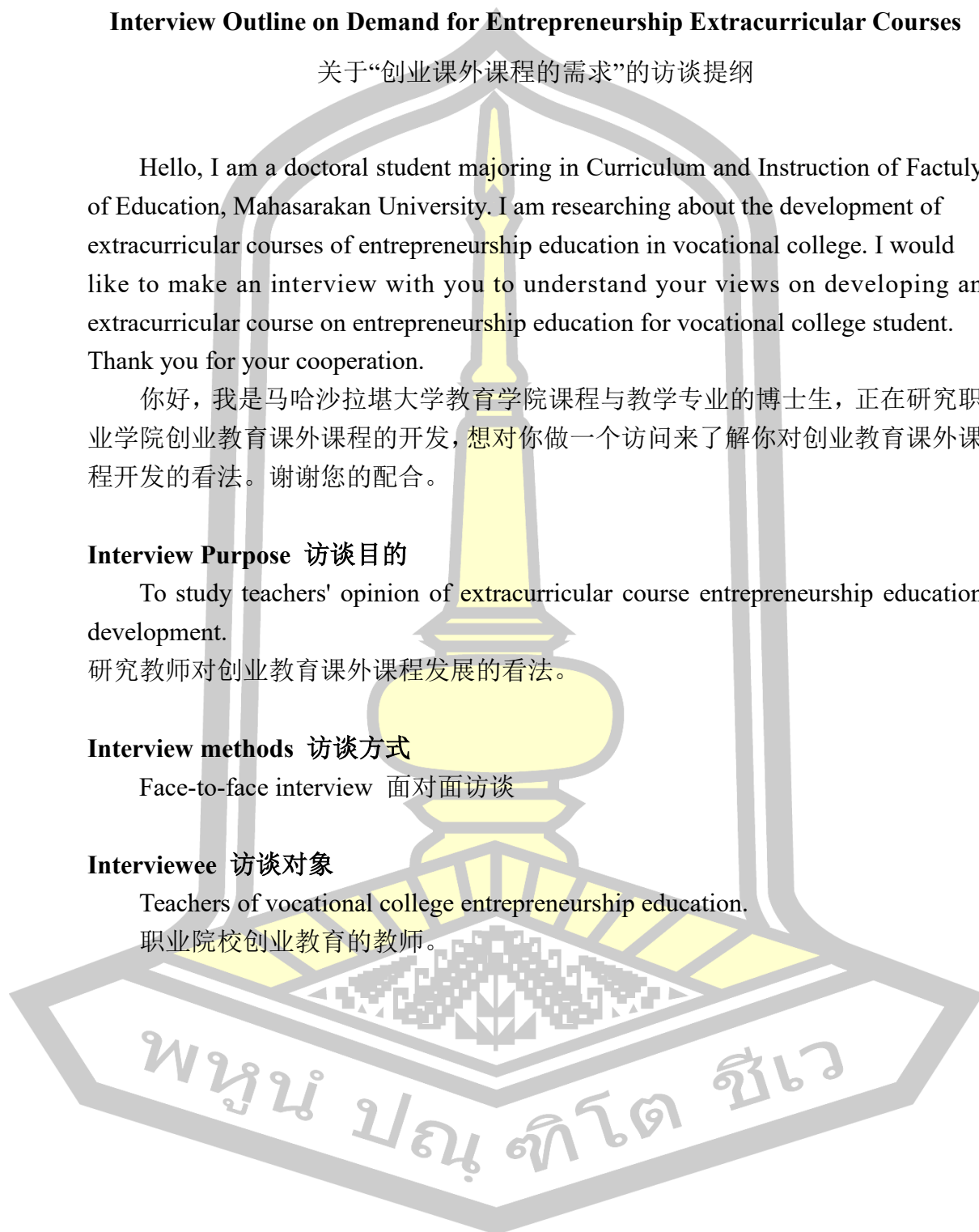
To study teachers' opinion of extracurricular course entrepreneurship education development.
研究教师对创业教育课外课程发展的看法。

Interview methods 访谈方式

Face-to-face interview 面对面访谈

Interviewee 访谈对象

Teachers of vocational college entrepreneurship education.
职业院校创业教育的教师。



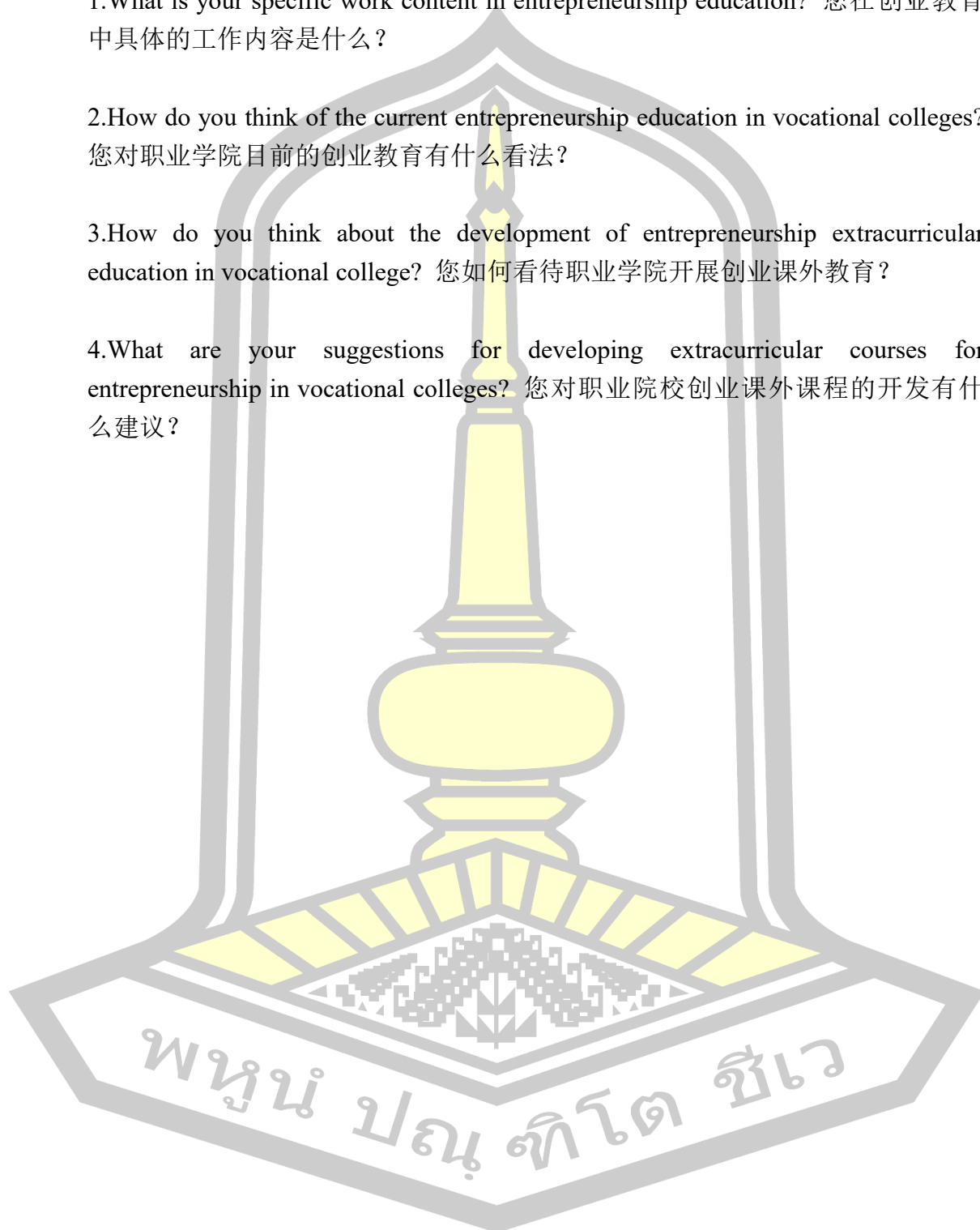
Interview outline 访谈提纲

1.What is your specific work content in entrepreneurship education? 您在创业教育中具体的工作内容是什么？

2.How do you think of the current entrepreneurship education in vocational colleges? 您对职业学院目前的创业教育有什么看法？

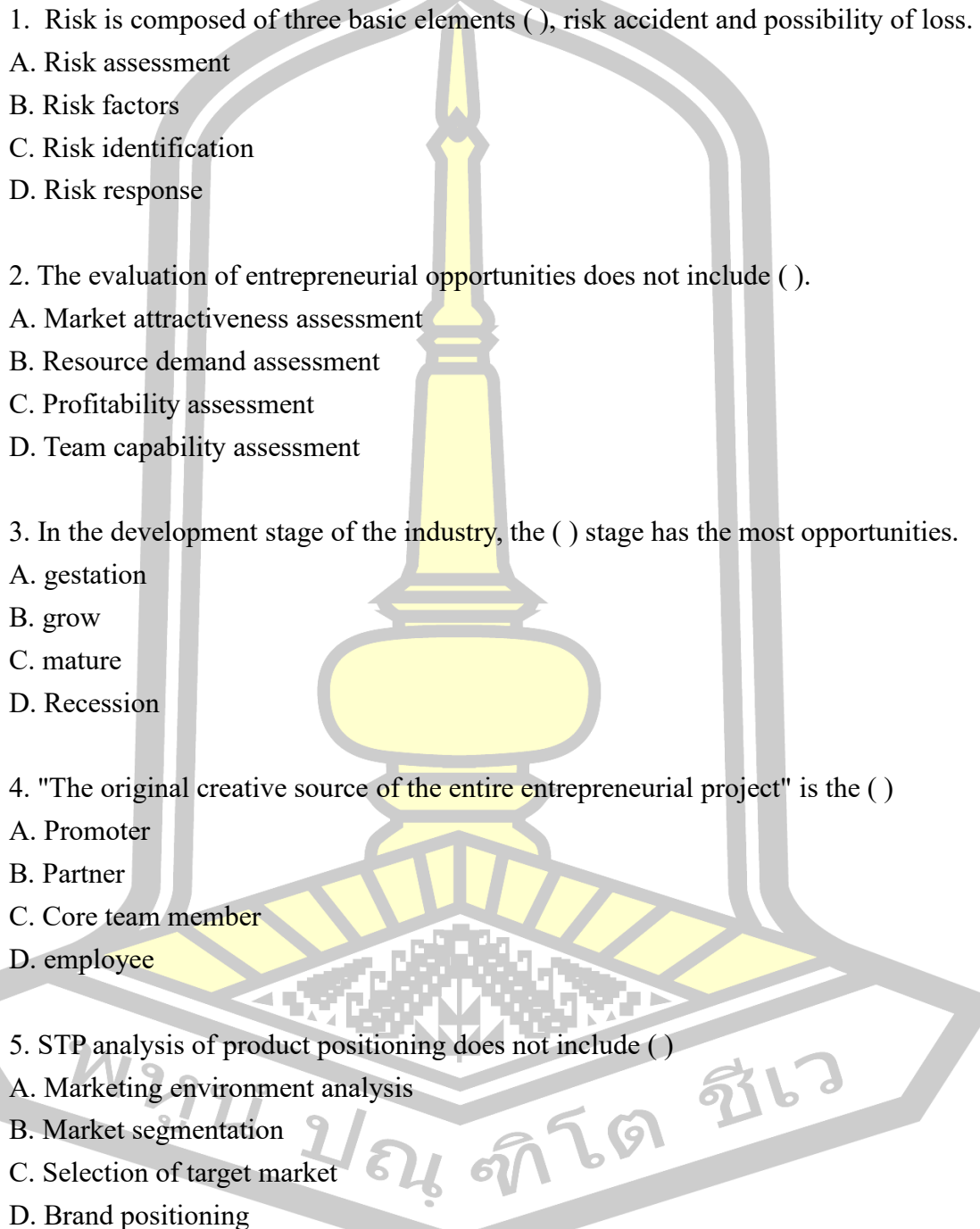
3.How do you think about the development of entrepreneurship extracurricular education in vocational college? 您如何看待职业学院开展创业课外教育？

4.What are your suggestions for developing extracurricular courses for entrepreneurship in vocational colleges? 您对职业院校创业课外课程的开发有什么建议？



Appendix D: Knowledge Test

Single Choice Questions (20 points in total)

1. Risk is composed of three basic elements (), risk accident and possibility of loss.
 - A. Risk assessment
 - B. Risk factors
 - C. Risk identification
 - D. Risk response
 2. The evaluation of entrepreneurial opportunities does not include ().
 - A. Market attractiveness assessment
 - B. Resource demand assessment
 - C. Profitability assessment
 - D. Team capability assessment
 3. In the development stage of the industry, the () stage has the most opportunities.
 - A. gestation
 - B. grow
 - C. mature
 - D. Recession
 4. "The original creative source of the entire entrepreneurial project" is the ()
 - A. Promoter
 - B. Partner
 - C. Core team member
 - D. employee
 5. STP analysis of product positioning does not include ()
 - A. Marketing environment analysis
 - B. Market segmentation
 - C. Selection of target market
 - D. Brand positioning
- 

