

DEVELOPMENT OF THE EDUCATION MANAGEMENT MODEL FOR
ENHANCING THE SUSTAINABLE EMPLOYMENT QUALITY OF
HIGHER VOCATIONAL STUDENTS

LONG YINXI

A thesis submitted in partial fulfillment of the requirements for the Doctor of
Philosophy program in Education Management for Sustainable Development

Academic Year 2025


Copyright of Bansomdejchaopraya Rajabhat University


Thesis Title Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational Students

Author Miss Long Yinxi


Thesis Committee



..... Chairperson
(Assistant Professor Dr.Patchareephorn Bangkheow)


..... Committee
(Associate Professor Dr. Chollada Pongpattanayothin)



..... Committee
(Assistant Professor Dr.Phisanu Bangkheow)


Accepted by Bansomdejchaopraya Rajabhat University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Educational Management for Sustainable Development

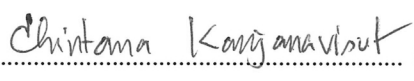

..... Dean of Graduate School
(Assistant Professor Dr. Nukul Sarawong)


..... President
(Assistant Professor Dr. Kanakorn Sawangcharoen)

Defense Committee


..... Chairperson
(Professor Dr.Prachyanun Nilsook)


..... Committee
(Associate Professor Dr.Methinee Wongwanich Rumpagaporn)


..... Committee
(Associate Professor Dr.Chintana Kanjanavisut)

Title	Development of the Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students
Author	Long Yinxi
Program	Education Management for Sustainable Development
Major Advisor	Assistant Professor Dr. Phatchareephone Bangkheow
Co-advisor	Associate Professor Dr. Chollada Pongpattanayothin
Co-advisor	Assistant Professor Dr. Phisanu Bangkheow
Academic Year	2025

Abstract

The objectives of this research were: 1) to analyze the current and desired conditions of educational management for enhancing the sustainable employment quality of higher vocational students; 2) to develop an educational management model to enhance the sustainable employment quality of higher vocational students; 3) to evaluate the feasibility and appropriateness of the proposed educational management model. This research employed a mixed-methods design. The sample group was selected using stratified random sampling and purposive sampling methods, comprising 384 higher vocational students and 15 experts from educational institutions and industry sectors in Guizhou Province. Data were collected through questionnaires, interviews, focus group discussions, and expert evaluation. The primary research instrument was a five-point rating-scale questionnaire with strong content validity (IOC = 1.00) and high reliability (Cronbach's alpha = 0.937). Statistical techniques including percentage, mean, standard deviation, Modified Priority Needs Index (PNI_{modified}), and content analysis were used for data analysis.

The research findings revealed that: 1) the current and desired conditions of educational management regarding the sustainable employment quality of higher vocational students were analyzed across seven dimensions: safety at work, income

and benefits, working hours and work-life balance, job security and social protection, social dialogue, skills development and training, and workplace relationships and work motivation. The Priority Needs Index indicated that safety at work ranked as the highest priority need, and all which were necessary for development. 2) Based on these findings, the researcher developed an educational management model comprising five essential components: Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation. The model integrates SDG 4, SDG 8, and SDG 10 as guiding frameworks to strengthen sustainable employment quality outcomes. 3) The model evaluation results indicated the highest level of feasibility and appropriateness, confirming that the educational management model is suitable for practical implementation in enhancing the sustainable employment quality of higher vocational students.

Keywords: Educational management model, Sustainable employment quality, Higher vocational students.

ชื่อเรื่อง	การพัฒนาแบบการจัดการศึกษาเพื่อเสริมสร้างคุณภาพ การปฏิบัติงานอย่างยั่งยืนของนักศึกษาอาชีวศึกษา ชั้นสูง
ชื่อผู้วิจัย	หลง ยินซี
สาขาวิชา	การจัดการศึกษาเพื่อการพัฒนาที่ยั่งยืน
อาจารย์ที่ปรึกษาหลัก	ผู้ช่วยศาสตราจารย์ ดร.พัชรินทร์ บางเขียว
อาจารย์ที่ปรึกษาร่วม	รองศาสตราจารย์ ดร.ชลดา พงศ์พัฒนโยธิน
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร.พิชญ์ บางเขียว
ปีการศึกษา	2568

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อ 1) เพื่อศึกษาสภาพปัจจุบันและสภาพที่พึงประสงค์ของการจัดการศึกษาเพื่อเสริมสร้างคุณภาพการปฏิบัติงานอย่างยั่งยืนของนักศึกษาอาชีวศึกษาชั้นสูง 2) เพื่อพัฒนาแบบการจัดการศึกษาเพื่อเสริมสร้างคุณภาพการปฏิบัติงานอย่างยั่งยืนของนักศึกษาอาชีวศึกษาชั้นสูง และ 3) เพื่อประเมินความเป็นไปได้และความเหมาะสมของรูปแบบการจัดการศึกษาที่พัฒนาขึ้น การวิจัยครั้งนี้ใช้ระเบียบวิธีวิจัยแบบผสมผสาน กลุ่มตัวอย่างคัดเลือกโดยใช้วิธีการสุ่มแบบแบ่งชั้น ภูมิ และการเลือกแบบเจาะจง ประกอบด้วยนักศึกษาอาชีวศึกษาชั้นสูงจำนวน 384 คน และผู้เชี่ยวชาญจากสถาบันการศึกษาและภาคอุตสาหกรรมในมณฑลกุ้ยโจวจำนวน 15 คน มีการเก็บรวบรวมข้อมูลโดยใช้แบบสอบถาม การสัมภาษณ์แบบกึ่งโครงสร้าง การสนทนากลุ่ม และการประเมินโดยผู้เชี่ยวชาญ เครื่องมือที่ใช้ในการวิจัย ได้แก่ 1) แบบสอบถาม 2) แบบสัมภาษณ์ 3) แนวทางการสนทนากลุ่ม 3) รูปแบบการจัดการศึกษา และ 4) แบบประเมินรูปแบบ การวิเคราะห์ข้อมูลวิเคราะห์ด้วยสถิติร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน ดัชนีความต้องการจำเป็น (PNI modified) และการวิเคราะห์เนื้อหา (Content analysis)

ผลการวิจัยพบว่า สภาพปัจจุบันและสภาพที่พึงประสงค์ของการจัดการศึกษาที่เกี่ยวข้องกับคุณภาพการปฏิบัติงานอย่างยั่งยืนของนักศึกษาอาชีวศึกษาชั้นสูงซึ่งวิเคราะห์จาก 7 มิติ ได้แก่ ความปลอดภัยในการทำงาน รายได้และสวัสดิการ ชั่วโมงการทำงานและความสมดุลระหว่างชีวิตและการทำงาน ความมั่นคงในงานและการคุ้มครองทางสังคม การเจรจาทางสังคม การพัฒนาทักษะและการฝึกอบรม ความสัมพันธ์ในที่ทำงานและแรงจูงใจในการทำงาน พบว่า ลำดับความจำเป็นในการพัฒนา

ด้านความปลอดภัยในการทำงานมีความจำเป็นเร่งด่วนที่สุด รองลงมาคือด้านรายได้และสวัสดิการ จากผลการวิจัยดังกล่าว ผู้วิจัยได้นำมาเป็นข้อมูลพื้นฐานในการพัฒนารูปแบบการจัดการศึกษาซึ่งประกอบด้วย 5 องค์ประกอบสำคัญ ได้แก่ หลักการ วัตถุประสงค์ เนื้อหา บทบาทของผู้มีส่วนเกี่ยวข้องหลัก และการวัดผลและประเมินผลของรูปแบบ ผลการประเมินจากผู้เชี่ยวชาญยืนยันว่ารูปแบบมีความเหมาะสมและความเป็นไปได้ในระดับสูง ซึ่งบ่งชี้ว่ารูปแบบนี้มีความเหมาะสมที่จะนำไปประยุกต์ใช้ในการเสริมสร้างคุณภาพการปฏิบัติงานทำอย่างยั่งยืนของนักศึกษาอาชีวศึกษาชั้นสูง

คำสำคัญ: รูปแบบการจัดการศึกษา, คุณภาพการปฏิบัติงานทำอย่างยั่งยืน, นักศึกษาอาชีวศึกษาชั้นสูง

Acknowledgement

The journey of studying is both a voyage toward knowledge and a process of engaging in a lasting dialogue with oneself. The significance of traveling far never lies in geographical movement, but in the expansion of one's spiritual territory. The daily scenes on Bangkok's streets and alleys, the flickering stall lights amid sudden downpours, and the self-doubt that repeatedly flares up and fades away, all these have woven into the winding path of my doctoral pursuit. It is damp, tortuous, and misty, like a rainforest after a heavy storm, with tangled branches and muddy ground that makes every step a struggle. Yet I have kept moving forward, groping my way through it all.

The completion of this thesis would not have been possible without the dedicated guidance of my main advisor, Assistant Professor Dr. Phatchareephorn Bangkheow. When I was lost and trapped, she illuminated my path with her broad academic vision and gentle teachings. She not only inspired me academically but also taught me how to maintain inner peace amid chaos. In addition, I would like to thank my co-advisors, Associate Professor Dr. Chollada Pongpattanayothin and Assistant Professor Dr. Phisanu Bangkheow for his guidance in revising this work.

Here, I want to express my deepest gratitude to my parents. They know nothing about academia, never ask about my research, and have no idea what this thesis is about. But it is their simple yet unwavering support, and their repeated, selfless efforts to lift me up, that allowed me to still look up at the stars even in the darkest moments of my life.

To my friends, especially those who answered my calls when I was mired in confusion, they pulled me back from the edge of collapse time and again. They are the heartbeat that always responds, even across thousands of mountains and rivers; they are the streetlamp lit for me in the darkest corners of the world.

Thanks to everyone who has helped with this project: the advice from seniors, the candor of interviewees, the encouragement from friends. It is these scattered bits of kindness that have come together to make what I can accomplish today possible. I am grateful that fate placed me on this journey, and grateful that I did not give up along the way.

Long Yinxi

Contents

	Page
Abstract.....	i
Abstract (Thai).....	iii
Acknowledgement.....	v
Contents.....	vi
List of Figures.....	viii
List of Tables.....	ix
Chapter	
1 Introduction.....	1
Rationale.....	1
Research Question.....	5
Objective.....	5
Scope of the Research.....	5
Advantages.....	10
Definition of Terms.....	11
Research Framework.....	12
2 Literature Review.....	14
Concepts and theories of Education Managements.....	14
Concepts and theories of Model Development.....	28
Concepts and theories of Employment Quality.....	50
Concepts and theories of Sustainable Employment Quality.....	69
Concepts and theories of Higher Vocational Students.....	88
Related Research.....	97
3 Research Methodology.....	103
Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.....	104
Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.....	114

Contents (Continued)

	Page
Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.....	117
4 Results of Analysis.....	126
Result of Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.....	127
Result of Development of an educational management model to enhance the sustainable employment quality of higher vocational students.....	153
Results of Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.....	176
5 Discussion Conclusion and Recommendations.....	191
Conclusion.....	192
Discussion.....	197
Recommendations.....	200
References.....	204
Appendices.....	215
A List of Specialists and Letters of Specialists Invitation for IOC Verification...	216
B Official Letter.....	222
C Research Instrument.....	254
D The Results of the Quality Analysis of Research Instruments.....	267
E Action Guidelines of Educational Management Model.....	326
F Certificate of English.....	363
G The Document for Accept Research.....	365
Researcher Profile.....	381

List of Figures

Figure	Page
1.1 Research Framework.....	13
2.1 Four major complex changes.....	25
2.2 The 7 elements of employment quality.....	57
3.1 Research steps.....	125
4.1 Priority Needs Index (PNI) of Employment Quality Dimensions.....	129
4.2 High-Priority Issues Identified from Expert Interviews.....	152
4.3 Components of model.....	155
4.4 Educational management model for enhancing the sustainable employment quality of higher vocational students.....	158
4.5 Principles of ModelFigure.....	162
4.6 Content of Model.....	169
4.7 Roles of key Actors of Model.....	174
4.8 Measurement and Evaluation of Model.....	176

List of Tables

Table	Page
2.1 Seven Elements of Integrated Educational Management.....	44
2.2 Stages of Vocational Education Development.....	93
3.1 Lists of 8 types of colleges, population and sample group.....	105
3.2 Measurement Scale of Development for Sustainable Education Management in Guizhou Higher Vocational Colleges.....	108
3.3 Summarizes the research methods in step 1.....	113
3.4 Summarizes the research methods in Step 2.....	116
3.5 Summarizes the research methods in step 3.....	119
3.6 Expert Evaluation Rubric for the appropriateness and Feasibility of the Sustainable Educational Management Model.....	120
4.1 Analysis of Participants' Demographic Characteristics.....	128
4.2 Overall Analysis of the Current and Desired Conditions of Employment Quality of Higher Vocational College Students.....	130
4.3 Analysis of the current and desired conditions of employment quality of higher vocational college students in safety at work.....	132
4.4 Analysis of the current and desired conditions of employment quality of higher vocational college students in income and benefits.....	133
4.5 Analysis of the current and desired conditions of employment quality of higher vocational college students in working hours and work-life balance....	135
4.6 Analysis of the current and desired conditions of employment quality of higher vocational college students in job security and social protection.....	136
4.7 Analysis of the current and desired conditions of employment quality of higher vocational college students in social dialogue.....	138
4.8 Analysis of the current and desired conditions of employment quality of higher vocational college students of skills development and training.....	140

List of Tables (Continued)

Table	Page
4.9 Analysis of the Current Situation and desired conditions of employment quality of higher vocational college students in Workplace Relationships and Work Motivation.....	142
4.10 Summary of Interview Results.....	145
4.11 The feasibility and appropriateness evaluation results of the proposed education management model.....	177
4.12 Analysis results of Components of the Educational Management Model.....	179
4.13 Analysis results of Principles of the Educational Management Model.....	181
4.14 Analysis results of Objectives of the Educational Management Model.....	183
4.15 Analysis results of Content.....	184
4.16 Analysis results of Roles of Key Actors.....	186
4.17 Analysis results of Measurement and Evaluation.....	188

Chapter 1

Introduction

Rationale

Globally, the management of higher education quality has long been a core issue in the development and advancement of academic institutions (Bakhmat et al., 2022). As the higher education system expands and diversifies, particularly in vocational colleges, the importance of education quality management has become increasingly evident. Quality of education has not only become a focal point in national and institutional policies, but it also reflects the responsibility of educational institutions to ensure that graduates are well-prepared to enter the labor market successfully and contribute to socio-economic development (Chankseliani, Qoraboyev & Gimranova, 2021). From a global policy perspective, this concern is closely aligned with the United Nations Sustainable Development Goal 8 (SDG 8), which emphasizes the promotion of decent work, productive employment, and sustainable economic growth. Improving the quality and sustainability of graduate employment has therefore become not only an educational issue, but also a key component of broader sustainable development agendas.

At the national level, China's higher education system has expanded rapidly in recent years, especially in the realm of vocational education. Despite the increase in the number of higher vocational colleges and student enrollment rates, the issue of employment quality remains significant. Across the country, many graduates face declining employment rates, inadequate job matching, and insufficient job stability. These issues not only hinder the professional development of graduates but also exert pressure on the nation's economic growth. In certain regions, due to a singular industrial structure, the mismatch between graduates' skills and market demand is even more pronounced, leading to the paradox of "having educational qualifications but lacking employment opportunities" (Barth & Rieckmann, 2012; Wall et al., 2018). In economically underdeveloped regions such as Guizhou Province, these challenges

are further intensified by structural inequalities in educational resources and labor market opportunities. This situation reflects the concerns addressed by Sustainable Development Goal 10 (SDG 10), which calls for reducing inequalities and promoting inclusive development. Enhancing the employment quality of higher vocational students in such regions is therefore critical to mitigating regional and social disparities in employment outcomes.

Economically, with the global shift towards a knowledge-based and technology-driven economy, traditional industries are gradually shrinking, while technology-intensive and knowledge-intensive sectors are becoming dominant. In less economically developed regions of China, such as Guizhou Province, this transition poses even greater challenges. Guizhou's economy has long relied on traditional industries, and the limited resources available for vocational education have further weakened graduates' competitiveness in the job market. Statistical data indicates that the employment rate and quality of employment for vocational college graduates in Guizhou Province are relatively low, particularly in terms of skill matching and career development potential (Katernyak et al., 2018). These challenges restrict students' career development pathways and hinder the sustainable development of the regional economy.

Therefore, addressing the aforementioned issues, particularly the low employment quality of graduates from vocational colleges in economically underdeveloped regions, highlights the need to improve vocational education management models. From the perspective of the United Nations Sustainable Development Goals, education is widely recognized as a fundamental pathway to achieving sustainable development. In particular, Sustainable Development Goal 4 (SDG 4) emphasizes inclusive and equitable quality education and the promotion of lifelong learning opportunities for all. This goal underscores the importance of strengthening educational management, curriculum relevance, and learning processes to better prepare students for sustainable employment and long-term career development. An educational management model based on Education for Sustainable Development (ESD) could offer a potential solution. ESD not only

focuses on environmental protection but also encompasses social equity, economic growth, and cultural diversity. It aims to cultivate students' critical thinking, problem-solving abilities, and comprehensive understanding of complex global challenges (Lozano et al., 2015). By introducing ESD into vocational education, students can better understand the application of sustainable development in their respective fields and enhance their employability and appropriateness through hands-on projects and industry collaboration (Barth & Rieckmann, 2012t; Kaernyak et al., 2018).

In the context of vocational education management, ESD can be effectively integrated in the following ways:

Curriculum Design: The principles of ESD can be incorporated into the curriculum, teaching not only technical skills but also fostering students' awareness and responsibility regarding sustainability issues. For instance, in courses such as mechanical engineering or chemical technology, modules on green technology, resource management, and environmental impact can be added (Scott, 2013). This integration not only enhances students' understanding of global challenges but also improves their ability to implement sustainable practices in their future careers (Lozano et al., 2015).

Teaching Methods: Participatory and experiential teaching methods can be employed, encouraging students to apply their knowledge through project-based learning, case studies, and hands-on activities. These methods enable students to gain a deeper understanding of sustainable development while enhancing their practical skills (Tilbury, 2011; Barth & Rieckmann, 2012). This approach aligns with Kolb's experiential learning theory, which is particularly suitable for vocational education (Kolb, 1984).

Industry Collaboration: Collaboration with local enterprises and communities can facilitate internships and projects based on ESD principles, allowing students to apply and develop their skills in real-world professional environments. At the same time, companies can enhance their sustainable practices by participating in educational programs (Barth & Rieckmann, 2012; Hodko, 2023). This collaborative

model not only improves students' employability but also fosters innovation and development in local industries (Katernyak et al., 2018).

The core objective of this study is to develop an educational management model based on ESD to improve the employment quality of students at Guizhou Industry Polytechnic College. Specifically, the research will first identify current gaps in the curriculum, particularly those that hinder the enhancement of students' employability (Gibson et al., 2019; Wall et al., 2018). Next, it will design and evaluate curriculum interventions based on ESD, focusing on their impact on students' employability and career readiness (Yang et al., 2018). Finally, the study will optimize curriculum design based on student feedback on these interventions to better support students' employment outcomes (Lozano et al., 2015).

However, although previous studies have examined employment outcomes, employability, and vocational education management, there remains a significant research gap in systematically integrating sustainable employment quality into an educational management framework specifically for higher vocational students. Existing research often focuses on individual employment indicators or short-term employment rates, but lacks a comprehensive analysis across the seven dimensions of sustainable employment quality, namely safety at work, income and benefits, working hours and work-life balance, job security and social protection, social dialogue, skills development and training, and workplace relationships and work motivation.

Moreover, limited empirical data are available regarding the current and desired conditions of educational management in relation to these seven dimensions, particularly within the context of higher vocational education in Guizhou Province. There is also insufficient research that translates these dimensions into a structured educational management model with clearly defined principles, objectives, content, roles of key actors, and measurement and evaluation. Therefore, a systematic investigation and model development are necessary to bridge this gap and to enhance the sustainable employment quality of higher vocational students.

Research Questions

1. What are the current and desired conditions of the sustainable employment quality among higher vocational students?
2. What is the educational management model be developed to enhance the sustainable employment quality of higher vocational students?
3. How feasible and appropriate is the educational management model for enhancing the sustainable employment quality of higher vocational students?

Objectives

1. To analyze the current and desired conditions of the sustainable employment quality of higher vocational students.
2. To develop an educational management model to enhance the sustainable employment quality of higher vocational students.
3. To evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

Scope of the Research

This research is divided into 3 phases:

Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

The details are as follows:

Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

Population

According to the Ministry of Education's official list released in June 2025, Guizhou Province has 48 higher vocational colleges (40 public, 8 private), with approximately 200,000 third-year students (graduating class of 2025) engaged in internship programs—averaging around 4,000 students per institution. This research targets these final-year students as the population, encompassing a broad and diverse group of learners across both technical and non-technical disciplines. The study aims to analyze the current and desired conditions of the sustainable employment quality of higher vocational students, particularly in relation to the implementation of effective and sustainable institutional support structures.

The Sample Group

According to Krejcie and Morgan (1970) Table for determining sample size, the recommended sample size for a population of approximately 200,000 is 384 respondents. Therefore, a total of 384 questionnaires were distributed to students across the selected higher vocational colleges. After data collection and screening for completeness and validity, 377 questionnaires were returned and deemed usable for analysis. The response rate was calculated at 98.18 percent, with a non-response rate of 1.82 percent. Since the proportion of missing responses was below the acceptable threshold of 10 percent, the collected data were considered adequate and appropriate for subsequent statistical analysis.

A total of 377 students were selected to participate in a structured questionnaire survey, which assesses the current and desired conditions of sustainable employment quality across seven core dimensions: Safety at Work, Income and Benefits from Employment, Working Hours and Work-Life Balance, Security of Employment and Social Protection, Social Dialogue, Skills Development and Training, and Workplace Relationships and Work Motivation. These dimensions comprehensively reflect the educational management practices and institutional

conditions that shape students' sustainable employment outcomes, providing empirical insights for subsequent model development.

The study aims to analyze the current and desired conditions of the sustainable employment quality of higher vocational students, particularly in relation to the implementation of effective and sustainable institutional support structures.

These selected students participated in a structured questionnaire survey designed to analyze the current and desired conditions of the sustainable employment quality of higher vocational students. The questionnaire encompassed seven dimensions of sustainable employment quality, namely Safety at Work, Income and Benefits from Employment, Working Hours and Work-Life Balance, Security of Employment and Social Protection, Social Dialogue, Skills Development and Training, and Workplace Relationships and Work Motivation. Together, these dimensions comprehensively reflect the educational management practices and institutional conditions that enhance the sustainable employment quality of higher vocational students.

Target Group

To support the interpretation of the quantitative findings and to provide expert validation and practical insights, a group of 15 educational experts and administrators from various higher vocational institutions across Guizhou Province were selected for in-depth interviews. Target group were selected by purposive sampling method and the criteria for selection of target group/key informants. These experts were selected using purposive sampling. The selection criteria included: (1) having at least five years of professional experience in vocational education management or industry human resource management; (2) possessing relevant knowledge and practical experience related to sustainable employment quality; and (3) willingness to participate in interviews, focus group discussions, and expert evaluation. The use of purposive sampling ensured that the selected experts had appropriate expertise to provide in-depth insights for model development and to evaluate the feasibility and appropriateness of the educational management model.

For the student participants, stratified random sampling was employed to ensure proportional representation across different academic years and fields of study. Students were randomly selected within each stratum to participate in the questionnaire survey.

Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

Target Group

A focus group discussion of 10 experts was established to participate in the development of an educational management model to enhance the sustainable employment quality of higher vocational students. The experts were selected based on their professional experience in areas such as education for sustainable development (ESD), higher vocational education, institutional policy planning, and employment services.

The group was composed of educators and specialists from universities, vocational colleges, and research institutions in Guizhou Province. Through a series of structured interviews and focus group discussions, the experts collaboratively analyzed the findings from Phase 1 and contributed to the design, framework construction, and functional components of the proposed educational management model, with a focus on practical applicability, institutional integration, and alignment with sustainable employment development goals.

Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

Target Group

In the final phase, a panel of 15 educational experts, including management personnel and faculty members from participating higher vocational colleges, was assembled to evaluate the implementation outcomes of the educational management model. The experts were selected based on the following criteria: (1) holding a master's degree or higher; and (2) having more than 10 years of experience in higher vocational education. In addition, 10 local business leaders with over 10

years of relevant industry experience were invited to participate in the evaluation process.

The evaluation was conducted based on multiple criteria, including the relevance of the model to labor market demands, its integration with institutional structures, the effectiveness of managerial and pedagogical components, and its alignment with the desired conditions for sustainable employment quality. Feedback from students, educators, and industry experts contributed to the refinement and optimization of the model to improve its practicality, appropriateness, and long-term applicability in higher vocational education settings.

The variable

Independent variable:

Educational management model to enhance the sustainable employment quality.

Dependent variable:

The feasibility and appropriateness of the proposed educational management model.

Contents

1. To analyze the current and desired conditions of sustainable employment quality among higher vocational students. This phase examined both the existing situation and the expected conditions across the seven dimensions of sustainable employment quality. Data were collected and analyzed to identify gaps between the current and desired states, which provided empirical evidence for model development.

2. To develop an educational management model for enhancing the sustainable employment quality of higher vocational students. Based on the findings from the situational analysis and the document study, an educational management model was constructed. The model incorporated principles, objectives, content components, roles of key actors, and measurement and evaluation mechanisms to systematically improve sustainable employment quality.

3. To evaluate the feasibility and appropriateness of the developed model. The developed educational management model was evaluated by experts using Likert-scale assessment criteria. The evaluation focused on the feasibility and appropriateness of the model components to ensure practical applicability and theoretical consistency.

Time

The research period from September 2024 to August 2025 was divided into the following stages:

1. Completing the proposal examination and revising the research proposal – September 2024.
2. Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students – January 2025 to February 2025.
3. Developing an educational management model to enhance the sustainable employment quality of Higher Vocational Education Students – March 2025.
4. Evaluating of the feasibility and appropriateness of the proposed model – May to June 2025.
5. Summarizing the research and submitting the research article – July to August 2025.

Advantages

1. For Students

Focusing on sustainable development within educational management, this study enhances the sustainable employment quality of students. Students gain essential technical skills and sustainable practices valued by employers, equipping them for success in a dynamic and evolving job market.

2. For Teachers and Industry Leaders

The study provides insights into integrating sustainable development into teaching and industry collaboration. By aligning educational content with industry

needs, educators and professionals can increase the practical relevance of vocational education, better preparing students for a sustainability-focused job market.

3. For Vocational Colleges

This study offers vocational colleges in Guizhou Province practical direction to reform educational management by integrating sustainable development principles. Aligning programs with labor market and sustainability goals can enhance career guidance, improve student employment outcomes, and strengthen institutional reputation.

Definition of Terms

Education Management refers to the integrated process of strategic planning, educational quality control, industry collaboration and adaptation to labor market demands. Highlighting curriculum alignment with the evolving job market and close industry-institution ties to foster employable graduates, this definition underscores the integration of strategic planning, quality assurance and industry collaboration, thereby underpinning education-driven employability while meeting market and educational standards. It thus provides a foundation for educational institutions to achieve operational efficiency, flexibility and relevance in a rapidly changing global context.

Model Development refers to a dynamic, integrated framework designed to bridge the gap between education and labor market demands, enhance graduates' employability and appropriateness. It emphasizes curriculum adaptation, industry collaboration, flexibility, and continuous improvement to sustain educational quality amid changes.

Employment Quality refers to the evolution of employment quality reflects a distinct shift from early labor market segmentation-focused views to comprehensive, multidimensional frameworks covering income, job stability, working conditions and broader social factors. No longer a purely economic metric, it has become a cornerstone of labor policy, social equity and sustainable development, and is now widely recognized as a dynamic, context-dependent construct that

encapsulates both job characteristics and their impacts on workers' well-being, career development and social integration.

Sustainable Employment Quality refers to sustainable employment quality has experienced a process of evolution from a single focus on long-term stability to a multi-dimensional integration of economic, social and environmental dimensions, from a general theoretical framework to a combination of specific national conditions and practice scenarios, and from a focus on the current generation to a consideration of intergenerational equity.

Higher Vocational Students refers to evolved from a narrow focus on technical skills to a broader scope covering dual education systems, employability, diversity, globalization and equity. This shift mirrors the growing complexity of vocational education in addressing both local labor market needs and global educational trends. However, existing studies have notable gaps: they overlook students' individual agency, lived learning experiences and long-term personal development beyond immediate employment. Additionally, definitions of higher vocational students vary widely across national and cultural contexts, highlighting the need for a more integrated, context-sensitive conceptualization to guide future educational research and policy design.

Research Framework

This research use this conceptual framework to develop an educational management model for enhancing the sustainable employment quality of higher vocational students. It begins with a literature review to establish the theoretical foundation, followed by a three-phase research process informed by empirical data collected through research instruments including questionnaires, interview forms, and evaluation forms, which are specifically applied to identify the current and desired conditions of sustainable employment quality, covering key dimensions such as work safety, income and benefits, work-life balance, employment security and social protection, social dialogue, skills development and training, and workplace relationships and work motivation. The entire study is grounded in the Sustainable

Development Goals, particularly SDG 8 (decent work) and SDG 4 (quality education), which guide the definition of the model's components and target outcomes. Finally, expert review and refinement will evaluate the model's feasibility and appropriateness, ensuring it effectively enhances the sustainable employment quality of higher vocational students.

The research framework of this study is presented in Figure 1.1.

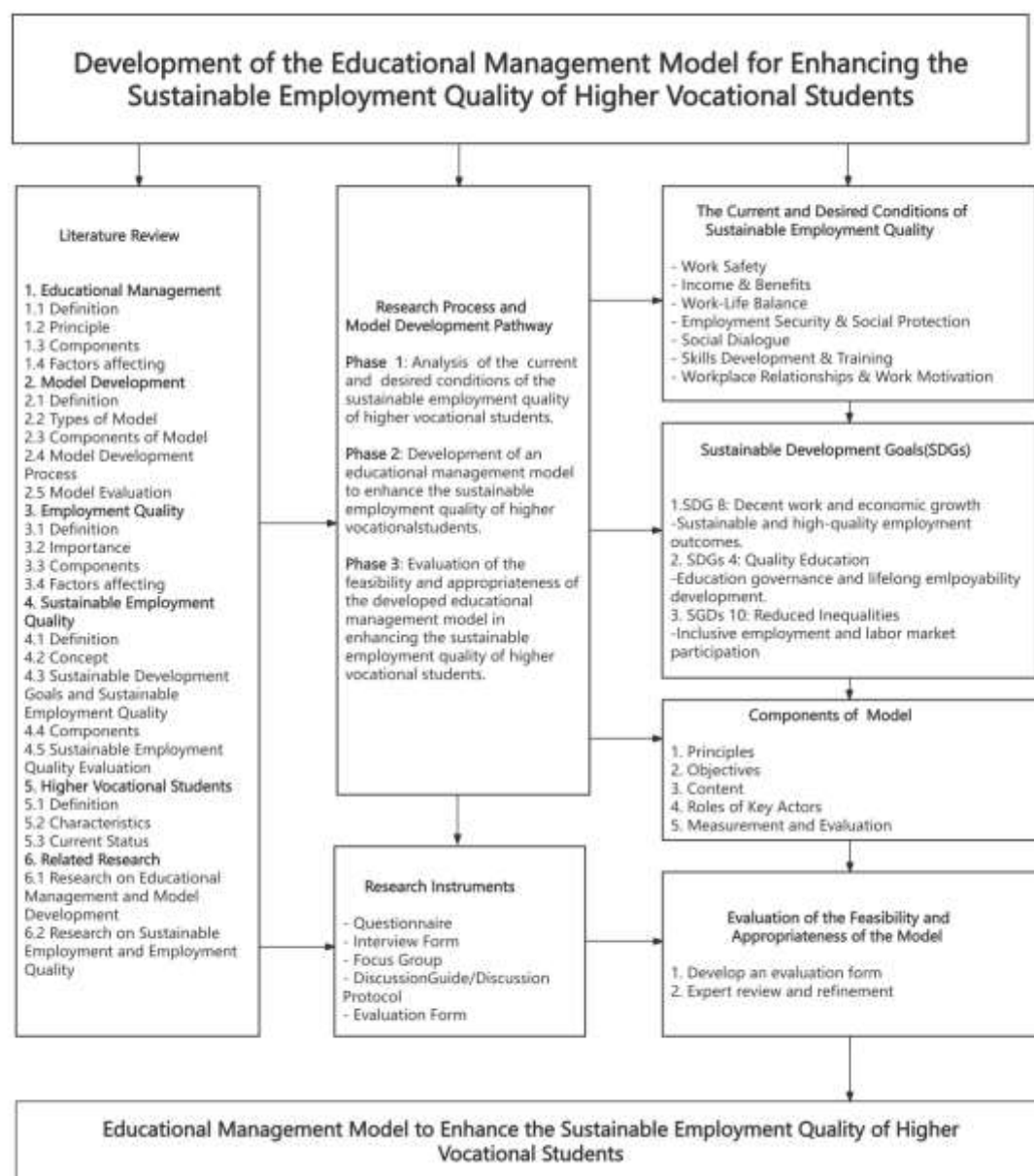


Figure 1.1 Research Framework

Chapter 2

Literature Review

A systematic search and review of relevant literature were conducted using various academic databases to support the development of an educational management model based on the principles of Education for Sustainable Development (ESD), aimed at enhancing the sustainable employability of students in higher vocational. The literature was meticulously categorized, organized, and analyzed to ensure alignment with the study's objectives, with a focus on key areas such as higher education management, employability, sustainable development, and vocational education. The key details of the literature review are as follows:

1. Concepts and theories of Education Management
2. Concepts and theories of Model Development
3. Concepts and theories of Employment Quality
4. Concepts and theories of Sustainable Employment Quality
5. Concepts and theories of Higher Vocational Students
6. Concepts and theories of Related Researches

Concepts and theories of Education Management

Education management is a critical field that involves the strategic and operational oversight of educational institutions. It encompasses a wide range of activities, from curriculum design to resource allocation, with a particular focus on ensuring the quality of education and enhancing students' employability. In vocational education, the management is particularly aimed at designing practice-oriented curricula, fostering industry partnerships, and ensuring that students acquire skills that meet labor market demands. This topic contains the following details:

Definition of Education Management

Definition of education management is as multifaceted and complex process involving multiple levels of administration. Its primary aim is to ensure that

educational institutions achieve their goals and improve the quality of teaching through effective planning and operations. In vocational education, the focus of management is on how to enhance students' employability by designing practice-oriented curricula and fostering close collaboration with industry partners. The details are as follows:

Gribkova et al. (2020) describe education management as a system that requires rigorous internal quality control and strong alignment with external labor market needs. They highlight that the definition of vocational education management must include the ability to develop and maintain curriculum content that remains relevant in fast-evolving technical contexts. Moreover, they stress the importance of industry collaboration as an integral component of management, ensuring that institutional planning produces graduates with job-ready skills aligned to actual business requirements.