6. In the business model, what really plays a key role in revenue expansion from a practical point of view is ()

- A. Number of customers
- B. Expansion rate of the number of customers
- C. Average customer contribution
- D. Total customer contribution

7. Market segmentation is the classification of ().

- A. Product
- B. Industry
- C. Consumer
- D. Service

8. The following are not fixed costs ()

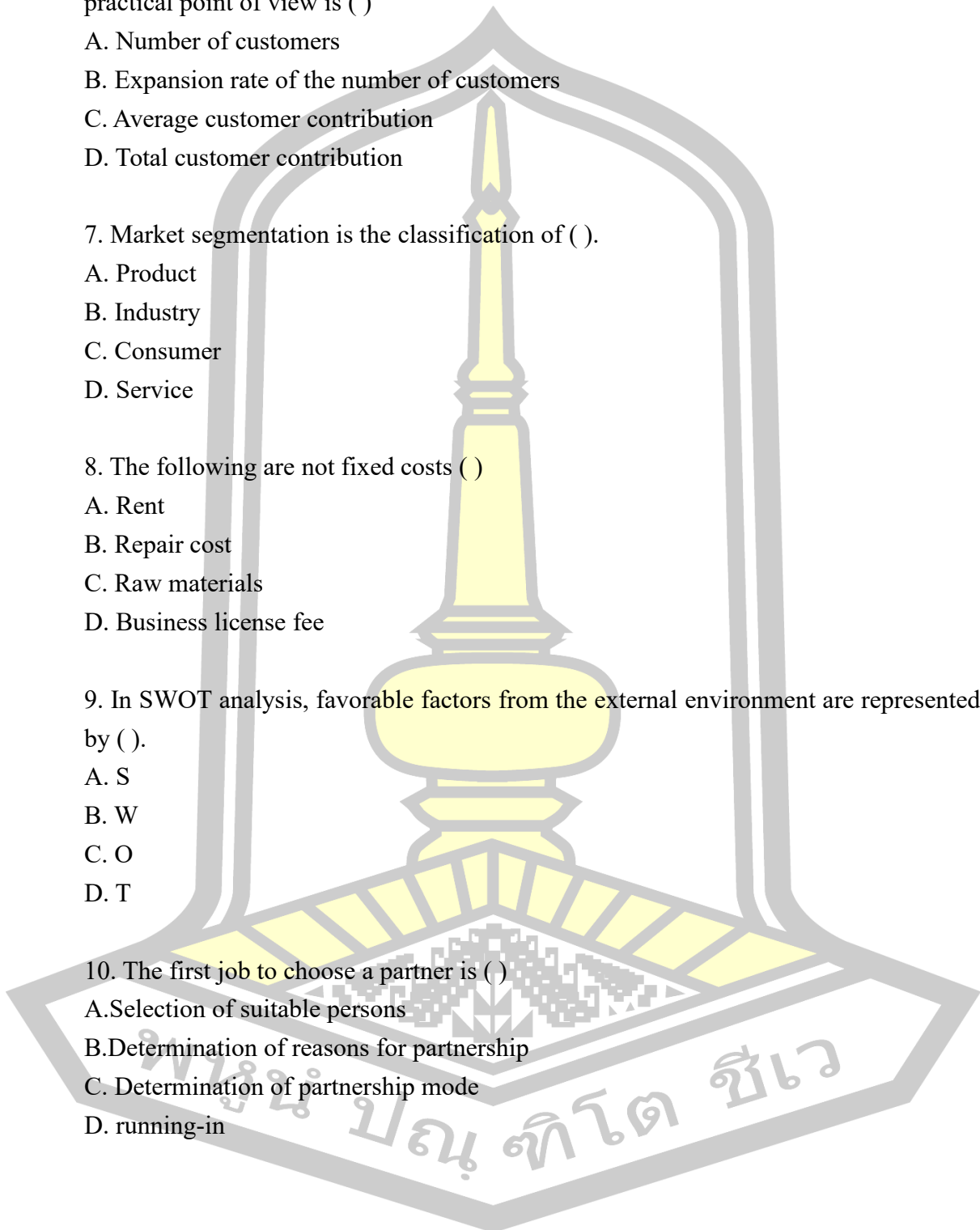
- A. Rent
- B. Repair cost
- C. Raw materials
- D. Business license fee

9. In SWOT analysis, favorable factors from the external environment are represented by ().

- A. S
- B. W
- C. O
- D. T

10. The first job to choose a partner is ()

- A. Selection of suitable persons
- B. Determination of reasons for partnership
- C. Determination of partnership mode
- D. running-in



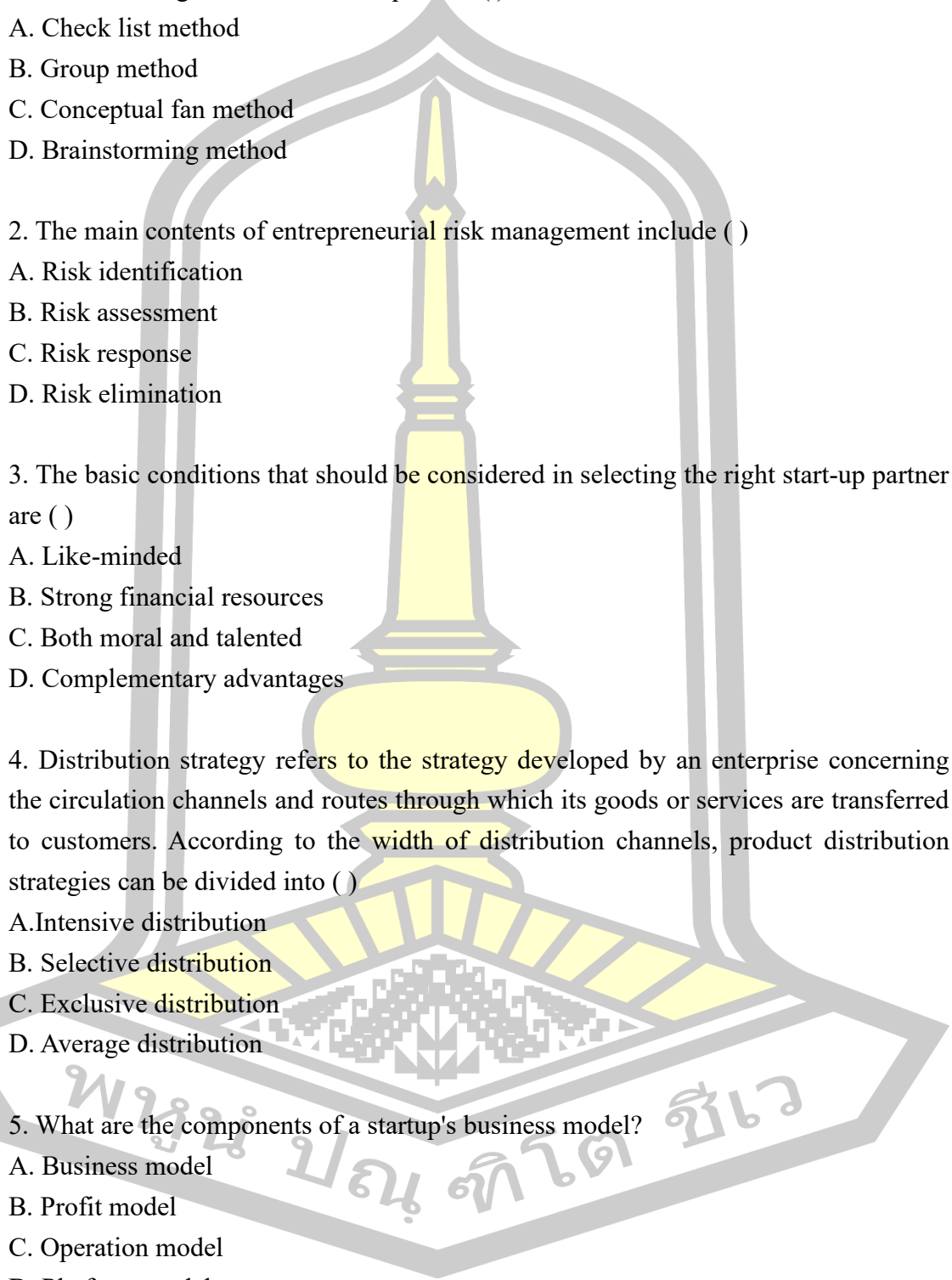
Multiple choice questions (total 30 points)

1. The following innovative techniques are ()
 - A. Check list method
 - B. Group method
 - C. Conceptual fan method
 - D. Brainstorming method

 2. The main contents of entrepreneurial risk management include ()
 - A. Risk identification
 - B. Risk assessment
 - C. Risk response
 - D. Risk elimination

 3. The basic conditions that should be considered in selecting the right start-up partner are ()
 - A. Like-minded
 - B. Strong financial resources
 - C. Both moral and talented
 - D. Complementary advantages

 4. Distribution strategy refers to the strategy developed by an enterprise concerning the circulation channels and routes through which its goods or services are transferred to customers. According to the width of distribution channels, product distribution strategies can be divided into ()
 - A. Intensive distribution
 - B. Selective distribution
 - C. Exclusive distribution
 - D. Average distribution

 5. What are the components of a startup's business model?
 - A. Business model
 - B. Profit model
 - C. Operation model
 - D. Platform model
- 

6. Classic 4P marketing strategies include ()

- A. Product
- B. Price
- C. Channel
- D. Sales promotion

7. Generally speaking, a startup team needs at least () three talents.

- A. Management
- B. Marketing
- C. Technology
- D. Logistics

8. The following are examples of innovative thinking ()

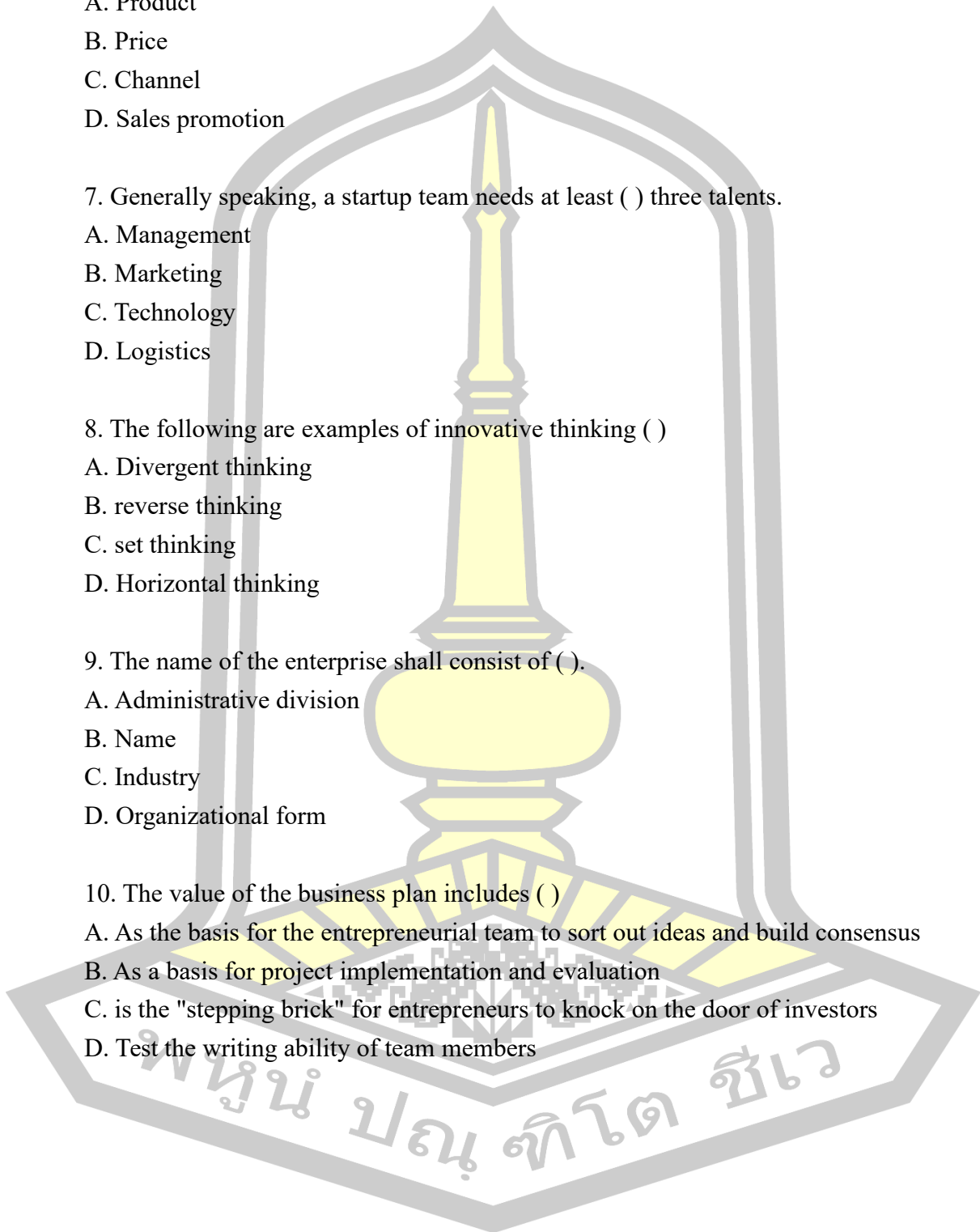
- A. Divergent thinking
- B. reverse thinking
- C. set thinking
- D. Horizontal thinking

9. The name of the enterprise shall consist of ().

- A. Administrative division
- B. Name
- C. Industry
- D. Organizational form

10. The value of the business plan includes ()

- A. As the basis for the entrepreneurial team to sort out ideas and build consensus
- B. As a basis for project implementation and evaluation
- C. is the "stepping brick" for entrepreneurs to knock on the door of investors
- D. Test the writing ability of team members



True or false questions (total 10 points)

1. Brand is a collective concept, which mainly includes brand name, brand identity, trademark and brand role. ()
2. In a partnership, each partner is obligated to pay all partnership debts. ()
3. In order to reduce the operating costs during the start-up period and maximize the sharing of entrepreneurial achievements, enterprises should minimize the core team personnel on the premise of ensuring efficient operation of enterprises. ()
4. Entrepreneurial risk can not be completely avoided, entrepreneurship always has risks. ()
5. The formation modes of entrepreneurial teams are mainly core-oriented and group-oriented. ()
6. Entrepreneurial team refers to the middle stage of entrepreneurship, consisting of a small number of entrepreneurs who complement each other's talents, share responsibilities, and are willing to strive for common entrepreneurial goals. ()
7. Exclusive distribution is when a manufacturer promotes its product in a given territory through only a few carefully selected and most suitable middlemen. ()
8. The purchase of insurance is a more widely used and effective means of transferring risks. ()
9. In the entrepreneurial team, profit should be distributed on a per capita basis to achieve equity. ()
10. Successful entrepreneurs generally choose self-image as "having initiative, flexibility, tenacity, moderate risk-taking, independence, self-control, self-confidence" and so on. ()

Short answer (total 40 points)

1. What are the sources of entrepreneurial opportunities? Please list at least five.
2. Please enumerate five common forms of business organization in our country.
3. Please briefly describe the ways to obtain technical resources.
4. What is the definition and four types of innovation?

Appendix E: Skill Test Criteria

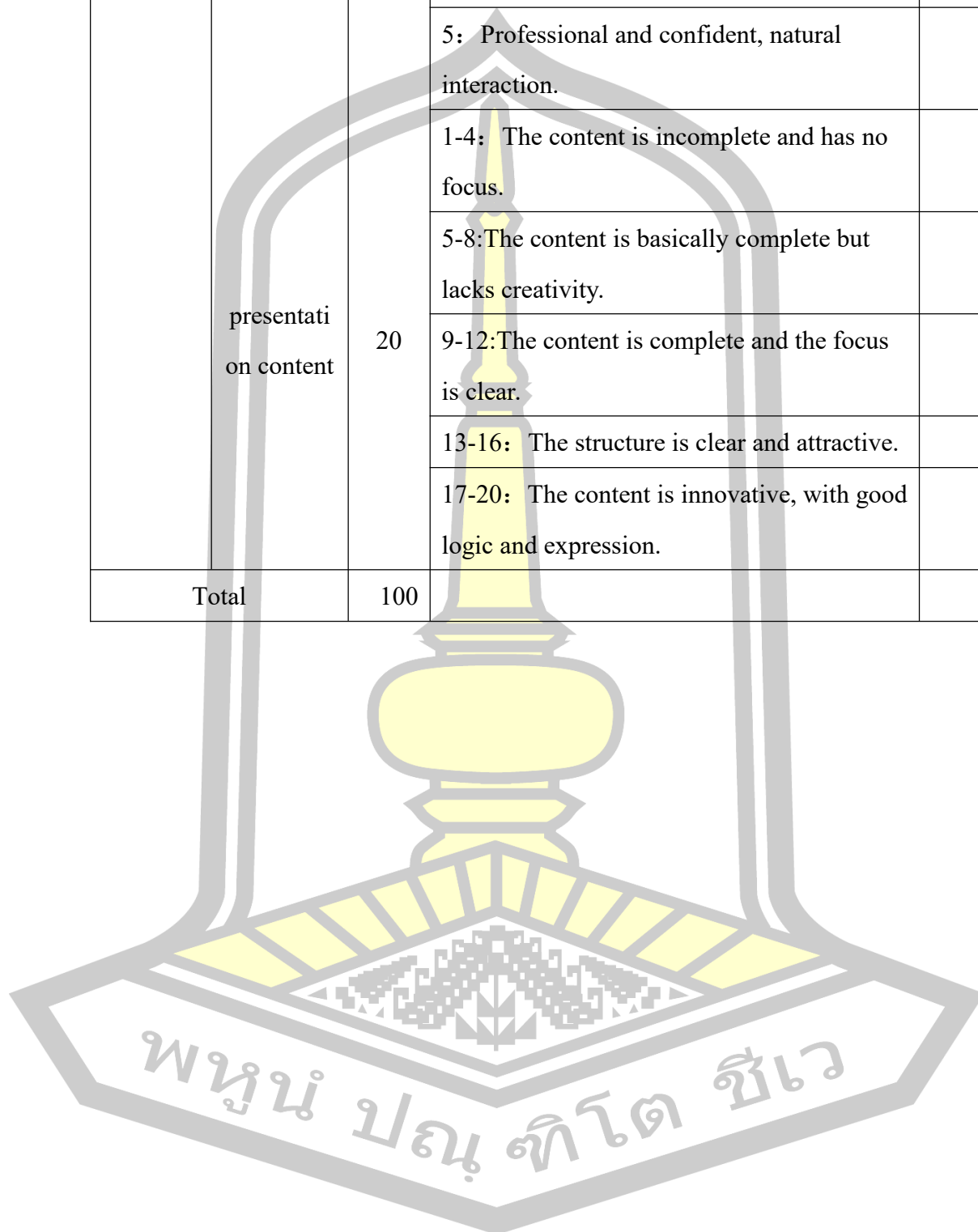
Skill Test Criteria

Evaluation Criteria for Entrepreneurial Projects				
Category	Scoring item	Score	Specific Standard	Your score
Business plan	Project feasibility analysis	10	1-2: The market positioning is unclear and the feasibility is low.	
			3-4: The market positioning is vague and the feasibility is average.	
			5-6: The market positioning is clear and the feasibility is good.	
			7-8: The market potential and positioning are clear and the feasibility is high.	
			9-10: The market potential and positioning are accurately described and the feasibility is very strong.	
	Innovation	10	1-2: No user demand, no innovation.	
			3-4: Unclear demand, weak innovation.	
			5-6: Clear demand, some innovation.	
			7-8: Strong demand, outstanding innovation.	
			9-10: Innovation is highly matched with market demand and has subversive nature.	

			1-2: No market research and analysis.	
			3-4: Rough research, one-sided analysis.	
			5-6: Basic research, reasonable analysis.	
			7-8: In-depth research, clear competitive strategy.	
	Competitive Analysis	10	9-10: Comprehensive analysis of market trends and competitive landscape, leading strategy.	
			1-2: No marketing strategy.	
			3-4: The strategy is vague and lacks details.	
	Marketing strategy	10	5-6: Basic strategy, partially feasible.	
			7-8: The strategy is complete and the channels are reasonable.	
			9-10: Precise positioning + pricing + promotion combination, efficient strategy.	
			1-2: No financial analysis.	
	Financial analysis	10	3-4: Incomplete data, confusing logic.	
			5-6: Basic data, vague profit forecast.	
			7-8: Clear data, feasible profit model.	
			9-10: Strict financial model, high profit potential.	
	Team	10	1-2: No team division of labor.	

Road Show	management		3-4: Fuzzy division of labor, loose structure.	
			5-6: Basic division of labor, clear roles.	
			7-8: Reasonable division of labor, strong cohesion.	
			9-10: Complementary teams, efficient organizational structure.	
			1: No planning and risk analysis.	
			2: Rough planning, insufficient risk identification.	
	Project planning and risk analysis	5	3: Basic planning, partial risk coverage.	
			4: Complete planning, feasible risk countermeasures.	
			5: Clear long-term planning, comprehensive risk prevention and control.	
			1-2: Unprepared, chaotic expression.	
Language expression		10	3-4: No script but nervous and stuck.	
			5-6: Fluent expression, basically clear logic.	
			7-8: Vivid language, rigorous logic.	
Etiquette and behavior			9-10: Confident and fluent, strong appeal.	
			1: Inappropriate clothing and impolite behavior.	
		5	2: Appropriate clothing but reserved	
			3: Natural and generous, lack of interaction.	
			4: Appropriate posture and moderate body	

		language	
		5: Professional and confident, natural interaction.	
		1-4: The content is incomplete and has no focus.	
		5-8: The content is basically complete but lacks creativity.	
	20	9-12: The content is complete and the focus is clear.	
		13-16: The structure is clear and attractive.	
		17-20: The content is innovative, with good logic and expression.	
Total	100		



Appendix F: Consistent assessment of Course

Consistent assessment of Course

Experts are invited to express their views on the attached questionnaire. Please enter (√) in your comment column and write down your comment, providing some useful suggestions for me to further consider and improve.

week	Teaching plan	Consistency				
		5	4	3	2	1
1	<p>Content: Identification of entrepreneurial opportunities(3 class hours)</p> <p>Activity: Looking for entrepreneurial opportunities</p> <p>Objectives :</p> <ol style="list-style-type: none"> 1.Knowledge: Understand the main sources of entrepreneurial opportunities 2.Skills: Look for at least three entrepreneurial opportunities 3.Attitude: Establish a correct outlook on entrepreneurship <p>Evaluation: Through the case analysis report, practical task results and reflection log, students' understanding of the depth of the source of entrepreneurial opportunities, opportunity identification ability and the initial formation of entrepreneurial values are comprehensively evaluated.</p>					

2	<p>Content: The choice of entrepreneurial projects(3 class hours)</p> <p>Activity:Screen a suitable startup project</p> <p>Objectives :</p> <ol style="list-style-type: none"> 1.Knowledge: Understanding the criteria for selecting a startup project 2.Skills: Ability to choose a startup project 3.Attitude:Establish a correct concept of entrepreneurship and law-abiding consciousness <p>Evaluation: Through the project screening scheme report, group decision simulation and compliance case analysis, we systematically evaluate students' depth of understanding of entrepreneurial project selection criteria, their ability to judge practical feasibility, as well as the internalization of legal compliance awareness and values.</p>				
3	<p>Content: Establishment of entrepreneurial team(3 class hours)</p> <p>Activity:Build a startup team</p> <p>Objectives :</p> <ol style="list-style-type: none"> 1. Knowledge: Understand the methods of team building 				

	<p>2. Skills: Ability to build a team</p> <p>3. Attitude: Cultivate a good sense of teamwork</p> <p>Evaluation: Through team role division simulation, collaboration and conflict resolution task and responsibility awareness reflection report, students' theoretical cognition level of team building methods, practical cooperation ability, and the practice degree of collective responsibility and win-win values are systematically evaluated.</p>					
	<p>Content: Integration of entrepreneurial resources(3 class hours)</p> <p>Activity: Write the startup fund raising plan</p> <p>Objectives :</p> <p>1.Knowledge: Understand the channels for raising venture capital</p> <p>2. Skills: start-up capital raising scheme</p> <p>3. Attitude: Cultivate the right attitude towards money</p> <p>Evaluation: By evaluating whether students can effectively integrate the knowledge of venture capital channels, develop feasible fund raising plans, and</p>					