Khamdamov et al. (2020) and Fearnley and Amora (2020) define education management in terms of its integration with Information and Communication Technology (ICT), especially in response to globalization and the digital era. Their definition frames education management as a digital transformation process that enhances operational efficiency and broadens access to educational resources. They emphasize that modern education management includes enabling flexible learning models and applying data-driven decision-making to support continuous educational improvement.

Sterling and Walker (2020) extend the definition of education management to include the principles of Education for Sustainable Development (ESD). They argue that managing vocational education today requires embedding sustainability into the curriculum, fostering students' awareness of social responsibility and long-term global challenges. This approach to management is centered on preparing students not only for current workforce needs but also for the demands of a sustainable future.

Nurchahya et al. (2021) explained that educational management is a discipline that integrates management principles within educational contexts. The basic

functions include planning, organizing, directing, coordinating, and controlling educational activities. This study also addresses the urgency of management in education, reviews its functions, explores various management models, and discusses the evolution of management theory as applied to educational institutions. The approach aims to foster institutional improvement and a deeper understanding of how effective educational management contributes to addressing systemic educational issues. Additionally, the study highlights that understanding management theory is crucial for adapting to contemporary educational problems, such as inequality, decentralization, and leadership effectiveness. By applying theoretical frameworks, schools can improve decision-making, stakeholder coordination, and instructional quality. The research underscores that a strong conceptual foundation in educational management enables leaders to make strategic choices that support both academic excellence and institutional resilience. The authors emphasize the importance of aligning management practices with evolving policy, technology, and learner needs.

Nurcahya et al. (2022) said that educational management is a discipline that integrates the principles of management with the context of education. It involves planning, organization, guidance, coordination, and control. The study emphasizes understanding the functions (e.g., decision-making, leadership), models of management in education (such as classical, human-relations, and systems models), and the principles and evolution of management theory in the educational field. By using qualitative library research, the authors highlight the urgent need to define and refine educational management in response to persistent educational issues and evolving societal demands. The framework aims to foster deeper insight into how educational management can be applied in modern educational institutions for sustainable development.

Roberts and King (2022) offer a comprehensive definition of education management as the strategic integration of planning, resource coordination, quality assurance, and collaboration mechanisms. They emphasize that vocational institutions must manage these components holistically to maintain competitiveness

and effectively serve their local economies. Their conceptualization positions education management as a continuous improvement process responsive to dynamic external conditions.

Zhao et al. (2022) define education management in constrained regions as the strategic optimization of limited resources and the coordination of partnerships to achieve educational equity and employability outcomes. In their view, management in such contexts must be proactive, solution-oriented, and grounded in sustainability goals, ensuring institutional capacity to provide high-quality education despite environmental limitations.

Jemmy et al. (2023) describe education management as a systematic process encompassing strategic planning, resource allocation, teaching quality assurance, and administrative oversight. They particularly emphasize the importance of practice-oriented teaching in vocational education. By closely aligning with industry needs, curriculum design must respond swiftly to market changes to ensure that students acquire the practical skills and competitiveness required by industry upon graduation. This management approach not only enhances students' employability but also contributes to an overall improvement in education quality. The literature further discusses how internal management systems can effectively monitor and improve teaching outcomes, ensuring that educational institutions continue to meet labor market demands.

Ulan Dari and Sukma (2024) define education management within vocational contexts as a flexible and responsive system that emphasizes the practicality of curriculum design and rapid appropriateness to market demands. According to their study, vocational education management is characterized by the need to continuously adjust student support, industry collaboration, and resource allocation strategies in order to ensure educational quality and enhance student employability. This definition underscores the managerial responsibility to maintain institutional resilience, especially in resource-limited environments, through innovative and collaborative solutions such as industry partnerships.

Nithedsilp et al. (2024) defines educational management as a comprehensive process that encompasses strategic planning, quality control in education, industry collaboration, and appropriateness. In other words, educational management requires strategic planning to ensure the achievement of educational goals, ensuring that the curriculum aligns with external labor market demands, and strengthening connections with external industries through industry collaboration.

In summary, this study adopts Nithedsilp et al.'s (2024) definition of educational management: an integrated process of strategic planning, educational quality control, industry collaboration and adaptation to labor market demands. Highlighting curriculum alignment with the evolving job market and close industry-institution ties to foster employable graduates, this definition underscores the integration of strategic planning, quality assurance and industry collaboration, thereby underpinning education-driven employability while meeting market and educational standards. It thus provides a foundation for educational institutions to achieve operational efficiency, flexibility and relevance in a rapidly changing global context.

Principle of Educational Management

In the context of rapid globalization, the effectiveness of educational management is considered essential for improving educational quality and enhancing the sustainable employment capacity of students. The details are as follows:

Yupin (2016) in *Journal of Educational Research* introduced a management model of professional services for private vocational institutions, emphasizing the importance of close collaboration between schools, enterprises, and communities in order to respond effectively to labor market needs.

Building upon this perspective, Thanapat et al. (2019) in *Journal of Educational Administration and Leadership* stressed that private vocational education management, when based on international quality standards, requires a clear organizational structure and defined responsibilities for personnel, which directly supports the principle of organizational management.

Chatchaya (2020) in *Journal of Educational Sciences* discussed the challenges of educational management in the era of disruptive change, highlighting the need for effective evaluation systems and timely feedback mechanisms. This aligns closely with the principle of reporting, ensuring accountability and continuous improvement.

As the digital and disruption era unfolded, Supattra and Sutthipong (2022) in the *Proceedings of the 4th National Research Conference* underscored that educational administrators must not only possess subject knowledge but also demonstrate innovation and appropriateness, which directly corresponds to the staffing principle. In parallel, Sujitra et al. (2022) in *Academic Journal, Pacific Institute of Management* highlighted that in digital disruption contexts, effective communication and coordination are vital for success, particularly under the principle of diagnosis and command.

Finally, Nithedsilp et al. (2024) proposed that educational management should follow seven core principles: planning, organizational management, staffing, diagnosis and command, coordination, reporting, and budget allocation. These principles not only provide an overall framework for governance in educational institutions but also highlight the dynamic interaction between internal school processes and external environmental demands. Effective planning ensures that institutions define clear goals, timelines, and strategies to align with rapid technological and economic transformations, while organizational management focuses on establishing transparent structures and responsibilities that improve efficiency. Staffing underscores the recruitment and development of qualified personnel capable of integrating innovation and responding to diverse student needs, which directly supports the labor market's call for adaptable graduates. Similarly, diagnosis and command emphasize clear communication and consistent supervision to maintain coherence in educational operations, whereas coordination highlights the necessity of building partnerships with industry, communities, and government sectors to strengthen the employability of students. Reporting and budget allocation further guarantee transparency, accountability, and resource optimization, which are crucial in contexts of limited funding and heightened expectations. Taken together,

these seven principles form an integrated system that enables vocational institutions to adapt to global changes, enhance institutional performance, and ultimately prepare students for sustainable careers in an increasingly competitive labor market.

In summary, the seven principles of educational management constitute a core framework for addressing the challenges of a rapidly changing era and provide an institutional foundation for enhancing the sustainable employment quality of higher vocational students.

Component of Educational Management

In the process of synthesizing the literature, it was found that scholars generally agree that the core components of educational management are based on seven fundamental principles: planning, organizational management, staffing, diagnosis and command, coordination, reporting, and budget allocation. These principles not only form the theoretical foundation of educational management but also serve as essential elements supporting the effective governance of educational institutions. Building upon this foundation, Nithedsilp et al. (2024) proposed the Integrated Educational Administration Framework, which converts abstract principles into practical components and organizes educational management into three interconnected dimensions. The framework first considers the Need, referring to the essential conditions required for effective governance; then addresses the Problem, capturing the challenges and gaps between institutional policies and actual practices; and finally presents Suggestions, offering feasible solutions for continuous improvement. Through this coherent progression from needs to problems and corresponding solutions, the framework provides a clear structure for translating educational management principles into actionable practices.

Through the logical chain of “Need–Problem–Suggestions,” this framework translates abstract principles into concrete implementation schemes, thereby forming the structured components of educational management.

1. Planning

1) Need: Educational institutions require clear and systematic planning with defined goals, timelines, and implementation strategies. 2) Problem: In practice, plans

are often vague, lack measurable objectives, or fail to include the perspectives of key stakeholders, leading to inefficiencies. 3) Suggestions: Administrators should involve teachers, staff, and external stakeholders in joint planning sessions to ensure the plans are comprehensive, achievable, and aligned with both institutional needs and external expectations.

2. Organizational Management

1) Need: A transparent organizational structure with clearly defined roles and responsibilities is essential for smooth institutional functioning. 2) Problem: In many institutions, unclear hierarchies and ambiguous responsibilities lead to overlapping duties, reduced accountability, and administrative inefficiency. 3) Suggestions: Establish a well-defined organizational framework consistent with the institution's mission, while ensuring role clarity and accountability for all personnel.

3. Staffing

1) Need: Recruitment and retention of qualified personnel with appropriate skills and knowledge are central to effective educational management. 2) Problem: Institutions often face shortages of qualified staff or mismatches between staff competencies and institutional needs, which hinder quality education delivery. 3) Suggestions: Implement rigorous recruitment processes, offer professional development opportunities, and create incentives to attract and retain highly skilled educators and administrators.

4. Diagnosis and Command

1) Need: Consistent supervision and effective decision-making are required to maintain institutional coherence and ensure policy execution. 2) Problem: Lack of clear guidance, inconsistent monitoring, and inadequate feedback mechanisms weaken institutional control and create confusion in implementation. 3) Suggestions: Establish transparent channels of command, provide continuous guidance, and conduct systematic performance evaluations to strengthen decision-making and accountability.

5. Coordination

1) Need: Effective coordination among departments, staff, and external stakeholders ensures the smooth flow of information and resources. 2) Problem: Poor communication, departmental silos, and insufficient collaboration often lead to fragmented practices and duplication of efforts. 3) Suggestions: Promote a culture of collaboration by establishing cross-functional teams, joint projects, and regular coordination meetings to enhance institutional synergy.

6. Reporting

1) Need: Transparent and efficient reporting systems are necessary for institutional accountability and performance tracking. 2) Problem: Reports are frequently incomplete, delayed, or lack analytical depth, limiting their usefulness in guiding decision-making. 3) Suggestions: Standardize reporting formats, ensure timely submission, and involve relevant stakeholders in both the preparation and evaluation of reports to improve reliability and transparency.

7. Budget Allocation

1) Need: Efficient and well-monitored budget allocation is vital to ensure resources are directed toward institutional priorities. 2) Problem: Misallocation of funds, lack of expenditure control, and insufficient alignment with institutional goals often result in resource wastage. 3) Suggestions: Develop detailed budgets based on institutional priorities, implement strict monitoring and auditing systems, and adjust allocations in response to emerging needs.

Hallinger and Bryant (2020) conceptualize the key components of educational management through the lens of instructional leadership and school effectiveness. They argue that effective educational management is grounded in four essential elements: strategic vision, instructional supervision, organizational culture building, and mechanisms for continuous improvement. First, strategic vision serves as the starting point for institutional development, requiring leaders to articulate clear goals and align them with daily operations to ensure coherent progress within dynamic educational environments. Second, instructional supervision encompasses classroom observations, teacher support, curriculum evaluations, and feedback processes,

positioning leaders as facilitators of instructional quality and professional growth. Third, the cultivation of a positive organizational culture is viewed as central to promoting collaboration, innovation, and shared responsibility among staff. Hallinger and Bryant emphasize that cultural factors can significantly influence school effectiveness, often exerting impacts beyond formal structures and policies. Lastly, continuous improvement mechanisms—including data-driven decision-making, systematic feedback loops, and regular performance evaluations—provide essential structures for sustaining institutional effectiveness over time. Together, these elements highlight the pivotal role of leadership, culture, and ongoing development in shaping a coherent and effective educational management system.

Akhavan and Dehghani (2022) redefine the components of educational management from the perspective of resource optimization, technological integration, stakeholder engagement, and quality assurance. They argue that in the context of rapid digital transformation, effective educational management increasingly depends on the seamless integration of technological tools, efficient allocation of institutional resources, and participatory governance. Technological integration includes the implementation of digital platforms, smart campus systems, data management frameworks, and instructional technologies, which collectively enhance transparency, flexibility, and innovation in teaching and administration. Resource management, covering human, financial, and material resources, is considered fundamental for operational stability and efficiency. They emphasize that equitable and sustainable allocation of resources is vital for supporting instructional activities and institutional development. In addition, stakeholder engagement encompassing teachers, students, administrative staff, community members, and external partners plays a critical role in ensuring the relevance and practicality of educational decisions. Collaborative participation strengthens policy legitimacy and supports effective implementation. Finally, quality assurance mechanisms such as ongoing monitoring, systematic evaluation, internal audits, and external accreditation processes are identified as crucial components that maintain high standards of educational quality and organizational performance. Overall, Akhavan and Dehghani's

framework foregrounds technology integration, collaborative governance, and quality assurance as core elements of contemporary educational management.

In summary, a review and synthesis of the literature reveal that scholars consistently emphasize several key elements and challenges in the theory and practice of educational management. First, effective educational management requires clear strategic planning, well-coordinated organizational structures, and clearly defined roles and responsibilities, which together form the foundational conditions for institutional effectiveness. Second, the literature consistently identifies a gap between policy design and practical implementation, a discrepancy often attributed to insufficient communication, lack of concrete planning, or limited stakeholder involvement in the decision-making process. Additionally, the development of a competent teaching workforce and the provision of ongoing professional support remain recurring needs in educational management, as mismatches between staff competencies and institutional demands frequently hinder educational quality. At the same time, continuous supervision mechanisms, feedback systems, and data-driven decision-making are viewed as essential safeguards for enhancing accountability and promoting ongoing improvement. Furthermore, the optimization of resources and the integration of technological tools are considered indispensable features of modern educational management, especially in the context of rapid digital transformation. Finally, the literature highlights collaboration, transparency, and appropriateness as core characteristics of effective educational management, enabling institutions to remain flexible and competitive in an ever-changing environment.

Factors affecting education management

Many scholars have analyzed the factors influencing education management, noting that the effectiveness of educational administration is shaped by multiple complex and interconnected conditions. In the context of rapid global change, educational institutions must adapt their management models to respond to these varied pressures. In this study, four major factors affecting education management are identified as follows: 1) Technological and Digital Transformation 2) Economic and

Social Changes 3) Educational Reform and Policy Changes 4) Geopolitical and Environmental Changes.

These factors exert significant influence on how management systems are designed, implemented, and adjusted to maintain institutional performance, sustainability, and responsiveness to global educational demands. As illustrated in Figure 2.2, they collectively reflect the dynamic environment in which modern educational management operates.

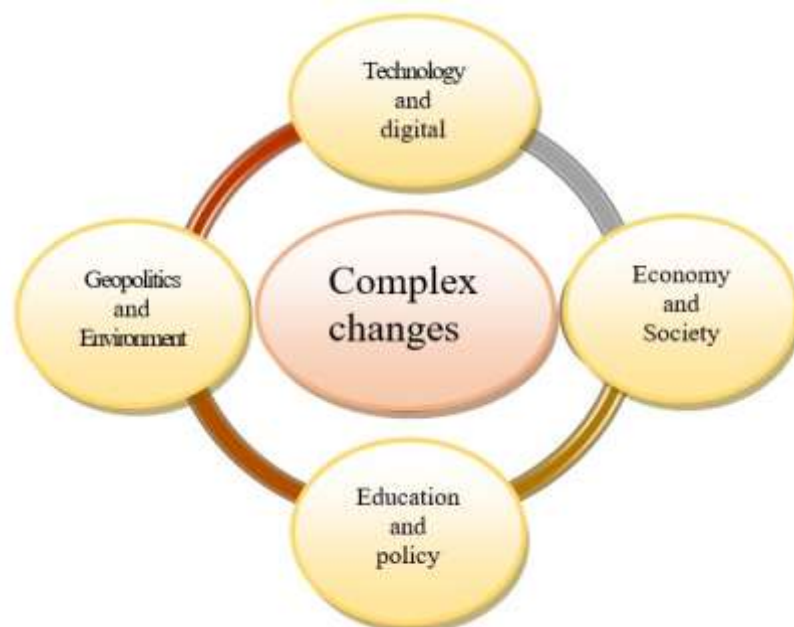


Figure 2.1 Four major complex changes

(Source: Nithedsilp et al., 2024)

Technological and digital transformation has been widely recognized as one of the major factors affecting education management. Zawacki-Richter et al. (2020) emphasized that digital transformation in education requires the integration of online and blended learning systems, supported by digital media and infrastructure, to enhance educational quality and equity. In line with this perspective, digital technologies are increasingly shaping administrative processes, instructional design, and institutional decision-making, leading to new models of educational delivery and management.

Economic and social changes were identified as key factors affecting education management. Schleicher (2020) argued that preparing students for the demands of the modern labor market requires embedding 21st-century skills—such as problem-solving, critical thinking, and teamwork—into curricula. These rapid shifts in economy and society reshape labor demands, making the cultivation of adaptable, skilled graduates essential for institutional planning and management. Likewise, re-indispensable in modern societies where technological disruption and demographic shifts shape labor demand. Rapid shifts in the economy and society demand that education prepare learners for modern labor markets. This includes designing curricula and activities that emphasize 21st-century skills such as critical thinking, problem-solving, teamwork, communication, and innovation. The growing importance of appropriateness and lifelong learning also highlights the need for flexible programs. Moreover, the diversity of students in terms of ability, background, and culture requires inclusive approaches that create supportive learning environments. Demographic trends, such as population aging and declining school-age cohorts, further shape the demand for education, while the increasing number of international students calls for global perspectives in management.

Educational reform and policy changes were identified as key factors affecting education management. Fullan and Quinn (2020) suggested that educational reform should focus on renewing curricula, improving teaching strategies, and building assessment systems that ensure higher educational quality. It is similar to the concept of Zhao (2021) stressed the importance of building school–community partnerships and international collaboration to strengthen educational development and innovation. Another key factor lies in changes in educational systems and policy reforms. Schools are expected to modernize curricula, teaching methods, and assessment systems in order to meet higher standards of educational quality. Stronger parent and community participation is encouraged to support educational outcomes, while partnerships between schools, communities, and external organizations are essential for continuous improvement. Furthermore, building collaborative networks with both domestic and international educational

institutions—across public and private sectors—facilitates knowledge sharing and quality development.

Geopolitical and environmental changes were identified as significant factors affecting education management. UNESCO (2020) reported that global geopolitical instability and environmental challenges require schools to build resilience and integrate sustainability principles into their operations and curricula. This concept was similar to the concept of Sterling and Orr (2022) emphasized that embedding ecological responsibility in education management is crucial for long-term institutional sustainability and student preparation for global citizenship. Global uncertainty, including economic and political instability, directly impacts the priorities and resilience of educational institutions. Administrators are required to develop systems capable of coping with such volatility while promoting appropriateness among staff and students. At the same time, the increasing importance of sustainability demands the integration of environmental awareness and sustainable development principles into teaching and management practices. This includes not only the efficient use of resources but also embedding long-term ecological responsibility into the mission of educational institutions.

In summary, factors affecting educational management in the era of rapid globalization were influenced by multiple interconnected factors that collectively shape its effectiveness and direction. Technological and digital transformation drives profound changes in teaching, learning, and administrative processes, requiring strong digital infrastructure and data-driven decision-making. Economic and social changes highlight the importance of 21st-century skills, appropriateness, lifelong learning, and inclusive practices to meet the diverse needs of students. Educational reforms and policy updates demand higher standards for curricula, teaching, and assessment, while strengthening collaboration among schools, families, communities, and both domestic and international institutions. Meanwhile, geopolitical and environmental changes call for resilience, sustainability, and the integration of ecological responsibility into the mission of education. Taken together, these factors form the essential framework through which educational management can address global challenges and enhance the sustainable employment quality of higher vocational students.

Concepts and theories of Model Development

In response to the evolving demands of the labor market and the need for higher vocational education to the sustainable employment quality of students., the Employment Quality Model was developed. This model provides a comprehensive framework for assessing and improving the employability of graduates, ensuring their long-term career success and satisfaction. It reflects the increasing recognition that higher education must not only prepare students for immediate employment but also equip them with the appropriateness and competencies required for sustainable professional growth in a rapidly changing environment. This topic contains the following details:

Definition of Model

The Employment Quality Model is a multi-dimensional, integrated framework designed to enhance the employability of graduates, ensuring their long-term career success in a rapidly evolving labor market. The core objective of this model is to address the gap between educational outputs and labor market demands. It provides a strategic approach, ensuring that graduates not only possess the required professional technical skills but also develop the appropriateness and resilience needed for sustained career growth in a dynamic environment. The details are as follows:

Gribkova et al. (2020) describe this model as a dynamic system that requires continuous alignment with external labor market demands. They emphasize that vocational education management, as defined within the model, must include the ability to develop and maintain curriculum content that adapts to the rapidly changing technological landscape. Furthermore, they stress that industry collaboration is a critical component of the system, ensuring that graduates gain job-ready skills closely aligned with real-world business needs, preparing them for the workforce.

Wren and Bedeian (2020) support this perspective, asserting that management must be understood as a dynamic and evolving process. They argue that educational management models must be flexible and adaptive to meet the challenges posed

by technological advancements, market fluctuations, and other external pressures. Specifically, these models must continuously adjust to the changing internal and external environment to align institutional strategies with both educational needs and market demands.

Rahmatullah (2021) expands on this by examining how the COVID-19 pandemic disrupted traditional education management models. He suggests that the sudden shift to online learning highlighted the limitations of older models, underscoring the need for education management that is both flexible and adaptive. Rahmatullah's study emphasizes that this model must include mechanisms for continuous improvement, particularly when responding to global crises, ensuring that educational quality remains intact during times of disruption.

Taking into account these scholarly perspectives, the Employment Quality Model is defined as a comprehensive, dynamic framework that integrates curriculum design, industry collaboration, and continuous professional development. The model emphasizes that higher education institutions must not only provide students with the skills required by the labor market but also foster their appropriateness, preparing them to succeed in an ever-changing global environment.

In summary, the model is a dynamic, integrated framework designed to bridge the gap between education and labor market demands, enhance graduates' employability and appropriateness. It emphasizes curriculum adaptation, industry collaboration, flexibility, and continuous improvement to sustain educational quality amid changes.

Types of Model

In the field of educational management and graduate employment quality research, models are classified into different types based on their core functions, application scenarios, structural characteristics and design concepts. Scholars at home and abroad have put forward diverse classification standards and type definitions from different research perspectives, which provide a comprehensive theoretical reference for the selection, construction and application of models. The main research viewpoints on the types of models are summarized as follows:

Smith et al. (2020) classified the models into static models and dynamic models based on whether they can adapt to environmental changes. Static models are constructed based on fixed environmental conditions and factor settings, with stable structure and clear indicators, but lack the ability to adjust to changes in the labor market and educational environment. Dynamic models, by contrast, have a built-in adjustment mechanism that can continuously optimize model parameters and structural settings according to changes in external factors such as technological updates, market fluctuations and policy adjustments, and are more in line with the actual needs of the dynamic development of employment quality.

Chen et al. (2021) proposed a classification of linear models and non-linear models. Linear models assume that there is a linear relationship between the core factors affecting employment quality (such as curriculum setting, industry cooperation, etc.) and employment quality indicators, which are simple in structure and easy to apply, and are suitable for the initial stage of model research. Non-linear models, on the other hand, consider the complex non-linear relationship and interaction between various factors, which can more accurately reflect the actual situation of employment quality improvement, but have higher requirements for data and research methods.

Lee and Park (2022) divided the models into result-oriented models and process-oriented models. Result-oriented models focus on the evaluation of employment quality results, taking indicators such as graduates' employment rate, salary level and career development status as the core evaluation content, and focus on verifying the effectiveness of the model through result data. Process-oriented models focus on the whole process of improving employment quality, paying attention to the implementation effect of each link such as curriculum design, teaching practice and industry cooperation, so as to find problems in the process and optimize them in a timely manner.

Li et al. (2022) divided the employment quality-related models into two main types: predictive models and guiding models. Predictive models focus on using historical data such as graduates' academic performance, professional skills and

labor market demand to predict graduates' employment quality and employment prospects, providing data support for educational institutions to adjust training strategies. Guiding models, on the other hand, focus on guiding the practice of educational management, clarifying the core links and implementation paths of improving employment quality, and providing operational guidelines for educational institutions and enterprises.

Zhang and Wang (2023) classified the models into school-level models, enterprise-level models and regional-level models. School-level models are mainly constructed for the characteristics of a single educational institution, focusing on optimizing the school's curriculum system, teaching methods and employment guidance services to improve the employment quality of its own graduates. Enterprise-level models are led by enterprises, focusing on matching the enterprise's talent demand standards with the training objectives of educational institutions to achieve the docking of talent training and job needs. Regional-level models are constructed based on the overall labor market demand and educational resources of a region, aiming to coordinate regional educational resources and promote the overall improvement of graduates' employment quality in the region.

Liu et al. (2023) proposed single-factor models and multi-factor integrated models. Single-factor models focus on the impact of a single core factor (such as industry cooperation depth, teacher professional level, etc.) on employment quality, which are conducive to in-depth exploration of the role mechanism of a single factor. Multi-factor integrated models integrate multiple factors affecting employment quality, consider the interaction between various factors, and can more comprehensively reflect the formation mechanism of employment quality, which is the main direction of current model research.

To sum up, scholars have formed a variety of classification standards for the types of employment quality-related models, and each type of model has its own characteristics, applicable scenarios and research focuses. The diversity of model types provides a rich theoretical basis for the in-depth research of employment quality models, and also provides more choices for educational institutions to select

and apply models according to their own actual conditions. However, there are still overlaps and differences in the classification standards of existing studies, which need to be further standardized and improved in follow-up research.

Components of Model

The structural design of the Educational Management Model in this study is grounded in curriculum theory, educational management theory, stakeholder theory, vocational education theory, and quality assurance literature. Across decades of scholarship, educational models have consistently been conceptualized as systematic structures composed of foundational principles, clearly defined objectives, operational content, stakeholder responsibilities, and evaluation mechanisms. The theoretical roots of these components can be traced through the following major contributions:

Tyler (1949) referred to educational planning as a rational and systematic process beginning with clearly defined objectives derived from learners, society, and subject matter. He emphasized that objectives guide the selection of learning experiences and determine evaluation criteria, thereby creating internal coherence within educational systems. Although his model is often summarized as objective-centered, Tyler's framework implicitly demonstrates that structured educational models require defined purposes, aligned content, and assessment mechanisms. His work laid the foundation for understanding educational models as organized systems rather than fragmented activities.

Building upon Tyler's framework, Taba (1962) proposed that curriculum models should include objectives, content selection, organization of learning experiences, and evaluation. She emphasized that curriculum development is a deliberate and structured process requiring internal consistency among its components. Taba highlighted that educational models must integrate philosophical assumptions with practical implementation processes. Her inductive model reinforced the idea that educational systems operate through interconnected structural elements, thereby supporting the multi-component structure adopted in the present study.

Knowles (1970), through the theory of andragogy, emphasized the importance of underlying assumptions about learners in designing adult and vocational education systems. He argued that educational design must reflect principles such as learner autonomy, experiential learning, and problem-centered instruction. These assumptions function as philosophical foundations that shape curriculum objectives, teaching methods, and evaluation practices. In vocational education contexts, such principle-based design is especially crucial, reinforcing the inclusion of foundational “Principles” as a structural component of the model.

Freeman (1984) introduced stakeholder theory, arguing that organizations function within networks of interdependent actors whose interests must be identified and managed. He emphasized that effective governance requires clarifying stakeholder roles and responsibilities to ensure organizational sustainability. In educational institutions, administrators, teachers, and students represent core stakeholders whose coordinated interaction determines institutional outcomes. Freeman’s framework provides theoretical justification for incorporating “Roles of Key Actors” as an explicit structural element within educational management models.

Deming (1986) introduced principles of continuous quality improvement, emphasizing the importance of systematic measurement, feedback loops, and ongoing refinement within organizational systems. He argued that quality cannot be ensured without structured monitoring and data-driven decision-making. Although developed in industrial contexts, Deming’s framework has been widely applied in educational quality management. His theory reinforces the necessity of embedding evaluation and continuous improvement processes within educational management models.

Print (1993) conceptualized curriculum as a structured integration of objectives, content, learning experiences, and evaluation. He emphasized coherence and systematic design in curriculum construction, arguing that effective educational models require alignment among these elements. Print’s work further consolidated the understanding that educational systems operate as structured frameworks composed of multiple interrelated components.

Fullan (2007) emphasized that sustainable educational reform depends on clear moral purpose, stakeholder engagement, and continuous feedback mechanisms. He argued that reforms fail when systems lack coherent guiding principles and collaborative implementation structures. His theory integrates principles, roles, and evaluation into a unified reform framework, reinforcing the necessity of a multi-component educational management model.

Bush (2011) referred to educational management as a governance system involving leadership structures, policy implementation, and stakeholder coordination. He emphasized that educational institutions require clearly defined administrative roles and organizational mechanisms to function effectively. His theory highlights the managerial and structural dimensions of educational models, supporting the integration of governance and stakeholder roles within the present framework.

Synthesizing these theoretical contributions, the present study structures the Educational Management Model into five interrelated components: Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation. This structure is not arbitrarily constructed but reflects a systematic integration of curriculum theory, vocational education scholarship, stakeholder governance frameworks, and quality assurance principles. Together, these theoretical foundations provide legitimacy and conceptual coherence to the model developed in this research. Each component is grounded in established academic traditions, as elaborated below.

1. Principles

Dewey (1938) conceptualized education as a socially embedded and experience-based process guided by democratic values and continuous growth. He emphasized that educational systems must be grounded in normative commitments that shape institutional direction rather than merely transmitting knowledge. Dewey's philosophical perspective suggests that any educational model must articulate its value orientation explicitly. This supports the inclusion of principles as the foundational layer of the present model.

Tyler (1949) proposed that educational planning begins with defining the purposes education seeks to achieve, derived from societal needs and learner characteristics. Although Tyler's model is often associated with objectives, it implicitly assumes the existence of guiding assumptions that determine what is worth teaching. These foundational assumptions function as institutional principles that orient decision-making and curricular coherence.

Knowles (1970) introduced the theory of andragogy, emphasizing learner autonomy, experiential learning, and competency development in adult and vocational education. His framework highlighted that educational systems must be built upon clearly articulated assumptions about learners and learning processes. These assumptions serve as operational principles guiding institutional management in vocational contexts.

Fullan (2007) further argued that sustainable educational reform depends on clearly articulated moral purpose and shared guiding values. Without explicit principles, institutional reforms lack coherence and long-term impact. Collectively, these perspectives justify positioning sustainability, equity, lifelong learning, and decent work orientation as the guiding principles of the present model.

UNESCO (2015), through the Education for Sustainable Development framework, emphasized that education systems should integrate sustainability, equity, and long-term social responsibility into institutional planning. This perspective extends traditional curriculum thinking by embedding environmental and social sustainability as core principles of educational governance.

In summary, the reviewed literature indicates that educational models require clear guiding foundations to ensure coherence and direction. Scholars consistently emphasize that educational systems should be based on defined assumptions and value orientations that inform planning and implementation. Therefore, the Principles component in the present model serves as the foundational basis that guides the development of objectives, content design, stakeholder roles, and evaluation processes.

2. Objectives

Tyler (1949) emphasized that objectives serve as the starting point of systematic curriculum design, providing direction for content selection and evaluation. He argued that clearly defined objectives ensure alignment within the educational system. This foundational view establishes objectives as a central structural component of any educational model.

Bloom (1956) expanded the understanding of educational objectives by proposing a taxonomy of cognitive domains, highlighting the need for measurable and structured learning outcomes. His work reinforced the importance of specifying educational goals in observable and assessable terms, which supports the operationalization of sustainable employment quality indicators.

Becker (1964), through human capital theory, framed education as an investment in skills and competencies that enhance economic productivity and individual earning potential. His theory connects educational objectives directly to labor market outcomes, providing theoretical justification for linking vocational education objectives with employment sustainability.

Spady (1994) introduced outcome-based education, arguing that educational systems should be organized around clearly defined performance outcomes. He emphasized competency mastery and real-world applicability, which aligns closely with vocational education objectives.

More recently, OECD (2019) highlighted employability skills, adaptability, and lifelong learning as measurable outcomes necessary for sustainable labor market participation. Together, these theoretical contributions support defining the objectives of the present model as enhancing multidimensional sustainable employment quality rather than merely increasing employment rates.

Overall, the literature confirms that clearly defined objectives are essential for systematic educational development. Objectives provide direction for curriculum organization, implementation, and evaluation, ensuring alignment within the educational system. Accordingly, the Objectives component in this model specifies

the expected outcomes of enhancing sustainable employment quality, forming the central direction of the management process.

3. Content

Taba (1962) emphasized that curriculum content represents the structured organization of knowledge and learning experiences aligned with objectives. She argued that content selection should be systematic and responsive to societal needs, establishing content as a core operational element of curriculum models.

Print (1993) further conceptualized curriculum as an integrated system of objectives, content, learning experiences, and evaluation. He emphasized coherence among these components to ensure effective implementation. This reinforces the idea that content operationalizes theoretical principles and objectives.

Finch and Crunkilton (1999) focused specifically on vocational and technical education, arguing that curriculum content must be responsive to industry standards and workplace competency requirements. Their work highlights the necessity of aligning vocational content with labor market realities.

Raelin (2008) introduced work-based learning theory, emphasizing the integration of academic knowledge with workplace practice. He argued that learning occurs through participation in authentic professional contexts, supporting the inclusion of school–enterprise collaboration within curriculum content.

Billett (2011) further emphasized workplace learning as central to vocational competence formation, highlighting the role of guided participation in occupational settings. Collectively, these scholars support defining content in the present model as encompassing curriculum reform, skill training systems, career guidance, and collaborative industry engagement.

In sum up, the studies highlight that content represents the operational dimension of educational models. It translates principles and objectives into structured learning arrangements and practical implementation mechanisms. Therefore, the Content component in the present model functions as the core operational element through which institutional goals are implemented in practice.

4. Roles of Key Actors in the Model

Sustainable employment quality in higher vocational education requires collaborative governance among key stakeholders. Educational management theory highlights the interconnected roles of administrators, teachers, and students in ensuring effective implementation of institutional policies, teaching practices, and competency development. Clarifying these roles provides the theoretical basis for constructing a coordinated educational management model. This topic contains the following details:

1) Administrators

Administrators serve as the core governance actors within educational institutions. Their responsibilities include strategic planning, policy implementation, resource coordination, and quality assurance. In higher vocational education, administrators facilitate alignment between institutional management and labor market needs, thereby creating structural conditions that support sustainable employment quality. The details are as follows:

Nurcahya et al. (2021) explored the pivotal role of administrators in translating management principles into educational practice, noting that their strategic planning, coordination, and decision-making directly shape institutional capacity to address systemic issues like inequality and adapt to technological change. They emphasize that administrators' grasp of management theory enables them to align institutional goals with learner needs and policy shifts, laying the foundation for effective educational governance.

Nithedsilp et al. (2024) refer to administrators as core drivers of integrated educational management, highlighting their responsibilities in implementing the seven core principles—planning, organizational management, staffing, diagnosis and command, coordination, reporting, and budget allocation. Their research underscores that administrators must balance internal process optimization with external industry collaboration, ensuring educational quality and labor market alignment to enhance student employability.