	<p>show a responsible financial decision attitude, to comprehensively measure the development level of their entrepreneurial resource integration ability.</p>					
<p>5</p>	<p>Content: Promotion of entrepreneurial projects(3 class hours)</p> <p>Activity: Write the promotion plan of the entrepreneurial project</p> <p>Objectives :</p> <ol style="list-style-type: none"> 1.Knowledge: Understand marketing theory 2.Skills: Writing promotion plans 3.Attitude: Establish a correct market view <p>Evaluation: By examining the depth of students’ understanding of marketing theory, the strategic integrity of the promotion plan and the practical fit of market values, the formation quality of their comprehensive entrepreneurial project promotion ability is</p>					

	systematically evaluated.					
6	<p>Content:The foundation of start-up companies(3 class hours)</p> <p>Activity:Watch startup movies</p> <p>Objectives :</p> <p>1.Knowledge: Understand the company registration process</p> <p>2.Skills:Choose a suitable form of legal organization</p> <p>3.Attitude: Establish a strong sense of law</p> <p>Evaluation: By analyzing the accuracy of students' cognition of the company registration process, the rationality of the choice of legal organization form, and the critical thinking of legal awareness in film and television cases, the effect of internalization of their entrepreneurial legal accomplishment is systematically evaluated</p>					
7	<p>Content: Prevention and control of entrepreneurial risks(3 class hours)</p> <p>Activity:Conduct risk assessment</p> <p>Objectives :</p> <p>1.Knowledge: Understand the common risks of starting a business</p> <p>2.Skills: Capable of initial risk prevention and control</p>					

	<p>3. Attitude: Establish appropriate risk awareness</p> <p>Evaluation: By examining the accuracy of students' identification of entrepreneurial risks, the feasibility of prevention and control scheme design and the awareness of risk response decisions, the formation validity of their entrepreneurial risk management ability is systematically evaluated.</p>				
<p>8</p>	<p>Content: Report on the entrepreneurial project(3 class hours)</p> <p>Activity:Each team conduct the project roadshow separately</p> <p>Objectives :</p> <ol style="list-style-type: none"> 1.Knowledge: Understand the requirements of project roadshow 2. Skills: Able to conduct project roadshows 3. Attitude: Attach importance to roadshow <p>Evaluation: By examining the effective demonstration skills demonstrated in the project roadshow, students can systematically evaluate their ability to master the roadshow.</p>				

Suggestions:



Appendix G: Survey scale on entrepreneurial attitude of vocational college students

Survey scale on entrepreneurial attitude of vocational college students

Score description:

- 1 points: Totally disagree
- 2 points: Disagree
- 3 points: neutral
- 4 points: Agree
- 5 points: Totally agree

Scoring range: Each dimension is scored from 1 to 5, and the total score is used to evaluate the student's performance in each dimension.

Dimension		Score				
		1	2	3	4	5
Entrepreneurship consciousness	I believe that entrepreneurship is an important way to realize self-worth and social value.					
	I think the key to entrepreneurial success lies in continuous effort and innovation.					

	<p>I think entrepreneurship is not only for economic benefits, but also for a sense of social responsibility.</p>				
<p>Entrepreneurial spirit and law-abiding awareness</p>	<p>I believe entrepreneurs should always abide by laws and regulations.</p>				
	<p>I will always maintain integrity during the entrepreneurial process.</p>				
	<p>During the entrepreneurial process, I will always maintain a positive attitude and persevere.</p>				
<p>Teamwork awareness</p>	<p>In the process of starting a business, I believe that teamwork is more important than individual ability.</p>				

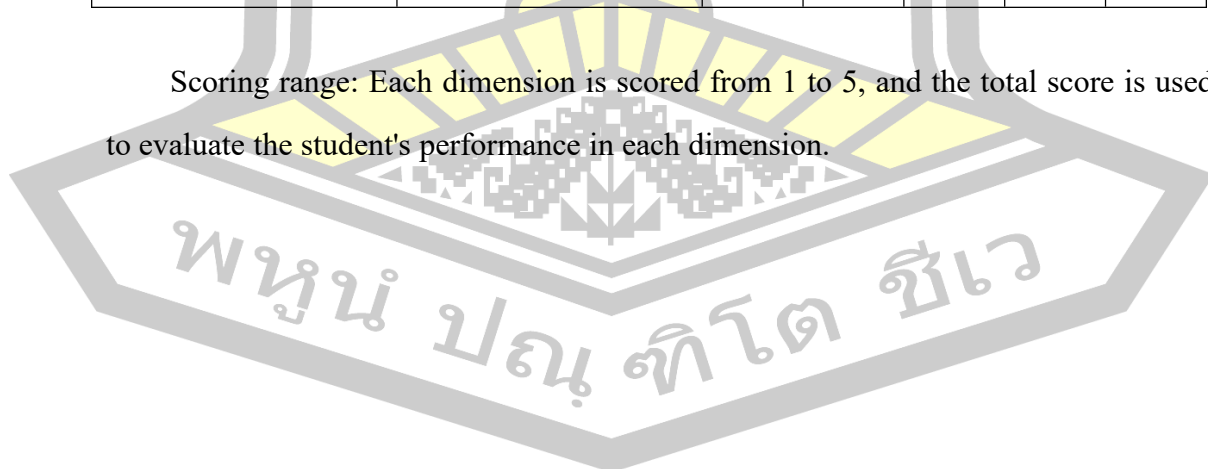
	I am willing to share resources and information with team members to achieve common goals.				
	I believe that communication and coordination between team members are the key to successful entrepreneurship.				
Financial awareness	I think financial management and capital control are crucial in the early stages of entrepreneurship.				
	I will use a detailed financial budget to ensure the normal flow of funds for the entrepreneurial project.				
	I realize that good financial planning can				

	<p>increase the probability of entrepreneurial success.</p>				
Market awareness	<p>Entrepreneurship requires keen market insight to seize market opportunities.</p>				
	<p>I think it is essential to conduct market research before starting a business.</p>				
	<p>Changes in market demand require constant adjustment of product or service positioning.</p>				
Legal awareness	<p>I think it is very important for entrepreneurs to understand and comply with business laws.</p>				
	<p>I realize the importance of</p>				

	intellectual property protection in entrepreneurship.					
	During the process of entrepreneurship, I will try my best to avoid any legal risks.					
Risk Awareness	I believe that entrepreneurship is inherently risky and these risks should be actively assessed and managed.					
	During the entrepreneurial process, I am willing to accept failure and learn from it.					
	I will develop strategies for possible risks to reduce the risk of entrepreneurial failure.					
Roadshow emphasis	I think roadshows are an important					

<p>opportunity to present entrepreneurial projects to investors.</p>					
<p>I will prepare the content of the speech in advance and practice it repeatedly to ensure the success of the roadshow.</p>					
<p>During the roadshow, I focus on clearly demonstrating the core competitiveness and market potential of the project.</p>					

Scoring range: Each dimension is scored from 1 to 5, and the total score is used to evaluate the student's performance in each dimension.



Appendix H: Conformity Assessment of Entrepreneurial Knowledge Test

Conformity Assessment of Entrepreneurial Knowledge Test

Please provide your feedback on the attached questionnaire.

Kindly mark (✓) in the comment section and write your suggestions to offer some useful advice for my further consideration and improvement.

Dimension	Item	Score					remarks
		1	2	3	4	5	
Single Choice Questions	Question Difficulty						
	Option clarity						
	Reasonableness of answer						
	Relevance of topic						
Multiple Choice questions	Question Difficulty						
	Option clarity						
	Reasonableness of answer						
	Relevance of topic						
True or False questions	Question Difficulty						
	Option clarity						
	Reasonableness of answer						
	Relevance of topic						
Short Answer Questions	Question Difficulty						
	Option clarity						
	Reasonableness of answer						
	Relevance of topic						

Appendix I: Conformity Assessment of Entrepreneurial Skill Test

Conformity Assessment of Entrepreneurial Skill Test

Please provide your feedback on the attached questionnaire.

Kindly mark (✓) in the comment section and write your suggestions to offer some useful advice for my further consideration and improvement.

Dimension	Item	Score					Remarks
		1	2	3	4	5	
Business Plan	Project Feasibility						
	Innovativeness						
	Market Competition Analysis						
	Marketing Strategy						
	Financial Analysis						
	Team Management						
	Project Planning Analysis and Risk Analysis						
Road Show	Language Performance						
	Etiquette and Behavior						
	Demonstration Contents						

Appendix J: Conformity Assessment of Entrepreneurial Attitude Test

Conformity Assessment of Entrepreneurial Attitude Test

Please provide your feedback on the attached questionnaire.

Kindly mark (✓) in the comment section and write your suggestions to offer some useful advice for my further consideration and improvement.

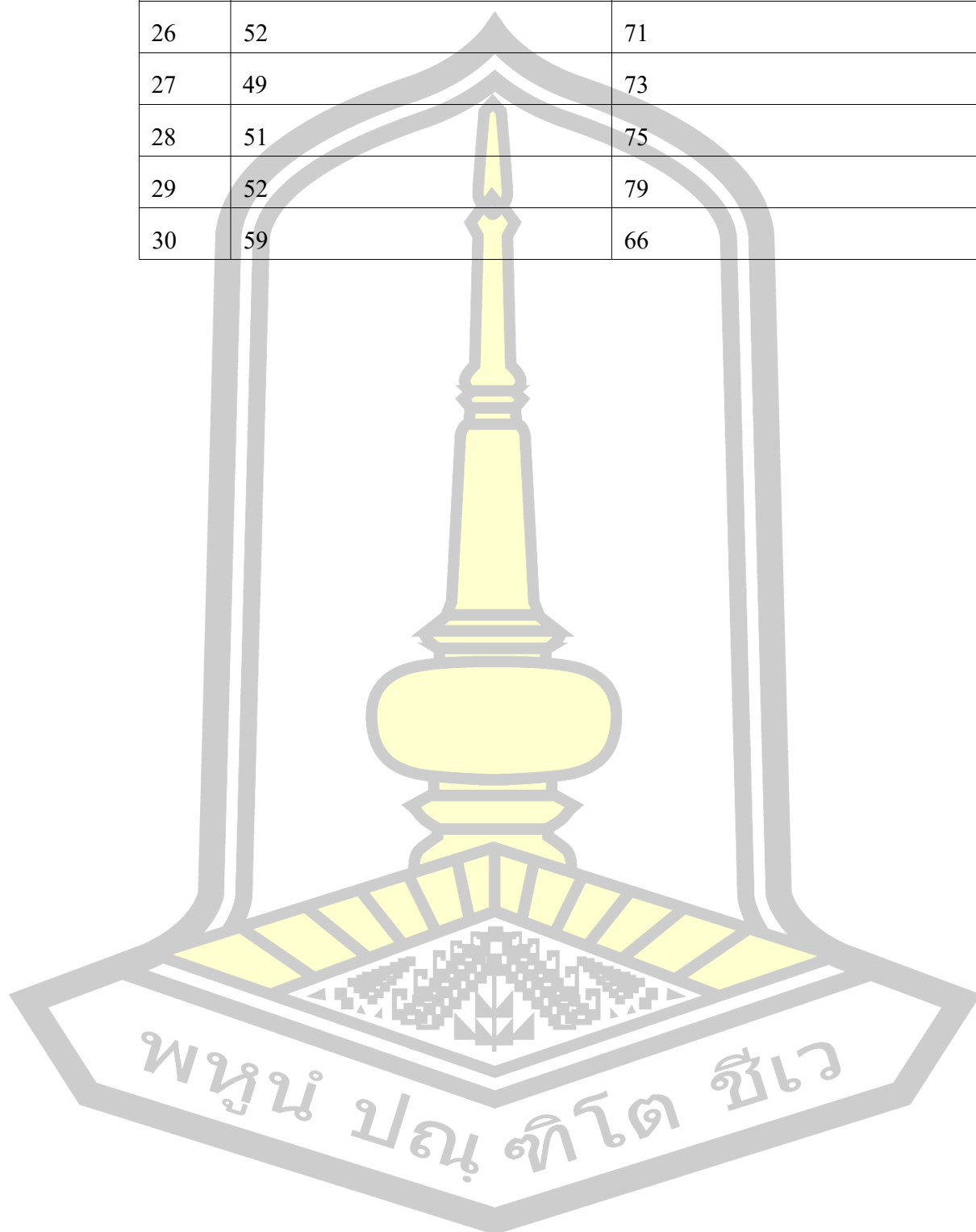
Dimension	Item	Score					Remarks
		1	2	3	4	5	
Financial awareness	Clarity of expression						
	Consistency of scoring criteria						
	Comprehensiveness of test content						
	Feasibility of testing						
Market awareness	Clarity of expression						
	Consistency of scoring criteria						
	Comprehensiveness of test content						
	Feasibility of testing						
Legal awareness	Clarity of expression						
	Consistency of scoring criteria						
	Comprehensiveness of test content						
	Feasibility of testing						
Risk Awareness	Clarity of expression						
	Consistency of scoring criteria						
	Comprehensiveness of test content						
	Feasibility of testing						
Roadshow emphasis	Clarity of expression						
	Consistency of scoring criteria						
	Comprehensiveness of test content						
	Feasibility of testing						

Appendix K: Entrepreneurship Knowledge Test Scores

Entrepreneurship Knowledge Test Scores

No.	Pre- Test	Post- Test
1	57	62
2	52	69
3	52	71
4	49	73
5	53	75
6	50	59
7	51	66
8	52	71
9	59	73
10	61	72
11	62	74
12	52	69
13	52	71
14	49	73
15	53	75
16	50	59
17	51	66
18	52	71
19	59	73
20	61	72
21	62	74
22	59	73
23	61	72
24	62	74

25	52	69
26	52	71
27	49	73
28	51	75
29	52	79
30	59	66



Appendix L : Entrepreneurship Skill Test Scores

Entrepreneurship Skill Test Scores

The test of entrepreneurial skills consists of two parts: business plan and roadshow.

Entrepreneurial Skills Test Score (Business Plan)

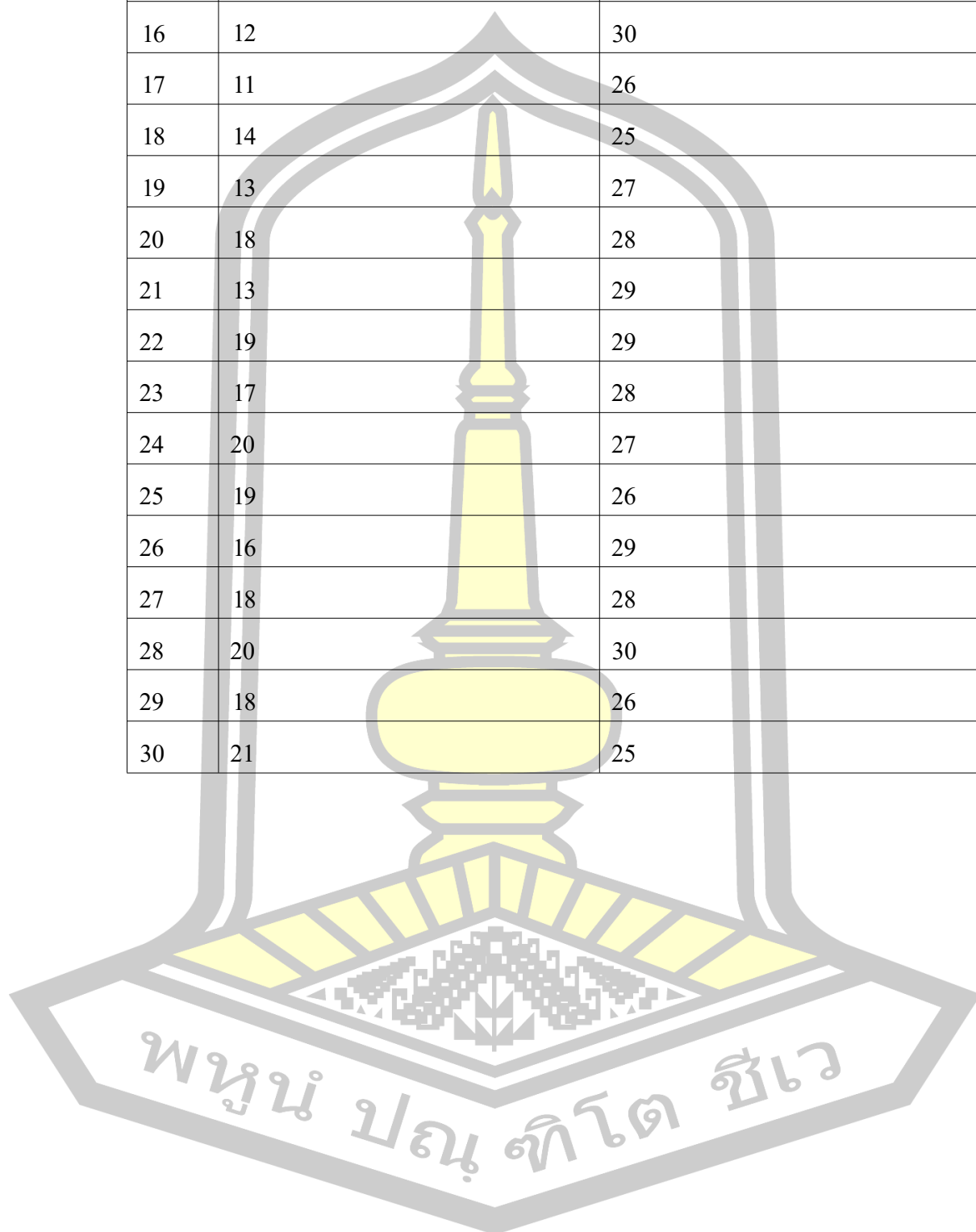
No.	Pre- Test	Post- Test
1	27	41
2	28	44
3	25	45
4	29	42
5	26	40
6	31	41
7	34	44
8	35	45
9	32	52
10	30	50
11	28	48
12	25	45
13	29	49
14	26	46
15	31	51
16	34	49
17	35	42
18	32	40
19	30	48
20	31	55

21	34	49
22	35	56
23	32	31
24	30	34
25	28	35
26	25	32
27	29	30
28	26	31
29	31	34
30	29	35

Entrepreneurial Skills Test Score (Roadshow)

No.	Pre- Test	Post- Test
1	17	27
2	12	26
3	11	29
4	14	28
5	13	30
6	18	26
7	13	25
8	19	27
9	17	28
10	20	29
11	19	28
12	16	27
13	18	26
14	20	29

15	18	28
16	12	30
17	11	26
18	14	25
19	13	27
20	18	28
21	13	29
22	19	29
23	17	28
24	20	27
25	19	26
26	16	29
27	18	28
28	20	30
29	18	26
30	21	25

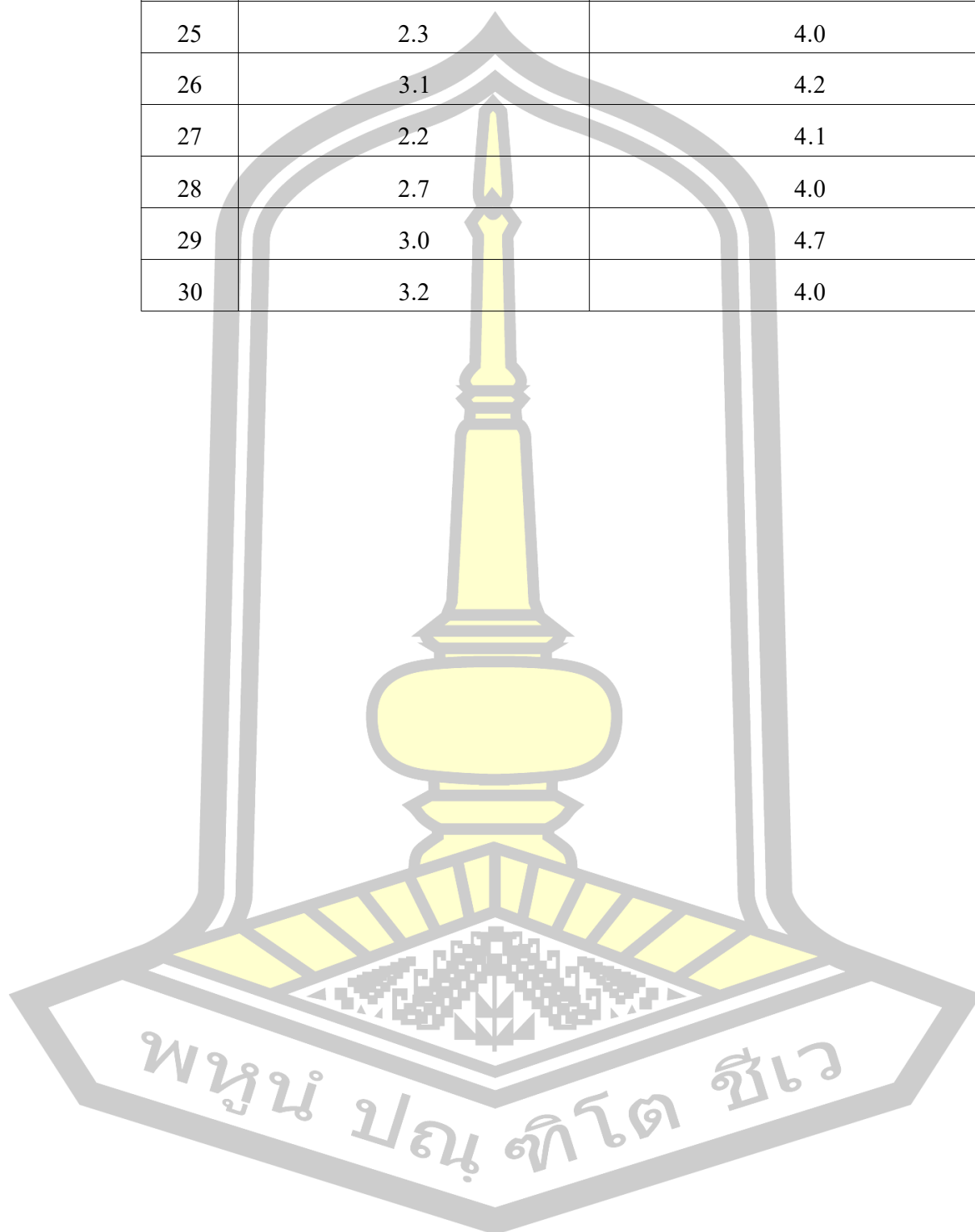


Appendix M: Entrepreneurial Attitude Scale Score

Entrepreneurial attitude scale score

No.	Pre- Test	Post- Test
1	2.1	4.1
2	2.3	4.2
3	3.1	4.7
4	2.2	4.0
5	2.7	4.7
6	3.0	4.0
7	2.7	4.2
8	3.0	4.1
9	3.2	3.9
10	2.1	4.1
11	2.3	4.2
12	3.1	4.7
13	2.2	4.0
14	2.7	4.7
15	3.0	4.0
16	3.2	4.2
17	2.1	4.1
18	2.3	4.7
19	3.1	4.0
20	2.2	4.1
21	2.7	4.2
22	3.0	4.7
23	3.2	4.0

24	2.1	4.7
25	2.3	4.0
26	3.1	4.2
27	2.2	4.1
28	2.7	4.0
29	3.0	4.7
30	3.2	4.0



Appendix N: Lesson Plans for Entrepreneurship Extracurricular Courses

Week 1: Entrepreneurial Opportunity Identification and Analysis (3 classhours)

Teaching Objectives:

1. Knowledge Objective: To help students understand the concept of entrepreneurial opportunities and master the main sources of entrepreneurial opportunities and identification methods.
2. Skill Objective: To train students to identify potential entrepreneurial opportunities through market research, creative thinking and other methods.
3. Attitude Objective: To stimulate students' entrepreneurial consciousness and cultivate them to have a keen sense of market and a pioneering and innovative spirit.

Course Content:

1. The concept of entrepreneurial opportunities: introduce the basic definition, characteristics and importance of entrepreneurial opportunities in the entrepreneurial process.
 2. Sources of entrepreneurial opportunities: analyze common sources of entrepreneurial opportunities, such as changes in market demand, technological innovation, social changes, policy support, etc.
 3. Techniques for identifying entrepreneurial opportunities: explain how to identify potential entrepreneurial opportunities through market research, consumer feedback, industry analysis, etc.
 4. Application of innovative thinking in opportunity identification: encourage students to use innovative thinking methods to develop new business opportunities.
- Instructional design and activities organization:

Part I: Guidance and basic knowledge explanation (1 class hour)

- Activities objective : Provide students with a theoretical foundation for identifying entrepreneurial opportunities and enable them to understand the definition and characteristics of entrepreneurial opportunities.

- Course content:

- Definition of entrepreneurial opportunity:

- ☞ Entrepreneurial opportunities refers to the combination of market demand and resources that can provide higher returns for entrepreneurs.

- ☞ It usually occurs when there is an imbalance between market demand and supply, technological changes, new regulations, or social and cultural changes.

- Characteristics of entrepreneurial opportunities:

- ☞ There is market demand (it can solve practical problems for consumers).

- ☞ Sustainable competitive advantage (with innovative or differentiated competitiveness).

- ☞ Have a clear profit model (through the right business model to achieve profit).

- ☞ Can solve the pain points (to meet the unmet or inefficient met needs of the market).

- Sources of entrepreneurial opportunities:

- ☞ Changes in market demand: analysis consumer behavior, market trends, or social change.

- ☞ Policy support: preferential policies or industry support of the national or local governments.

- ☞ Social change: social, cultural, environmental protection and other changes bring new demands.