Zhao et al. (2022) explored administrators' role in resource-constrained regions, arguing that their ability to strategically optimize limited resources and coordinate partnerships is critical for achieving educational equity and sustainable employment outcomes. They note that proactive, solution-oriented administrative practices—grounded in sustainability goals—enable institutions to overcome environmental limitations and deliver high-quality vocational education.

Akhavan and Dehghani (2022) refer to administrators as facilitators of technological integration and stakeholder engagement in modern educational management. Their study emphasizes that administrators must lead the adoption of digital tools, efficient resource allocation, and participatory governance, fostering transparency and innovation to meet the demands of rapid digital transformation.

Roberts and King (2022) explored administrators' responsibility for holistic institutional management, highlighting their role in integrating planning, resource coordination, quality assurance, and collaboration mechanisms. They argue that administrators' strategic oversight ensures vocational institutions remain competitive, responsive to dynamic external conditions, and effective in serving local economies through graduate employability.

In summary, administrators play a multifaceted and central role in the educational management model, serving as strategic planners, resource optimizers, technological integrators, and stakeholder coordinators. The literature consistently highlights that their ability to implement management principles, align institutional practices with industry and policy demands, and navigate contextual constraints directly influences educational quality and students' sustainable employment outcomes. These insights underscore the need to prioritize administrative capacity-building—including theoretical mastery, strategic thinking, and collaborative leadership—in the model, ensuring institutions can effectively bridge education and labor market needs.

2) Teacher

Teachers are the primary implementers of educational management policies within higher vocational institutions. They translate institutional objectives

into employment-oriented teaching, practical training, and competency development activities. Through curriculum design and instructional practices, teachers directly influence students' professional skills and workplace readiness, thereby contributing to sustainable employment quality. The details are as follows:

Chen et al. (2021) emphasize teachers' pivotal role in integrating Education for Sustainable Development (ESD) into vocational education, noting that their ability to deliver interdisciplinary, problem-based learning directly shapes students' sustainability literacy and long-term employability. They highlight that many teachers lack formal ESD training, underscoring the need for structured professional development to equip educators with the competencies to bridge technical instruction and sustainable development goals.

Nurcahya et al. (2021) refer to teachers as core implementers of educational management principles, arguing that their engagement in planning, organizing, and coordinating educational activities ensures the translation of institutional strategies into practical learning outcomes. Their research underscores that teachers' grasp of management theory and instructional design enables them to align teaching practices with learner needs and labor market demands, fostering academic excellence and institutional resilience.

Jemmy et al. (2023) explore teachers' responsibility for delivering practice-oriented teaching in vocational education, emphasizing that their ability to align curriculum content with industry needs and update teaching methods in response to market changes is critical for students' practical skill acquisition. They note that teachers act as intermediaries between educational institutions and industries, ensuring that graduates develop the competitiveness required for immediate employment and long-term career growth.

Ulan Dari and Sukma (2024) refer to teachers as key contributors to institutional adaptability in vocational education, highlighting their role in adjusting student support strategies and collaborating with industry partners to enhance educational quality. Their study emphasizes that teachers' flexibility and responsiveness to market demands particularly in resource-limited environments—

are essential for maintaining institutional resilience and improving student employability.

Zhang & Li (2023) explore teachers' role in under-resourced regions, finding that their professional competence and industry experience directly influence students' sustainable employment quality. They argue that teachers with "dual-qualified" backgrounds (combining teaching expertise and industry practice) are better able to bridge theory and practice, addressing gaps in curriculum modernization and digital tool integration that hinder vocational education in less developed areas.

In summary, teachers play a multifaceted and indispensable role in the educational management model, serving as ESD integrators, instructional implementers, practice-oriented educators, institutional adaptors, and bridges between education and industry. The literature consistently highlights that teachers' professional development, industry engagement, and ability to align teaching with labor market and sustainability demands directly impact students' technical skills, soft competencies, and long-term employability. These insights underscore the need to prioritize teacher training—including ESD competencies, industry collaboration, and adaptive teaching methods—in the model, ensuring that vocational education effectively prepares students for sustainable employment outcomes.

3) Students

Students are the central participants in the educational process and the ultimate beneficiaries of educational management. In higher vocational education, they are expected to engage in competency-oriented active learning and career development. Their learning motivation, adaptability, and continuous skill improvement are essential factors in achieving sustainable employment quality. The details are as follows:

McQuaid & Lindsay (2020) explored students' active role in bridging education and labor market needs, noting that their engagement in career self-management—such as proactively seeking industry insights and adapting to skill demands—directly enhances sustainable employability. They emphasize that

vocational education's effectiveness relies on students' willingness to integrate institutional training with real-world practice, rather than passive knowledge acquisition.

Tomlinson (2021) refers to students as core agents in their own employability development, arguing that their cultivation of technical competencies, soft skills, and career awareness is indispensable for long-term career success. His research highlights that students who actively participate in internships, collaborative projects, and lifelong learning initiatives are better positioned to navigate dynamic labor markets and achieve sustainable employment quality.

Brown et al. (2022) explored the impact of students' proactive career planning on employment outcomes, finding that those who leverage institutional career guidance, digital career platforms, and industry networks gain clearer career trajectories and higher job satisfaction. They stress that students' agency in identifying personal strengths and aligning them with market demands is a key determinant of sustainable employment.

Almahasees and Jacomard (2022) refer to students' adaptability and digital literacy as critical for sustaining employment in technology-driven contexts, noting that vocational students who embrace technological change and continuous skill upgrading are more resilient to industry disruptions. Their study underscores that students' proactive adoption of new tools and learning methods bridges gaps between academic training and workplace requirements.

Zhang et al. (2025) explored the mediating role of students' employability in translating human and social capital into employment quality, finding that students who actively build professional skills (human capital) and expand social networks (social capital) achieve better objective (salary, job stability) and subjective (satisfaction) employment outcomes. They emphasize that students' active engagement in skill development and networking is essential for maximizing the value of educational and institutional resources.

In summary, students play a proactive and central role in the educational management model, serving as self-directed learners, career planners, and adaptors

to labor market changes. The literature consistently highlights that their active engagement in skill development, career self-management, networking, and technological adaptation directly influences sustainable employment quality. These insights underscore the need to design the model to empower students—by providing accessible career support, flexible learning pathways, and industry engagement opportunities—ensuring they can actively shape their employability and thrive in long-term, high-quality careers.

5. Measurement and Evaluation

Stufflebeam (1971) developed the CIPP evaluation model, emphasizing context, input, process, and product evaluation as systematic decision-support tools. His work positions evaluation as an integral component of educational management rather than a peripheral activity.

Deming (1986) introduced continuous quality improvement principles, arguing that systematic measurement and feedback loops are essential for institutional effectiveness. His framework supports incorporating cyclical monitoring mechanisms into educational models.

Scriven (1991) defined evaluation as systematic value judgment aimed at improving program effectiveness. He emphasized accountability and evidence-based decision-making, reinforcing the need for measurable indicators.

Harvey and Green (1993) conceptualized quality in higher education as multidimensional, including fitness for purpose, transformation, and stakeholder satisfaction. Their framework underscores the complexity of measuring educational outcomes.

OECD (2013) further emphasized performance indicators and evidence-based policy in monitoring educational effectiveness. Collectively, these perspectives justify integrating multidimensional employment quality indicators, feedback systems, and continuous improvement processes within the present model.

In summary, evaluation literature demonstrates that systematic measurement is essential for monitoring effectiveness and supporting continuous improvement. Educational systems require structured evaluation processes to assess whether

objectives are achieved. Accordingly, the Measurement and Evaluation component in this model ensures that implementation outcomes can be monitored and refined in a systematic manner.

Model Development Process

As labor markets undergo structural upgrades and job requirements rapidly evolve, institutions must establish employment-oriented adaptive mechanisms in curriculum design, teacher development, and governance practices. On the other hand, in response to declining student enrollment, globalization pressures, and employers' rising expectations for graduate quality, institutions urgently require a scientific, standardized, and sustainable management model to strengthen students' employability and resilience. By combining the seven principles with the Need–Problem–Suggestions approach, the model ensures that educational governance simultaneously supports students' personal development and addresses the long-term demand for skilled labor in society and industry (see Table 2.1).

Table 2.1 Seven Elements of Integrated Educational Management

Educational Management Element	Need	Problem	Suggestions
1. Planning	Employment-oriented systemic planning with clear goals, timelines, and strategies.	Unclear objectives, lack of measurable outcomes, and insufficient stakeholder involvement.	Joint planning by administrators, faculty, and industry partners to align strategies with labor market demands.
2. Organizational Management	Establish a transparent structure with	Overlapping duties, lack of accountability,	Develop a governance framework

Table 2.1 (Continued)

Educational Management Element	Need	Problem	Suggestions
	clearly defined responsibilities.	disconnection between employment services and teaching.	consistent with the institutional mission and integrate departmental functions.
3. Staffing	Recruit and retain qualified teachers and administrators with industry and teaching expertise.	Insufficient professional competence among faculty; lack of “dual-qualified” personnel.	Provide professional development and incentives, and promote teacher–industry collaboration.
4. Diagnosis and Command	Ongoing monitoring of teaching and employment outcomes to ensure informed decision-making.	Lack of performance evaluation and feedback; inconsistent execution.	Build systematic evaluation mechanisms to ensure transparency and effectiveness in decision-making.
5. Coordination	Efficient collaboration among departments and between institutions and industry.	Poor communication and insufficient cooperation.	Establish cross-departmental teams and promote school–industry partnership projects.

Table 2.1 (Continued)

Educational Management Element	Need	Problem	Suggestions
6. Reporting	Develop transparent and efficient systems for employment and performance reporting.	Incomplete or delayed data; inadequate feedback.	Standardize employment quality reports and integrate employer feedback.
7. Budget Allocation	Prioritize funding for internships, career services, and skills training.	Misallocation of resources; underinvestment in employment-related programs.	Implement strict budget monitoring and adjustment mechanisms.

Source: Adapted from Nithedsilp et al. (2024)

Building upon the table 2.1, the model development process is further elaborated through seven practical steps:

Step 1: Planning

Strategic planning serves as the starting point. By formulating employment-oriented goals and implementation pathways, vocational colleges can ensure alignment between education and labor market demands.

Step 2: Organizational Management

A clear organizational structure with well-defined responsibilities reduces inefficiencies and ensures institutional support for employment-related educational practices.

Step 3: Staffing

Recruiting and developing “dual-qualified” teachers, while offering continuous professional development, equips institutions to meet the demand for versatile and market-relevant talent.

Step 4: Diagnosis and Command

Systematic evaluation and evidence-based decision-making monitor educational and employment outcomes, ensuring that deviations are promptly corrected.

Step 5: Coordination

Fostering collaboration across departments and building partnerships with employers and government agencies ensures a closer connection between education and industry needs.

Step 6: Reporting

Transparent and timely reporting mechanisms for employment and performance outcomes not only strengthen internal governance but also provide employers’ feedback for continuous improvement.

Step 7: Budget Allocation

Rational allocation of financial resources, prioritizing internships, career guidance, and school–industry collaborations, enhances students’ sustainable employability.

In conclusion, the development process of the “Educational Management Model to Enhance Sustainable Employment” is both an extension of classical management principles and an innovative response to the governance challenges of higher vocational education. Through the unification of systematicity, closed-loop logic, and practical operability, this model strengthens the scientific and forward-looking nature of educational governance, providing vocational institutions with a comprehensive pathway to achieve improved student learning outcomes and sustainable employment quality in a rapidly changing labor market.

Model Evaluation

Model evaluation is a critical process to verify the rationality, effectiveness and applicability of the established framework, which provides a theoretical and practical basis for the optimization and promotion of the model. In the field of employment quality model evaluation, scholars at home and abroad have carried out in-depth research from different perspectives, forming a variety of evaluation ideas and core viewpoints, which are summarized as follows:

Smith and Jones (2020) emphasized that the evaluation of the employment quality model should highlight the concept of “student-centered”, and added the evaluation dimension of graduates’ subjective well-being and career development potential on the basis of objective indicators. They believed that the ultimate goal of the model is to promote the all-round development of graduates, and subjective evaluation indicators can better reflect the practical value of the model from the perspective of graduates.

Wang et al. (2021) took vocational colleges as the research object, conducted an empirical study on the application effect of the employment quality model, and found that the model can significantly improve the employability of graduates and the cooperation enthusiasm of enterprises. However, they also pointed out that the model has deficiencies in the dynamic adjustment of the curriculum and the tracking of graduates’ long-term career development, which need to be optimized in the follow-up evaluation and improvement.

Chen et al. (2022) proposed that the evaluation of the employment quality model should focus on three core dimensions: output effectiveness, operation efficiency and appropriateness. They argued that output effectiveness should be measured by the match between graduates’ skills and labor market demands and their employment stability; operation efficiency should focus on the resource input-output ratio of educational institutions in the process of implementing the model; and appropriateness should evaluate the model’s response speed and adjustment ability to external environmental changes such as technological updates and market fluctuations.

Lee et al. (2022) put forward that the employment quality model is not a static framework, so its evaluation should also adopt a dynamic tracking mechanism. They suggested that the evaluation should be carried out in stages, including pre-evaluation before the model is implemented, process evaluation during the implementation process, and post-evaluation after a certain period of operation, so as to timely find problems in the model operation and put forward targeted improvement suggestions.

Zhang and Li (2023) constructed a multi-level evaluation indicator system for the employment quality model, including 12 specific indicators such as curriculum matching degree, industry cooperation depth, graduate employment rate and career development satisfaction. They adopted the combination of quantitative and qualitative methods, using data analysis to measure quantitative indicators and expert evaluation to judge qualitative indicators, so as to improve the scientificity and comprehensiveness of the evaluation results.

Liu and Wang (2023) pointed out that model evaluation is not only to verify the effectiveness of the model, but also to provide a basis for model improvement. Through the evaluation of the employment quality model, they found that strengthening the deep integration of industry and education and improving the professional quality of teachers are important ways to optimize the model, and proposed corresponding optimization strategies combined with the evaluation results to enhance the sustainability and practicality of the model.

To sum up, existing studies have carried out in-depth discussions on the evaluation dimensions, indicators, methods and optimization directions of the employment quality model, but there are still differences in the selection of evaluation indicators and the application of evaluation methods in different research scenarios. This provides a direction for the follow-up in-depth research on model evaluation.

Concepts and theories of Employment Quality

Employment quality has become an important topic in labor market and education research. In recent years, scholars have emphasized that employment should not only focus on obtaining a job but also on the quality and conditions of employment. Employment quality generally refers to the overall characteristics of employment, including aspects such as income, job security, working conditions, and opportunities for skills development. Therefore, understanding employment quality provides an important theoretical basis for analyzing and improving the employment outcomes of higher vocational students.

Definition of Employment Quality

Doeringer and Piore (1971), in their theory of the segmented labor market, were among the first to highlight differences in employment quality. They argued that labor markets are divided into “internal” and “external” segments: jobs in the internal market typically offer higher wages, greater stability, and promotion opportunities, while those in the external market are often low-paid, insecure, and lack career development channels. This perspective broke away from the simplistic view of employment as merely “having a job,” linking employment quality to workers’ market position, job stability, and long-term career prospects. Which are summarized as follows:

Building on this, Kalleberg (1977) expanded the understanding of employment quality, conceptualizing it as a multidimensional construct. Beyond wages, employment quality should also include stability, opportunities for advancement, access to social protection, and autonomy at work. His research was pioneering in linking “working conditions” with “social structures,” demonstrating how workers’ quality of life and social integration are directly shaped by employment quality.

In Europe, the European Commission (2001) embedded “employment quality” into the European Employment Strategy, arguing that mere growth in job numbers is insufficient to reflect the true health of labor markets. High-quality employment must also address social inclusion, workers’ rights, gender equality, and access to training and career development. This marked the transition of

employment quality from academic discourse into a central policy agenda, directly aligned with the international decent work framework.

As research progressed, Green and Mostafa (2012) proposed a multidimensional measurement system that included wages, work intensity, opportunities for skills development, job security, and work–life balance. Their cross-country comparison showed that even in high-income countries, employment quality could be undermined by excessive work pressure and limited opportunities for upskilling. This finding challenged the assumption that economic growth automatically improves employment quality, emphasizing instead the role of institutional and policy design.

At the policy level, the International Labour Organization (ILO, 2013) introduced the “Decent Work” framework, defining good-quality employment as encompassing productive work, fair income, social security, opportunities for development, social integration, and freedom of organization and participation. This framework was later adopted by the United Nations (2015) in the Sustainable Development Goals (SDG 8), which established “full productive employment and decent work for all” as a global consensus.

Drawing on European evidence, Van Aerden et al. (2017) developed a multidimensional structure of employment quality, incorporating stability, material rewards, social protection, working time arrangements, training and employability, collective organization, and power relations. Their work reinforced the structural and systemic nature of job quality and contributed to the development of standardized measurement tools across labor markets.

Building on this foundation, Eurofound (2017) proposed a comprehensive employment quality framework for the EU, comprising six dimensions: earnings and working conditions, job prospects, working time and work–life balance, skills and discretion, work environment quality, and social dialogue and representation. Large-scale European Working Conditions Surveys demonstrated that employment quality is closely linked to workers’ health, well-being, and productivity, while also strengthening social cohesion and economic competitiveness.

In cross-national perspectives, Brummund, Mann, and Rodríguez-Castelán (2018), followed by Sehnbruch et al. (2020) and González et al. (2021), advanced the concept of a Job Quality Measure (JQM) that integrates income, stability, benefits, and working conditions. Expanding on this, Hovhannisyan et al. (2022) used labor force survey data from 40 developing countries to construct a global framework covering income adequacy, benefits, stability, and working conditions. Their findings underscored the importance of education, age, and rural–urban differences in shaping employment quality, while also stressing the contextual nature of definitions across economies.

More recently, Peckham et al. (2022) linked employment quality to health inequalities, showing that job quality is not only about wages or security but also about its impact on physical and mental health, social status, and family life. Their study revealed that low-quality jobs, such as precarious or gig work, significantly increase psychological stress, health risks, and social exclusion, whereas high-quality jobs promote health equity and sustainable development. This extended the boundaries of employment quality by situating it within the broader framework of social determinants of health.

In summary, the evolution of employment quality reflects a distinct shift from early labor market segmentation-focused views to comprehensive, multidimensional frameworks covering income, job stability, working conditions and broader social factors. No longer a purely economic metric, it has become a cornerstone of labor policy, social equity and sustainable development, and is now widely recognized as a dynamic, context-dependent construct that encapsulates both job characteristics and their impacts on workers' well-being, career development and social integration.

Importance of Employment Quality

Quinlan (2015) emphasized that the importance of employment quality has become increasingly pronounced under the conditions of globalization and labor market flexibilization. By examining “non-standard employment” such as temporary work, subcontracting, and gig economy jobs, he argued that these employment forms often involve insufficient wages, lack of social protection, irregular working hours, and

the absence of collective representation. Such conditions not only reduce workers' living standards but also heighten psychological stress, occupational risks, and long-term health deterioration. Employment quality, therefore, must be understood as a critical determinant of workers' well-being and social status. The details are as follows:

Benach and Julià (2017) further expanded this perspective by highlighting the deep connections between employment quality and health inequalities. They argued that poor-quality employment goes beyond precarious contracts or low pay to include relational aspects such as lack of power, limited participation, and weak representation in the workplace. These deficits disproportionately affect vulnerable groups—including women, youth, and minorities—by constraining opportunities for career development, health protection, and social inclusion. As a result, improving employment quality becomes essential for reducing social stratification and promoting equity in health outcomes.

Bosmans et al. (2019) and Julià et al. (2020) provided empirical evidence supporting a multidimensional understanding of employment quality. Using cross-national surveys in Europe, they developed a framework encompassing job stability, material rewards, social protection, working time arrangements, and collective organization. Their findings demonstrated that higher employment quality is strongly associated with better mental health, self-rated health, and overall well-being. These results underscore that job quality has a direct impact not only on workers' economic security but also on their subjective life satisfaction, highlighting its role as a policy lever for social welfare and public health.

Jonsson et al. (2021) analyzed employment quality from a life-course perspective, showing that long-term exposure to low-quality employment significantly increases the risk of psychological disorders and deteriorating self-perceived health. Drawing on longitudinal survey data, they found evidence of a cumulative effect, where sustained precarious employment leads to adverse consequences that persist across individuals' careers and life trajectories. This

highlights the necessity of improving job quality as a means of ensuring long-term well-being for workers.

Gevaert et al. (2022) and Eisenberg-Guyot et al. (2022) challenged the adequacy of single-indicator measures of job quality, such as wages or contract type. Using latent class analysis (LCA), they identified diverse “job quality constellations,” or multidimensional employment types, which combine stability, pay, social protection, working time, and autonomy. Their results showed that certain “higher-quality constellations” provide protective effects for workers’ health, while “low-quality constellations” sharply increase health risks. These findings demonstrate the complexity of employment quality and stress the need for policymakers to adopt multidimensional strategies to improve workers’ outcomes.

Ahonen et al. (2025) synthesized this body of work in a comprehensive review, observing a shift in employment quality research from a predominantly pathogenic perspective—focusing on risks—to a salutogenic perspective—focusing on resources. They argued that employment quality should not only be understood as a source of health risk but also as a positive determinant of population health and equity. By situating job quality as a mediator between education, labor, and health systems, they concluded that enhancing employment quality could generate broad societal benefits, including improved well-being, reduced inequalities, and sustainable development.

In summary, employment quality is far more than an economic measure of job availability or income level. It shapes workers’ stability, career development, and autonomy, while also exerting profound effects on health, well-being, and social justice. High-quality employment fosters satisfaction, resilience, and productivity, whereas low-quality employment amplifies inequalities, health risks, and social exclusion. As such, employment quality must be recognized as a central objective in education, labor, and health policies, serving as a strategic lever for sustainable societal progress.

Components of Employment Quality

Employment quality has received increasing attention as research and policy concerns have shifted from employment access to the quality and sustainability of employment outcomes. Rather than relying on single indicators such as employment rates or income levels, scholars conceptualize employment quality as a multidimensional construct encompassing working conditions, employment security, development opportunities, and well-being. In this context, clarifying the key components of employment quality provides an essential theoretical basis for subsequent empirical analysis. Which are summarized as follows:

Kalleberg (1977) referred to job security, income level, and employment stability as the core components of employment quality, emphasizing that stable employment arrangements are fundamental to workers' long-term well-being.

Doeringer and Piore (1985) referred to internal labor markets and employment protection mechanisms as essential components, arguing that institutional arrangements play a key role in shaping employment stability and career development opportunities.

ILO (1999) referred to Decent Work as a comprehensive framework for employment quality, identifying components such as employment security, adequate income, workplace safety, social protection, and social dialogue. This framework marked a shift from single economic indicators to multidimensional evaluation.

Green (2006) referred to job satisfaction, work intensity, and work–life balance as important dimensions of employment quality, highlighting workers' subjective perceptions alongside objective working conditions.

Brown, Lauder, and Ashton (2011) referred to skill utilization, opportunities for training, and career progression as critical components of employment quality, particularly in knowledge-based and vocational labor markets.

Eurofound (2012) referred to employment security, adaptability, and continuous skills development as key indicators of employment quality, emphasizing the importance of long-term employability rather than short-term job outcomes.

ILO (2016) referred to social inclusion, equal treatment, and labor protection as integral components of employment quality, particularly for vulnerable groups such as young graduates and vocational education students.

More recently, Findlay, Kalleberg, and Warhurst (2020) referred to employment quality as a dynamic and relational concept, incorporating income security, employment stability, meaningful work, work–life balance, and opportunities for development, while stressing the interaction between individual capabilities and institutional governance.

In summary, existing literature demonstrates that employment quality has evolved from a narrow focus on income and job security to a multidimensional and dynamic construct encompassing employment stability, income and benefits, workplace safety, work–life balance, social protection, skills development, and career sustainability. From the perspective of this study, these components are particularly relevant to higher vocational students, whose employment outcomes are closely shaped by educational management practices and institutional support mechanisms. Therefore, understanding employment quality as an integrated system of interrelated components provides a necessary theoretical foundation for developing an educational management model aimed at enhancing the sustainable employment quality of higher vocational students.



Figure 2.2 The 7 Elements of Employment Quality

(Source: United Nations Economic Commission for Europe (UNECE))

Dimensions and Indicators of Employment Quality

Employment quality is not solely determined by whether employees can secure a job; more importantly, it encompasses the overall work experience, including dimensions such as workplace safety, income and benefits, work-life balance, skills development, and more. Through a systematic Employment Quality Model, companies can ensure that employees experience job satisfaction, motivation, and long-term career development potential (see Figure 2.3). The details are as follows:

1. Safety at Work

International Labour Organization (ILO, 2013) refers to occupational safety as the foundational pillar of decent work, emphasizing the elimination of child labor, forced labor, and the guarantee of fair treatment in employment as non-negotiable

requirements for high-quality work. It highlights that safe working environments are not only a legal right but also a prerequisite for protecting workers' physical health and maintaining long-term employment stability. The details are as follows:

Bhate et al. (2020) explored the critical role of safety equipment and training in workplace safety, noting that providing industry-compliant protective gear (e.g., helmets, protective clothing) and regular emergency response training directly reduces occupational hazards, particularly in high-risk sectors like construction and manufacturing. Their research underscores that systematic safety measures enhance employee trust and job satisfaction.

Fagan et al. (2020) refers to fair promotion opportunities and transparent recruitment processes as key components of psychological safety at work, arguing that equitable employment practices reduce workplace stress and conflict, thereby fostering a safe and inclusive organizational culture. They emphasize that non-physical dimensions of safety (e.g., fair treatment) are equally vital for overall employment quality.

Sahudin et al. (2022) explored the link between workplace safety systems and employee retention, finding that enterprises with robust safety protocols—including regular safety audits and clear hazard identification mechanisms—experience lower turnover rates. Their study confirms that safety investment translates to improved employee loyalty and long-term employment sustainability.

Johnson & Kim (2024) refers to transparent recruitment and employment contracts as foundational to workplace safety, stating that clear documentation of rights, responsibilities, and safety standards reduces ambiguity and disputes. They highlight that formalized safety-related agreements enhance employees' sense of security and organizational accountability.

To sum up, workplace safety is a multi-dimensional component of employment quality, encompassing both physical protection (e.g., safety equipment, hazard prevention) and psychological/institutional safeguards (e.g., fair treatment, transparent processes). The literature consistently confirms that effective safety measures from compliance with labor standards and provision of protective

resources to equitable employment practices are critical for protecting workers' well-being, enhancing job satisfaction, and sustaining long-term employment stability. These insights inform the current study's focus on integrating safety-related considerations into educational management models, ensuring that higher vocational students are prepared to recognize and advocate for safe working conditions as part of their sustainable employment outcomes.

2. Income and Benefits from Employment

Income and benefits form a core component of employment quality, determining employees' long-term satisfaction and stability within the company. A fair compensation system and comprehensive benefits package not only provide financial security but also enhance motivation and loyalty. The details are as follows:

Sahudin et al. (2022) explored the link between performance-based bonus distribution and employee engagement, noting that transparent bonus systems not only recognize contributions but also foster internal trust, directly enhancing job satisfaction and long-term retention.

Bhate et al. (2020) refer to regular salary adjustments as a critical retention strategy, emphasizing that aligning wages with industry standards and cost-of-living changes helps employees feel valued, reducing turnover and improving overall employment quality.

Fagan et al. (2020) explored the impact of non-wage benefits like housing allowances, highlighting that such perks alleviate financial stress for employees in high-cost areas, reflecting an organization's commitment to work-life balance and well-being.

Mishra et al. (2020) refer to transportation subsidies as a practical benefit that improves work efficiency and job satisfaction, particularly for employees with long commutes, by reducing the financial and time burdens of daily travel.

Van Aerden et al. (2017) explored the broader role of non-wage benefits in employment quality, arguing that housing subsidies, health insurance, and transportation support directly shape workers' economic stability and living standards, complementing wages to form a comprehensive compensation package.

In summary, income and benefits are core components of employment quality, encompassing both monetary rewards (salaries, bonuses) and non-wage perks (housing allowances, transportation subsidies). The literature consistently highlights that fair and transparent compensation systems, paired with targeted non-monetary benefits, enhance employee satisfaction, reduce turnover, and support long-term employment stability. These insights underscore the importance of integrating comprehensive benefit design into educational management models, ensuring that higher vocational students are prepared to recognize and advocate for equitable compensation as part of their sustainable employment outcomes.

3. Working Hours and Work-Life Balance

Working hours and work-life balance directly impact employees' physical and mental health, as well as their job performance. Offering flexible work schedules and ensuring sufficient personal time helps employees manage stress and enhances productivity. The details are as follows:

Bhate et al. (2020) explored the impact of flexible shift schedules on work-life balance in shift-based industries, noting that fair shift allocation and adequate rest periods reduce employee burnout and improve overall job satisfaction.

Fagan et al. (2020) refer to adequate rest breaks and vacation time as essential for maintaining employee well-being, emphasizing that reasonable working time arrangements directly enhance productivity and long-term retention.

Detgen & Stone (2021) explored the importance of clear overtime policies, arguing that fair compensation for overtime and limits on excessive work hours prevent employee exhaustion and ensure compliance with labor standards.

Segbenya et al. (2023) refer to on-site welfare facilities (e.g., childcare centers, fitness centers) as practical supports for work-life balance, noting that such amenities reduce non-work-related stress and help employees integrate professional and personal responsibilities.

Green and Mostafa (2012) explored the negative impact of excessive or unpredictable working hours on employment quality, demonstrating that poor work-time management undermines worker well-being and productivity even in high-income contexts.

In summary, working hours and work-life balance are critical components of employment quality, encompassing reasonable shift arrangements, rest breaks, overtime regulations, and supportive workplace amenities. The literature consistently highlights that balanced working time policies and targeted welfare supports not only protect employees' physical and mental health but also boost productivity, job satisfaction, and retention. These insights emphasize the need to integrate work-life balance considerations into educational management models, ensuring that higher vocational students are prepared to recognize and advocate for equitable working time practices as part of their sustainable employment outcomes.

4. Security of Employment and Social Protection

Providing job security and comprehensive social protection is crucial in mitigating economic uncertainties and safeguarding employee welfare. Strong social protection systems ensure that employees are supported during illness or workplace accidents, reducing financial burdens. The details are as follows:

Johnson & Kim (2024) refer to clear employment contracts as a cornerstone of employment security, emphasizing that documenting rights, responsibilities, and long-term job commitments enhances employees' sense of stability and organizational accountability.

Bhate et al. (2020) explored the link between job stability policies and employee loyalty, noting that measures to reduce turnover (e.g., structured career pathways) foster greater commitment and improve overall employment quality.

Fagan et al. (2020) refer to occupational injury insurance as a critical social protection tool, highlighting that it mitigates financial risks for employees in high-risk sectors, reinforcing trust in employers and workplace safety.

Lubbe et al. (2024) explored the impact of comprehensive healthcare coverage on employment quality, finding that access to medical care during illness or accidents reduces employee stress, improves well-being, and strengthens long-term retention.

Hovhannisyan et al. (2022) refer to weak social protection systems as a key barrier to employment quality in developing contexts, arguing that insufficient healthcare, unemployment insurance, and safety nets disproportionately harm low-income and informal workers.

In summary, security of employment and social protection are integral components of employment quality, encompassing job stability (via clear contracts, retention policies), and safety nets (healthcare, injury insurance). The literature consistently highlights that robust employment security measures and comprehensive social protection not only safeguard employees' financial and physical well-being but also boost loyalty, trust, and long-term employment sustainability. These insights underscore the need to integrate social protection and job stability considerations into educational management models, ensuring that higher vocational students are prepared to recognize and advocate for equitable security provisions as part of their sustainable employment outcomes.

5. Social Dialogue

Constructive social dialogue serves as a communication bridge between employees and employers, allowing employees to voice their opinions and participate in decision-making processes. Establishing effective communication channels helps companies address employee concerns and make necessary adjustments. The details are as follows:

Schmittmann & Bornmann (2020) refer to union participation as a key pillar of effective social dialogue, emphasizing that it safeguards employees' rights, fosters organizational fairness, and strengthens trust between workers and management.

Lubbe et al. (2024) explored the role of collective bargaining in social dialogue, noting that it helps negotiate fair wages, benefits, and working conditions, reducing labor disputes and promoting collaborative workplace relationships.

Segbenya et al. (2023) refer to formal employee feedback mechanisms as essential for meaningful social dialogue, arguing that they enable workers to voice concerns, driving internal improvements and enhancing job satisfaction.

Mishra et al. (2020) explored the value of regular workplace environment assessments in social dialogue, highlighting that evaluating physical and mental health conditions facilitates targeted interventions to reduce burnout and boost motivation.

Eurofound (2017) refer to social dialogue and collective representation as institutional cornerstones of employment equity, stating that they empower workers to participate in decision-making, improving working conditions and organizational adaptability.

In summary, social dialogue is a critical component of employment quality, encompassing union participation, collective bargaining, feedback mechanisms, and workplace assessments. The literature consistently highlights that robust social dialogue channels enable effective communication between employees and employers, safeguard workers' rights, and foster fair, collaborative work environments. These insights underscore the need to integrate social dialogue considerations into educational management models, ensuring that higher vocational students are prepared to recognize and engage in constructive dialogue as part of their sustainable employment outcomes.

6. Skills Development and Training

Continuous skills development is fundamental to employees' career growth and job satisfaction. By offering training opportunities and career development pathways, companies can help employees acquire new skills and adapt to evolving job requirements, thereby enhancing overall employment quality. The details are as follows:

Bhate et al. (2020) explored the significance of industry-relevant vocational training programs in sustaining employment quality, noting that targeted technical training ensures employees' skills remain aligned with evolving job requirements—especially in fast-changing sectors like manufacturing and digital services. Their

research emphasizes that such training not only enhances job performance but also strengthens employees' resilience against technological disruptions, laying the foundation for long-term career stability.

Fagan et al. (2020) refer to skills enhancement opportunities such as workshops and seminars as key drivers of employment quality, arguing that continuous skill upgrading empowers employees to take on more challenging roles, access promotion pathways, and maintain competitiveness in dynamic labor markets. They highlight that institutions and enterprises that invest in structured skill development programs foster higher employee engagement and reduce turnover by demonstrating a commitment to workers' professional growth.

Detgen & Stone (2021) explored the impact of external training support—including financial backing for certification programs and off-site courses—on employment quality, finding that such investments significantly boost employees' marketability and career advancement potential. Their study underscores that beyond in-house training, supporting employees' pursuit of external qualifications bridges skill gaps, enhances organizational capability, and creates a mutually beneficial relationship between workers and employers.

Johnson & Kim (2024) refer to leadership and team management training as critical components of comprehensive skills development, noting that equipping managers with these competencies improves internal operational efficiency, fosters positive workplace cultures, and supports the growth of junior employees. They emphasize that leadership training is not only vital for individual career progression but also for building resilient teams that can adapt to organizational changes and drive sustainable performance.

Van Aerden et al. (2016) integrated training and employability into the core dimensions of employment quality, arguing that lifelong learning opportunities are indispensable for long-term career sustainability. Their cross-national analysis shows that access to continuous training enables workers to navigate labor market shifts, transition between roles, and maintain relevance amid technological advancements, positioning training as a cornerstone of equitable and sustainable employment.