- ☞ The shortage of competitors: analyze the shortage of products or services in the existing market to find a breakthrough.

- Teaching method:

- ☞ Through the PPT explanation, supplemented by the actual case analysis (such as the source of entrepreneurial opportunities for successful enterprises).

- ☞ Simple interactive questions to ensure students understand the concepts.

Part II: Case analysis and group discussion (1 class hour)

- Activity objectives: Through specific case analysis, to help students to better understand the practical application of entrepreneurial opportunity identification.

- Content:

- Select 2-3 representative entrepreneurial cases, and analyze in detail how these enterprises identify the market opportunities.
- Student group discussion:
 - 📁 Each group selects an industry (such as Internet, health, education, environmental protection, etc.) to analyze potential entrepreneurial opportunities in the industry.
 - 📁 Discuss the source of entrepreneurial opportunities, market demand, potential competitive advantage, industry pain points and other factors.
- Teaching method:
 - Case analysis: Guide students to think about how they discovered and seized market opportunities by analyzing classic entrepreneurial success cases.
 - Group discussion: After the group discussion, each group shared the results of the discussion and deepened their understanding through the teacher's comments.

Part III: Methods and practices of entrepreneurial opportunity identification (1 class hour)

- Activity objective: Let students identify entrepreneurial opportunities through practical activities.
- Content:
 - Market research: explain how to understand the market demand and pain points, and identify the entrepreneurial opportunities through market research, consumer feedback and other ways.
 - 📁 Research methods: Questionnaire survey, interview, industry analysis report, social media, etc.
 - Innovative thinking tools: Introduce some innovative thinking tools, such as brainstorming method, SWOT analysis, PEST analysis, concept fan-forming method, etc., to help students identify entrepreneurial opportunities from different perspectives.
 - Entrepreneurial opportunity Framework:
 - 📁 User needs: By analyzing the pain points and needs of users, we can find out the unmet market space.
 - 📁 Technical viability: to assess whether the technology can support the realization of new business opportunities.
 - 📁 Business model: to investigate the feasibility and profit space of the business model.

- Teaching method:
 - Brainstorm: Organize students to brainstorm, put forward a specific entrepreneurial idea, and conduct further analysis through innovative thinking methods.
 - Practical operation: According to the following methods learned, students independently conduct market research or simulation research to find out potential entrepreneurial opportunities.
- Activity organization:
 - Group activities: Group discussions to encourage students to use brainstorming and other tools to identify and share entrepreneurial opportunities.
 - Class sharing: Each group of students share their identified entrepreneurial opportunities, give a brief presentation, and teachers and other students comment. Classroom interaction and assessment
- Classroom interaction:
 - In each link, teachers will guide students to participate through asking questions, interactive discussion, case analysis and other ways, to ensure that students can master the theoretical content and apply it to practice.
 - During the group discussion, teachers will ask questions to help students clarify their minds and provide practical advice.
- Classroom evaluation:
 - Group performance: Asson students' participation in group discussions and activities, performance and thinking of entrepreneurial opportunity identification.
 - Class test: Finally, take a simple classroom test to test the students' understanding of the entrepreneurial opportunity identification method.

Teaching Resources

- 1.PPT Handout: including the concept, source, characteristics and other basic theories of entrepreneurial opportunity identification.
- 2.Case video: Video material showing how successful companies identify entrepreneurial opportunities.
- 3 . Market research tools: online questionnaire tool, interview template,150 industry analysis report.

4. Innovative thinking tools: brainstorming method, PEST analysis framework, SWOT analysis tool.

Class summary and homework

- Class summary :
 - Summarize the core concepts and methods of entrepreneurial opportunity identification, and emphasize how to use this knowledge in practice.
 - Remind students to pay attention to market demand, technical feasibility, profit model and other factors when identifying entrepreneurial opportunities.
- Homework:
 - Students are required to choose an industry according to the classroom learning content, combine with their own interests, conduct a market research, identify an entrepreneurial opportunity, and write an entrepreneurial opportunity analysis report (including market demand, target customers, competition analysis, feasibility evaluation, etc.).

Week 2: Selection and evaluation of entrepreneurial projects (3 class hours)

Teaching objectives

1. Knowledge objective: Help students to understand the importance of entrepreneurial project selection, and master the basic methods and standards of evaluating entrepreneurial projects.
2. Skill objectives: To cultivate students' ability to evaluate entrepreneurial projects, including market research, feasibility analysis, resource evaluation, etc.
3. Attitude objective: To stimulate students to pay attention to the choice of entrepreneurial projects, and to cultivate the ability of rational analysis and decision-making.

Teaching content

- The significance of the selection of entrepreneurial projects: explain why the selection of entrepreneurial projects is crucial to the success of entrepreneurship, and emphasize that the selection of appropriate projects can effectively improve the success rate of entrepreneurship.
- Screening criteria for entrepreneurial projects: introduce the commonly used

criteria for screening entrepreneurial projects, such as market demand, resource matching, innovation, competitive advantage, etc.

- Evaluation method of entrepreneurial project: explain how to evaluate the feasibility of the project through market analysis, SWOT analysis, financial analysis and other methods.
- Practical activities: screening and evaluation of entrepreneurial projects. Through group activities and case analysis, help students to master project screening and evaluation skills in practice.

Instructional design and activities organization:

Part I: Guidance and basic knowledge explanation (1 class hour)

- Activities objective : Lay a theoretical foundation for students to select and evaluate entrepreneurial projects, and help students understand the criteria and evaluation methods for selecting entrepreneurial projects.
- Course content:
 - Significance of entrepreneurial project selection:
 - ☞ The choice of entrepreneurial project determines whether the business can be successful. A good project can solve practical problems and have market demand and profit potential.
 - ☞ Wrong project selection is often one of the main reasons for entrepreneurial failure.
 - Screening criteria for entrepreneurial projects:
 - ☞ Market demand: entrepreneurial projects must have a clear market demand, which can solve the pain points of customers.
 - ☞ Resource matching: entrepreneurial projects need to consider the matching of resources, including the availability of capital, technology, talent and other resources.
 - ☞ Innovation: Entrepreneurial projects should have certain innovation and be able to form differentiated competitive advantages in the market.
 - ☞ Team ability: To evaluate the team ability and experience, whether the team can effectively execute the project plan.
 - ☞ Profit potential: whether the profit model of the project is clear, whether it has the feasibility of profit and long-term profitability.
 - Evaluation method of entrepreneurial projects:

☞ Market research: to understand consumer demand and competition pattern through market research.

☞ SWOT analysis: Help students to identify the strengths, weaknesses, opportunities, and threats of the program.

☞ Financial analysis: to evaluate the capital needs, profitability and cash flow of entrepreneurial projects.

- Teaching method:

☞ Through PPT explanation and case analysis, help students understand the importance of entrepreneurial project selection and the criteria of evaluation.

☞ Combined with the actual entrepreneurial project, a detailed analysis of how to screen and evaluate an entrepreneurial project.

Part II: Case analysis and group discussion (1 class hour)

- Activity objectives: Through case analysis and group discussion, help students to learn the practical application of project screening and evaluation methods. Content:
 - Select 2-3 typical entrepreneurial cases (such as Xiaomi, Tesla, JD, etc.) and analyze how these companies screen and evaluate entrepreneurial projects.

- Student group discussion:

☞ Each group selected a startup project and evaluated the feasibility of the project by using the screening criteria learned in the classroom.

☞ Discuss the market demand, innovation, resource matching, and team ability of the project, and analyze the advantages and disadvantages of the project.

- Teaching method:

- Case analysis: Analyze the successful and failed entrepreneurial cases, and explore the project selection and evaluation methods.

- Group discussion: Students screen and evaluate the selected projects in groups, discuss the advantages and disadvantages of the project, and demonstrate how to make rational decisions through practical cases.

- Class sharing: Each group will share the discussion results with the whole class, and teachers will provide feedback and guidance according to the discussion of each group.

Part III: The selection and evaluation practice of entrepreneurial projects (1 class hour)

- Activity objective: Through practical activities, help students gain practical experience in the screening and evaluation process of specific entrepreneurial projects.
- Content:
 - ☞ Entrepreneurial project selection: explain how to select the most potential projects from multiple entrepreneurial projects, including how to use scoring cards, market research, competition analysis and other methods.
 - ☞ Entrepreneurial project evaluation: introduce the specific steps of entrepreneurial project evaluation, including market research, financial analysis, SWOT analysis, etc., to help students form a set of scientific and systematic evaluation methods.
- Teaching method:
 - Rating card method: Through a simple entrepreneurial project screening scoring card, students can score and evaluate the merits and disadvantages of multiple projects in the actual operation, and make a choice.
 - SWOT analysis: Students conduct SWOT analysis according to the selected project to find out the advantages, disadvantages, opportunities and threats of the project, and help students better understand how to comprehensively evaluate the potential of entrepreneurial projects.
 - Simulation exercise: Each group of students selects one most potential project from multiple entrepreneurial projects, and complete market analysis, financial analysis and SWOT analysis. Eventually, each group will present the results of their analysis and conduct a brief roadshow.
- Activity organization:
 - Group activities: Students are divided into groups to screen and evaluate projects, and conduct market research, SWOT analysis, financial analysis, etc.
 - Project presentation and discussion: Each group presents its screened and evaluated projects and conducts a brief roadshow. Other group members and teachers ask questions and make comments.

Class interaction and assessment

- Class interaction:
 - Teachers ask questions and guide students to conduct case analysis and discussion to ensure that students can understand the core methods of project screening and evaluation.
 - In the practical activities, teachers will patrol and provide individual guidance to help students constantly improve their ideas in the process of screening and evaluation.
- Class evaluation:
 - Group evaluation: Evaluate the depth of analysis and the rationality of decision making according to students' performance in group discussion and practical activities.
 - Class test: Through a simple classroom test, students' understanding and mastery of entrepreneurial project selection and evaluation methods are tested.

Teaching Resources

- 1.PPT Handout: It includes the theoretical framework, standards and methods of entrepreneurial project selection and evaluation.
- 2.Case video: Practical examples of how successful companies select and evaluate entrepreneurial projects.
- 3.Rating card template: provide scoring cards for the screening of entrepreneurial projects to help students have clear criteria in the screening process.
- 4.Market research tools: provide questionnaire survey and interview template to help students conduct market research of entrepreneurial projects.

Class summary and homework

- Class summary:
 - Summarize the importance of entrepreneurial project selection, and emphasize the supporting role of evaluation method for entrepreneurial decision-making.
 - Emphasize the core role of feasibility analysis, market research and financial

evaluation of entrepreneurial projects in project selection.

- Homework:

- Students are required to choose a entrepreneurial project for a detailed evaluation according to what they have learned. The homework content includes market demand analysis, SWOT analysis, financial analysis, competition analysis, etc., and finally gives the conclusion of whether the project is worth investing in or starting a business.

Week 3: Entrepreneurial Team building and Management (3 class hours)

Teaching Objectives:

1. Knowledge Objective: Help students understand the importance of entrepreneurial team building, and master the basic knowledge and methods of team member selection, role allocation and team management.

2. Skill Objective: Cultivate students' ability to form an entrepreneurial team, define the responsibilities of team members and manage the team.

3. Attitude Objective: Emphasize the spirit of teamwork and cultivate students' sense of cooperation with team as the core and the sense of responsibility of team management in the process of entrepreneurship.

Teaching content

- The importance of entrepreneurial team building: Entrepreneurial success not only depends on business model and product innovation, but also requires an efficient entrepreneurial team.
- The role and division of labor of the entrepreneurial team: the role allocation of team members, the components of the core team, and how to choose the right team members.
- Team leadership and management: the leadership and management skills of the entrepreneurial team, team motivation, communication and coordination.
- The legal structure and cooperation agreement of the entrepreneurial team: the legal structure of the entrepreneurial team, the team agreement and the equity distribution issues.
- Practice activities: team building and division of labor: through simulation activities and group discussion, help students to build and manage the practical

operation team.

Instructional design and activities organization:

Part I: Guidance and basic knowledge explanation (1 class hour)

- Activities objective : To lay the basic knowledge of entrepreneurial team building for students, and help students understand the importance and basic composition of entrepreneurial team in the process of entrepreneurship.

- Course content:

- Importance of entrepreneurial team building:

- ☞ Entrepreneurial teams are the key to the success of a company, and starting businesses alone often face huge risks. An efficient and cooperative team can effectively improve the success rate of entrepreneurship.

- ☞ The complementarity of team members, team culture, and team execution are important factors in the success of a startup.

- Core members and role assignments of the entrepreneurial team:

- ☞ The entrepreneurial team needs to have a certain diversity, and the team members can come from different backgrounds (such as technology, marketing, finance, etc.).

- ☞ Core team members: usually include the founder, technical director, marketing director, financial management director, etc.

- ☞ Team roles and division of labor: clarify the responsibilities and roles of team members to ensure that everyone can play to their strengths.

- Basic principles of team management:

- ☞ The core of team management is trust and communication. Leaders need to have good decision-making ability and coordination ability.

- ☞ Incentive mechanism and effective communication channels can significantly improve the team cohesion and work efficiency.

- Teaching method:

- Through PPT explanation and actual case analysis, help students understand the importance of entrepreneurial team and how to build an efficient team.

- Analyze the team building of several successful enterprises (such as Google,

Alibaba), and explore the way and success elements of their team management.

Part II: Selection and role allocation of entrepreneurial teams (1 class hour)

- Activity objectives: Through practical cases and simulation activities, help students understand how to select appropriate team members and assign reasonable roles.
- Content:
 - How to select team members:
 - ☞ In the early days, the selection of team members is crucial. Members with different skills, experience and backgrounds should be selected according to the needs of the project.
 - ☞ Selecting team members to consider their ability, personality, values, work attitude, etc.
 - ☞ The complementarity and collaboration ability of the members are more important than a single high skill.
 - Role Assignment for the team members:
 - ☞ CEO /Founder : Responsible for the overall strategic planning and decision-making.
 - ☞ CTO (Technical Director): Responsible for technology development and innovation.
 - ☞ COO (Head of Operations): Responsible for the daily operation and execution of the enterprise.
 - ☞ CFO (Finance Officer): responsible for financial management, fund operation and budget control.
 - ☞ CMO (Head of Marketing): Responsible for marketing, brand building and customer expansion.
- Teaching method:
 - Case analysis: Guide students to think about how they discovered and seized market opportunities by analyzing classic entrepreneurial success cases.

Class interaction and assessment

- Class interaction:

- Teachers help students understand the theoretical basis of entrepreneurial team building through asking questions and giving guidance.
- Students group role play, discussion and case analysis, and teachers provide real-time feedback and guidance to help students understand the importance of team building in practice.
- Class evaluation:
 - Group performance assessment: Students' teamwork and management skills were assessed based on their participation and performance in role play and group discussions.
 - Class test: Through a simple classroom test, students' understanding and mastery of entrepreneurial team building are tested.

Teaching Resources

- 1.PPT Handout: It includes the theoretical framework of entrepreneurial team building, role allocation and team management.
- 2.Case video: Show the team management case of a successful enterprise, and analyze its management mode.
- 3.Team management toolkit: provides common tools for entrepreneurial team management, such as team building plan template, incentive plan template, etc.
- 4.Role assignment table: Help students to clearly assign team member roles in group discussions.

Class summary and homework

- Class summary :
 - Summarize the importance of entrepreneurial team building, and emphasize the complementarity of team members, the construction of team culture and the cultivation of leadership.
 - Emphasize the value of teamwork and the challenges of team management, and encourage students to focus on team building in the future entrepreneurial process.
- Homework:

- Students are asked to design a role allocation plan for an entrepreneurial project team according to what they have learned, and to clarify the responsibilities and tasks of each team member.
- Provide a draft cooperation agreement for the entrepreneurial team, explaining the details of equity allocation, incentive mechanism and other issues.

Week 4: Entrepreneurial resource integration and fund-raising (3 class hours)

Teaching objectives

1. Knowledge objective: Help students understand the types of resources needed to start a business and how to integrate these resources, and master different fund-raising methods and their applications.
2. Skill objective: Train students to design effective fund-raising plans, and master the ability to use resources and funds to promote the development of entrepreneurial projects.
3. Attitude objective: Cultivate students' financial awareness and risk awareness, and stimulate students' attitude of rational planning and using entrepreneurial resources.

Teaching content

- Classification and integration of entrepreneurial resources: analyze the core resources needed for entrepreneurship from the aspects of human resources, material resources, financial resources and technology, and discuss how to effectively integrate these resources effectively.
- Methods and strategies of fund raising: introduce the sources of funds needed for different stages of entrepreneurship, including angel investment, venture capital, crowdfunding, bank loans, etc., and analyze their advantages and disadvantages.
- Venture capital process and choice: explain how to attract investors, how to prepare the investment plan and project roadshow.
- How to design a fund raising plan: combined with actual cases, teach how to develop financing strategies and choose appropriate financing methods.
- Practical activities of resource integration: Through group activities, help students design a fundraising plan and conduct simulation demonstrations.

Class interaction and assessment

- Class interaction:
 - Case discussion: Through analyzing cases, guide students to understand the advantages and applicable scenarios of various fund-raising methods.
 - Group activities: Students design the fund raising plan in groups, conduct a simulated road show, and provide feedback and suggestions to each other.
 - Interactive discussion: In class, teachers ask students' views and understanding of different financing channels, and stimulate students to think and discuss.

- Class evaluation:
 - Group performance assessment: Assess the students' innovation and practical ability in the fundraising plan design and roadshow presentation based on the performance of the group activities.
 - Class test: Through a short classroom test, the students' knowledge of fund-raising methods and resource integration is tested.
 - Roadshow performance evaluation: to evaluate students' speech skills, content expression, question-answering ability, and other abilities in the simulated roadshow.

Teaching Resources

- 1.PPT Handout: It includes different ways of fund raising, resource integration strategies and financing plan template.
- 2.Case analysis materials: Provide the financing cases of several well-known enterprises to help students understand the practical application of different financing methods.
- 3.Financing plan template: provide a simple financing plan template to help students design financing plan.
- 4.Roadshow evaluation form: used to evaluate student performance in simulated roadshows to help students identify deficiencies and improve.

Class summary and homework

- Class summary :
 - Summarize the basic principles of entrepreneurial resource integration and the

common ways of fund-raising, and emphasize how to choose the appropriate capital sources and manage the financing risks in the financing process.

- o Emphasize the importance of making fund-raising plans and showing roadshows in the entrepreneurial process.
- Homework:
 - o According to their own entrepreneurial project, students write a financing plan and design a financing plan suitable for their own project.
 - o Students prepare and participate in the next week's simulation roadshow to showcase their financing plans and project highlights.

Week 5: Entrepreneurial project promotion and marketing (3 class hours)

Teaching objectives

1. Knowledge objective: Make students understand the basic theories and strategies of marketing, and master the marketing methods of entrepreneurial projects.
2. Skill objective: Cultivate students' ability to develop effective marketing plans, and to develop appropriate marketing strategies according to the characteristics of the project.
3. Attitude objective: Stimulate students' interest in marketing, establish the awareness of innovative marketing, and enhance students' confidence and adaptability to face the market competition in the entrepreneurial projects.

Teaching content

- Basic theory of marketing: introduce the basic concepts of marketing, marketing 4P (product, price, channel, promotion) strategy, and explain how to apply these theories in the start-up stage.
- Market segmentation and target market selection: explain how to segment the market according to the market demand, select the target market, and determine the market positioning. Venture capital process and choice: explain how to attract investors, how to prepare the investment plan and project roadshow.
- Marketing strategy:
 - o Brand promotion: how to create and promote the brand, brand differentiation and positioning strategy.
 - o Channel promotion: how to choose the appropriate sales channel (such as

online, offline, social media, etc.).

- o Promotion strategy: introduce the promotion means, such as discounts, gifts, flash buying, etc.

- Digital marketing and Internet promotion: Focus on how to use social media, SEO, SEEM, content marketing and other Internet tools to promote entrepreneurial projects.

- Practical activity : Through case analysis and group discussion, help students design a complete marketing plan and conduct simulation presentation.

Class interaction and assessment

- Class interaction:

- o Case discussion: By discussing successful marketing cases, students can better understand the practical application of marketing strategies. Group activities: Students design the fund raising plan in groups, conduct a simulated road show, and provide feedback and suggestions to each other.

- o Group activities: Let the students design a complete marketing plan in groups, and show it to the whole class.

- o Interactive Q& A: encourage students to put forward the difficulties encountered in the actual operation, and teachers to answer and guide.

- Class evaluation:

- o Group work evaluation: According to the marketing plan designed by the group, to evaluate the performance of creativity, feasibility, marketing, etc. Class test: Through a short classroom test, the students' knowledge of fund-raising methods and resource integration is tested.

- o Classroom discussion performance: to assess students' engagement and depth of thinking in classroom discussion and interaction.

- o Practice Assessment: Check students' ability to understand and apply marketing strategies through simulation presentation and group evaluation.

Teaching Resources

1.PPT Handout: Including the basic theory of marketing, 4P strategy, market segmentation and target market selection, marketing strategy and other content.

2. Case analysis materials: Provide a number of successful startup marketing cases (such as JD "Double 11", Xiaomi's social media marketing, etc.).

3. Marketing plan template: provide a simple marketing plan template to help students better conceive and show their marketing plans.

Class summary and homework

- Class summary :
 - Emphasize the importance of marketing for entrepreneurial success, and review the key contents of 4P strategy, market segmentation, target market selection, brand building, channel promotion and promotion strategy explained in this course.
 - Remind students that the marketing of entrepreneurial projects needs to be continuously optimized and adjusted to adapt to market changes and consumer needs.
- Homework:
 - According to their own marketing projects, students will write a complete marketing plan, including market analysis, brand promotion strategy, channel selection, promotion activity design, etc.
 - Students prepare and conduct the next week's mock roadshow showing their marketing plans.

Week 6: Startup foundation and registration process (3 class hours)

Teaching objectives

1. Knowledge objective: Make students understand the legal process of startup company registration, master different organizational forms and their characteristics, and understand the key legal issues in the establishment process of the company.

2. Skill objective: Cultivate students' ability to choose the appropriate organizational form of companies according to entrepreneurial projects, and learn the specific steps and procedures of startup registration.

3. Attitude objective: Improve students' attention to legal issues, establish correct legal awareness, cultivate students' awareness of legal operation in the process of entrepreneurship.

Teaching content

- Introduction of the organizational form of the startup company:
 - individual business : Suitable for small-scale, independent entrepreneurial

projects, the registration process is simple, suitable for low risk, low investment projects.

- o limited liability company (LLC) : The most common form of company is applicable to start-ups, where legal persons and shareholders are separated, and shareholders have limited liability.

- o Stock corporation: Suitable for companies with expansion plans that need capital operation, shareholders can participate in management through shareholding and have limited responsibility.

- o partnership business : It is suitable for multiple founders to operate together and share the responsibilities among shareholders, which can be a limited partnership or a general partnership.

- Company registration process:

- o Company name approval: how to apply for a company name and choose the appropriate company name.

- o Registered address and business scope: the importance of selecting the registered address and clarifying the business scope.

- o Establishment of registered capital and shareholders: determine the allocation of registered capital and shareholders, how to establish the shareholders' meeting and the board of directors, etc.

- o Articles of association and shareholders' agreements: Articles of association and shareholders' agreements to ensure that the rights and obligations between founders are clear.

- o Industrial and commercial registration application: submit the registration materials, register the company.

- o Tax registration and bank account opening: after the establishment of the company, conduct tax registration and open a bank account.

- o Other legal matters: including social security registration, trademark registration, etc.

Class interaction and assessment

- Class interaction:

- o Case discussion: By discussing the practical problems encountered by different types of companies in the registration and governance aspects, students are

guided to think about how to avoid similar problems.

- o Group discussion: Students discuss in groups how to choose the right form of the company, and develop a simple articles of association and shareholder agreement.

- o Simulated registration activities: students simulate the company registration process according to the hypothetical entrepreneurial projects, and fill in the company name, business scope, shareholder setting, etc.

- Class evaluation:

- o Group work evaluation: Assess the company registration materials and charter agreements submitted by the team to examine their understanding of the company registration process.

- o Classroom discussion performance: Evaluate whether students can accurately express their views during the discussion and whether they can make practical suggestions.

- o Case analysis report: Students are asked to write a report analyzing a case of successful or failed registration and governance of a startup, and make suggestions for improvement.

Teaching Resources

1.PPT Handout: Including the organization form, registration process, legal and compliance management and other content.

2.Company Registration Process Manual: provide specific company registration steps and matters needing attention as reference materials for students.

3.Case analysis materials: Provide successful and failed company cases to help students understand the importance of legal compliance to entrepreneurship.

Class summary and homework

- Class summary :

- o Emphasize the complexity of the company registration process and the importance of legal compliance, and review the knowledge of various company forms, registration steps and legal management explained in this course.

- o Emphasizing the importance of choosing the right corporate form and shareholder agreement is crucial to the long-term success of entrepreneurial projects.

- Homework:
 - o According to their own entrepreneurial projects, students design a company organization form, write simple articles of association and shareholder agreements, and are ready to submit them to the teachers.
 - o Students prepare the company introduction and registration process, explaining the company form and legal framework.