In summary, skills development and training are pivotal components of employment quality, encompassing industry-specific technical training, skills enhancement workshops, external qualification support, leadership development, and lifelong learning initiatives. The literature consistently highlights that structured, continuous training not only aligns employees' skills with market demands but also enhances career mobility, resilience, and job satisfaction. These insights underscore the need to integrate robust skills development mechanisms into educational management models, ensuring that higher vocational students are equipped with both immediate job-ready skills and the lifelong learning mindsets required to thrive in sustainable employment.

7. Workplace Relationships and Work Motivation

Strong workplace relationships and employee motivation are essential for increasing job satisfaction and productivity. By fostering a collaborative work environment and providing clear career advancement opportunities, companies can boost employee morale and reduce turnover rates. The details are as follows:

Sahudin et al. (2022) explored the positive correlation between teamwork and employment quality, noting that fostering a collaborative work environment enhances employee productivity, strengthens a sense of organizational belonging, and reduces turnover. Their research emphasizes that teamwork not only improves task efficiency but also cultivates mutual support among colleagues, creating a positive feedback loop that boosts overall job satisfaction and long-term engagement.

Lubbe et al. (2024) refer to colleague support as a critical driver of work motivation, arguing that supportive interpersonal relationships in the workplace build employee confidence, help individuals cope with work challenges more effectively, and reduce psychological stress. They highlight that when employees feel valued and supported by peers, they are more likely to demonstrate proactive work attitudes and commit to organizational goals.

Benach et al. (2014) explored the impact of organizational culture on workplace relationships and motivation, finding that inclusive and supportive cultural norms reduce interpersonal conflicts, enhance trust, and foster a sense of shared

purpose. Their study underscores that organizational culture shapes the quality of workplace interactions, directly influencing employees' intrinsic motivation and willingness to invest in their roles.

Julià et al. (2017) refer to positive workplace relationships as a buffer against occupational burnout, noting that strong peer connections and supportive leadership mitigate the negative effects of work pressure. Their research confirms that employees in harmonious work environments exhibit higher levels of mental well-being, which in turn sustains their motivation and performance over time.

Peckham et al. (2022) explored the link between workplace relationships, motivation, and health equity, demonstrating that toxic or unsupportive interpersonal dynamics not only reduce work motivation but also contribute to physical and mental health disparities. They emphasize that fostering positive workplace relationships is not only a matter of employment quality but also a key factor in promoting social inclusion and overall well-being.

In summary, workplace relationships and work motivation are indispensable components of employment quality, rooted in teamwork, colleague support, inclusive organizational culture, and positive interpersonal dynamics. The literature consistently highlights that harmonious workplace relationships enhance employee confidence, reduce burnout, and boost intrinsic motivation, while supportive cultural norms and peer connections sustain long-term engagement and performance. These insights underscore the need to integrate relationship-building and motivation-enhancing strategies into educational management models, ensuring that higher vocational students are prepared to cultivate and contribute to positive workplace environments as part of their sustainable employment outcomes.

Factors affecting Employment Quality

Doeringer and Piore (1971) first highlighted that institutional structures shape differences in employment quality through segmented labor markets. Workers in "internal markets" enjoy higher wages, stability, and promotion opportunities, while those in "external markets" often face insecurity, low pay, and limited advancement. This early insight showed that employment quality is not determined solely by

individual skills but is deeply conditioned by labor market segmentation. The details are as follows:

Kalleberg (2000, 2011) emphasized the role of globalization and labor market flexibilization in reshaping employment quality. He argued that the rise of non-standard employment arrangements—such as temporary contracts, part-time jobs, and subcontracting—has created growing polarization, with some workers benefiting from autonomy and flexibility while others experience insecurity, low pay, and lack of protection. His work established that employment quality is highly sensitive to broader economic transformations and labor market policies.

Gallie (2007) expanded this perspective by stressing the importance of institutional frameworks and welfare regimes. Comparative studies across Europe showed that countries with strong collective bargaining systems, active labor market policies, and inclusive welfare states were able to buffer the risks of precarious employment, thereby enhancing employment quality. Conversely, weak labor protection and deregulated markets exacerbated inequalities in job conditions.

Green and Mostafa (2012) pointed out that skill development opportunities and autonomy within the workplace are decisive factors influencing job quality. Their research demonstrated that access to training, career advancement, and work–life balance arrangements directly shape workers' satisfaction and long-term employability. Lack of such opportunities not only undermines job quality but also reinforces social inequalities.

Van Aerden et al. (2016) provided empirical evidence that employment quality is affected by multiple structural dimensions, including job stability, material rewards, social protection, working time arrangements, and collective representation. Their cross-national analyses in Europe revealed that workers in flexible but unprotected jobs suffered from significantly lower perceived job quality and higher risks of health deterioration. These findings emphasized that both material and relational factors jointly determine employment quality.

Eurofound (2017) identified six interrelated dimensions—earnings, prospects, working time, skills and discretion, working conditions, and social dialogue—as central factors affecting employment quality across Europe. Their survey results showed that deficits in any one dimension could undermine overall job quality, even in otherwise favorable contexts, thus confirming the multidimensional and cumulative nature of influencing factors.

Sehnbruch et al. (2020) and González et al. (2021) introduced multidimensional job quality indices (JQM) that combined income, stability, benefits, and working conditions. Their findings revealed that structural inequalities—particularly those related to gender, age, and education—were decisive in shaping who gains access to high-quality employment. These indices provided policymakers with new tools for diagnosing disparities in labor markets.

Hovhannisyan et al. (2022) further extended this discussion by analyzing data from 40 developing countries. They found that factors such as education level, age distribution, and rural–urban divides significantly determined employment quality. Importantly, institutional weaknesses—such as limited labor regulation and insufficient social protection—intensified precarious employment and hindered progress toward sustainable labor markets.

Ahonen et al. (2025) synthesized recent research and argued that employment quality must be understood as the outcome of interactions among individual resources, organizational practices, and institutional settings. They concluded that education, skills, health, and social dialogue act as protective resources, while insecure contracts, weak welfare states, and insufficient regulation remain key barriers.

In summary, employment quality is shaped by a constellation of interrelated factors operating at multiple levels. At the individual level, skills, autonomy, and training opportunities directly influence workers' experiences. At the organizational level, management practices, contract types, and workplace relations affect stability and motivation. At the institutional level, labor regulation, welfare policies, and collective bargaining systems determine the degree of protection and fairness in

labor markets. Together, these factors highlight that employment quality cannot be reduced to a single dimension but emerges as a systemic outcome of economic structures, organizational governance, and social policy frameworks.

Concepts and theories of Sustainable Employment Quality

Sustainable employment quality has emerged as an important extension of the concept of employment quality. It emphasizes not only the current conditions of employment but also the long-term stability and sustainability of career development. Sustainable employment quality generally reflects whether employment can provide continuous opportunities for skill development, job stability, and career growth over time. Therefore, this concept is particularly important for higher vocational students, as it highlights the need to support both immediate employment outcomes and long-term career sustainability.

Definition of Sustainable Employment Quality

Sustainable Employment Quality (SEQ) is an integrated concept that combines the connotation of sustainable development and employment quality, reflecting the dynamic balance between employment stability, worker well-being, social equity and long-term development. With the deepening of research on sustainable development and labor market governance, scholars and international organizations have continuously enriched the definition of SEQ from multiple perspectives such as labor rights, economic development, social equity and environmental coordination. The following is a summary of the core viewpoints on the definition of SEQ, sorted by the year of the authors or institutions in chronological order, The details are as follows:

Bosch and Lehndorff (2008) put forward one of the earliest explicit definitions of sustainable employment quality. They defined SEQ as a long-term stable employment state that not only guarantees workers' basic labor rights, reasonable income and safe working conditions, but also matches workers' personal career development needs and social development goals. This definition initially links employment quality with "sustainability", emphasizing the long-term nature of

employment rather than short-term employment gains, and lays a preliminary theoretical foundation for the subsequent research on SEQ.

The International Labour Organization (ILO, 2012) expanded the connotation of SEQ from the perspective of global labor governance. On the basis of the “decent work” framework, the ILO defined SEQ as a sustainable employment model that integrates fair income, safe working environment, social protection, labor rights protection and career development opportunities. It emphasized that SEQ should not only meet the current needs of workers and employers, but also take into account the bearing capacity of the social and economic environment, and avoid the unsustainability of employment caused by excessive exploitation of labor resources or damage to social equity.

Eurofound (2015) further supplemented the definition of SEQ from the perspective of European labor market practice. It defined SEQ as a multi-dimensional employment quality model that balances individual, enterprise and social interests, including three core elements: employment stability and appropriateness, workers’ skill development and well-being, and the compatibility between employment practices and social sustainable development goals. This definition highlights the interactive relationship between different subjects, and points out that the sustainability of employment quality depends on the coordinated development of individuals, enterprises and society.

Tang and Li (2018) defined SEQ from the perspective of emerging market economies, combining China’s labor market characteristics. They argued that SEQ refers to an employment state that can realize the coordinated development of workers’ personal development, enterprise benefit improvement and social progress in the long run, including four core dimensions: income sustainability, employment stability, skill upgrading space and social security completeness. This definition focuses on the particularity of emerging market economies, and emphasizes the importance of skill upgrading and social security for the sustainability of employment quality.

Zhang et al. (2020) enriched the definition of SEQ by integrating the environmental dimension of sustainable development. They defined SEQ as a comprehensive employment quality framework that integrates economic, social and environmental dimensions, pointing out that SEQ not only includes traditional employment quality indicators such as income, stability and working conditions, but also requires employment practices to be compatible with environmental protection and green development, and to avoid employment growth at the cost of environmental damage, which expands the connotation of SEQ to the field of environmental coordination.

Wang and Chen (2022) further deepened the definition of SEQ from the perspective of intergenerational equity. They argued that SEQ is a dynamic employment quality model that takes into account intergenerational interests, which not only guarantees the employment rights and interests and development needs of the current generation of workers, but also does not damage the employment opportunities and development space of future generations. This definition inherits the core concept of intergenerational equity in sustainable development, and clarifies the intergenerational connotation of the sustainability of employment quality.

Li and Wang (2023) defined SEQ from the perspective of urban sustainable development, combining the background of urban renewal and high-quality urban development. They pointed out that in the context of urban sustainable development, SEQ refers to an employment state that adapts to the needs of urban industrial upgrading and green development, can promote the integration of workers into urban society, and realize the coordinated development of urban employment, economic growth, social equity and environmental protection. This definition links SEQ with specific urban practice scenarios, enhancing its practical applicability.

Chen et al. (2024) supplemented the definition of SEQ from the perspective of multi-subject collaboration. They argued that SEQ is a sustainable employment quality system formed by the joint participation of government, enterprises, workers and social organizations, which not only requires enterprises to assume social

responsibility and ensure the basic rights and interests of workers, but also requires the government to improve relevant policies and systems, workers to continuously improve their own quality, and social organizations to play a supervisory and coordinating role, so as to realize the long-term sustainability of employment quality.

To sum up, the definition of sustainable employment quality has experienced a process of evolution from a single focus on long-term stability to a multi-dimensional integration of economic, social and environmental dimensions, from a general theoretical framework to a combination of specific national conditions and practice scenarios, and from a focus on the current generation to a consideration of intergenerational equity. From the initial definition of long-term stable employment proposed by Bosch and Lehndorff (2008) to the multi-subject collaborative framework proposed by Chen et al. (2024), the connotation of SEQ has been continuously enriched and improved, which provides a comprehensive theoretical reference for the research and practice of sustainable employment quality in different countries and regions.

Concepts of Sustainable Employment Quality

Rockström et al. (2021) introduced the notion of planetary boundaries to highlight that human and economic systems must operate within ecological limits. This concept of sustainability was later extended into labor markets, suggesting that employment quality must be understood not only in terms of individual well-being but also in relation to social and environmental sustainability. Building on this foundation, the United Nations (2015) integrated “decent work and sustainable economic growth” into the Sustainable Development Goals (SDG 8), linking employment quality directly with the global agenda of sustainable development. The details are as follows:

Sehnbruch et al. (2020) advanced this perspective by arguing that employment quality should be defined through a multidimensional framework that captures income adequacy, employment stability, social protection, and workers’ rights. Their proposal of a Job Quality Index (JQI) has become a cornerstone for measuring sustainable employment, emphasizing the interplay between economic

security and social equity. Extending this framework, González et al. (2021) demonstrated that employment quality also serves as a key driver of inclusive development, particularly in contexts of inequality and informality.

Ahonen et al. (2022) expanded the discussion by linking sustainable employment quality with population health. They argued that poor-quality jobs—characterized by instability, lack of social security, and hazardous conditions—not only undermine individual well-being but also generate broader health inequities in society. Similarly, Peckham et al. (2022) highlighted that sustainable employment must integrate occupational health, psychosocial well-being, and work–life balance as essential dimensions, underscoring the role of labor policies in shaping equitable outcomes.

More recently, Hovhannisyan et al. (2022) emphasized the importance of contextual variation, showing that the meaning of sustainable employment quality differs between developing and developed economies. While in low-income contexts, the focus is often on basic rights and social protection, in advanced economies sustainable employment is increasingly tied to skills development, career progression, and appropriateness to technological change.

Taken together, these studies demonstrate that sustainable employment quality is a multidimensional and context-sensitive concept. It encompasses not only traditional aspects such as income and job stability but also social protection, skills development, workplace conditions, and health equity. Moreover, by situating employment quality within the broader sustainability agenda, the concept highlights how labor markets can contribute simultaneously to individual well-being, social cohesion, and long-term economic resilience.

Sustainable Development Goals and Sustainable Employment Quality

1. SDG 4: Quality Education and Sustainable Employment Quality

SDG 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, has been widely discussed in the literature as a foundational goal supporting sustainable employment outcomes. In the context of vocational and higher vocational education, SDG 4 is commonly

associated with the development of employability, skills relevance, and long-term career sustainability rather than short-term employment attainment. The details are as follows:

UNESCO (2016) refers to SDG 4 as a transformative agenda that emphasizes not only access to education but also the quality, relevance, and effectiveness of educational systems in preparing learners for work and life. This perspective highlights the close relationship between education quality and employment outcomes, particularly in vocational education contexts where curricula are expected to align closely with labor market needs.

McGrath et al. (2018) explore the role of vocational education and training within SDG 4 and argue that quality vocational education contributes directly to sustainable employability by equipping learners with both occupational skills and adaptive learning capacities. Their study emphasizes that sustainable employment quality depends on continuous skill development rather than initial job placement alone.

Pavlova (2019) refers to SDG 4 as a key framework for integrating education for sustainable development into vocational education systems. She highlights that vocational institutions must move beyond narrow technical training and incorporate broader competencies, such as problem-solving, adaptability, and lifelong learning skills, which are essential for sustaining employment in dynamic labor markets.

Wheelahan and Moodie (2020) explore the relationship between education quality and labor market outcomes, noting that fragmented or poorly aligned curricula often lead to unstable employment trajectories. Their findings suggest that educational management and curriculum coherence play a critical role in ensuring that educational inputs translate into sustainable employment quality.

Cedefop (2020) refers to quality assurance mechanisms in vocational education as an essential component of SDG 4 implementation. The report emphasizes that systematic monitoring, feedback, and curriculum renewal are necessary to maintain the relevance of vocational education and support graduates' long-term employment stability.

Zancajo and Valiente (2021) explore how institutional governance and management practices influence education quality and employability outcomes. Their study highlights that effective educational management systems can strengthen the link between teaching processes and sustainable employment outcomes, particularly in vocational institutions.

In summary, the literature consistently indicates that SDG 4 provides a critical educational foundation for sustainable employment quality. Quality education, curriculum relevance, lifelong learning, and effective educational management are repeatedly identified as key factors linking vocational education to long-term employability. These findings suggest that improving sustainable employment quality requires institutional-level educational management models aligned with the principles of SDG 4.

2. SDG 8: Decent Work and Sustainable Employment Quality

SDG 8 focuses on promoting sustained economic growth, productive employment, and decent work for all. Within employment-related research, SDG 8 is widely regarded as a central framework for shifting attention from employment quantity to employment quality. Scholars frequently link SDG 8 to multidimensional employment outcomes, including job security, working conditions, income adequacy, and opportunities for career development. The details are as follows:

International Labour Organization (ILO, 2015) refers to decent work as a multidimensional concept encompassing employment security, social protection, safe working environments, and social dialogue. This framework has been widely adopted in studies examining employment quality and provides a conceptual basis for evaluating sustainable employment outcomes.

Green and Mostafa (2017) explore the relationship between decent work and job quality, emphasizing that employment stability and meaningful work are essential components of sustainable employment. Their study highlights that high employment rates alone do not necessarily reflect positive employment outcomes if job quality remains low.

Kalleberg (2018) refers to the increasing polarization of labor markets and argues that precarious employment undermines sustainable employment quality. His work suggests that education systems, particularly vocational education, play a crucial role in mitigating employment insecurity by preparing graduates for stable and productive work.

Tang and Chen (2019) explore employment quality evaluation in the context of vocational education graduates. Their findings indicate that traditional indicators, such as employment rate, fail to capture key aspects of decent work, including career development opportunities and employment satisfaction.

Guo et al. (2020) refer to SDG 8 as a guiding framework for reforming employment evaluation systems in higher education. They emphasize the need for multidimensional indicators that reflect job quality, development potential, and long-term employment sustainability.

Liu and Xie (2021) explore the role of institutional support and school–enterprise cooperation in promoting decent work outcomes for vocational graduates. Their study highlights that structured partnerships with industry can enhance employment stability and job quality when aligned with educational objectives.

To sum up, the literature demonstrates that SDG 8 provides a comprehensive framework for understanding sustainable employment quality from the perspective of decent work. Research consistently emphasizes the limitations of employment-rate-focused evaluation systems and calls for multidimensional indicators that reflect employment stability, quality, and development potential. These findings underscore the importance of integrating SDG 8 principles into educational management and employment evaluation practices.

3. SDG 10: Reduced Inequalities and Sustainable Employment Quality

SDG 10 aims to reduce inequalities within and among countries, with particular emphasis on equality of opportunity and social inclusion. In employment-related studies, SDG 10 is frequently associated with disparities in access to quality employment, career mobility, and social protection, especially among graduates from vocational education backgrounds. The details are as follows:

UNDP (2019) refers to inequality as a structural issue embedded in education-to-employment transitions. The report highlights that individuals from disadvantaged educational tracks often face limited access to high-quality employment opportunities, resulting in lower employment stability and career progression.

Brown, Lauder, and Cheung (2020) explore social stratification in labor markets and argue that vocational graduates are often positioned at a disadvantage due to institutional hierarchies within education systems. Their research suggests that employment quality disparities cannot be fully explained by individual ability alone but are shaped by systemic factors.

Yang and Qiu (2020) refer to employment inequality among vocational graduates and emphasize that unequal access to internships, career guidance, and social networks contributes to differences in employment quality. Their study highlights the importance of institutional support in reducing these disparities.

OECD (2021) explores the relationship between education pathways and labor market inequality, noting that vocational education systems with weak governance structures often reproduce employment inequalities. The report emphasizes the need for inclusive education policies and coordinated employment support mechanisms.

Wang and Li (2021) explore the role of educational management in promoting equity-oriented employment outcomes. Their findings suggest that targeted support measures and inclusive evaluation systems can enhance sustainable employment quality for disadvantaged student groups.

Zhang et al. (2022) refer to SDG 10 as a critical lens for evaluating employment quality beyond average outcomes. They argue that sustainable employment quality should be assessed in terms of both overall improvement and the reduction of disparities among different groups of graduates.

In summary, existing studies indicate that SDG 10 provides an essential equity-oriented perspective for understanding sustainable employment quality. The literature emphasizes that employment quality improvement must address structural inequalities and ensure inclusive outcomes for vocational graduates. These findings

highlight the importance of integrating equity considerations into educational management models and employment evaluation systems.

Components of Sustainable Employment Quality

Sustainable Employment Quality (SEQ) is a holistic and forward-looking construct that transcends the basic attainment of employment, integrating the core tenets of sustainable development with the multidimensional attributes of employment quality. It emphasizes the dynamic balance between individual career sustainability, organizational development, and societal equity, aiming to foster long-term, resilient, and value-driven employment outcomes for graduates. As vocational education faces the dual demands of labor market transformation and global sustainability goals, clarifying the core components of SEQ becomes pivotal for designing targeted educational management models. The following literature review synthesizes scholarly perspectives on the key dimensions that constitute sustainable employment quality, laying a theoretical foundation for enhancing higher vocational students' long-term employability and career development. This topic contains the following details:

1. Developing Technical Competencies

Technical competencies remain the foundation of graduate employability. Bhate et al. (2020) emphasize that proficiency in core disciplinary knowledge and practical technical skills ensures graduates' competitiveness in increasingly specialized labor markets. Clarke (2021) further notes that technical mastery enables graduates to meet job-specific requirements and adapt quickly to evolving workplace technologies. More recently, Johnson and Kim (2024) argue that embedding technical competencies into higher education curricula enhances both short-term job acquisition and long-term career sustainability, particularly in sectors undergoing rapid digital transformation. Thus, technical skills function as a non-negotiable dimension of sustainable employment quality.

At the same time, recent studies highlight that technical competencies are no longer limited to narrow professional expertise but also encompass digital literacy, analytical capacity, and the ability to integrate technology into problem-solving. For

example, Almahasees and Jaccopard (2022) argue that graduates who possess strong digital and data-handling skills are better positioned to succeed in technology-driven workplaces. Similarly, Sahudin et al. (2022) observe that in the era of globalization, technical competencies must be continuously updated to keep pace with shifting industry standards and international benchmarks. Tomlinson (2021) adds that the acquisition of technical knowledge contributes to graduates' sense of professional identity, giving them confidence to transition from education to work. Collectively, these insights suggest that technical competencies are not static achievements but dynamic capabilities that require constant renewal. Therefore, higher education institutions must design curricula and learning environments that systematically integrate technical training, applied practice, and opportunities for continuous upskilling, ensuring that graduates remain employable and competitive throughout their careers.

2. Enhancing Soft Skills

Beyond technical abilities, soft skills are increasingly recognized as critical for long-term employability. Fagan et al. (2020) highlight that communication, teamwork, and problem-solving remain key attributes valued by employers across industries. Tomlinson (2021) observes that higher education must intentionally foster these interpersonal and cognitive skills to ensure that graduates thrive in collaborative and multicultural work environments. Similarly, Jackson and Bridgstock (2021) stress that the integration of soft skills into curricular and co-curricular activities enhances appropriateness and resilience. Collectively, these perspectives confirm that sustainable employment requires the deliberate cultivation of soft skills alongside technical training.

In addition, recent scholarship underscores that soft skills not only complement technical expertise but also function as long-term career enablers. Johnson and Kim (2024) argue that graduates with strong interpersonal and emotional intelligence skills demonstrate higher levels of career satisfaction and are more effective in leadership roles. Brown et al. (2022) note that employer engagement in higher education reveals a persistent demand for graduates who can

communicate across disciplines, manage conflict, and demonstrate flexibility in uncertain contexts. Almahasees and Jacomard (2022) further emphasize that in the digital age, soft skills such as appropriateness, resilience, and self-directed learning are indispensable for navigating technological disruptions and global crises. These findings suggest that higher education institutions must embed structured opportunities, such as collaborative projects, leadership programs, and experiential learning, into curricula to systematically develop soft skills. By doing so, they not only enhance graduates' immediate employability but also support their capacity to sustain professional growth across dynamic career trajectories.

3. Raising Career Awareness

Career awareness represents another essential element of sustainable employment quality, as it enables students to actively manage their professional trajectories. Hooley et al. (2020) argue that career development learning embedded in education systems equips students with the tools to align their studies with future employment pathways. Garcia and Lee (2023) add that institutions that integrate labor market intelligence and career counseling into curricula provide graduates with a clearer understanding of employment trends and opportunities. Clarke (2021) emphasizes that fostering career self-management also enhances graduates' agency and long-term job satisfaction. Together, these insights indicate that sustainable employment quality cannot be achieved without cultivating strong career awareness among students.

Recent scholarship further emphasizes that raising career awareness contributes directly to students' employability readiness and appropriateness. Brown et al. (2022) observe that graduates who receive systematic career guidance are better prepared to navigate uncertain labor markets and transition effectively into professional roles. Dodd et al. (2021) highlight the growing role of digital career platforms, which allow students to access real-time labor market data and explore alternative pathways beyond traditional employment trajectories. Similarly, Tomlinson (2021) notes that career awareness is deeply connected to students' identity formation and confidence in pursuing meaningful work, suggesting that

employability is as much about personal development as it is about skill acquisition. These findings suggest that higher education institutions must embed career guidance programs, reflective activities, and exposure to industry practices into their curricula. By doing so, they not only raise career awareness but also empower graduates to manage lifelong career development in dynamic and competitive labor markets.

4. Collaboration with Industry

Partnerships between higher education institutions and industry are widely acknowledged as essential for ensuring that academic outcomes are closely aligned with labor market expectations. Research shows that collaboration facilitates not only knowledge transfer but also internships and applied training opportunities, allowing students to translate classroom knowledge into workplace practice (Rothaermel et al., 2021). Industry engagement in curriculum design has also been found to help programs anticipate technological shifts and incorporate relevant competencies, thereby enhancing graduates' readiness for employment (Fernandes et al., 2022). Building on this perspective, the "triple helix" model developed by Etzkowitz and Zhou (2019) demonstrates how universities, industries, and governments can jointly create innovation ecosystems that strengthen employability while advancing broader economic development.

More recent scholarship highlights that these collaborations generate reciprocal benefits for both students and employers. For instance, Støren and Aamodt (2021) argue that internships and work-based projects enhance graduates' appropriateness and professional confidence, while simultaneously giving employers access to new skills and perspectives. Ranga and Etzkowitz (2022) extend this discussion by noting that industry–university partnerships often drive regional innovation and knowledge sharing, reinforcing the societal impact of higher education. Moreover, international collaborations are gaining prominence: Beerkens and Soo (2019) find that cross-border partnerships expand students' exposure to global work environments and help build intercultural competencies that are critical for career sustainability. Taken together, the literature suggests that collaboration

with industry is not merely supportive but constitutes a core strategy for achieving sustainable employment quality in an interconnected world.

5. Ongoing Quality Assessment and Feedback

Sustainable employment also depends on continuous quality evaluation of both teaching and graduate outcomes. Shikalepo (2020) underscores that systematic assessment mechanisms identify gaps in instructional practices and support ongoing improvements. Harvey and Shah (2020) argue that quality assurance frameworks must go beyond compliance, fostering cultures of enhancement and innovation. Cardoso et al. (2022) show that digital feedback systems now allow institutions to gather real-time insights from students and employers, ensuring curricula remain responsive to labor market needs. Taken together, these findings indicate that continuous quality assessment functions as both a corrective and adaptive mechanism in sustaining employment quality.

Building on this perspective, recent scholarship has emphasized that feedback loops are most effective when they integrate multiple stakeholders and feed directly into institutional decision-making. Stensaker et al. (2021) note that combining internal self-evaluations with external peer reviews promotes accountability while also encouraging reflective learning within institutions. Similarly, Elassy (2019) highlights that student voice is central to sustainable quality practices, as it provides authentic insights into the relevance of teaching and learning strategies. More recently, Zawacki-Richter and Kerres (2020) argue that technology-enhanced quality assurance systems—such as learning analytics dashboards—enable proactive interventions by monitoring student engagement and outcomes in real time. Collectively, these studies suggest that ongoing assessment and feedback should be understood as dynamic processes that drive both immediate course-level improvements and long-term institutional transformation.

6. Policy Support and Institutional Governance

Effective policies and governance frameworks underpin sustainable graduate employability. Dari and Sukma (2024) contend that institutional resilience requires supportive policies combined with the strategic allocation of resources. Marginson

(2021) further observes that policy directives balance institutional autonomy with accountability, ensuring that higher education contributes to long-term national development. Hazelkorn and Mihut (2021) add that policy reforms promoting appropriateness and innovation enable universities to respond effectively to crises while safeguarding employment outcomes. Thus, sustainable employment quality depends on coherent governance structures that integrate policy support with institutional strategy.

Expanding on this perspective, recent scholarship emphasizes that governance systems must also be participatory and forward-looking. de Boer and Jongbloed (2020) highlight that transparent funding mechanisms and performance-based allocations are critical to ensuring efficiency and fairness in higher education. Mok and Neubauer (2020) note that responsive policy frameworks, particularly during global disruptions such as the COVID-19 pandemic, enabled universities in Asia to accelerate digital transformation and maintain educational continuity.

Similarly, Ranga and Etzkowitz (2022) argue that policies that promote university–industry–government collaboration strengthen innovation ecosystems and enhance graduates' employability at both national and regional levels. Collectively, these findings suggest that effective governance is not merely about oversight; it represents an enabling environment where policies, resources, and institutional practices converge to support appropriateness, innovation, and the long-term sustainability of graduate employment.

7. Work–Life Balance and Employment Security

Employment quality also encompasses non-technical aspects such as job stability and work–life balance. Fagan et al. (2020) highlight that sustainable employment should provide not only adequate wages but also conditions that support long-term employee well-being. Green and Mostafa (2023) demonstrate that secure employment contracts and flexible working arrangements positively influence both productivity and job satisfaction. Eurofound (2021) reports that employees who experience balanced workloads and supportive environments are more likely to

remain engaged and committed to their organizations. Consequently, sustainable employment must integrate well-being and security as core elements.

Beyond immediate workplace conditions, recent studies show that work–life balance and employment security are increasingly tied to broader social and institutional practices. Chung et al. (2021) observe that flexible working policies, particularly remote and hybrid arrangements, enhance workers’ ability to balance personal and professional responsibilities without compromising career advancement. Similarly, Kelliher and Richardson (2020) argue that supportive organizational cultures are as important as formal policies, since employee perceptions of fairness and autonomy strongly influence well-being outcomes. Furthermore, Peck and Theodore (2020) highlight that employment security is not only an individual concern but also a structural issue shaped by labor regulations and national welfare systems. Together, these perspectives suggest that sustainable employment must address both organizational-level initiatives and policy-level protections, ensuring that graduates enter work environments where stability, flexibility, and well-being are integral to long-term career quality.

8. Lifelong Learning and Continuous Development

Lifelong learning represents a cornerstone of sustainable employability, as it enables graduates to maintain relevance in rapidly changing labor markets. Sahudin et al. (2022) argue that globalization and technological advancement require individuals to continuously update their knowledge and skills in order to remain competitive. Brown et al. (2022) emphasize that higher education plays a central role in instilling learning mindsets that extend beyond graduation, encouraging graduates to engage in professional development throughout their careers. Almahasees and Jacomard (2022) further highlight that digital literacy and resilience training provide graduates with the capacity to navigate disruptions such as automation and economic volatility. Taken together, these findings suggest that lifelong learning is not an optional supplement but a critical requirement for sustained employment quality.

Recent research further demonstrates that continuous development must be supported at institutional, organizational, and policy levels. Cendon (2020) stresses that higher education institutions should design flexible learning pathways—such as micro-credentials, modular courses, and online platforms—that allow graduates to upskill and reskill throughout their working lives. Similarly, Jereb et al. (2020) note that workplace-based lifelong learning programs enhance both employee performance and organizational innovation, showing that employers also benefit from fostering continuous development. At a broader level, OECD (2021) underscores that national strategies promoting adult learning and re-training are essential for managing labor market transitions, particularly in times of crisis. Collectively, these perspectives indicate that lifelong learning is not simply an individual responsibility but a shared endeavor involving universities, employers, and governments to ensure that employability is sustained across the entire career span.

Sustainable employment quality is a multidimensional concept that extends beyond the simple attainment of jobs to include job stability, meaningful career development opportunities, fair compensation, personal well-being, and appropriateness to continuous change. The reviewed literature indicates that sustainable employability is built on the integration of several interrelated dimensions. Technical competencies and soft skills form the essential foundation, equipping graduates with both specialized expertise and the interpersonal abilities required for long-term success. Raising career awareness further empowers students to navigate professional trajectories with confidence and agency, while structured collaboration with industry ensures that academic learning is consistently aligned with labor market realities.

Equally important, ongoing quality assessment and feedback provide adaptive mechanisms for improving teaching and graduate outcomes, while coherent policy support and participatory governance frameworks create the institutional and structural conditions for resilience and innovation. Beyond skills and systems, sustainable employment quality also requires attention to work–life balance and employment security, recognizing that stability and well-being are central to

graduates' sustained engagement and productivity. Finally, lifelong learning and continuous development represent the cornerstone of future employability, enabling individuals to adapt to globalization, technological disruptions, and shifting economic landscapes.

Taken together, these eight dimensions highlight that sustainable employment quality is not confined to short-term employability but represents a long-term, holistic approach to career success and societal contribution. By systematically embedding these elements into their practices, vocational and higher education institutions can promote forms of employment that are equitable, resilient, and future-oriented, thereby ensuring graduates remain competitive and fulfilled across their professional lives.

Sustainable Employment Quality Evaluation

Sustainable Employment Quality (SEQ) evaluation assesses the long-term sustainability, equity, and developmental value of employment, moving beyond traditional metrics. Amid rapid labor market changes and global sustainability goals, such evaluation has become vital for policy and practice. This section reviews key literature on SEQ evaluation frameworks, indicators, and methods, synthesizing current research to identify progress and remaining gaps.

Kalleberg (2011) laid the foundation for evaluating employment quality by arguing that jobs should not be judged solely on wages but also on stability, autonomy, and opportunities for career advancement. His work emphasized that employment quality is inherently multidimensional, requiring a broader evaluative lens. Building on this perspective, Eurofound (2017) developed a systematic framework across the European Union that included income, working conditions, work-life balance, skill development, and social dialogue, linking job quality to well-being, productivity, and social cohesion.

Van Aerden et al. (2017) advanced this framework by empirically identifying multiple indicators of employment quality in European labor markets, focusing on stability, material rewards, training opportunities, and collective representation. Their findings highlighted that sustainable employment cannot be evaluated by income

alone but must also capture the institutional and relational aspects of work. Sehnbruch et al. (2020) reinforced this multidimensional view by introducing the Employment Quality Index (EQI), which integrates wages, stability, benefits, and training, and argued that such indices are essential for uncovering inequalities faced by vulnerable groups.

González et al. (2021) refined these indicators by incorporating subjective elements such as workers' perceptions of work–life balance and well-being, stressing that sustainability in employment must address both objective job conditions and lived experiences. Peckham et al. (2022) further expanded the scope by linking employment quality evaluation to public health, showing that poor-quality jobs—characterized by instability or lack of protection—contribute directly to health disparities, while good-quality employment promotes equity and long-term resilience.

Hovhannisyan et al. (2022) drew attention to the contextual nature of evaluation, arguing that frameworks for developing and transition economies must prioritize basic labor rights, social protection, and minimum income adequacy, while high-income countries should focus on career sustainability and work–life integration. Most recently, Ahonen et al. (2023) synthesized this trajectory by emphasizing that employment quality evaluation should not only measure economic or institutional factors but also incorporate health, equity, and sustainability, calling for longitudinal, multidimensional approaches that adapt to changing labor markets.

Taken together, these contributions demonstrate that sustainable employment quality evaluation has evolved into a multidimensional and context-sensitive field. While wages and job security remain central, modern frameworks emphasize continuous learning, institutional protection, work–life balance, and health outcomes. The challenge ahead lies in designing flexible evaluation systems that capture these diverse elements across different labor market contexts, ensuring that employment contributes simultaneously to individual well-being, equity, and sustainable development.

Concepts and theories of Higher Vocational Students

Higher vocational students refer to learners who receive vocational and technical education aimed at developing practical skills and professional competencies for specific occupations. Compared with students in traditional academic universities, higher vocational students focus more on applied knowledge, technical training, and direct preparation for the labor market. Therefore, understanding the characteristics and development needs of higher vocational students is important for improving vocational education management and enhancing their employment outcomes.

Definition of Higher Vocational Students

Higher vocational students represent a distinct group within the educational landscape, bridging general academic education and direct labor market entry. Their characteristics, learning needs, and career trajectories differ significantly from those in traditional university programs. This section reviews key definitions and conceptualizations of higher vocational students from scholarly and policy perspectives, aiming to clarify their unique attributes, educational experiences, and roles in economic and social development. This topic contains the following details:

Guo and Lamb (2019) in *Journal of Vocational Education and Training* described higher vocational students as post-secondary learners enrolled in institutions designed to provide technical and applied knowledge, highlighting their distinct orientation toward workplace readiness compared to general higher education students.

Pilz and Li (2020) emphasized that higher vocational students are defined by their engagement in dual learning systems, where academic study is systematically integrated with workplace practice. They noted that this dual approach is particularly crucial in contexts where industry collaboration determines the relevance of training.

Li and Pilz (2021) argued that higher vocational students should be viewed through the lens of employability, with their identity shaped by competency-based curricula that combine general education, technical knowledge, and transferable skills. This positions them as a key workforce pipeline for modern industries such as manufacturing, logistics, and digital services.

Tang, Yang, and Xu (2022) pointed out that the population of higher vocational students is highly diverse, including learners from rural and urban areas with varying academic preparedness. They emphasized the importance of flexible learning pathways and inclusive pedagogical strategies to accommodate this diversity.

Zhao and Wang (2023) highlighted that higher vocational students are increasingly influenced by global labor market demands. They argued that these students should be defined as learners whose education is aligned not only with national economic strategies but also with international standards of skill development, making them vital actors in globalized workforce mobility.

Wang and Guo (2024) extended this perspective by proposing that higher vocational students embody the integration of social equity and economic efficiency. They contended that the definition must include not only their technical skill orientation but also their role in promoting social mobility, particularly for students from disadvantaged backgrounds.

In summary, research on higher vocational students has evolved from a narrow focus on technical skills to a broader scope covering dual education systems, employability, diversity, globalization and equity. This shift mirrors the growing complexity of vocational education in addressing both local labor market needs and global educational trends. However, existing studies have notable gaps: they overlook students' individual agency, lived learning experiences and long-term personal development beyond immediate employment. Additionally, definitions of higher vocational students vary widely across national and cultural contexts, highlighting the need for a more integrated, context-sensitive conceptualization to guide future educational research and policy design.

Characteristics of Higher Vocational Education

In the context of contemporary higher vocational education, a threefold orientation of quality focus, market alignment, and continuous improvement has gradually emerged as a consensus. On the one hand, institutions must monitor the “service quality gap” between students' expectations and perceptions; on the other hand, governance systems must align with external labor markets, employers, and

regulatory standards while promoting continuous improvement through internal quality assurance mechanisms. Using the case of Serbian higher vocational education, studies clearly indicate that the essence of service quality lies in the comparison between expectations and perceptions, with student satisfaction determined by this relationship. Moreover, quality has been elevated to the level of a national education strategic goal, requiring institutions to undergo external accreditation, conduct self-evaluations, and incorporate international review elements to enhance alignment with global standards (Jovićić et al., 2020). Recent structural reforms (such as merging multiple vocational schools into vocational colleges) and external competitive pressures (declining student enrollment, expansion of private institutions, changes in occupational structures, internationalization demands, and insufficient linkage with market practices) have collectively made “student-centered and quality-driven” service capacity the key variable for institutional survival and development (Vuković et al., 2022).

From a measurement perspective, service quality in higher vocational education is often assessed through the SERVQUAL model, which covers five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. By applying expectation–perception paired gap analysis, institutions can diagnose their strengths and weaknesses in teaching and management services (Parasuraman et al., 1988; Weerasinghe & Fernando, 2018). Empirical findings from the Serbian sample reveal that all five dimensions showed significant negative gaps (student perceptions lower than expectations), with the largest gaps observed in reliability and responsiveness, and the smallest in empathy. Overall service quality also demonstrated a significant negative gap, suggesting that priority improvements should be made in processes and responsiveness to reduce gaps in timeliness, accuracy, and delivery quality (Jovićić et al., 2020). This measurement framework underscores the intrinsic link between student satisfaction, teaching quality, and employment outcomes in higher vocational education.

From the perspective of governance and assurance, quality assurance in higher vocational education is shifting from “compliance-oriented program accreditation” to

“internal quality systems driven by external standards for continuous improvement.” This path includes identifying core processes, defining key stakeholders and quality indicators, incorporating graduate employment as a major evaluation metric, establishing quality policies and objectives, clarifying roles and responsibilities, implementing a monitoring–measurement–analysis–evaluation cycle, and adopting process methods to promote systematic improvement and corrective action (Srikanthan & Dalrymple, 2020). Within this framework, institutions are required to systematically identify both external (technological, market, cultural, social, and economic) and internal (values, culture, knowledge, performance) influencing factors, as well as diverse stakeholders such as students, governments, employers, and accreditation agencies. This ensures that educational processes are both “internally controlled” and “externally verifiable,” embedding “learning quality–employment quality–societal expectations” into a unified quality system (Srikanthan & Dalrymple, 2020). At the same time, research warns of the limitations and challenges in directly applying corporate quality management to education, such as difficulties in defining customers, overemphasis on non-academic processes, communication and measurement challenges, and resistance to cultural change. These findings suggest that vocational institutions should maintain contextual sensitivity and a mission-driven orientation when adopting quality models (Harvey & Williams, 2010; Jovićić et al., 2020).

In summary, recent empirical evidence and governance practices together outline the core characteristics of higher vocational education: service quality measurement based on students’ expectations, quality assurance systems driven by accreditation and internal evaluation, external alignment with employment and labor market demands, and continuous improvement through process methods and data analysis. For the Chinese or local higher vocational context, this characteristic framework is equally transferable: by clarifying stakeholders and quality indicators, institutions can achieve coordinated optimization of teaching and management through a “process–indicator–feedback–improvement” chain, thereby enhancing students’ learning experiences and sustainable employment quality.

Current Status and Development of Higher Vocational Education

Higher vocational education occupies a central position within the broader education system, serving as a bridge between academic knowledge and labor market needs. Historically, its emergence was closely tied to the Industrial Revolution, when industrial societies demanded technically skilled workers to operate new technologies and support economic transformation. Since then, vocational education has gradually evolved from narrow, occupation-specific training to broader systems integrating applied knowledge, transferable skills, and professional competencies (Pilz & Li, 2020). This historical trajectory highlights its dual role: meeting immediate labor market needs while supporting long-term industrial upgrading.

In the contemporary context, higher vocational colleges are increasingly recognized as critical drivers of economic growth and social development. Scholars emphasize their role in producing highly skilled workers for key industries such as manufacturing, logistics, healthcare, and digital services (Tang et al., 2022). At the same time, the sector faces pressures from globalization and technological disruption, requiring curricula to incorporate not only technical knowledge but also digital literacy, innovation capacity, and cross-cultural competencies (Zhao & Wang, 2023). Moreover, the internationalization of vocational education, including cross-border cooperation and the harmonization of qualification frameworks, is reshaping how higher vocational institutions align their training with both national and global labor market demands (Li & Pilz, 2021).

Recent reforms also highlight challenges and opportunities in the development of higher vocational education. On the one hand, structural adjustments—such as the integration of vocational colleges, expansion of quality assurance systems, and closer partnerships with industries—have enhanced its relevance and sustainability (Guo & Lamb, 2019). On the other hand, persistent issues remain, including unequal access, resource disparities between regions, and the need for inclusive pathways that accommodate diverse student populations (Wang & Guo, 2024). Taken together, the current development of higher vocational education

reflects a dynamic process of adaptation, where institutions must balance traditional skill training with modern requirements of innovation, equity, and employability.

A historical review of vocational education highlights its gradual evolution through distinct stages of development, as summarized in Table 2.2.

Table 2.2 Stages of Vocational Education Development

Time Period/Year	Development Stage	Key Events/Characteristics	Impact/Outcomes
Early 20th Century	Rise of Vocational Education	Countries systematically promoted vocational education, particularly in industrialized nations like Germany and the United States	Vocational education systems gradually matured, becoming vital channels for enhancing worker skills
1990s to Present	Internationalization and Modernization of Vocational Education	Globalization and advancements in information technology diversified vocational education forms and integrated technology	Vocational colleges widely cooperated with industries, fostering the cultivation of skilled talent and supporting industrial development
21st Century	Modernization and Innovation in Vocational Education	Countries improved regulatory frameworks to continuously enhance the quality of vocational education	Vocational education became a critical pillar of economic development, facilitating global industrial upgrading and technological progress

The Rise of Vocational Colleges: Global Promotion in the 20th Century

In the early 20th century, as industrialization accelerated and technological advancements surged, the global demand for skilled labor increased dramatically. Many nations began systematically promoting vocational education as a key means to address employment challenges and enhance workforce skills. In industrialized countries, vocational education gradually became the primary channel for training technical workers.

For instance, in 1917, the United States passed the Smith-Hughes Act, marking the federal government's formal support for the development of vocational and technical education. This legislation provided federal funding for sectors such as agriculture and industry, fostering the establishment and growth of vocational schools. Vocational education expanded beyond traditional manufacturing sectors to include agriculture, commerce, and services, creating a comprehensive vocational education system (Xiong & Chang, 2022).

In China, vocational education experienced rapid development after the 1990s. Through the implementation of the Vocational Education Law, the Chinese government explicitly recognized vocational education as a critical component of the national education system. It actively promoted the construction of vocational colleges and the enhancement of faculty quality. By 2020, China had established the largest vocational education system in the world, annually training millions of skilled workers to meet the growing demand for high-skilled labor in various industries (Zhu & Shi, 2021).

Diversification and Modernization of Vocational Education: Adapting to 21st-Century Challenges.

In the 21st century, with rapid global economic growth and industrial restructuring, vocational education faces new challenges and opportunities. To address the changes brought by globalization and technological advancements, vocational colleges around the world have undertaken significant reforms to promote the diversification, internationalization, and modernization of vocational education.

Integration of Technology and Innovation: The integration of technology and innovation with vocational education has become a defining trend in the 21st century. Advanced technologies such as virtual reality (VR), artificial intelligence (AI), and the Internet of Things (IoT) have increasingly been integrated into vocational education curricula. This combination of technology and education not only enhances students' practical skills but also fosters the innovative thinking and problem-solving abilities required in modern production environments (Stoyanets et al., 2022). Additionally, the rapid growth of online education platforms, fueled by advancements in information technology, has expanded the reach of vocational education, offering more flexible learning opportunities.

Industry-Academia Collaboration: Vocational colleges place great emphasis on combining theory with practice, particularly through deep collaborations with local enterprises and industries. These collaborations provide students with internships, projects, and technical training, helping them gain valuable hands-on experience while providing businesses with a stable pipeline of skilled workers. Germany's dual education system exemplifies this model, where students receive theoretical instruction in schools while gaining practical experience in enterprises. This ensures that they have a strong theoretical foundation and are well-prepared to meet workplace demands. This model has been widely adopted by countries around the world, serving as a foundation for the modernization of vocational education (Zhao et al., 2022).

In response to the rapidly changing modern economy and industrial structure, countries have continuously refined vocational education policies and regulatory frameworks to ensure that vocational colleges provide training aligned with market demands.

In China, the legal framework for vocational education has become increasingly comprehensive. The 2019 amendment to the Vocational Education Law emphasized the importance of "integration of industry and education" and "collaboration between schools and enterprises." This amendment calls for stronger partnerships between vocational institutions and enterprises to jointly cultivate high-

skilled talents. The revised law also reinforced the legal status of vocational education, providing institutional guarantees for its growth within the national education system (Xiong & Chang, 2022).

Moreover, international cooperation has emerged as an important strategy for enhancing the quality of vocational education. Through partnerships with countries such as Germany and Australia, China has introduced advanced vocational education concepts and standards, significantly improving the quality of teaching and the international competitiveness of its vocational institutions.

Looking ahead, vocational colleges will increasingly emphasize the integration of technological innovation and international collaboration, particularly to meet the needs of emerging industries and address global challenges. As the global economy continues to evolve, vocational education must not only focus on developing students' technical skills but also enhance their awareness of sustainable development and global perspectives. For instance, Education for Sustainable Development (ESD) is gradually being integrated into vocational curricula to help students understand the importance of environmental protection, resource management, and social responsibility. Additionally, the future of vocational education will involve strengthening international partnerships with universities and enterprises, introducing more cross-border projects and technological exchanges to broaden students' international horizons. The organic integration of technological innovation, international cooperation, and sustainable development education will drive the future growth of vocational colleges, ensuring their continued contribution to global economic development and industrial upgrading.

In conclusion, higher vocational colleges, as core institutions for cultivating applied talents, have developed in tandem with global economic and technological advancements. From the industrialization-driven expansion of the 20th century to the globalization and information technology revolutions of the 21st century, vocational education has continuously evolved and innovated, becoming a key pillar of economic growth. In the future, vocational colleges will continue to play a vital role in fostering technological innovation, promoting international collaboration, and

advancing sustainable development, providing highly skilled talents to industries worldwide and supporting sustainable economic growth.

Related Researches

Researches on Educational Management and Model Development

This section reviews research related to the construction and reform of vocational education management models, focusing on institutional responses to sustainable development, educational quality, and system-level transformation. The details are provided below :

Eurofound. (2017) defines sustainable employment as a multi-dimensional construct integrating job stability, skill development, work–life balance, and health/safety. Emphasizes that long-term employability relies on aligning individual skills with labor market transformation, and notes that vocational education systems often fail to address skill obsolescence and weak industry linkages, leading to gaps in graduates’ adaptive capacity.

Forrier et al. (2018). examined a systematic review and research agenda conceptualizes sustainable employability as a dynamic interaction between individual agency (e.g., career self-management) and institutional support (e.g., training provision, career guidance). Argues that vocational education frequently neglects individual career awareness and self-efficacy, resulting in graduates’ inability to navigate career transitions effectively.

ILO (2020). discussed in decent work and the future of work for young people links sustainable employment quality to decent work principles, including fair income, social protection, labor rights, and access to skill development. Critiques vocational education systems in emerging economies for weak industry–education collaboration and inadequate social protection mechanisms, which hinder graduates’ long-term employment stability.

Tang et al. (2021). explored the sustainable employment quality of vocational college graduates in China Gaps and Solutions based on empirical research in Chinese vocational education, identifies three primary gaps: misalignment between

curriculum content and enterprise job requirements, inadequate internship quality supervision, and lack of personalized career guidance. Proposes that effective solutions require integrated reforms across curriculum design, industry collaboration, and support services.

Chen et al. (2021) emphasize the pivotal role of teachers in delivering ESD. However, many teachers lack formal training in sustainable development competencies. The transition from technical instruction to interdisciplinary, problem-based learning demands investment in professional development and the creation of structured ESD training programs for instructors.

Tangpong et al. (2023) conducted research and development (R&D) to create an educational management model for secondary schools in Thailand. The study aimed to identify key components, assess needs, and evaluate the model's implementation. Data were collected from 669 participants using questionnaires, interviews, and observation forms, with analysis performed via mean, standard deviation, and PNI (modified). The findings identified three core components: organizational management, management efficiency, and achievement. The developed model consists of five elements: principles, purposes, conditions for success, processes, and supporting systems. Implementation results indicated that supervision and monitoring were of the highest significance. Furthermore, Tangpong et al. (2023) reported that all participating institutions successfully implemented quality management. The experts' evaluation and user satisfaction were both recorded at the highest levels. This model serves as a strategic framework for enhancing educational quality toward excellence in the secondary educational service area.

Zhang & Li (2023). explored institutional factors shaping sustainable employment quality evidence from vocational education in western China focuses on under-resourced regions (consistent with the current study's Guizhou Province context) and finds that institutional readiness (e.g., resource availability, administrative support) and mature school–enterprise partnerships are key determinants of sustainable employment quality. Notes that vocational institutions in

less developed regions face greater challenges in curriculum modernization and digital tool integration.

Raha & Wongsapan, (2024) studied developed an instructional model to improve Thai language competency among Grade 6 students in response to limitations in teaching resources and student-centered practices. The model integrates six components: principles and theories, objectives, learning processes, social systems, teacher responsiveness, and learning resources. It promotes learner engagement, self-directed learning, critical thinking, and real-life language application. A research and development (R&D) approach was used, including needs analysis, model design, implementation, and expert validation. Results showed significant improvement in students' knowledge, language skills, and learning attributes. The effectiveness index demonstrated clear learning progress after the model's implementation. Expert evaluations confirmed the model's appropriateness, feasibility, and instructional value.

Self-directed, experiential, and collaborative learning strategies were key factors in enhancing language proficiency. The study emphasizes adaptive instruction, varied learning media, and comprehensive assessment methods. Overall, the model offers a validated and practical framework for Thai language instruction, supporting experiential learning, social collaboration, and ICT integration.

Bangkheow and Bangkheow (2025) developed a "Design Thinking Learning Model to Enhance Creative Writing" for higher education. The research objectives were to investigate foundational data, develop the model, and evaluate its effectiveness. Instruments included questionnaires, interviews, the learning model, lesson plans, and writing tests. Data were analyzed using IOC, Mean, S.D., t-test for dependent samples, PNI_{modified}, and Content Analysis. Results showed a high demand among students for creative writing development. The model comprises 5 components and a 5-step process: Empathize, Define, Ideate, Prototype, and Test. Expert evaluation confirmed the model's appropriateness at a high level. Implementation results revealed that students' post-test creative writing scores were

significantly higher than pre-test scores at a .05 level. Finally, student satisfaction was reported at a high level.

Researches on Sustainable Employment and Employment Quality

The following syntheses represent significant academic contributions to the field of sustainable employment and employment quality. The details are presented below:

OECD (2016). explored in skills for Jobs: OECD Skills Outlook Links sustainable employment quality to skill mismatch reduction, emphasizing that vocational education curricula must align with evolving industry needs to enhance graduates' job retention and career progression. Highlights that weak collaboration between educational institutions and enterprises, outdated training content, and insufficient practical learning opportunities are key barriers to sustainable employment in vocational education.

Wang & Liu (2019). discussed in Sustainable Employment Quality of Vocational Graduates in China: Dimensions and Influencing Factors Identifies five core dimensions of sustainable employment quality for Chinese vocational graduates—job stability, skill development, income security, work–life balance, and social protection. Empirically verifies that curriculum-industry alignment, enterprise internship quality, and personalized career guidance are critical influencing factors, while noting that fragmented career services and inadequate social protection mechanisms hinder sustainable outcomes.

McQuaid & Lindsay (2020). explored conceptualizes sustainable employment as a multi-stakeholder construct involving individuals, institutions, enterprises, and governments. Argues that vocational education systems often fail to integrate demand-driven reforms, resulting in graduates' insufficient understanding of labor market needs and weak workplace adaptation. Stresses the need for integrated frameworks that combine curriculum reform, industry collaboration, and career support.

United Nations Development Programme (UNDP, 2023). discussed that frames sustainable employment quality as a key enabler of SDG 8 (Decent Work and

Economic Growth), emphasizing fair income, safe working conditions, social protection, and lifelong learning opportunities. Critiques vocational education systems globally for neglecting work–life balance, labor rights awareness, and environmental sustainability in training, leading to employment outcomes that lack long-term viability.

Sakdapat (2024) and Chen et al. (2021) emphasize the need for curricula that reflect labor market changes and integrate ESD. However, the misalignment between course content and actual workforce needs persists due to lagging responsiveness and lack of industry feedback. Institutions must balance technical skills with sustainability literacy in curricular design.

Mo, Y., Liao, K., & Wang, J. (2024) employed Latent Dirichlet Allocation (LDA) topic modeling to analyze 1,642 articles from the Web of Science to identify core research hotspots. Findings reveal that current discourse is driven by four primary themes: career sustainability and employee development, socio-economic dynamics, age and health in relation to work, and the impact of technology. The research highlights that sustainable employment requires proactive management by multiple stakeholders to maintain worker health and competence in an unpredictable environment. Notably, the integration of artificial intelligence presents both opportunities and challenges for high-level skill requirements. The study concludes that sustainability is achieved when lifelong learning policies are integrated with age-sensitive employee welfare. Recommendations emphasize the need for updated leadership styles and knowledge management to support an aging workforce. This LDA-based approach helps policymakers identify under-explored gaps, such as sustainability in the post-pandemic tourism and hospitality sectors.

Zhang, T., Gao, R., Yang, S., & Shi, C. (2025) analyzed the impact of human and social capital on both objective and subjective employment quality using a sample of 778 graduate students in China. Structural equation modeling indicates that human capital (academic knowledge and technical skills) significantly and positively affects objective quality, such as salary and job location. In contrast, social capital (networks and social support) exerts a stronger influence on subjective

quality, encompassing job satisfaction and development prospects. Employability serves as a vital mediating variable, translating these capitals into high-quality work outcomes. The research also finds that future career clarity moderates the positive impact of human capital on employability. Surprisingly, employment policy support negatively moderated the link between employability and job quality, suggesting a potential misalignment between policy and market reality. The study concludes that higher education institutions should shift focus from purely academic training to fostering networking skills and proactive career planning.

Lee, S., & Idrogo, C. B. (2025) utilized European Working Conditions Survey (EWCS) data across 26 countries to examine the non-monetary "premiums" associated with a university degree. Findings indicate that graduates enjoy significant advantages in skills utilization, task discretion, and physical safety. However, these premiums are not uniformly distributed; graduates do not necessarily experience better social environments or superior working time quality compared to non-graduates. In certain contexts, high-level workers face greater work intensity and stress due to complex responsibilities. The magnitude of these qualitative premiums is further moderated by national tertiary attainment rates, where high attainment often correlates with smaller premiums in discretion. The research challenges the assumption that higher education leads to better conditions across all facets of work. It concludes that the value of education should be assessed holistically, particularly in its role in protecting workers from hazardous or monotonous labor.

To conclude, this research's conceptual framework focuses on an educational management model targeting higher vocational students' sustainable employment quality. Core concepts are defined clearly: educational management models are operational frameworks with principles, goals, and evaluation; sustainable employment quality covers safety, income, skills, and prioritizes long-term fit; higher vocational students connect skill training to the labor market. Influenced by school-enterprise collaboration and skill support, the model fills gaps such as mismatched training via three-step research (current condition analysis, model building, feasibility evaluation), supporting practical implementation.

Chapter 3

Research Methodology

The research objectives of the study on the Development of a Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students were as follows: 1) To analyze the current and desired conditions of the sustainable employment quality of higher vocational students; 2) To develop an educational management model to enhance the sustainable employment quality of higher vocational students; 3) To evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

To achieve these research objectives, the study was divided into the following three phases:

Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

For each phase, the researcher followed specific research procedures as outlined below.

1. The Population / sample group
2. Research Instruments
3. Data Collection
4. Data Analysis

The details were as follows:

Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

The study of the current conditions and desired conditions of the development of employment quality of higher vocational students was carried out with the following details:

The population / Sample Group

The Population

According to the official list released by the Ministry of Education in June 2025, Guizhou Province has a total of 48 higher vocational colleges, consisting of 40 public and 8 private institutions. As of 2025, the total number of third-year students who are currently engaged in internship programs (graduating class of 2025) across these institutions is approximately 200,000, with an average of about 4,000 students per college. These students, representing both technical and non-technical disciplines, constitute a broad and diverse group of higher vocational learners within the province. Focusing on this cohort allows the study to capture a realistic understanding of the current and desired conditions of educational management practices that influence students' sustainable employment quality, particularly regarding the implementation of effective and sustainable institutional support structures.

The 48 higher vocational colleges are categorized by institutional type rather than size. The classification includes normal, sports, medical, science and engineering, finance and economics, comprehensive, private, and other types of colleges. This categorization highlights the differences in institutional capacity, specialization, and resource allocation, forming the foundation for the subsequent comparative analysis of sustainable employment quality among students.

The distribution of institutions, total student population, and the selected sample for this study are presented in Table 3.1.

Table 3.1 Lists of 8 types of colleges, population and sample group

No.	Types of Colleges	Number of Colleges	Students (Population)	Sample
1	Normal Colleges	5	20,000	38
2	Sports Colleges	1	4,000	8
3	Medical Colleges	5	20,000	38
4	Science and Engineering Colleges	13	54,000	104
5	Finance and Economics Colleges	3	12,000	23
6	Comprehensive Colleges	16	64,000	123
7	Private Colleges	1	4,000	8
8	Other Colleges	4	22,000	42
Total		48	200,000	384

The Sample Group

1. students

The sample group was determined using the Morgan sampling table (Krejcie & Morgan, 1970). Based on a total population of approximately 200,000 third-year students currently engaged in internship programs across 48 higher vocational colleges in Guizhou Province including 40 public and 8 private institutions, the required minimum sample size was calculated to be 384. These students represent both technical majors (e.g., science and engineering, medical, and finance and economics) and non-technical majors (e.g., normal, sports, and comprehensive), ensuring diversity and representativeness across the province's higher vocational education system.

These students served as the primary respondents for the questionnaire survey. Data collection was conducted through an online survey platform, following the principle of voluntary participation. Prior to questionnaire distribution, all participants were informed that their responses would remain anonymous and confidential, and that participation would have no impact on their academic

performance or institutional evaluation. The collected data were used solely for academic research purposes, ensuring the authenticity, reliability, and validity of the research findings.

2. Experts

In addition, qualitative data were collected through in-depth interviews with faculty members. These 15 participants were selected using purposive sampling and were identified based on their extensive professional experience and academic background. All selected participants had a minimum of ten years of teaching experience in higher education and demonstrated scholarly engagement in the field.

Each participating faculty member met the following criteria: 1) Held an academic rank of Associate Professor or above; 2) Possessed at least ten years of teaching experience at the higher education level; 3) Had achieved academic outcomes related to student employment in higher education, such as the publication of relevant books, articles, or audiovisual materials.

Research Instruments

In Phase One of the study, both questionnaires and interviews were employed as data collection instruments.

1. Questionnaire

The questionnaire items were developed based on the theoretical framework and related research presented in Chapter 2. Specifically, the seven dimensions of sustainable employment quality—safety at work, income and benefits, working hours and work-life balance, job security and social protection, social dialogue, skills development and training, and workplace relationships and work motivation—were derived from the literature review on sustainable employment quality and international frameworks related to decent work and employment standards.

Each dimension was constructed by synthesizing key concepts and indicators discussed in the related research section, particularly those addressing employment quality components and sustainable employment outcomes. The operational definitions of each dimension were formulated in alignment with the conceptual

framework established in Chapter 2 (see pp. 49–52 and pp. 114). The questionnaire items were then designed to reflect measurable aspects of these dimensions within the context of higher vocational students.

A structured questionnaire consisting of two main sections was utilized:

Section 1: Collection of demographic information of the respondents.

Section 2: Items designed to assess the current and desired conditions regarding educational management models aimed at enhancing the sustainable employment capacity of higher vocational college students.

The researcher employed a questionnaire which composed of 7 parts.

1. Safety at Work, consisting of 4 items
2. Income and Benefits from Employment (4 items)
3. Working Hours and Work-Life Balance (4 items)
4. Security of Employment and Social Protection (4 items)
5. Social Dialogue (4 items)
6. Skills Development and Training (4 items)
7. Workplace Relationships and Work Motivation (6 items)

Total: 30 items

This instrument was intended to capture students' perceptions of the current status and their expectations concerning the components of an educational management model that supports sustainable employability. Respondents were asked to evaluate the extent to which each item represented an effective component in promoting sustainable employment outcomes.

Each item was rated using a five-point Likert scale (Likert, 1932), as follows:

- 5 = Strongly Agree,
- 4 = Agree,
- 3 = Moderately Agree,
- 2 = Disagree,
- 1 = Strongly Disagree.

Table 3.2 Measurement Scale of Development for Sustainable Education Management in Guizhou Higher Vocational Colleges

Perception level	Score
Strongly Agree	5
Agree	4
Moderate	3
Disagree	2
Strongly Disagree	1

A high score on the scale indicated strong student competencies in career planning and a solid understanding of sustainable education management models at Guizhou Higher Vocational Colleges. The measurement items were designed to assess the relationship between these competencies and employability outcomes.

To ensure consistent interpretation of the data, the measurement criteria were based on the established framework by Best (1977), which categorizes mean scores into five perception levels. This classification helps in determining how well students positively engage with and apply the principles of sustainable education management in their career planning.

The range of the measurement scores and the mean levels of these competencies were classified into five perception levels. These levels reflect how well students integrate sustainable practices into their career development. The interpretation of these levels, based on Best's (1977) criteria, is as follows:

1. Mean scores between 4.50-5.00: Indicated a "Strongly Agree" perception level, reflecting very high engagement.
2. Mean scores between 3.50-4.49: Represented an "Agree" perception level, indicating high engagement.
3. Mean scores between 2.50-3.49: Corresponded to a "Moderate" perception level, showing moderate engagement.

4. Mean scores between 1.50-2.49: Reflected a "Disagree" perception level, indicating low engagement.

5. Mean scores between 1.00-1.49: Indicated a "Strongly Disagree" perception level, reflecting very low engagement.

These perception levels, as detailed in Table 3.3, provide a clear framework for interpreting the data.

Quality of Research Instrument

The questionnaire, developed during Phase 1, was meticulously crafted to align with the study's objectives. Its quality was rigorously assessed through both content validity and reliability to ensure it effectively measures the intended constructs.

Content Validity of the Questionnaire

To ensure content validity, the questionnaire was evaluated by a panel of five educational research experts. These experts assessed the accuracy of the language, the comprehensiveness of the content, and the relevance of each item to the study's objectives. The evaluation process included:

1. Expert Review: The panel reviewed each questionnaire item for alignment with the research goals and appropriateness for the targeted student population. Their feedback was crucial in refining the questionnaire to meet the study's requirements.

2. Item-Objective Congruence (IOC) Analysis: The content validity was quantified using the Item-Objective Congruence (IOC) method, where each item was rated on its alignment with the research objectives. Items with IOC values ranging from 0.60 to 1.00 were considered valid and retained in the final version of the questionnaire.

3. Finalization: Based on the expert feedback and IOC analysis, the questionnaire was revised and finalized to ensure comprehensive coverage of the research dimensions.

Reliability of the Questionnaire

The reliability of the questionnaire was tested using Cronbach's alpha, a widely recognized measure of internal consistency. This method was used to evaluate how consistently the items measured the intended constructs as a group. A Cronbach's alpha score above 0.937 was considered to confirm that the questionnaire items reliably measured the constructs relevant to this study.

Data Collection

1. Questionnaire

The data collection process for this study was meticulously planned to ensure the accuracy and relevance of the collected data, with a specific focus on the questionnaire survey. The following steps outline the process:

Step 1: The content validity of the questionnaire was evaluated by a panel of five experts, with particular attention given to the clarity of language, comprehensiveness of content, and relevance to the research constructs. The Item-Objective Congruence (IOC) method was employed to assess the degree of alignment between each questionnaire item and the intended research objectives. Based on expert feedback, the items were revised, validated, and finalized accordingly.

Step 2: Prior to data collection, ethical approval was obtained from the University Research Ethics Committee. All research procedures were conducted in strict accordance with the approved protocol and institutional ethical guidelines.

Step 3: The purpose and scope of the study were clearly explained to the target population. An official invitation letter, issued by the Graduate School of Bansomdejchaopraya Rajabhat University, was used to formally invite 384 higher vocational college students from 48 institutions to participate in the study, and 377 were returned, representing a 98.20% response rate.

Step 4: Upon receiving administrative approval, coordination was made with relevant departments at each participating institution to facilitate online distribution of the questionnaire. The survey was administered through email and WeChat, with each questionnaire package including an introduction to the study, assessment

criteria, a participant information sheet, and a summary of response items. The data collection was conducted via the Wenjuanxing online platform and completed within a period of 25 days.

2. Interview

To address Research Objective 1, which focuses on identifying the current conditions and desired conditions for enhancing the sustainable employment quality of higher vocational college students, qualitative data were collected using a structured interview process. The data collection was conducted in accordance with established procedures and aligned with the study's methodological framework. The process included the following steps:

Step 1: A formal application was submitted to the Graduate School of Bansomdejchaopraya Rajabhat University to obtain official approval and an interview invitation letter. This letter served as an institutional endorsement to facilitate communication with prospective participants.

Step 2: The official invitation letter, along with a detailed interview protocol, was distributed to 15 selected faculty members via email and WeChat. These participants were purposefully sampled based on predefined selection criteria to ensure the relevance and credibility of the information provided. All interviews were conducted between February 5 and February 18, 2025. Each interview followed a semi-structured format, allowing for both consistency across participants and flexibility to explore emerging themes in greater depth.

Step 3: The interview data were systematically reviewed, with all responses transcribed and coded. A thematic analysis approach was then employed to categorize and synthesize the key findings. This process enabled the identification of common themes, variations in perspectives, and insights into the perceived gaps between current practices and ideal conditions for sustainable employment among vocational college students.

Data Analysis

1. Questionnaire

The quantitative data analysis in this study focuses on assessing the validity and reliability of the research instruments specifically designed to evaluate sustainable education management and career planning. Demographic variables will be analyzed using descriptive statistics, including frequency and percentage, to provide an overview of the sample characteristics.

The core variables related to sustainable education management at Guizhou Higher Vocational Colleges will be analyzed using descriptive statistics, such as mean (\bar{X}) and standard deviation (S.D.). These measures will help summarize the expert evaluations and identify the overall level of agreement on the research instruments.

To refine the analysis, the process will involve identifying and excluding irrelevant variables, ensuring that only the most pertinent data are considered in the final evaluation.

Following the analysis of descriptive statistics, the mean scores will be interpreted based on established criteria:

1.00 - 1.49 = Lowest

1.50 - 2.49 = Low

2.50 - 3.49 = Moderate

3.50 - 4.49 = High

4.50 - 5.00 = Highest

This detailed analysis will provide critical insights into the suitability and effectiveness of the research instruments, ensuring they are well-suited to measure the constructs related to sustainable education management and career planning within the context of this study. This approach ensures that the research instruments are both valid and reliable, effectively capturing the intended constructs.

2. Interview

This study employed qualitative interviews to collect, analyze, and synthesize relevant data. Based on the insights obtained from expert interviews, the study identified key factors influencing the enhancement of sustainable employment

quality, as well as the essential components for the development of the proposed educational management model, based on the data collected from various sources, an outline was developed to guide the construction of the proposed model.