Week 7: Risk prevention and control of entrepreneurship (3 class hours)

Teaching objectives

1. Knowledge objective: Make students understand all kinds of risks they may face in the process of entrepreneurship, and master the basic concepts, framework and methods of entrepreneurial risk management, especially the types of risks that may be encountered in the start-up stage.
2. Skill objective: Cultivate students' ability to analyze, evaluate and deal with entrepreneurial risks, and learn how to develop effective risk prevention and control strategies.
3. Attitude objective: Establish students' risk awareness, encourage them to take reasonable risk management measures, and reduce the potential losses and uncertainties in the process of entrepreneurship.

Teaching content

- Definition and classification of entrepreneurial risk:
 - o Risk definition: Entrepreneurial risk refers to the probability and loss that entrepreneurs may not achieve the goal due to the influence of internal and external factors in the process of establishing and running an enterprise.
 - o classification of risks:
 - ☞ Market risk: including demand changes, fierce competition, changes in consumer preferences, etc.
 - ☞ Technical risk: the technical feasibility of the product or service is uncertain, the technology development has failed or the technology is obsolete.
 - ☞ Financial risk: financing difficulties, insufficient cash flow, cost control errors and other financial management problems.
 - ☞ Legal risks: policy changes, legal compliance issues, patent infringement and other legal issues.
 - ☞ Management risk: lack of management team ability, personnel mobility,

corporate culture, etc.

☞ Operational risks: supply chain interruption, quality problems in the production process, equipment failure, etc.

- Steps of entrepreneurial risk management:
 - Risk identification: how to identify the risks possible encountered in the process of entrepreneurship through market research, financial analysis, technical evaluation and other ways.
 - Risk assessment: Analyze the probability and consequences of risk occurrence, assess the severity of each risk, and determine its priority.
 - Risk response strategies: determine how to deal with various kinds of risks, including avoidance, mitigation, transfer and acceptance strategies.
 - ☞ Risk aversion: Avoid some high-risk areas by changing business models or strategies.
 - ☞ Risk mitigation: reduce the probability of risk to occur or mitigate losses through control measures.
 - ☞ Risk transfer: transfer part of the risk to others through insurance, outsourcing or cooperation.
 - ☞ Risk acceptance: For risks that cannot be avoided or transferred, enterprises can choose to accept and be prepared for them.
 - Risk monitoring and adjustment: regularly assess and monitor the identified risks, and timely adjust strategies to deal with new risks.

Class interaction and assessment

- Class interaction:
 - Risk identification activities: Students discuss the potential risks of their own entrepreneurial projects in groups, and brainstorm with the possible market, technical, financial, management and other risks.
 - Probability-Impact matrix: Students draw a risk assessment matrix and prioritize it based on case analysis or their own entrepreneurial projects.
 - Group case analysis: each group designs a complete set of risk management plan according to the simulated entrepreneurial project, and defines the coping strategies for each risk.
- Class evaluation:

- o Group work evaluation: Assess students' understanding of risk identification, assessment and response based on the risk assessment report and coping strategies submitted by the team.
- o Classroom discussion performance: Assess students' participation in the discussion, whether they can deeply analyze the potential risks of the project, and propose reasonable countermeasures.
- o Case analysis report: Students are required to submit a case analysis report analyzing the risks of a startup project and proposing improvements.

Teaching Resources

- 1.PPT Handout: Including entrepreneurial risk classification, risk assessment methods, coping strategies and other content, to help students understand the framework of risk management.
- 2.Risk assessment tool: Provide a risk assessment matrix template and a case analysis tool to help students with a specific risk assessment.
- 3.Case analysis materials: Provide successful and failed entrepreneurial cases to help students understand how to identify, evaluate, and respond to risks.

Class summary and homework

- Class summary :
 - o Emphasizing the risks in entrepreneurship is inevitable, but through effective identification, evaluation and coping strategies, entrepreneurs can minimize the negative impact of risks on projects.
 - o Remind students to pay special attention to the market, finance, technology and other risks in the early stage of entrepreneurship, and make a risk management plan as soon as possible.
- Homework:
 - o According to their own entrepreneurial projects, students conduct a detailed risk identification and assessment, and submit a report containing a risk assessment matrix and risk coping strategies.
 - o Prepare for the next week's risk management plan presentation to prepare for the roadshow.

Week 8: Entrepreneurial project report and road show (3 class hours)

Teaching objectives

1. Knowledge objective: Let the students understand the basic concepts, requirements and importance of entrepreneurial project reports and roadshows, and master how to write a business plan and how to conduct effective project roadshows.
2. Skill objective: Enhance students' ability to write business plans and conduct project roadshows, presenting entrepreneurial projects clearly, concise and persuasive to potential investors.
3. Attitude objective: Cultivate students to pay attention to the roadshow of entrepreneurial projects, enhance their confidence and communication skills, and improve the skills of promoting projects in the process of entrepreneurship.

Teaching content

- Entrepreneurial Project Report (Business Plan):
 - The importance of a business plan: A business plan is an important tool for entrepreneurs to show the feasibility of projects, attract investment, and plan for the future. It is not only a means for entrepreneurs to prove the potential and value of the project to investors, but also to help entrepreneurial teams clarify the project thinking and development goals.
 - The Structure of the business plan:
 - ☞ Cover: including the company name, project name, contact person and other basic information.
 - ☞ Product presentation: If possible, demonstrate product prototypes or services to highlight innovation.
 - ☞ Market analysis and competitive advantage: show the market research results and illustrate the unique advantages and competitiveness of the project.
 - ☞ Marketing plan: describe the product positioning, pricing strategy, promotion channels, sales strategy, etc.
 - ☞ Financial planning: including capital demand, profit model, financial forecast, etc.
 - ☞ Team composition: Introduce the background, experience and team division of the core team members.
 - ☞ Risk analysis and response: analyze the main risks in the process of entrepreneurship, and put forward coping strategies.

☞ Exit mechanism: the exit mode of investors, including listing, merger and acquisition, equity transfer, etc.

- Skills and preparation for the business roadshow:

- o The purpose and importance of the road show: The road show is an opportunity for entrepreneurs to communicate with investors face to face. The purpose is to make investors interested in entrepreneurial projects and willing to invest. Successful roadshows not only demonstrate the potential of the project, but also allow entrepreneurs to demonstrate their execution, teamwork, and strategic vision.

- o The basic structure of the roadshow:

- ☞ Project overview: briefly introduce the entrepreneurial project, clarify the objectives and market needs of the project.

- ☞ Product presentation: If possible, demonstrate product prototypes or services to highlight innovation.

- ☞ Market analysis and competitive advantage: show the market research results and illustrate the unique advantages and competitiveness of the project.

- ☞ Business model and profit model: explain how to make profits through projects, including pricing strategy, customer groups, sales channels, etc.

- ☞ Financial forecast: provide financial data such as revenue, profit, cost and capital demand to show the profitability and growth potential of the project.

- ☞ Team introduction: demonstrate the ability and background of team members to demonstrate the team's ability to achieve project goals.

- ☞ Capital demand and use: clearly explain the amount and use of funds required by the project, and explain the use plan of funds.

- ☞ Conclusion: Brief summary, emphasizing the opportunities and returns of investment, and inviting investors to ask questions.

- Class evaluation:

- o Roadshow performance evaluation: based on students' road show performance, content integrity, clarity of expression and investor interaction.

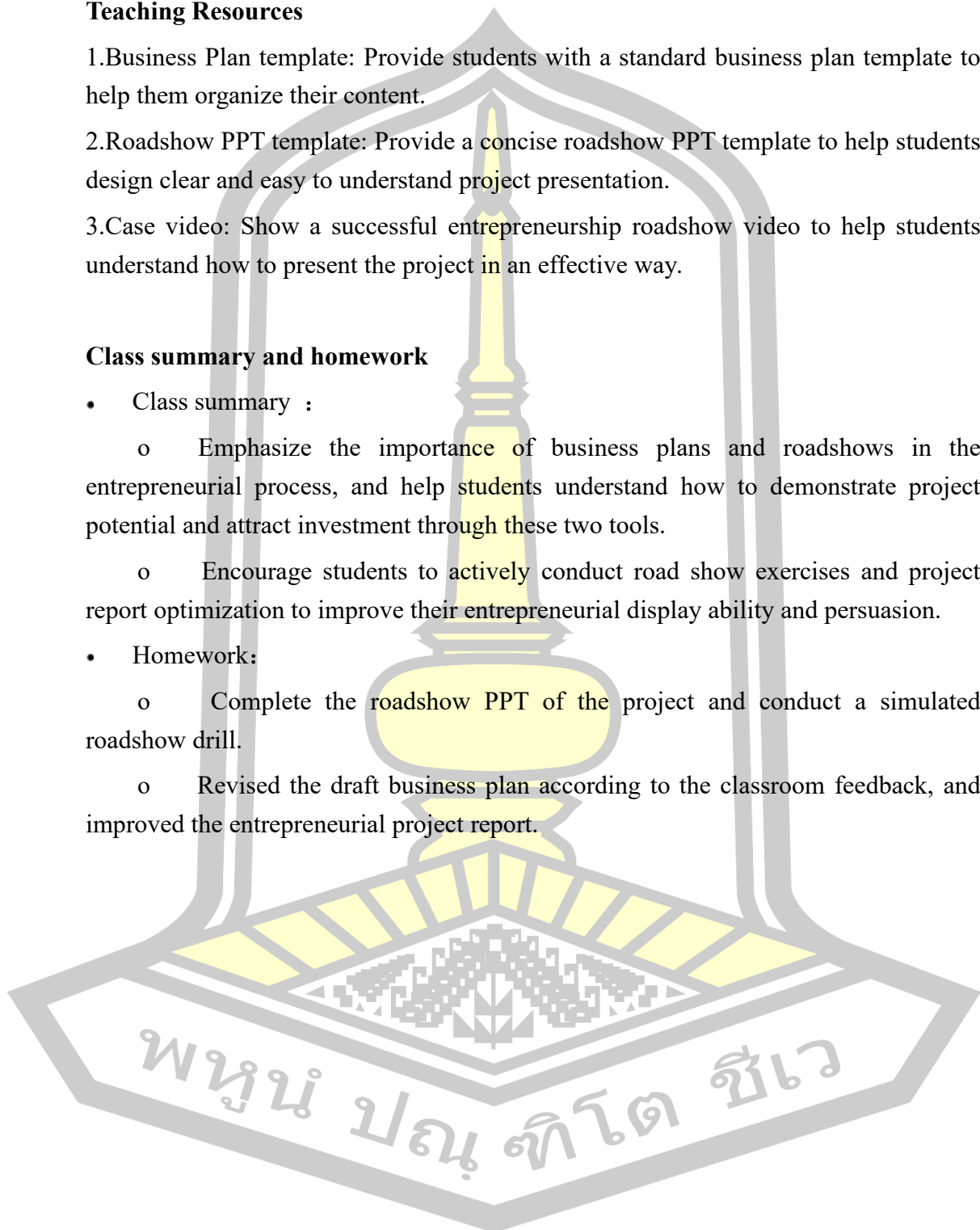
- o Business plan evaluation: To evaluate the feasibility, market analysis, marketing strategy, financial forecast and other contents based on the draft business plan submitted by students.

Teaching Resources

1. Business Plan template: Provide students with a standard business plan template to help them organize their content.
2. Roadshow PPT template: Provide a concise roadshow PPT template to help students design clear and easy to understand project presentation.
3. Case video: Show a successful entrepreneurship roadshow video to help students understand how to present the project in an effective way.

Class summary and homework

- Class summary :
 - o Emphasize the importance of business plans and roadshows in the entrepreneurial process, and help students understand how to demonstrate project potential and attract investment through these two tools.
 - o Encourage students to actively conduct road show exercises and project report optimization to improve their entrepreneurial display ability and persuasion.
- Homework:
 - o Complete the roadshow PPT of the project and conduct a simulated roadshow drill.
 - o Revised the draft business plan according to the classroom feedback, and improved the entrepreneurial project report.



BIOGRAPHY

NAME	Wanqiu Hu
DATE OF BIRTH	31/10/1993
PLACE OF BIRTH	Sichuan,China
ADDRESS	Zigong City, Sichuan Province, China
POSITION	Intermediate instructor for vocational college
PLACE OF WORK	Sichuan Health Rehabilitation Vocational College, China
EDUCATION	2012 - 2016 Bachelor's degree. Finance Jiaying University, China. 2016 - 2018 Master of Business Administration. International Trade Anhalt University of Applied Sciences, Germany. 2021 - 2025 Doctor of Philosophy. Curriculum and Instruction Mahasarakham University, Thailand.

พหุบัณฑิต ชีเว