Table 3.3 Summarizes the research methods in step 1

Research Objectives	Research Method	Resources/ Target Group	Instruments	Data Analysis	Results
To analyze the current and desired conditions of the sustainable employment quality of higher vocational students.	Study the internal and external factors influencing the effectiveness of educational management	Sample group: 384 final-year students from 48 higher vocational colleges in Guizhou Province, covering both technical and non-technical disciplines	Questionnaire	Frequency; Standard Deviation	To identify key internal and external factors affecting the sustainable development of educational management systems, thereby providing a foundation for model design and further improvement of students' employment quality

Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

The target group

In this phase, a total of 10 experts from higher vocational institutions, universities, and educational authorities in Guizhou Province were selected as the target group for model development through focus group discussions. These experts included senior administrators, policy researchers, curriculum specialists, and professors with extensive experience in vocational education. Each of them had more than 10 years of experience in educational leadership, model design, and employment-related program development, and had been actively engaged in promoting sustainable educational reforms in the vocational sector.

Purposive sampling was adopted to select the expert participants in this study. This non-probability sampling method was chosen for its ability to target individuals with specific professional knowledge, practical experience, and insights directly relevant to vocational education management and sustainable employment quality. The selection criteria were strictly defined to ensure that all experts possessed over 10 years of professional experience in educational leadership, model design, and employment program development within the vocational sector. By focusing on key informants from higher vocational institutions, universities, and educational authorities in Guizhou Province, this sampling strategy effectively ensured the representativeness and depth of expertise required for the rigorous development of the educational management model. This approach prioritized the quality and relevance of the sample over random representativeness, aligning with the exploratory and developmental nature of this research phase.

Research Instruments

1. The draft of Model

This draft model was constructed based on data collected from questionnaires and interviews, theoretical frameworks and empirical evidence related to educational management and employment quality. It outlines key components

such as curriculum development, industry collaboration, teacher development, student support systems, and quality assurance mechanisms.

2. Focus group discussion

Procedures for Conducting the Focus Group Discussion

Step 1: A preliminary draft of the proposed sustainable employment quality model was submitted to the thesis advisor for review. Based on the advisor's feedback, necessary revisions were made to refine the model components. The finalized version was then approved by the advisor.

Step 2: A formal request was submitted to the university to issue official invitation letters for the focus group experts. These letters were subsequently distributed to the selected participants.

Step 3: Upon receiving informed consent from all participants, an online focus group discussion was conducted. The input provided by each expert was carefully documented and systematically organized to ensure clarity and accuracy in data interpretation.

Step 4: The draft model and focus group discussion record were submitted to a panel of experts for initial review. Based on their professional feedback, revisions were made to improve the structure and content of the instrument. The revised version was then used in a follow-up expert focus group discussion, serving as the foundation for collaborative validation and further model development. This process aimed to ensure that the proposed educational management framework aligns with the research objectives and meets the contextual needs of the study.

Data Collection

To achieve Research Objective 2 to developing a sustainable educational management model to enhance the employment quality of higher vocational college students qualitative data were collected through a structured process aligned with the research instruments and procedures. The data collection involved the following steps:

Step 1: A formal application was submitted to the Graduate School of Bansomdejchaopraya Rajabhat University to obtain official letters of invitation for the expert focus group.

Step 2: Invitation letters were distributed to ten selected experts. Focus group data were gathered through email and WeChat between March 2 and March 9, 2025.

Step 3: Key points and expert input were documented throughout the focus group discussions. The content provided by each expert was systematically organized and prepared for subsequent analysis to support model refinement.

Data Analysis

Qualitative data from the focus group discussions were analyzed using content analysis method. The collected data were thematically coded to identify key patterns, conceptual adjustments, and actionable recommendations for improving the educational management model.

Table 3.4 Summarizes the research methods in step 2

Research Objectives	Research Method	Resources/ Target Group	Instruments	Data Analysis	Results
To develop an educational management model to enhance the sustainable employment quality of higher vocational students.	Focus group discussion	10 experts from vocational colleges, education departments, and employment sectors in Guizhou Province	1. Draft model of sustainable educational management 2. Group discussion recording form	Content Analysis	1. Refined educational management model 2. Practical recommendations from experts

Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

This step had the objective to evaluate the feasibility and appropriateness of the development of employment quality of higher vocational students. There are five important items described as follows:

Target group

There were 15 experts responsible for evaluating the feasibility and appropriateness of the sustainable educational management model. These experts included experienced administrators from higher vocational colleges, employment guidance specialists, education researchers, and policy advisors. Each expert had over 10 years of professional experience in educational governance, model evaluation, and employment system development. These experts evaluated the proposed strategies using an evaluation form designed on a 5-point Likert scale to evaluate two aspects: 1) feasibility 2) appropriateness.

Research Instruments

To accomplish Research Objective 3, which involves evaluating the feasibility and applicability of the sustainable employment quality model for higher vocational college students, this study employed a structured evaluation instrument to collect data. The assessment was conducted by Nine experts possessing relevant academic credentials and professional expertise, ensuring a rigorous and informed appraisal of the proposed model.

Evaluation form

The development process of the evaluation questionnaire was as follows:

Step 1: Drawing upon the findings from surveys and interviews concerning the current and ideal conditions for sustainable employment quality, along with insights from focus group discussions, a model aimed at enhancing the sustainable employment quality of higher vocational college students was formulated.

Step 2: An evaluation questionnaire outline was drafted to assess the proposed model. This draft was submitted to the thesis advisor for review and subsequently

revised based on their feedback. Upon receiving final approval, the instrument was implemented.

Step 3: Ten experts were invited to assess the feasibility and appropriateness of the educational management strategies encompassed within the model.

Step 4: The collected data were systematically analyzed to evaluate the feasibility and appropriateness of the proposed strategies.

Data collection

An evaluation was conducted to assess the feasibility and appropriateness of the proposed model for enhancing sustainable employment quality among higher vocational college students.

Step 1: An official letter of authorization was obtained from the Graduate School of Bansomdejchaopraya Rajabhat University, permitting the distribution of evaluation instruments to a panel of five expert reviewers.

Step 2: Between March 20 and March 27, 2025, the evaluation forms were disseminated to the selected experts via digital platforms (Email and WeChat). The responses were collected for subsequent analysis.

Data Analysis

In Phase 3, to address Research Objective 3, a qualitative research approach was employed. A panel of five experts assessed the feasibility and applicability of the proposed model aimed at enhancing the sustainable employment quality of students in higher vocational institutions. The evaluation outcomes provided valuable input for refining and improving the model. Data were analyzed using measures of central tendency and dispersion, specifically the mean and standard deviation.

Quantitative data were analyzed through means and standard deviation. The average scores for feasibility and appropriateness were calculated from the nine experts evaluations and compared with the following criteria:

Score 4.51 – 5.00 means “highest”

Score 3.51 – 4.50 means “high”

Score 2.51 – 3.50 means “moderate”

Score 1.51 – 2.50 means “less”

Score 1.00 – 1.50 means “least”

Table 3.5 Summarizes the research methods in step 3

Research Objectives	Research Method	Resources/Target Group	Instruments	Data Analysis	Results
To evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.	Take the model and evaluation form to experts for judgment and feedback	15 experts were invited to evaluate the model for improving employment outcomes in higher vocational education	1. Evaluation form 2. Evaluation of model's feasibility and appropriateness	1. Mean (\bar{X}) 2. Standard Deviation (S.D.)	The sustainable educational management model was rated at a very high level of feasibility and appropriateness by the experts

Rubric-Based Evaluation Criteria and Five-Level Rating Descriptors Experts evaluated each criterion on a five-point scale (5–1). Higher scores indicate stronger agreement that the model is appropriate, implementable, and capable of supporting sustainable employment development. See table 3.6.

Table 3.6 Expert Evaluation Rubric for the Feasibility and Appropriateness of the Sustainable Educational Management Model

Assessment Criteria	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
1. Conceptual Soundness	The model is conceptually clear with a complete closed-loop logic; relationships among components are explicit and internally consistent.	The concept is generally clear and logically coherent; only minor clarifications are needed.	The concept is understandable, but logical connections are weak or incomplete in some parts.	The concept is vague and logically inconsistent, making practical application difficult.	The concept is invalid or the structure contains major flaws.
2. Policy Alignment	Highly consistent with national and local policies on vocational education and high-quality employment; can be directly aligned with policy instruments.	Generally consistent with policy directions; some elements require additional policy support.	Partially consistent, but key components lack sufficient policy linkage.	Most elements do not align with policy orientations or lack clear policy justification.	Clearly conflicts with policy directions or cannot be aligned with existing policies.

Table 3.6 (Continued)

Assessment	5	4	3	2	1
Criteria	(Very High)	(High)	(Moderate)	(Low)	(Very Low)
3. Relevance to Labor Market Dynamics	Effectively responds to industrial upgrading and occupational competency requirements; mechanisms can dynamically adapt to labor market changes.	Largely aligned with labor market needs; some components require updating.	Partially aligned, but responses to emerging occupations and new skills are insufficient.	Clearly disconnected from labor market demands and unlikely to improve employment quality.	Largely irrelevant to labor market dynamics or unable to explain employment improvement pathways.
4. Institutional Applicability	Can be implemented within most higher vocational college organizational structures; roles and processes are highly compatible.	Can be implemented with minor organizational or procedural adjustments.	Requires substantial institutional or organizational restructuring to be implemented.	Implementati on depends on highly specific conditions and is difficult for most institutions.	Essentially cannot be implemente d within existing institutional systems.
5. Operational Clarity	Implementation steps, responsible units, required resources, and timelines are	Overall implementati on process is clear; some operational details require	Provides general directions, but operational steps are	Operational pathways are unclear, making execution and supervision	The model is not operational and cannot be translated

Table 3.6 (Continued)

Assessment	5	4	3	2	1
Criteria	(Very High)	(High)	(Moderate)	(Low)	(Very Low)
	clearly defined; the model can be directly executed.	refinement.	insufficiently specified.	difficult.	into implementation plans.
6. Resource Feasibility	Resource requirements are reasonable; human, financial, and technical resources are realistically attainable.	Resource requirements are generally reasonable; some additional support is needed but feasible.	Resource demands are relatively high or resource allocation is unclear.	Resource demands are excessive and difficult to meet in the short term.	Required resources are unattainable or costs are unacceptable.
7. Effectiveness of Multi-stakeholder Collaboration	Collaboration mechanisms among schools, enterprises, and government are well designed; communication, co-construction, and feedback form a clear closed loop.	Collaboration mechanisms are relatively complete; some coordination interfaces require optimization.	Collaboration is conceptually proposed, but mechanisms lack specificity or binding force.	Collaboration mechanisms are weak and unlikely to generate synergy.	Collaboration is absent or cannot be operationalized.

Table 3.6 (Continued)

Assessment	5	4	3	2	1
Criteria	(Very High)	(High)	(Moderate)	(Low)	(Very Low)
8. Quality Assessment and Feedback Loop	Evaluation indicators are multi-dimensional; employment quality can be continuously tracked and effectively fed back for improvement.	Indicators are relatively comprehensive; tracking is possible but data mechanisms require optimization.	Indicators are limited or feedback mechanisms are weak.	Evaluation and feedback cannot support continuous improvement.	Evaluation mechanisms are absent or feedback is not feasible.

Overall, the expert-based rubric evaluation provided structured and transparent evidence that the proposed Sustainable Educational Management Model demonstrates strong potential for practical application in higher vocational college contexts. By assessing eight key criteria ranging from conceptual soundness and policy alignment to labor-market relevance, institutional applicability, operational clarity, resource feasibility, multi-stakeholder collaboration, and the quality assessment feedback loop which is the review confirmed that the model is not only theoretically coherent but also oriented toward real-world implementation. The combination of quantitative ratings and qualitative comments enabled the research team to identify both the model's strengths (e.g., closed-loop logic, contextual relevance, and governance operability) and areas requiring refinement (e.g., clearer responsibility allocation, more explicit resource planning, and strengthened feedback mechanisms). Consequently, the expert review served as a critical step in enhancing the model's appropriateness and feasibility, ensuring that the finalized framework is both evidence-informed and practically relevant for improving sustainable employment quality among higher vocational college students.

Summary

This study employed a mixed-methods approach, integrating both quantitative and qualitative research designs. The research process was structured into three distinct phases.

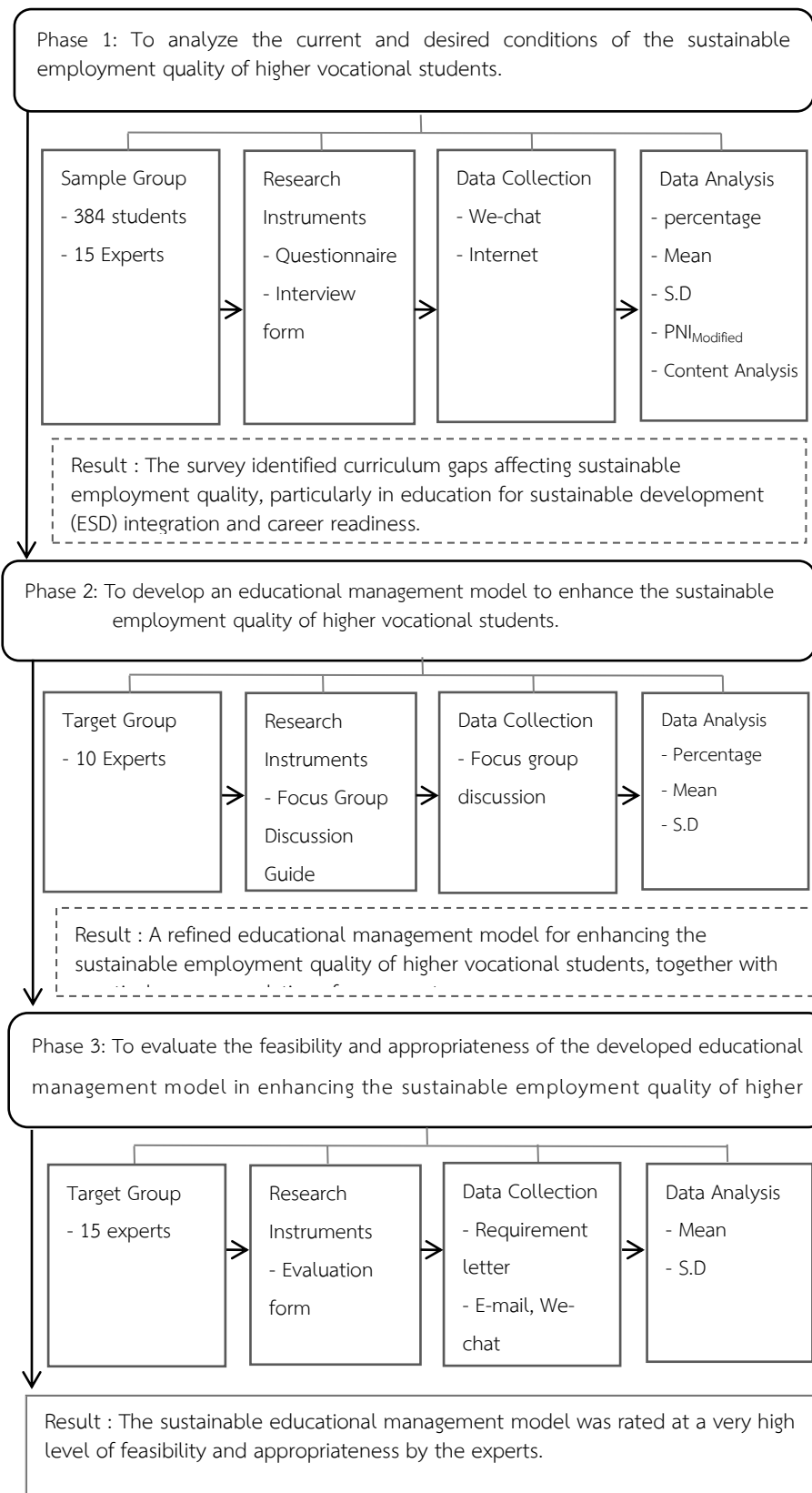


Figure 3.1 Research steps

Chapter 4

Result of Analysis

This research was conducted with the following objectives: 1) to analyze the current and desired conditions of the sustainable employment quality of higher vocational students. 2) to develop an educational management model to enhance the sustainable employment quality of higher vocational students. 3) to evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students. Through these three parts, this chapter provided empirical evidence to address the study objectives and to support the proposed model and its potential application in improving higher vocational students' sustainable employment quality.

1. Phase 1: Analysis of the current and desired conditions of the employment quality of higher vocational students.

1.1 Analysis of Personal Information

1.2 Analysis of Questionnaire Data

The questionnaire focuses on seven key dimensions that influence sustainable employment quality. Data were analyzed to compare the current and desired situation, identifying gaps and supporting factors. The analysis is structured as follows:

Overall Results: General perception of students across the seven dimensions

Safety at Work

Income and Benefits

Working Hours and Work-Life Balance

Job Security and Social Protection

Social Dialogue

Skills Development and Training

Workplace Relationships and Work Motivation

1.3 Analysis of interview

1.4 Conclusion

2. Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

2.1 Development of model Using Analytical Results

2.2 Interview Form Used for Model Review (Expert Review Draft)

3. Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

The proposed model was assessed by a panel of experts from both academia and industry. Evaluation criteria included relevance to current labor market needs, alignment with ESD (Education for Sustainable Development) principles, feasibility of curriculum implementation, and potential for scalability in other institutions.

The details of the research results were as below:

Phase 1: Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

1.1 Analysis of Personal Information

Analysis of personal information of students from higher vocational colleges, including gender and department affiliation. The details are as follows:

Table 4.1 Analysis of Participants' Demographic Characteristics

Personal Information		Number of people	Percentage
Gender	Male	196	52.0%
	Female	181	48.0
	Total	377	100.0
Department	Department of Automotive Engineering	52	13.8
	Department of Big Data and Information Engineering	41	10.9
	Department of Chemistry and Environmental Engineering	28	7.4
	Department of Civil Engineering	58	15.4
	Department of Economics and Management	49	13.0
	Department of Humanities and Arts	54	14.3
	Department of Intelligent Manufacturing Engineering	26	6.9
	Department of Marxist Studies	28	7.4
	Department of Physical Education	40	10.6
	Total	377	100

According to table 4.1, this study involved a total of 377 valid participants. Among the respondents, 196 were male students, accounting for 52.0%, and 181 were female students, accounting for 48.0%. In terms of department distribution, the highest proportion of participants came from the Department of Civil Engineering (15.4%), followed by the Department of Humanities and Arts (14.3%), the Department of Automotive Engineering (13.8%), and the Department of Economics

and Management (13.0%). Other departments included the Department of Big Data and Information Engineering (10.9%), Department of Physical Education (10.6%), Department of Chemistry and Environmental Engineering (7.4%), Department of Marxist Studies (7.4%), and the Department of Intelligent Manufacturing Engineering (6.9%).

The overall distribution of the participants across gender and departments was relatively balanced and representative. This demographic information provides a solid foundation for the subsequent analysis of the factors affecting the sustainable employment quality of higher vocational college students.

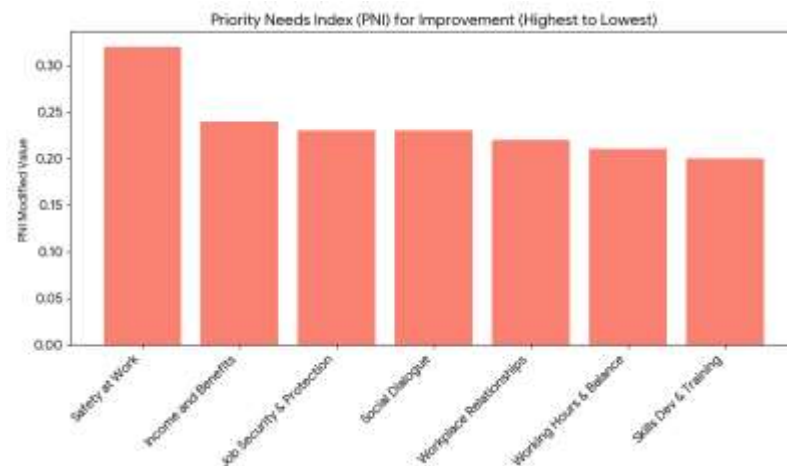


Figure 4.1 Priority Needs Index (PNI) of Employment Quality Dimensions

Summary details are shown in Figure 4.1. The figure provides an overall picture of the relative priority needs identified through the questionnaire analysis and serves as a concise synthesis of respondents' perceived gaps across key employment-quality dimensions. Based on this overview, the following section further examines each dimension in detail, linking specific questionnaire items to the subsequent analysis and discussion.

1.2 Analysis of Questionnaire Data

The questionnaire focuses on seven key dimensions that influence sustainable employment quality. Data were analyzed to compare the current and desired situation, identifying gaps and supporting factors. The analysis is structured as follows:

Table 4.2 Overall Analysis of the Current and Desired Conditions of Employment Quality of Higher Vocational College Students.

Dimension	Current Conditions		Desired Conditions		PNI modified (I-D)/D	Rank
	\bar{X}	S.D.	\bar{X}	S.D.		
	1 Safety at Work	3.62	1.29	4.78		
2 Income and Benefits	3.66	1.29	4.54	0.66	0.24	2
3 Working Hours and Work-Life Balance	3.74	1.22	4.54	0.63	0.21	6
4 Social Dialogue	3.70	1.24	4.55	0.64	0.23	3
5 Skills Development and Training	3.92	1.15	4.70	0.62	0.20	7
6 Job Security and Social Protection	3.80	1.18	4.68	0.64	0.23	3
7 Workplace Relationships and Work Motivation	3.77	1.20	4.61	0.63	0.22	5
Total	3.74	1.22	4.63	0.63	0.24	-

According to Table 4.2, the data showed that the current situation of sustainable development of employment quality among higher vocational college students was at a moderate level ($M = 3.74$, $S.D. = 1.22$). All seven dimensions were rated at a moderate level as well. The mean values from highest to lowest were as follows: Skills Development and Training ($M = 3.92$, $S.D. = 1.15$), Job Security and Social Protection ($M = 3.80$, $S.D. = 1.18$), Workplace Relationships and Work Motivation ($M = 3.77$, $S.D. = 1.20$), Working Hours and Work-Life Balance ($M = 3.74$,

S.D. = 1.22), Social Dialogue (M = 3.70, S.D. = 1.24), Income and Benefits (M = 3.66, S.D. = 1.29), and Safety at Work (M = 3.62, S.D. = 1.29).

In addition, the desired conditions were rated higher across all dimensions, with an overall desired mean of M = 4.63 (S.D. = 0.63), indicating that students expected better employment quality than their current experiences. The modified Priority Needs Index (PNI) further revealed clear improvement priorities. Safety at Work showed the highest need for improvement (PNI = 0.32, Rank 1), followed by Income and Benefits (PNI = 0.24, Rank 2). Job Security and Social Protection (PNI = 0.23) and Social Dialogue (PNI = 0.23) shared the same priority level (Rank 3). Workplace Relationships and Work Motivation ranked fifth (PNI = 0.22), Working Hours and Work-Life Balance ranked sixth (PNI = 0.21), and Skills Development and Training showed the lowest improvement need (PNI = 0.20, Rank 7).

Overall, these results suggest that although students perceived their current employment-related conditions at a fair/moderate level, substantial gaps remained between the current and desired states. In particular, workplace safety and compensation-related aspects should be prioritized in educational management and support initiatives to foster more sustainable and supportive employment environments for higher vocational college students.

Table 4.3 Analysis of the current and desired conditions of employment quality of higher vocational college students in safety at work

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I have received adequate safety training during my study or internship.	3.55	1.32	4.70	0.65	0.32	4
2. My school or training place is equipped with sufficient safety equipment.	3.64	1.28	4.78	0.60	0.31	2
3. My internship or training environment ensures fair and safe working conditions.	3.65	1.30	4.83	0.58	0.32	1
4. My internship or training environment effectively prevents the occurrence of forced labor.	3.65	1.26	4.80	0.62	0.32	1
Total	3.62	1.29	4.78	0.61	0.32	-

According to Table 4.3, it can be seen that the surveyed participants' view of safety at work was at a moderate level, with an average score across four aspects ($M = 3.62$, $S.D. = 1.29$). The participants generally rate safety at work as moderate across all dimensions. The ranking of each aspect, from high to low, was as follows: the first was "My internship or training environment ensures fair and safe working conditions" ($M = 3.65$, $S.D. = 1.30$), followed closely by "My internship or training environment effectively prevents the occurrence of forced labor" ($M = 3.65$, $S.D. = 1.26$). The third was "My school or training place is equipped with sufficient safety equipment" ($M = 3.64$, $S.D. = 1.28$), and the lowest was "I have received adequate safety training during my study or internship" ($M = 3.55$, $S.D. = 1.32$).

The surveyed participants' expectations regarding safety at work are generally at a high level ($M = 4.78$, $S.D. = 0.61$), indicating a significant gap between the current situation and expectations. This suggests that workplace safety still requires further improvement and enhancement.

The total PNI value was 0.32, with the following ranking of aspects from highest to lowest: "My internship or training environment ensures fair and safe working conditions" ($PNI = 0.32$), "My internship or training environment effectively prevents the occurrence of forced labor" ($PNI = 0.32$), "I have received adequate safety training during my study or internship" ($PNI = 0.32$), and "My school or training place is equipped with sufficient safety equipment" ($PNI = 0.31$). These results indicate that improvements in workplace safety are still needed across these four aspects.

Table 4.4 Analysis of the current and desired conditions of employment quality of higher vocational college students in income and benefits

Items	Current Conditions		Desired Conditions		PNI modified (I-D)/D	Rank
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I am satisfied with my current internship or part-time income.	3.60	1.31	4.50	0.70	0.22	4
2. I have received a stipend subsidy, or bonus within the past 12 months	3.67	1.27	4.50	0.66	0.23	3
3. I receive allowances (e.g., transportation, meals) during my internship or study.	3.65	1.27	4.56	0.64	0.25	2
4. I believe that the school or internship's support system sufficiently meets my living needs/I expect future work to provide adequate benefits.	3.71	1.30	4.70	0.62	0.27	1
Total	3.66	1.29	4.54	0.66	0.24	—

According to Table 4.4, it can be seen that the surveyed participants' view of income and benefits was at a moderate level, with an average score across four aspects ($M = 3.66$, $S.D. = 1.29$). The participants generally rate income and benefits as moderate across all dimensions. The ranking of each aspect, from high to low, is as follows: the first was "I believe that the school or internship's support system sufficiently meets my living needs" ($M = 3.71$, $S.D. = 1.30$), followed by "I have received a stipend, subsidy, or bonus within the past 12 months" ($M = 3.67$, $S.D. = 1.27$), then "I receive allowances (e.g., transportation, meals) during my internship or study" ($M = 3.65$, $S.D. = 1.27$), and the lowest is "I am satisfied with my current internship or part-time income" ($M = 3.60$, $S.D. = 1.31$).

The surveyed participants' expectations regarding income and benefits are generally at a high level ($M = 4.54$, $S.D. = 0.66$), indicating a significant gap between the current situation and expectations. This suggests that income-related support still requires further improvement and enhancement.

The total PNI value was 0.24, with the following ranking of aspects from highest to lowest: "I believe that the school or internship's support system sufficiently meets my living needs" (PNI = 0.27), "I receive allowances (e.g., transportation, meals) during my internship or study" (PNI = 0.25), "I have received a stipend, subsidy, or bonus within the past 12 months" (PNI = 0.23), and "I am satisfied with my current internship or part-time income" (PNI = 0.22). These results indicate that income and benefits need to be further improved across these four aspects.

Table 4.5 Analysis of the current and desired conditions of employment quality of higher vocational college students in working hours and work-life balance

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. My current study or internship schedule is reasonable.	3.64	1.25	4.45	0.66	0.22	4
2. The frequency of extra study tasks or overtime during internship in the past month has been within an acceptable range.	3.66	1.32	4.50	0.64	0.23	3
3. I am able to balance my study/internship and personal life.	3.82	1.18	4.60	0.61	0.20	2
4. My school or internship unit provides adequate rest periods and facilities to help me balance study/internship and personal life.	3.84	1.11	4.62	0.59	0.20	1
Total	3.74	1.22	4.54	0.63	0.21	-

According to Table 4.5, it can be seen that the surveyed participants' view of working hours and work-life balance was at a moderate level, with an average score across four aspects ($M = 3.74$, $S.D. = 1.22$). The participants generally rate working hours and work-life balance as moderate across all dimensions. The ranking of each aspect, from high to low, was as follows: the first is "My school or internship unit provides adequate rest periods and facilities to help me balance study/internship and personal life" ($M = 3.84$, $S.D. = 1.11$), followed by "I am able to balance my study/internship and personal life" ($M = 3.82$, $S.D. = 1.18$), then "The frequency of extra study tasks or overtime during internship in the past month has been within an acceptable range" ($M = 3.66$, $S.D. = 1.32$), and the lowest was "My current study or internship schedule was reasonable" ($M = 3.64$, $S.D. = 1.25$). The surveyed participants' expectations regarding

working hours and work-life balance are generally at a high level ($M = 4.54$, $S.D. = 0.63$), indicating a significant gap between the current situation and expectations. This suggests that work schedule arrangements and support for personal life still require further improvement and enhancement. The total PNI value was 0.21, with the following ranking of aspects from highest to lowest: “The frequency of extra study tasks or overtime during internship in the past month has been within an acceptable range” ($PNI = 0.23$), “My current study or internship schedule is reasonable” ($PNI = 0.22$), “My school or internship unit provides adequate rest periods and facilities to help me balance study/internship and personal life” ($PNI = 0.20$), and “I am able to balance my study/internship and personal life” ($PNI = 0.20$). These results indicate that working hours and work-life balance need to be further improved across these four aspects.

Table 4.6 Analysis of the current and desired conditions of employment quality of higher vocational college students in job security and social protection

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I have a formal internship agreement or contract.	3.81	1.19	4.70	0.63	0.23	2
2. I am satisfied with the stability of my study or internship arrangements / I feel confident in my future job stability.	3.81	1.16	4.65	0.66	0.22	3
3. I have health insurance or medical protection provided during internship or study.	3.84	1.18	4.68	0.61	0.22	4
4. I have occupational injury insurance or similar protection during internship.	3.72	1.19	4.70	0.64	0.26	1
Total	3.80	1.18	4.68	0.64	0.23	—

According to Table 4.6, it can be seen that the surveyed participants' view of job security and social protection was at a moderate level, with an average score across four aspects ($M = 3.80$, $S.D. = 1.18$). The participants generally rate job security and social protection as moderate across all dimensions. The ranking of each aspect, from high to low, was as follows: the first was "I have health insurance or medical protection provided during internship or study" ($M = 3.84$, $S.D. = 1.18$), followed by "I have a formal internship agreement or contract" ($M = 3.81$, $S.D. = 1.19$) and "I am satisfied with the stability of my study or internship arrangements / I feel confident in my future job stability" ($M = 3.81$, $S.D. = 1.16$), with the lowest being "I have occupational injury insurance or similar protection during internship" ($M = 3.72$, $S.D. = 1.19$).

The surveyed participants' expectations regarding job security and social protection are generally at a high level ($M = 4.68$, $S.D. = 0.64$), indicating a significant gap between the current situation and expectations. This suggests that employment-related protection still requires further improvement and enhancement.

The total PNI value was 0.23, with the following ranking of aspects from highest to lowest: "I have occupational injury insurance or similar protection during internship" (PNI = 0.26), "I have a formal internship agreement or contract" (PNI = 0.23), "I am satisfied with the stability of my study or internship arrangements / I feel confident in my future job stability" (PNI = 0.22), and "I have health insurance or medical protection provided during internship or study" (PNI = 0.22). These results indicate that job security and social protection need to be further improved across these four aspects.

Table 4.7 Analysis of the current and desired conditions of employment quality of higher vocational college students in social dialogue

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I have the opportunity to express opinions in school or internship activities.	3.74	1.24	4.60	0.64	0.23	2
2. My school or internship unit is transparent and open regarding student/trainee feedback mechanisms.	3.74	1.24	4.62	0.62	0.24	1
3. I can express my opinions on the study or internship environment through formal channels.	3.68	1.26	4.50	0.65	0.22	3
4. I have the opportunity to participate in discussions on school or internship policies, and I expect to join collective discussions in future workplaces.	3.64	1.24	4.48	0.66	0.23	4
Total	3.70	1.24	4.55	0.64	0.23	—

According to Table 4.7, it can be seen that the surveyed participants' view of social dialogue was at a moderate level, with an average score across four aspects ($M = 3.70$, $S.D. = 1.24$). The participants generally rate social dialogue as moderate across all dimensions. The ranking of each aspect, from high to low, is as follows: the first was "My school or internship unit is transparent and open regarding student/trainee feedback mechanisms" ($M = 3.74$, $S.D. = 1.24$), followed by "I have the opportunity to express opinions in school or internship activities" ($M = 3.74$, $S.D. = 1.24$), then "I can express my opinions on the study or internship environment through formal

channels” (M = 3.68, S.D. = 1.26), and the lowest is “I have the opportunity to participate in discussions on school or internship policies, and I expect to join collective discussions in future workplaces” (M = 3.64, S.D. = 1.24).

The surveyed participants’ expectations regarding social dialogue are generally at a high level (M = 4.55, S.D. = 0.64), indicating a significant gap between the current situation and expectations. This suggests that employee participation mechanisms and communication channels still need to be further improved and enhanced.

The total PNI value was 0.23, with the following ranking of aspects from highest to lowest: “My school or internship unit is transparent and open regarding student/trainee feedback mechanisms” (PNI = 0.24), “I have the opportunity to express opinions in school or internship activities” (PNI = 0.23), “I have the opportunity to participate in discussions on school or internship policies, and I expect to join collective discussions in future workplaces” (PNI = 0.23), and “I can express my opinions on the study or internship environment through formal channels” (PNI = 0.22). These results indicate that social dialogue needs to be further improved across these four aspects.

Table 4.8 Analysis of the current and desired conditions of employment quality of higher vocational college students of skills development and training

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I am provided with opportunities to attend vocational training offered by my school or internship unit.	3.98	1.10	4.70	0.64	0.18	4
2. My school supports my participation in external skills enhancement programs.	3.90	1.17	4.68	0.63	0.20	3
3. My school or internship unit provides sufficient career development opportunities for students.	3.83	1.20	4.70	0.61	0.23	1
4. My school or internship unit offers programs to enhance management and leadership capabilities.	3.96	1.11	4.72	0.60	0.19	2
Total	3.92	1.15	4.70	0.62	0.20	-

According to Table 4.8, it can be seen that the surveyed participants' view of skills development and training was at a moderate level, with an average score across four aspects ($M = 3.92$, $S.D. = 1.15$). The participants generally rate skills development and training as moderate across all dimensions. The ranking of each aspect, from high to low, was as follows: the first was "My school or internship unit provides sufficient career development opportunities for students" ($M = 3.83$, $S.D. = 1.20$), followed by "My school or internship unit offers programs to enhance management and leadership capabilities" ($M = 3.96$, $S.D. = 1.11$), then "My school

supports my participation in external skills enhancement programs” (M = 3.90, S.D. = 1.17), and the lowest was “I am provided with opportunities to attend vocational training offered by my school or internship unit” (M = 3.98, S.D. = 1.10).

The surveyed participants’ expectations regarding skills development and training are generally at a high level (M = 4.70, S.D. = 0.62), indicating a significant gap between the current situation and expectations. This suggests that employee training and career support still need to be further improved and enhanced.

The total PNI value was 0.20, with the following ranking of aspects from highest to lowest: “My school or internship unit provides sufficient career development opportunities for students” (PNI = 0.23), “My school supports my participation in external skills enhancement programs” (PNI = 0.20), “My school or internship unit offers programs to enhance management and leadership capabilities” (PNI = 0.19), and “I am provided with opportunities to attend vocational training offered by my school or internship unit” (PNI = 0.18). These results indicate that skills development and training need to be further improved across these four aspects.

Table 4.9 Analysis of the Current Situation and desired conditions of employment quality of higher vocational college students in Workplace Relationships and Work Motivation

Items	Current		Desired		PNI modified (I-D)/D	Rank
	Conditions		Conditions			
	\bar{X}	S.D.	\bar{X}	S.D.		
1. I have a positive relationship with my classmates, teammates, or colleagues during internship.	3.96	1.16	4.60	0.62	0.16	6
2. My study or internship team collaborates effectively.	3.73	1.19	4.60	0.64	0.23	3
3. I feel supported by my teachers, mentors, or internship supervisors.	3.77	1.24	4.62	0.63	0.23	4
4. My school or internship experience provides sufficient opportunities for growth and recognition / I expect future jobs to provide fair promotion opportunities.	3.73	1.26	4.65	0.65	0.25	1
5. I am optimistic about my future career development.	3.69	1.23	4.60	0.66	0.25	2
6. My study or internship experience fosters my motivation and enthusiasm.	3.75	1.22	4.58	0.61	0.22	5
Total	3.77	1.20	4.61	0.63	0.22	—

According to Table 4.9, it can be seen that the surveyed participants' view of workplace relationships and work motivation was at a moderate level, with an average score across six aspects ($M = 3.77$, $S.D. = 1.20$). The participants generally rate workplace relationships and work motivation as moderate across all dimensions. The ranking of each aspect, from high to low, was as follows: the first is "I have a positive relationship with my classmates, teammates, or colleagues during internship" ($M = 3.96$, $S.D. = 1.16$), followed by "My school or internship experience provides sufficient opportunities for growth and recognition / I expect future jobs to provide fair promotion opportunities" ($M = 3.73$, $S.D. = 1.26$), then "I feel supported by my teachers, mentors, or internship supervisors" ($M = 3.77$, $S.D. = 1.24$), "My study or internship team collaborates effectively" ($M = 3.73$, $S.D. = 1.19$), "My study or internship experience fosters my motivation and enthusiasm" ($M = 3.75$, $S.D. = 1.22$), and the lowest was "I am optimistic about my future career development" ($M = 3.69$, $S.D. = 1.23$).

The surveyed participants' expectations regarding workplace relationships and work motivation are generally at a high level ($M = 4.61$, $S.D. = 0.63$), indicating a significant gap between the current situation and expectations. This suggests that emotional support, promotional pathways, and motivational mechanisms still need to be further improved and enhanced.

The total PNI value was 0.22, with the following ranking of aspects from highest to lowest: "My school or internship experience provides sufficient opportunities for growth and recognition / I expect future jobs to provide fair promotion opportunities" (PNI = 0.25), "I am optimistic about my future career development" (PNI = 0.25), "I feel supported by my teachers, mentors, or internship supervisors" (PNI = 0.23), "My study or internship team collaborates effectively" (PNI = 0.23), "My study or internship experience fosters my motivation and enthusiasm" (PNI = 0.22), and "I have a positive relationship with my classmates, teammates, or colleagues during internship" (PNI = 0.16). These results indicate that workplace relationships and work motivation need to be further improved across these six aspects.

1.3 Analysis of Interview

The Interview Summary Report table was developed based on structured expert interviews with 15 experts (international scholars) conducted for this study. These experts were purposively selected because of their professional roles and extensive experience in higher vocational education, graduate employment, institutional governance, and industry–education collaboration. The interviewees included senior institutional leaders (e.g., vice president, deputy dean), directors of key administrative units (e.g., School–Enterprise Cooperation Office, International Exchange and Cooperation Department, Graduate School, Publicity Department, Marxist Teaching Department), as well as professors from multiple universities and vocational colleges. During the interviews, experts were invited to share their perspectives on the meaning of sustainable employment for higher vocational college graduates, the distinguishing features of sustainable employment compared with initial job acquisition, and the key conditions, sources, and priorities influencing graduates’ long-term employment development. Interview responses were transcribed and synthesized into the table by summarizing recurring viewpoints for each question; the “Summary” column presents the consolidated thematic interpretations derived from the experts’ responses.

Table 4.10 Summary of Interview Results

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
Topic 1 : Career Awareness and Career Education	Weak early career decision-making	Students lack informed decision- making ability in early stages and rely on fragmented information	12	80.0%
	Limited exposure to real workplaces	Insufficient authentic workplace experience before graduation	11	73.3%
	Fragmented and late-stage career education	Career education is fragmented and concentrated near graduation	10	66.7%
	Need for process- oriented career education	Career education should run throughout the training period	13	86.7%
	Integration of labor market information	Use of labor market data and career maps to guide decisions	9	60.0%
	Psychological readiness and labor rights awareness	Importance of psychological adaptation and employment protection	8	53.3%

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
Topic 2 : Industry- Education Collaboration	Superficial collaboration	Cooperation limited to internships or recruitment	14	93.3%
	Misaligned incentives and timelines	Schools and enterprises evaluate cooperation differently	11	73.3%
	Lack of shared governance mechanisms	Absence of joint decision-making and accountability	12	80.0%
	Need for curriculum co- development	Enterprises should participate in curriculum design	10	66.7%
	Mentor-based and rotational training	Importance of structured mentoring and rotations	9	60.0%
	Retention- and development- oriented evaluation	Collaboration quality should be assessed by retention and growth	8	53.3%
	Topic 3 : Curriculum- Industry Alignmen	Outdated curriculum content	Course content lags behind industry changes	13
Weak alignment with job competency chains	Curriculum does not reflect coherent competency pathways	12	80.0%	

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
	Lack of workflow logic	Teaching focuses on techniques rather than work processes	10	66.7%
	Industry chain / job cluster restructuring	Curriculum should align with industry chains or job clusters	11	73.3%
	Slow curriculum update mechanisms	Institutional procedures delay curriculum revision	9	60.0%
	Evidence-based curriculum review	Employer and graduate data should inform revision	8	53.3%
Topic 4:				
Career Planning and Employment Guidance	Late-stage and fragmented guidance	Career guidance mainly occurs near graduation and lacks continuity	12	80.0%
	Overly generic, one-size-fits-all approaches	Guidance does not differentiate by student ability or pathway	11	73.3%
	Lack of developmental and staged pathways	Absence of structured, stage-based career development design	13	86.7%
	Need for tiered career pathways	Differentiated pathways (fast-track vs. remedial) are required	10	66.7%

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
	Weak linkage with academic performance data	Career planning is insufficiently informed by learning outcomes	9	60.0%
	Insufficient early-employment support	Lack of guidance during the first employment transition period	8	53.3%
Topic 5: Skills Training and Assessment	Fragmented skills training	Training focuses on isolated skills rather than integrated tasks	14	93.3%
	Misalignment with real workplace constraints	Training ignores time pressure, coordination, and responsibility	12	80.0%
	Insufficient emphasis on reliability and consistency	Stable performance and error control are undertrained	11	73.3%
	Weak integration of transferable skills	Communication, teamwork, and problem-solving are underemphasized	10	66.7%
	Need for authentic task-based assessment	Assessment should simulate real job performance	13	86.7%
	Limited focus on future-oriented competencies	Digital, sustainability, and learning-to-learn skills are lacking	8	53.3%

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
Topic 6: Integration of Industry Experts and Social Resources	Unstable external participation mechanisms	Expert involvement is ad hoc rather than institutionalized	13	86.7%
	Fragmented industry and social resources	Resources are scattered and poorly coordinated	12	80.0%
	Lack of incentive and support mechanisms	Experts and partners lack motivation for sustained participation	10	66.7%
	Need for institutionalized expert roles	Advisory boards and co-assessment panels are required	11	73.3%
	Insufficient integration of community/public services	Social and public support resources are underutilized	8	53.3%
	Weak cross-institution coordination platforms	Lack of platforms linking schools, enterprises, and associations	9	60.0%
	Topic 7: Information Technology Empowerment	Technology used mainly as a support tool	IT is not integrated into management and evaluation systems	12
Need for data-driven competency profiling		Use of data to track skills and match jobs is insufficient	11	73.3%

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
	Lack of process-based and formative evaluation	Limited use of IT for continuous assessment and feedback	10	66.7%
	Importance of simulation technologies	Virtual simulation needed for high-risk or high-cost scenarios	13	86.7%
	Weak early-warning mechanisms	Employment risk prediction and intervention are underdeveloped	9	60.0%
	Insufficient governance transparency	IT not fully used to support quality assurance and oversight	8	53.3%
Topic 8:	Overreliance on employment rate indicators	Evaluation focuses mainly on initial placement rates	14	93.3%
Employment Quality Evaluation System	Lack of longitudinal tracking	Employment quality is not monitored over time	13	86.7%
	Insufficient multidimensional indicators	Stability, development, and protection are undermeasured	12	80.0%
	Weak integration of employer feedback	Employer perspectives are insufficiently included	10	66.7%

Table 4.10 (Continued)

Topic	Sub-theme	Description	Frequency (n=15)	Percentage
	Evaluation results not feeding back into improvement	Findings are not effectively used for curriculum or policy adjustment	11	73.3%
	Need for evaluation as governance mechanism	Evaluation should trigger accountability and corrective action	8	53.3%

According to table 4.10, a thematic analysis was conducted to synthesize experts' perspectives related to the sustainable employment quality of higher vocational college graduates. Through repeated comparison and integration of expert responses across the eight interview questions (N = 15), recurring concepts and patterns were identified and subsequently grouped into eight higher-order topics. A secondary coding process was then applied to refine each topic into six sub-themes, and the prevalence of each sub-theme was calculated based on the number of experts who explicitly mentioned it. Overall, the results indicated that expert endorsement across sub-themes ranged from 53.3% to 93.3%, suggesting clear differences in the relative salience of issues within each topic.

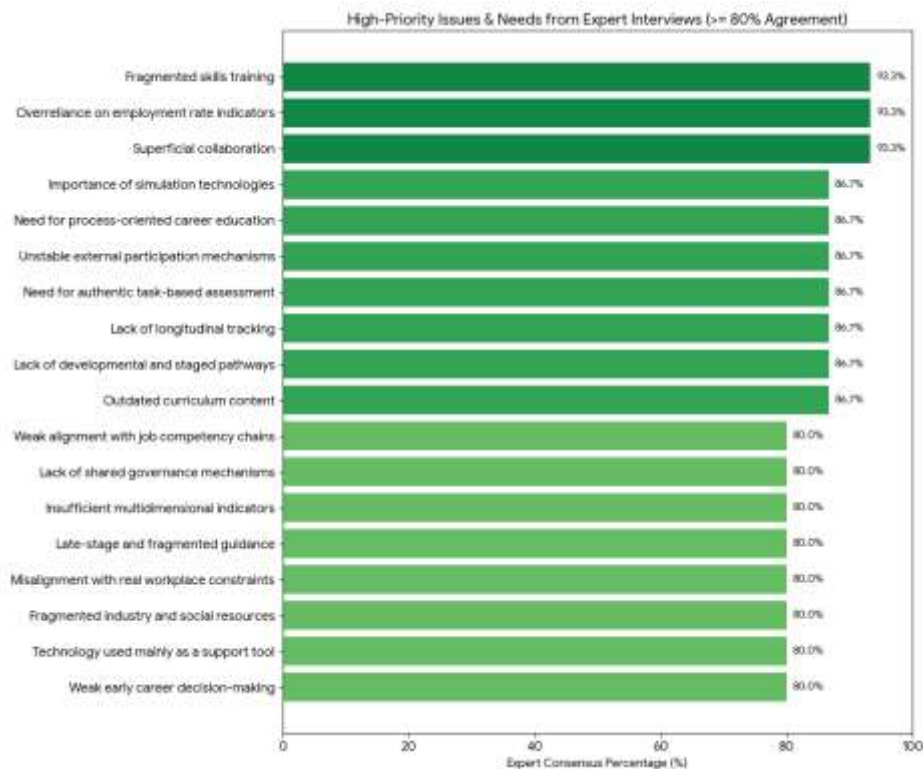


Figure 4.2 High-Priority Issues Identified from Expert Interviews

Figure 4.2 illustrated the high-priority issues identified from expert interviews, with agreement levels of 80% or higher. The results showed that fragmented skills training, overreliance on employment rate indicators, and superficial collaboration between vocational colleges and industry received the highest agreement (93.3%). This indicated that current educational management practices were still fragmented and overly focused on short-term employment outcomes.

Several other issues, including outdated curriculum content, lack of longitudinal tracking, unstable external participation mechanisms, and insufficient developmental pathways, reached 86.7% agreement. Additional structural concerns, such as weak alignment with job competency chains and insufficient multidimensional indicators, also achieved 80% agreement.

Overall, the findings revealed systematic weaknesses in the existing educational management system and highlighted the need for a more integrated and

process-oriented model. Based on these high-priority needs, the researcher proceeded to develop the educational management model in the next phase of the study.

1.4 conclusion

In summary, the thematic analysis and secondary coding results (Table 4.10) identified eight interrelated topics career awareness and career education, industry–education collaboration, curriculum–industry alignment, career planning and employment guidance, skills training and assessment, integration of industry experts and social resources, information technology empowerment, and the employment quality evaluation system. Together, these findings provided a coherent qualitative foundation for refining the sustainable educational management model and for informing subsequent model development and evaluation.

Phase 2: Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

The Educational Management Model for enhancing higher vocational students' sustainable employment quality was constructed through integrating three core sources of evidence: literature review, questionnaire survey, and expert interviews. The literature review laid the theoretical and governance foundation by identifying seven classical educational management principles (planning, organizational management, staffing, diagnosis and command, coordination, reporting, budget allocation) and clarifying a closed-loop implementation logic, establishing the institutional basis for the model. The questionnaire survey, from a student-centered perspective, revealed that current employment quality was at a moderate level, with prominent gaps in work safety, income and benefits, employment security, and social protection—pinpointing targeted improvement priorities for vocational colleges. Expert interviews contributed a long-term, practice-oriented perspective, identifying eight key components of sustainable employment (technical competencies, soft skills, career awareness, industry collaboration, quality assessment and feedback,

policy and institutional governance, work–life balance and employment security, lifelong learning and continuous development) through thematic analysis.

By synthesizing these sources, the study framed educational management elements as institutional governance mechanisms, employment quality dimensions as observable process indicators, and sustainable employment components as long-term goals, forming a coherent “governance inputs-employment quality processes-sustainable employment outcomes” logic chain. After iterative cross-source comparison, thematic clustering, excluding non-intervenable items, and consolidating overlapping themes, with governance levers from literature as inputs, student-identified gaps as problem focus, and expert-endorsed capacities as targets—the model was refined into six actionable core dimensions : Curriculum Reform and Skills Development, Teaching Innovation and Lifelong Learning, Employment Security and Work-Life Balance, Workplace Relationships and Work Motivation, Policy Support and Institutional Governance, and Quality Assurance and Continuous Feedback. These dimensions cover competency formation, learning optimization, employment experience, institutional assurance, and continuous improvement, offering vocational institutions actionable governance levers to enhance students’ sustainable employment quality in dynamic labor markets.

Document Study

The document study synthesized the theoretical foundations presented in Chapter 2. The Educational Management component was derived from educational governance and system integration theories (pp. 63–69). The Employment Quality dimensions were based on the ILO decent work framework and multidimensional job quality literature (pp. 49–52). The Sustainable Employment elements were synthesized from sustainable employability theory and long-term competency development perspectives (pp. 53–58).

These theoretical components constituted the conceptual basis for model construction before empirical validation.

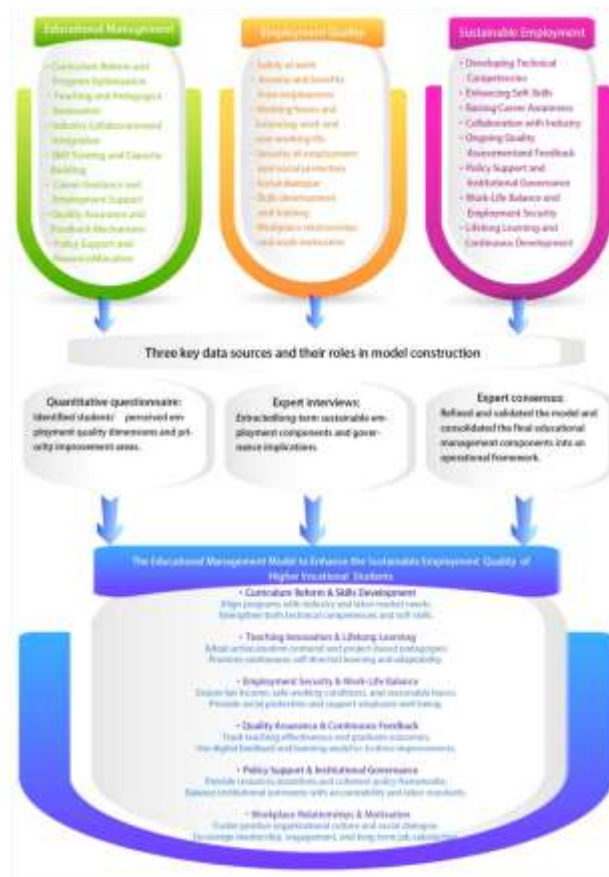


Figure 4.3 Components of Model

Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students.

The integration process between Box 1 (Document Study) and Box 2 (Empirical Research Findings) formed the foundation for the construction of Box 3 (The Educational Management Model).

The Document Study provided the theoretical framework by identifying the seven dimensions of sustainable employment quality and clarifying key educational management principles, including curriculum reform, industry collaboration, governance mechanisms, and continuous improvement. These theoretical elements defined the conceptual structure and scope of the model.

Meanwhile, the empirical research findings from the quantitative questionnaire, expert interviews, and expert consensus evaluation identified priority

improvement areas and structural weaknesses in the current educational management system. The PNImodified results highlighted urgent needs across the seven dimensions, while expert interviews extracted long-term sustainable employment components and governance implications.

The integration occurred through a synthesis process in which theoretical principles were aligned with empirical priority needs. Specifically, the seven dimensions identified in the Document Study were mapped onto the priority issues revealed by the quantitative and qualitative findings. The Six Action Modules and Five Supporting Measures were then formulated to respond directly to these identified gaps. The Roles of Key Actors were structured to operationalize the implementation of these components within institutional governance, teaching practice, and student development processes.

Through this systematic alignment between theory and empirical evidence, Box 3—the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational Students—was constructed as both theoretically grounded and empirically validated.

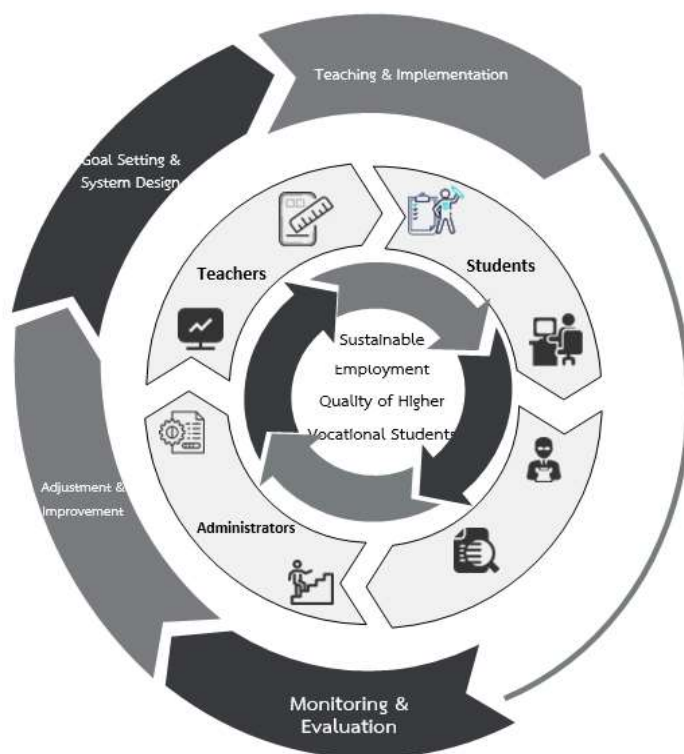
Educational Management Model for Enhancing Sustainable Employment Quality of Higher Vocational Students

1. Principles

- 1.1 Principle of System Integration
 - Holistic Element Synergy & Closed-Loop Governance
- 1.2 Student-Centered Principle of Sustainable Employment Quality
 - Long-Term Sustainable Employment Quality
- 1.3 Practice-Oriented and Operability Principle
 - Modular Implementability & Adaptability
- 1.4 Principle of Continuous Improvement
 - Data-Driven Dynamic Iteration & Update

2. Objectives

- system centered on sustainable employment quality;
- 2.2. To improve the alignment between curricula and industry demand;
- 2.3. To strengthen students' vocational competencies, career awareness, and employment adaptability;
- 2.4. To improve school–enterprise cooperation mechanisms and enhance employment stability and development opportunities;
- 2.5. To establish continuous monitoring and feedback mechanisms that support dynamic optimization of education management practices.



3. Content

3.1 Six Action Modules

- Curriculum System Skill Development
- Teaching Innovation and Learning Approaches
- School–Enterprise Collaboration and Industry Alignment
- Career Guidance and Professional Development
- Institutional Safeguards and Policy Support
- Quality Monitoring and Continuous Improvement

3.2 Five Supporting Measures

- Institutional Support
- Resource Support
- Capacity Building
- Monitoring, Evaluation, and Accountability
- Incentive Mechanisms

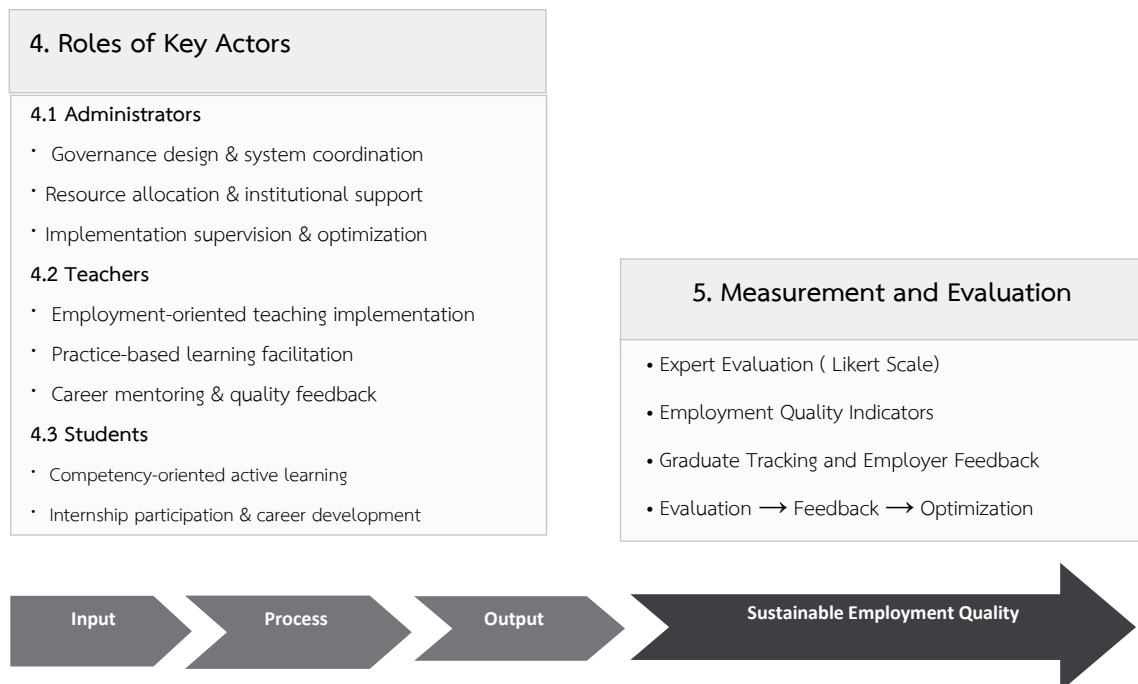


Figure 4.4 Educational management model for enhancing the sustainable employment quality of higher vocational students

Figure 4.4 illustrated the Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students. The model consisted of five core components: Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation, with the enhancement of sustainable employment quality of higher vocational students positioned at the center as the ultimate goal guiding all management processes.

The model was developed based on the findings of Phase 1 and Phase 2 and grounded in the literature review on sustainable employment quality and educational management. The Content component, including the Six Action Modules and Five Supporting Measures, was derived from the Priority Needs Index (PNI_{modified}) results and expert interview findings, which identified fragmented skills training, superficial collaboration, outdated curriculum content, and insufficient multidimensional indicators as priority issues. These modules were designed to systematically address these gaps across the seven dimensions of sustainable employment quality.

The Roles of Key Actors component was informed by stakeholder analysis in the literature review and validated through focus group discussions. The defined responsibilities of Administrators, Teachers, and Students reflected governance design and system coordination, employment-oriented teaching implementation, and competency-oriented active learning, ensuring alignment among institutional management, teaching practices, and student development.

Overall, the integration of these components ensured that the model was both empirically grounded and theoretically aligned with educational management principles. The details are listed below:

1. Principles

The proposed education management model is grounded in the core values of Sustainable Development and Participatory Management, which are translated into operational and actionable guiding principles to steer the entire process of model design, implementation, and continuous optimization. These two concepts are adopted as the foundational values because improving the employment quality of higher vocational students cannot be achieved through isolated teaching interventions; rather, it constitutes a systemic endeavor involving curriculum design, pedagogy, practical training, school–enterprise collaboration, employment services, resource allocation, and quality monitoring.

Without a long-term perspective grounded in sustainable development, reform efforts tend to be confined to short-term employment rate targets. Likewise, without participatory management mechanisms, reforms are likely to suffer from fragmented departmental responsibilities and a lack of coordination, ultimately undermining collective effectiveness. Therefore, the action guideline explicitly articulates four fundamental principles to ensure that the model is systematic, sustainable, and practically implementable.

1) Principle of System Integration

This principle emphasizes coordination and linkage among all elements of education management to avoid fragmented reforms. Higher vocational institutions are encouraged to adopt a holistic governance perspective, treating

curriculum reform, pedagogical innovation, practical training arrangements, career guidance, and school–enterprise cooperation not as independent projects but as interdependent components of an integrated system. The principle calls for the establishment of a closed-loop logic encompassing goal setting, resource allocation, process implementation, quality monitoring, and feedback-driven improvement.

System integration requires both cross-departmental collaboration—among academic affairs offices, secondary colleges, career services, student affairs, and industry cooperation units—and cross-stage alignment, spanning enrollment education, coursework, internships, graduate employment, and post-employment tracking. Through such integration, different actions reinforce one another and generate cumulative effects, rather than dissipating efficiency through isolated efforts.

2) Student-Centered Principle of Sustainable Employment Quality

This principle places students’ long-term, stable, developmental, and protected employment outcomes at the core of the model. It extends the focus of education management from short-term employment results (e.g., initial employment rates) to broader dimensions of employment quality and career development processes. Specifically, it emphasizes whether graduates can secure relatively stable positions in the labor market, access opportunities for continuous development, enjoy adequate labor protection and social security, and maintain physical and psychological well-being throughout their career trajectories.

Guided by this principle, education management should align with students’ career development patterns and employment experiences, forming an integrated support chain that encompasses competency development, job matching, onboarding adaptation, employment stability, and lifelong learning. In this way, management practices genuinely serve students’ long-term career sustainability rather than focusing solely on one-off employment placement.

3) Practice-Oriented and Operability Principle

This principle ensures that the model can be effectively implemented within real governance contexts of higher vocational institutions. It requires that the proposed actions be not only theoretically sound but also feasible under existing

organizational structures, resource conditions, and institutional constraints. Accordingly, the model emphasizes presenting actions in modular, process-oriented, and responsibility-specific formats, clearly identifying who implements each action, how it is implemented, what resources are required, when it should be carried out, and how effectiveness is evaluated.

At the same time, this principle acknowledges institutional diversity among higher vocational colleges—such as differences in regional industrial bases, school–enterprise cooperation resources, faculty composition, and funding capacity—and thus promotes adaptable implementation pathways to enhance the model’s transferability and replicability.

4) Principle of Continuous Improvement

This principle highlights the importance of dynamic optimization through continuous feedback and evaluation mechanisms. Education management reform should not be treated as a one-time initiative but rather as a long-term governance mechanism. Institutions are therefore required to establish employment quality monitoring and data feedback systems that regularly collect information on graduates’ employment status, job stability, wages and benefits, workplace safety, social security coverage, career development, and employer satisfaction.

These data should be systematically fed back into curriculum updates, practical training design, school–enterprise cooperation enhancement, and career guidance improvement. Continuous improvement reflects not only problem identification and strategy adjustment but also the development of institutional learning capacity, enabling colleges to dynamically adapt training programs and management priorities in response to labor market changes and industrial upgrading.

At the level of vision and mission, the action guideline further emphasizes alignment with Education for Sustainable Development (ESD) and the Sustainable Development Goals (SDGs). It highlights that governance in higher vocational education should not only serve individual employment outcomes but also address regional economic development, industrial transformation, and broader societal sustainability needs. Accordingly, institutions are encouraged to integrate

future-oriented competencies—such as digital skills, green skills, and sustainability awareness—into curricula and skill systems, emphasize equity and protection in employment management, and promote long-term, mutually beneficial partnerships in industry collaboration.

Regarding participatory governance, the model institutionalizes multi-stakeholder engagement mechanisms. Participatory management goes beyond occasional enterprise involvement and instead establishes stable consultative and co-governance structures, such as joint school–enterprise governance committees, stakeholder feedback mechanisms involving enterprise mentors, graduates, and student representatives, and transparent information-sharing systems. Through clearly defined responsibilities and collaboration processes, these arrangements enhance governance efficiency and provide stable support for the sustainable operation of the model across diverse contexts.

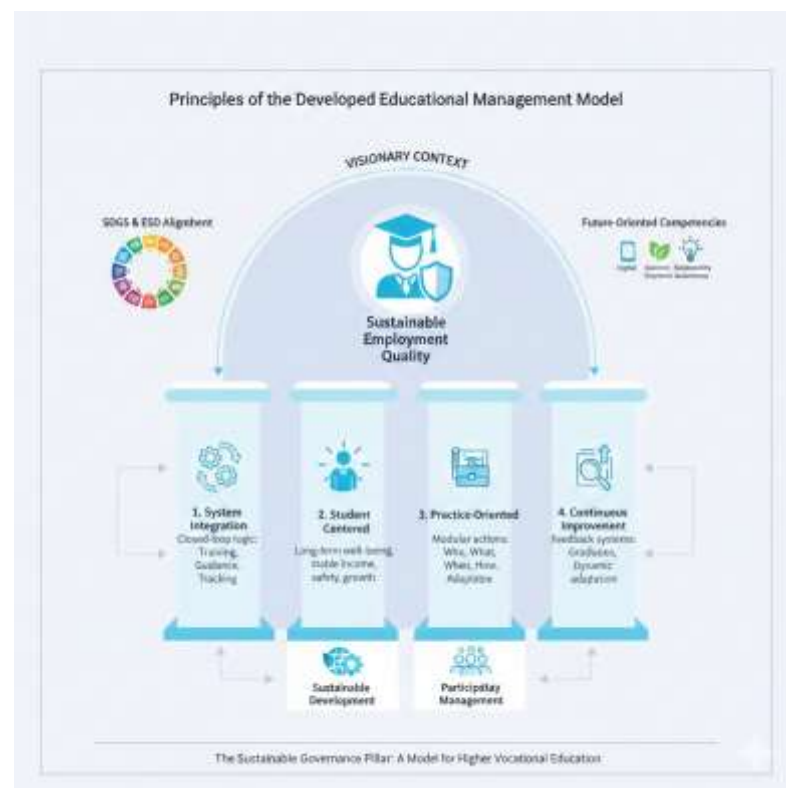


Figure 4.5 Principles of Model

2. Objectives

The overarching objective of this study is to enhance the sustainable employment quality of higher vocational students. This overarching goal is operationalized through a hierarchical set of specific objectives articulated in the action guideline:

2.1 To establish an education management objective system centered on sustainable employment quality;

2.2 To improve the alignment between curricula and industry demand;

2.3 To strengthen students' vocational competencies, career awareness, and employment appropriateness;

2.4 To improve school–enterprise cooperation mechanisms and enhance employment stability and development opportunities;

2.5 To establish continuous monitoring and feedback mechanisms that support dynamic optimization of education management practices.

3. Content

To make the model structure more complete and operational, this study defines the model content as two complementary key elements. One is “Action Modules”, which specify what higher vocational colleges should do in the process of improving students' sustainable employment quality; the other is “Measures”, which explain how institutional and resource-level arrangements should be provided to ensure that the action modules can operate in a long-term, stable, and continuous manner. Together, these two elements constitute the main content framework of the model from “idea–action–operation”: the action modules provide directions and actionable levers, while the measures provide conditions and driving forces.

1) Six Action Modules (Action Modules) :

The action guideline further translates the research findings into six core action modules, aiming to transform abstract education management concepts into executable governance levers. It should be emphasized that these six modules are not arbitrarily designed; rather, they are derived from the data analysis results in Chapter 4. On the one hand, they respond to the key improvement areas revealed

by the gap between students' perceived "current status-ideal" employment quality in the questionnaire survey (e.g., safety, income and benefits, employment security and social protection, communication mechanisms, etc.). On the other hand, they also incorporate the key elements of sustainable employment repeatedly highlighted in expert interviews (e.g., technical competence, transferable/general competence, career awareness, industry collaboration, closed-loop quality feedback, policy governance, and lifelong learning, etc.). Therefore, the six modules reflect both a problem-oriented approach (addressing weaknesses) and a goal-oriented approach (oriented toward long-term sustainability).

(1) Curriculum System and Skill Development Module

This module focuses on upstream reform of "training content and competency structure". It emphasizes integrating industry needs and sustainability orientation into the curriculum system and competency standards, and promoting alignment among curriculum content, curriculum structure, and the job-competency chain. According to the interview results, experts generally pointed out that the disconnection between curricula and industry needs, delayed content updates, and an unclear job-competency pathway are key reasons affecting employment quality and stability. Therefore, this module emphasizes not only curriculum updating, but also organizing learning content according to the logic of job clusters/work processes, and strengthening students' "usable competencies" through a skill training system and assessment mechanisms. From the perspective of the questionnaire data in Chapter 4, curriculum and skill development is not directly equivalent to the employment protection that students have already obtained, but it is a fundamental condition for improving employment quality: only when curricula and skills truly match industries and jobs are graduates more likely to enter employment positions that are safer, more standardized, better protected, and offer greater development space.

(2) Teaching Innovation and Learning Approaches Module

This module emphasizes improving teaching effectiveness and learning engagement through project-based learning, contextualized teaching, practice-oriented teaching, and school-enterprise co-teaching, so that students can

develop more authentic work-task experience and occupational behavioral norms during their schooling. Expert interviews repeatedly mentioned that higher vocational students often face problems such as “lack of real workplace exposure”, “weak awareness of work logic and standards”, and “insufficient appropriateness”. These issues cannot be solved simply by adding more knowledge points; instead, it is necessary to bring “real work contexts” into the learning process through teaching approaches. In relation to the employment quality dimensions in the questionnaire, teaching innovation not only affects skill development, but also influences students’ communication competence, rule awareness, stability, and adaptation speed after entering the workplace, thereby indirectly affecting their sense of employment security and long-term retention.

(3) School–Enterprise Collaboration and Industry Alignment Module

This module focuses on the “depth” and “stability” of industry–education integration. It emphasizes shifting from superficial cooperation (only providing internships/recruitment) to shared governance and co-education, including jointly developing competency standards, jointly designing practical tasks, introducing enterprise mentors, implementing rotation/project-based training, and evaluating cooperation quality using outcome indicators such as retention, development, and satisfaction. Interview data in Chapter 4 show that multiple experts pointed out that “superficial cooperation, inconsistent incentives, and lack of shared governance and quality standards” are important reasons for uneven internship quality, low job matching, and high mobility after entry. Therefore, this module plays a bridging role in the model content by “connecting education and employment”: through higher-quality industry collaboration, it improves job fit and employment stability, and is also more likely to improve outcome indicators that students highly value in the questionnaire, such as employment security, social protection, and income and benefits.

(4) Career Guidance and Professional Development Module

This module emphasizes that career guidance should not be limited to employment services at the graduation stage, but should run through the entire training process, with a focus on enhancing students’ career awareness, career

decision-making ability, ability to understand career information, and onboarding/adaptation competence. Interview results generally indicated that higher vocational students' "weak early career decision-making ability", "fragmented career cognition", and "short-term employment choices" lead to blind job selection, frequent job hopping, and unstable employment. In addition, experts also emphasized that the early onboarding period (the first 3–6 months) is a high-risk period for turnover, and schools need to provide adaptation support extending into post-employment. Therefore, this module responds both to students' expectations in the questionnaire for improved employment quality (more stable, better protected, and with better development) and to the "career development learning" pathway emphasized in interviews (from awareness–exploration–matching–stability–growth).

(5) Institutional Safeguards and Policy Support Module

This module emphasizes the institutional environment and resource conditions for implementing the model, including division of organizational responsibilities, resource allocation, policy linkage, cross-departmental coordination mechanisms, and standardization of cooperation rules. In Chapter 4 interviews, multiple experts pointed out that many reforms fail not because the ideas are wrong, but because of the lack of institutionalized channels and stable mechanisms (e.g., cooperation relying on personal relationships, difficulty enforcing quality standards, and insufficient incentives for enterprise participation). Therefore, this module performs a "governance safeguard" function in the model content: through institutional arrangements, it upgrades actions such as industry–education integration, curriculum updating, practical training implementation, and employment support from "project-based" to "normalized", thereby supporting continuous improvement in students' employment quality and enhancing the replicability and sustainability of the model.

(6) Quality Monitoring and Continuous Improvement Module

This module serves as the closed-loop hub of the model content. It emphasizes establishing an employment quality evaluation indicator system, graduate tracking mechanisms, enterprise feedback mechanisms, and improvement

response mechanisms, so that the model shifts from “implementing once” to “continuous optimization”. The questionnaire data itself has already presented a “current–ideal” gap structure and priority improvement areas, providing a foundational indicator framework for quality monitoring; meanwhile, a large number of experts in the interviews emphasized that “employment quality evaluation cannot focus only on employment rates”, “it is necessary to track stability, development, and protection over the long term”, and “evaluation should feed back into curriculum and cooperation adjustments”, which provides the long-term governance logic for this module. Therefore, the core significance of this module lies in forming a data-driven continuous governance cycle of “diagnosis–improvement–re-evaluation”, enabling education management measures to dynamically adapt to industrial upgrading and labor market changes.

2) Supporting Measures

After clarifying “what to do”, the model content must also answer “how to ensure it can be sustained in the long run”. Therefore, to prevent the six modules from remaining at the slogan level, the action guideline proposes five categories of supporting measures that constitute the operating safeguard conditions of the model. These supporting measures have clear meanings within the analytical context of Chapter 4: they are key conditions for transforming “problems and priorities revealed by data” into a “sustainable improvement mechanism”, and they also provide the institutional logic explaining “why schools can continuously improve employment quality”.

(1) Institutional Support: Institutionalize the action modules through rules and regulations, process specifications, and clear division of responsibilities, reduce the dependence of reform on individual drivers, and enhance execution stability and sustainability.

(2) Resource Support: Include financial investment, training conditions, information platforms, and school–enterprise cooperation resources to ensure the practical feasibility of module implementation, especially in areas such as safety, training quality, enterprise mentors, and job development.

(3) Capacity Building: Emphasize improving the competencies of teachers and management teams (e.g., industry cognition, curriculum development, data analysis, and career guidance), because many interview findings point to “mechanisms exist but implementation is weak”; capacity building is critical for improving implementation quality.

(4) Monitoring, Evaluation, and Accountability: Ensure that the quality closed loop truly operates through indicator systems, tracking evaluations, result reporting, and responsibility tracing, shifting employment quality improvement from “self-claimed” to “evidence-proven”.

(5) Incentive Mechanisms: Enhance sustained participation willingness of enterprises, teachers, and departments through performance appraisal, incentives, and recognition mechanisms, responding to the core bottlenecks of “insufficient incentives and unstable participation” highlighted in interviews.

In this way, the proposed model can not only explain the mechanism through which employment quality gaps are formed, but also provide an education management plan that is executable, assessable, and capable of sustainable optimization, thereby laying a structural foundation for subsequent model implementation and expert evaluation.

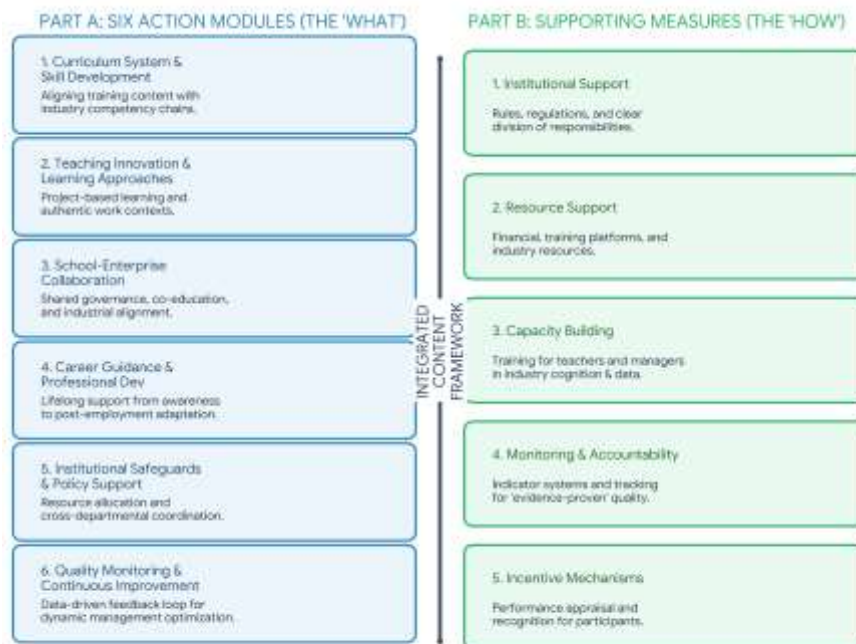


Figure 4.6 Content of Model

4. Roles of Key Actors

The roles of key actors in this model extend beyond functional responsibilities. Within the employment-oriented framework, administrators, teachers, and students serve as the driving forces that activate each dimension of the model. Their coordinated actions ensure that the principles, objectives, content modules, and evaluation mechanisms are effectively translated into sustainable employment outcomes.

Thus, the following section not only describes their roles but also explains how each actor contributes to the operationalization of the model dimensions within the employment context.

To ensure the effective and sustainable operation of the educational management model, administrators, teachers, and students jointly constitute the core actors of model implementation. Their roles are clearly defined and mutually reinforcing, forming a governance–implementation–feedback mechanism that translates management design into improved sustainable employment quality.

4.1 Administrators' Roles

Administrators are responsible for governance design and system coordination, which directly activate the system integration dimension of the model. Through policy formulation, institutional alignment, and resource allocation, they ensure coherence between educational objectives and labor market demands.

By supervising implementation and optimizing institutional mechanisms, administrators support the curriculum development, school–enterprise collaboration, and evaluation dimensions, thereby creating a stable structural foundation for sustainable employment quality.

(1) Strategic Designers of the Employment-Oriented Governance Framework

Administrators are responsible for embedding the goal of sustainable employment quality into institutional development strategies, management systems, and performance evaluation mechanisms. They translate policy objectives and research findings into actionable governance frameworks that guide curriculum reform, teaching innovation, and school–enterprise collaboration.

(2) Coordinators of Cross-Departmental and Multi-Stakeholder Collaboration

Administrators facilitate coordination among academic affairs, student services, career guidance units, quality assurance departments, and external stakeholders such as enterprises and industry organizations. Through systematic integration, they reduce fragmentation in educational management and ensure that curriculum design, practical training, and employment services operate coherently.

(3) Resource Allocators and Institutional Support Providers

Administrators ensure the allocation of human, financial, and infrastructural resources necessary for model implementation. This includes supporting teaching innovation, enterprise cooperation platforms, faculty development, career guidance services, and employment quality monitoring systems.

(4) Supervisors of Model Implementation and Accountability

Administrators establish supervision and evaluation mechanisms to monitor the implementation of action modules. By defining responsibilities,

performance indicators, and accountability procedures, they ensure that each module is executed effectively and aligned with the model's objectives.

(5) Facilitators of Monitoring, Feedback, and Continuous Optimization

Administrators organize employment quality monitoring, expert evaluations, and feedback processes. Based on evidence from graduate tracking, employer feedback, and internal evaluations, they lead data-driven adjustments and iterative optimization of the educational management model.

4.2 Teachers' Roles

Teachers function as the primary implementers of the model's curriculum and competency development dimension. Through employment-oriented teaching strategies, authentic task-based learning, and practice-based facilitation, they translate governance goals into concrete learning experiences.

Additionally, teachers contribute to the career guidance and continuous improvement dimensions by providing formative feedback, mentoring, and adaptive instructional adjustments aligned with industry requirements.

(1) Implementers of Employment-Oriented Curriculum and Teaching Innovation.

Teachers are responsible for translating curriculum standards and industry competency requirements into concrete teaching practices. They design and deliver courses that integrate vocational skills, transferable competencies, and career awareness, ensuring alignment between learning content and labor market demands.

(2) Facilitators of Practice-Based and Student-Centered Learning

In line with the practice-oriented principle, teachers adopt diversified teaching methods such as project-based learning, workplace simulation, problem-based learning, and school-enterprise co-teaching. These approaches emphasize students' active participation, problem-solving ability, teamwork, and appropriateness, which are essential for sustainable employment.

(3) Mentors for Career Development and Employment appropriateness

Teachers provide continuous guidance throughout students' learning processes, including internship preparation, workplace adaptation, and early career

planning. Through individualized mentoring and feedback, teachers help students understand career pathways, assess personal competencies, and enhance long-term employment stability.

(4) Contributors to Quality Monitoring and Continuous Improvement

Teachers actively participate in the collection and analysis of data related to learning outcomes and employment quality. By reflecting on teaching effectiveness and student feedback, they contribute to the ongoing optimization of curriculum content, teaching methods, and action modules.

4.3 Students' Roles

Students are the central participants in the operationalization of the model. Through competency-oriented active learning, internship participation, and reflective self-improvement, they engage directly with the curriculum, collaboration, and career development dimensions.

Their feedback and adaptive participation further strengthen the monitoring and evaluation dimension, ensuring that sustainable employment quality is achieved as a developmental process rather than a short-term outcome.

(1) Active Learners in Competency-Oriented Learning Processes

Students engage proactively in learning activities that emphasize vocational skills, transferable competencies, and real-world problem solving. Through classroom participation, project collaboration, and practical training, students continuously improve their professional competence and employability.

(2) Participants in Practice-Based Learning and School-Enterprise Cooperation

Students take part in internships, enterprise projects, and workplace learning experiences, applying theoretical knowledge to real occupational contexts. These experiences help students develop appropriateness, professional identity, and awareness of labor standards and workplace expectations.

(3) Self-Managers of Career Development and Lifelong Learning

Students are encouraged to develop self-directed learning habits, reflect on personal career goals, and actively seek feedback from teachers and employers. By

cultivating lifelong learning awareness, students enhance their ability to sustain employment quality in a changing labor market.

(4) Feedback Providers for Model Optimization

Students provide feedback on curriculum relevance, teaching effectiveness, and learning support services. Their feedback serves as an important data source for evaluating and improving the educational management model.

4.4 Role Interaction and Governance Logic

Through the interaction among administrators, teachers, and students, the model forms a closed and dynamic governance mechanism. Administrators provide institutional design and resource guarantees, teachers translate management objectives into teaching and mentoring practices, and students actively participate and provide feedback. This tripartite interaction ensures that the educational management model operates effectively and continuously contributes to the enhancement of sustainable employment quality. In this model, administrators provide governance design and institutional guarantees, teachers translate management objectives into teaching and mentoring practices, and students actively participate in learning and feedback processes, jointly driving the enhancement of sustainable employment quality.

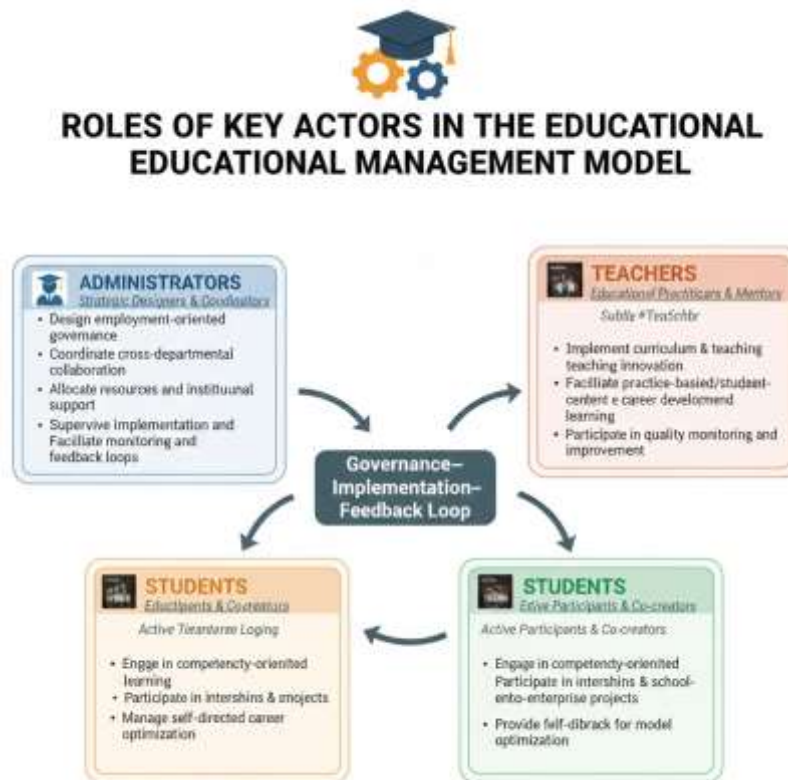


Figure 4.7 Roles of key Actors of Model

5. Measurement and Evaluation

To verify the appropriateness, feasibility, and practicality of the constructed education management model, and to ensure that the model possesses not only theoretical explanatory power but also real-world implementability, this study conducted a scale-based expert evaluation after the model was developed. As the final validation step in model construction, this evaluation aimed to examine the conceptual rigor, policy consistency, market relevance, and operational feasibility of the model from multiple dimensions, and to refine the model description, module boundaries, and implementation mechanisms accordingly.

In the final stage, this study invited 10 experts from relevant fields to participate in the evaluation. The experts represented areas including vocational education management, school-enterprise collaboration and industrial practice, employment services, and quality assessment, ensuring that the evaluation could

simultaneously reflect education governance logic and labor market practice requirements. A five-point Likert scale (5–1) was adopted, with higher scores indicating stronger expert agreement regarding the model’s rationality and feasibility in the corresponding dimensions. The evaluation instrument was structured around eight core criteria: Conceptual Soundness, Policy Alignment, Relevance to Labor Market Dynamics, Institutional Applicability, Operational Clarity, Resource Feasibility, Effectiveness of Multi-stakeholder Collaboration, and Quality Assessment and Feedback Loop. These indicators cover key aspects of the model from conceptual structure, external environment alignment, organizational implementation conditions, resources and collaboration, to closed-loop quality governance, enabling a structured examination of the model’s overall effectiveness rather than merely principle-based judgment.

During implementation, experts first independently rated each indicator based on the scale, and then provided supplementary suggestions through open-ended written feedback on the model’s structural logic, module articulation, implementation pathways, and operational safeguards. The quantitative scoring results offered comparable evidence for assessing the overall feasibility of the model, while the written feedback provided directional guidance for improving model details and operability. Through the combination of “quantitative evaluation plus qualitative feedback,” this study achieved a dual validation of the model in the evaluation stage: on the one hand, verifying consistency and recognition across key dimensions, and on the other hand, translating expert recommendations into revision inputs, thereby further strengthening the model’s usability, executability, and capacity for sustainable improvement in higher vocational education governance contexts.



Figure 4.8 Measurement and Evaluation of Model

Phase 3: Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

To evaluate whether the proposed Sustainable Educational Management Model can be effectively applied in real higher vocational college contexts, this study adopted an expert-based evaluation approach using a rubric-style (five-level) rating scale, consistent with authentic assessment principles that emphasize real-world appropriateness and operational performance. A panel of 15 experts (university faculty members and educational administrators with extensive experience in higher vocational education, employment management, and industry–education collaboration) reviewed the model. The evaluation focused on two core aspects appropriateness and feasibility to determine whether the model fits the institutional

and labor-market context (appropriateness) and whether it can be implemented with realistic resources and procedures (feasibility). Experts were asked to provide both numerical ratings and written comments, and the feedback was used to refine the model and improve its practical relevance.

Rubric-Based Evaluation Criteria and Five-Level Rating Descriptors:

Experts evaluated each criterion on a five-point scale (5–1). Higher scores indicate stronger agreement that the model is appropriate, implementable, and capable of supporting sustainable employment development. See table 4.12.

This table addresses objective 3 which is to evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students. It is necessary to know the level of the feasibility and appropriateness of model.

Table 4.11 The feasibility and appropriateness evaluation results of the proposed education management model

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
1	Components of the Educational Management Model	4.60	0.51	Highest	4.47	0.51	High
2	Principles	4.42	0.51	High	4.44	0.55	High
3	Objectives	4.56	0.52	Highest	4.47	0.55	High
4	Content	4.31	0.62	High	4.29	0.68	High
5	Roles of Key Actors	4.56	0.44	Highest	4.58	0.54	Highest
6	Measurement and Evaluation	4.65	0.41	Highest	4.42	0.56	High
Total		4.52	0.50	Highest	4.45	0.57	High

According to Table 4.11, the expert evaluation results indicated that the mean scores of appropriateness for the proposed education management model ranged from 4.29 to 4.58, while the mean scores of feasibility ranged from 4.31 to

4.65. Overall, all dimensions were evaluated at the high to highest level, demonstrating that the proposed model was regarded as both appropriate and feasible for enhancing the sustainable employment quality of higher vocational students. In particular, the total mean score for appropriateness was 4.45 (S.D. = 0.57), rated at the high level, while the total mean score for feasibility was 4.52 (S.D. = 0.50), rated at the highest level, indicating strong expert consensus regarding the model's overall design quality and implementability.

At the dimension level, Components of the Educational Management Model achieved an appropriateness mean of 4.47 and a feasibility mean of 4.60, indicating that experts considered the model structure comprehensive, coherent, and highly implementable. The Principles dimension also received high-level ratings (appropriateness $\bar{X} = 4.44$; feasibility $\bar{X} = 4.42$), suggesting that the guiding principles were perceived as consistent with the current educational context and relevant educational management practices aimed at sustainable employment quality. The Objectives were likewise evaluated positively (appropriateness $\bar{X} = 4.47$; feasibility $\bar{X} = 4.56$), indicating that the objectives were clear, aligned with the model's principles, and highly feasible as a guiding framework for educational management.

Regarding Content, which encompassed the core action modules and supporting measures, experts rated its appropriateness at 4.29 and feasibility at 4.31, both at the high level, implying that the content framework was well structured and generally implementable, while its effectiveness may depend on contextual implementation conditions. The Roles of Key Actors obtained the highest-level ratings in both appropriateness ($\bar{X} = 4.58$) and feasibility ($\bar{X} = 4.56$), reflecting strong expert agreement that the responsibilities of administrators, teachers, and students were clearly defined and could effectively support coordinated implementation. In addition, Measurement and Evaluation received strong evaluations, with appropriateness rated at 4.42 (high) and feasibility at 4.65 (highest), indicating that experts highly recognized the model's evaluation mechanisms and their feasibility in supporting monitoring, feedback, and continuous improvement.

Overall, the findings confirmed that the proposed education management model demonstrated high appropriateness and highest feasibility across its key dimensions, providing robust evidence to support its application in higher vocational education settings for enhancing the sustainable employment quality of graduates.

Table 4.12 Analysis results of Components of the Educational Management Model

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
1	Components of the Educational Management Model						
1.1	The components of the Educational Management Model are comprehensive and complete.	4.60	0.51	Highest	4.40	0.50	High
1.2	The components of the Educational Management Model are consistent with the research objectives.	4.53	0.52	Highest	4.53	0.52	Highest
1.3	The components of the Educational Management Model are clear and practically applicable for educational management.	4.67	0.49	Highest	4.47	0.52	High
Total		4.60	0.51	Highest	4.47	0.51	High

According to Table 4.12, the expert evaluation results showed that the mean scores of appropriateness for the Components of the Educational Management Model ranged from 4.40 to 4.53, while the mean scores of feasibility ranged from 4.53 to 4.67. The results indicated a strong overall evaluation, with appropriateness rated at the high to highest level and feasibility consistently rated at the highest

level, suggesting that the model components were considered both appropriate and highly feasible for practical implementation.

Specifically, Item 1.1 (comprehensive and complete components) obtained an appropriateness mean of 4.40 (high) and a feasibility mean of 4.60 (highest), indicating that experts generally agreed the model structure was sufficiently comprehensive and could be implemented effectively in real institutional settings. Item 1.2 (consistency with research objectives) received highest-level ratings for both appropriateness (4.53) and feasibility (4.53), demonstrating expert consensus that the model components were well aligned with the research objectives and operationally workable. Item 1.3 (clarity and practical applicability) achieved an appropriateness mean of 4.47 (high) and a feasibility mean of 4.67 (highest), reflecting strong expert agreement that the model components were clearly articulated and highly implementable in educational management practice.

Overall, the total mean scores confirmed a high evaluation level for appropriateness ($\bar{X} = 4.47$, S.D. = 0.51) and a highest evaluation level for feasibility ($\bar{X} = 4.60$, S.D. = 0.51). These findings suggested that the proposed education management model was perceived as structurally complete, consistent with the research objectives, and clearly formulated, with particularly strong feasibility for implementation in the context of enhancing the sustainable employment quality of higher vocational students.

Table 4.13 Analysis results of Principles of the Educational Management Model

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
2.	Principles of the Educational Management Model						
2.1	The principles of the Educational Management Model are consistent with the current educational context.	3.93	0.59	High	3.87	0.64	High
2.2	The principles of the Educational Management Model are consistent with educational management practices aimed at enhancing the sustainable employment quality of higher vocational students.	4.60	0.60	Highest	4.73	0.46	Highest
2.3	principles of the Educational Management Model are clear and can effectively serve as a guideline for educational management.	4.80	0.41	Highest	4.67	0.49	Highest
Total		4.42	0.51	High	4.44	0.55	High

According to Table 4.13, the expert evaluation results indicated that the mean scores of appropriateness for the Principles of the Educational Management Model ranged from 3.93 to 4.73, while the mean scores of feasibility ranged from 3.87 to 4.80. The results showed a generally positive evaluation, with two items rated at the highest level and one item rated at the high level, indicating that the proposed principles were considered both appropriate and feasible for guiding

educational management aimed at enhancing the sustainable employment quality of higher vocational students.

Specifically, Item 2.1 (consistency with the current educational context) obtained an appropriateness mean of 4.73 and a feasibility mean of 4.60, both at the highest level, suggesting strong expert agreement that the model principles were highly consistent with current educational realities and could be applied within real institutional settings. Item 2.2 (consistency with educational management practices aimed at enhancing sustainable employment quality) received high-level ratings for both appropriateness (3.93) and feasibility (3.87), indicating that experts generally recognized the relevance of the principles to existing management practices, while also implying that implementation might depend on certain enabling conditions such as institutional capacity and resources. Item 2.3 (clarity and guideline function) achieved appropriateness and feasibility means of 4.67 and 4.80, respectively, both at the highest level, reflecting strong expert consensus that the principles were clearly articulated and could effectively serve as operational guidelines for educational management actions.

Overall, the total mean scores confirmed a high evaluation level for both dimensions, with appropriateness at 4.44 (S.D. = 0.55) and feasibility at 4.42 (S.D. = 0.51). These findings indicated that the guiding principles of the proposed education management model were strongly endorsed by experts, demonstrating clear alignment with educational contexts and practical management requirements, and providing a solid normative foundation for subsequent implementation to enhance the sustainable employment quality of higher vocational students.

Table 4.14 Analysis results of Objectives of the Educational Management Model

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
3	Objectives of the Educational Management Model						
3.1	The objectives of the Educational Management Model are consistent with the principles of the model.	4.80	0.56	Highest	4.67	0.49	Highest
3.2	The objectives of the Educational Management Model reflect the approaches for enhancing the sustainable employment quality of higher vocational students.	4.80	0.41	Highest	4.80	0.56	Highest
3.3	The objectives of the Educational Management Model are clear and can effectively serve as a guideline for educational management.	4.07	0.59	High	3.93	0.59	High
Total		4.56	0.52	Highest	4.47	0.55	High

Table 4.14 presented the expert evaluation results of the Objectives component of the Educational Management Model in terms of feasibility and appropriateness. Overall, the Objectives component was evaluated at the highest level of feasibility (\bar{X} = 4.56, S.D. = 0.52) and a high level of appropriateness (\bar{X} = 4.47, S.D. = 0.55), indicating strong expert agreement on the clarity and applicability of the model objectives.

Among the three items, Item 3.2, which addressed the alignment of objectives with approaches for enhancing sustainable employment quality, received the highest mean scores in both feasibility (\bar{X} = 4.80) and appropriateness (\bar{X} = 4.80). This

suggested that experts perceived the objectives as effectively reflecting strategies to improve sustainable employment quality. Item 3.1 also received the highest level rating, confirming consistency between the objectives and the model principles. In contrast, Item 3.3, which evaluated whether the objectives could effectively serve as guidelines for educational management, received slightly lower mean scores (feasibility $\bar{X} = 4.07$; appropriateness $\bar{X} = 3.93$), although it remained at a high level. This indicated that while the objectives were considered clear, further refinement in practical guidance might enhance their applicability. Overall, the findings confirmed that the Objectives component was structurally coherent, strategically aligned, and practically feasible.

Table 4.15 Analysis results of Content

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
4	Content						
4.1	The six core modules are consistent with the objectives of are consistent with the objectives of the Educational Management Model	4.20	0.67	High	4.13	0.74	High
4.2	The Modules are well-defined and comprehensive, effectively addressing the enhancement of sustainable employment quality for higher vocational students.	4.07	0.70	High	4.07	0.80	High
4.3	The Modules facilitate the enhancement of sustainable employment quality for higher vocational students.	4.67	0.49	Highest	4.67	0.49	Highest
	Total	4.31	0.62	High	4.29	0.68	High

Table 4.15 presented the expert evaluation results of the Content component of the Educational Management Model in terms of feasibility and appropriateness. Overall, the Content component was evaluated at a high level in both feasibility and appropriateness, indicating that experts generally agreed that the Six Action Modules were clearly structured and practically applicable in enhancing sustainable employment quality.

Among the three items, Item 4.3, which assessed whether the modules facilitated the enhancement of sustainable employment quality for higher vocational students, received the highest mean scores in both feasibility ($\bar{X} = 4.67$, S.D. = 0.49) and appropriateness ($\bar{X} = 4.67$, S.D. = 0.49). This reflected strong expert consensus regarding the direct contribution of the modules to sustainable employment outcomes. Items 4.1 and 4.2 were rated at a high level, with mean scores ranging from 4.07 to 4.20. These results indicated that while the modules were considered consistent with the model objectives and comprehensive in addressing sustainable employment quality, there remained moderate variation in expert perceptions, as reflected in slightly higher standard deviations.

Overall, the findings confirmed that the Content component was coherent, aligned with the model objectives, and strongly supported by expert evaluation, particularly in terms of its practical contribution to enhancing sustainable employment quality.

Table 4.16 Analysis results of Roles of Key Actors

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
5	Roles of Key Actors						
5.1	The roles of administrators, teachers, and students are consistent with the objectives of the Educational Management Model.	4.20	0.41	High	4.27	0.60	High
5.2	The roles of key actors are clearly defined and comprehensive in enhancing the sustainable employment quality of higher vocational students.	4.80	0.41	Highest	4.80	0.41	Highest
5.3	The roles of key actors effectively contribute to enhancing the sustainable employment quality of higher vocational students.	4.67	0.49	Highest	4.67	0.62	Highest
Total		4.56	0.44	Highest	4.58	0.54	Highest

Table 4.16 presented the expert evaluation results of the Roles of Key Actors component in terms of feasibility and appropriateness. Overall, this component received the highest level of evaluation in both feasibility ($\bar{X} = 4.56$, S.D. = 0.44) and appropriateness ($\bar{X} = 4.58$, S.D. = 0.54), indicating strong expert consensus regarding the clarity and effectiveness of the defined stakeholder roles within the Educational Management Model.

Among the three items, Item 5.2, which assessed whether the roles of key actors were clearly defined and comprehensive in enhancing sustainable employment quality, received the highest mean scores in both feasibility and appropriateness ($\bar{X} = 4.80$). This reflected a high level of agreement that the differentiation of responsibilities among Administrators, Teachers, and Students was well-structured and appropriate.

Item 5.3 also received the highest level rating, confirming that the roles of key actors were perceived as effectively contributing to the enhancement of sustainable employment quality. Although Item 5.1 received slightly lower mean scores (feasibility $\bar{X} = 4.20$; appropriateness $\bar{X} = 4.27$), it remained at a high level, suggesting that the alignment between stakeholder roles and model objectives was generally strong.

Overall, the findings confirmed that the Roles of Key Actors component was clearly structured, operationally feasible, and strongly supported by expert evaluation, reinforcing the governance foundation of the model.

Table 4.17 Analysis results of Measurement and Evaluation

No.	Educational Management	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
6	Measurement and Evaluation						
6.1	The Educational Management Model includes evaluation methods that are consistent with the established objectives.	4.87	0.35	Highest	4.47	0.64	High
6.2	The Educational Management Model features evaluation methods that align with the educational management activities designed for enhancing the sustainable employment quality of higher vocational students.	4.27	0.46	High	4.20	0.41	High
6.3	The Educational Management Model incorporates evaluation methods that demonstrate objectivity and reliability.	4.80	0.41	Highest	4.60	0.63	Highest
Total		4.65	0.41	Highest	4.42	0.56	High

According to Table 4.17, the expert evaluation results indicated that the mean scores of appropriateness for Measurement and Evaluation ranged from 4.20 to 4.60, while the mean scores of feasibility ranged from 4.27 to 4.87. The results showed a strong overall evaluation, with appropriateness including both high and highest ratings, and feasibility including two items rated at the highest level and one item rated at the high level. This suggested that the proposed measurement and

evaluation design was considered both appropriate and feasible for supporting the enhancement of sustainable employment quality among higher vocational students.

Specifically, Item 6.1 (consistency of evaluation methods with established objectives) obtained an appropriateness mean of 4.47 (high) and a feasibility mean of 4.87 (highest), indicating that experts strongly agreed the evaluation methods were aligned with the model objectives and were highly implementable in practice. Item 6.2 (alignment between evaluation methods and educational management activities) received high-level ratings for both appropriateness (4.20) and feasibility (4.27), reflecting expert agreement that the evaluation design matched the educational management processes intended to enhance sustainable employment quality. Item 6.3 (objectivity and reliability of evaluation methods) achieved an appropriateness mean of 4.60 (highest) and a feasibility mean of 4.80 (highest), suggesting that experts perceived the evaluation methods as credible, objective, and practically workable.

Overall, the total mean scores confirmed a high evaluation level for appropriateness ($\bar{X} = 4.42$, S.D. = 0.56) and a highest evaluation level for feasibility ($\bar{X} = 4.65$, S.D. = 0.41). These findings indicated that the measurement and evaluation component of the proposed education management model was well designed and highly feasible, and that it could provide reliable evidence, monitoring, and feedback support for continuous improvement aimed at enhancing the sustainable employment quality of higher vocational students.

To sum up, tables 4.14–4.16 presented the expert evaluation results regarding the feasibility and appropriateness of the Educational Management Model. Overall, the evaluation results indicated a consistently high level across all dimensions, reflecting strong expert agreement on the model's practical applicability and structural coherence.

Among the evaluated dimensions, the Content component and the Roles of Key Actors component received the highest mean scores, indicating that the Six Action Modules, Five Supporting Measures, and the defined responsibilities of Administrators, Teachers, and Students were perceived as particularly clear and

implementable. This suggested that the model effectively translated empirical findings into operational strategies.

The Principles and Objectives components were also rated at a high level, demonstrating alignment between the model orientation and the enhancement of sustainable employment quality of higher vocational students. Furthermore, the Measurement and Evaluation component received strong support, indicating that the proposed multidimensional indicators were considered appropriate for continuous monitoring and improvement. The expert evaluation confirmed that the Educational Management Model was feasible, appropriate, and systematically structured. The high level of evaluation across all components provided empirical validation for the model and supported its readiness for practical implementation.

In summary, this research constructed an education management model aimed at enhancing the sustainable employment quality of higher vocational students. Grounded in the principles of sustainable development and participatory management, the model clarified its objectives, structural components, action modules, supporting measures, and the roles of key actors. To strengthen the feasibility and operability of the proposed model, an Action Guideline was developed as a practical extension of the model. The Action Guideline translated the model's structural design into concrete implementation procedures, clarified role responsibilities, and provided operational references for administrators, teachers, and students in higher vocational institutions. Together, the proposed model and its accompanying Action Guideline formed an integrated framework that combined conceptual design with practical applicability, laying a foundation for subsequent application and ongoing refinement (see Appendix G for details).

Chapter 5

Conclusion, Discussion and Recommendations

In this study, development of the Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students was developed to enhance the sustainable employment quality of higher vocational college students. The objectives of this study were: (1) to analyze the current and desired conditions of sustainable employment quality among higher vocational students; (2) to develop an educational management model to enhance sustainable employment quality; and (3) to evaluate the feasibility and appropriateness of the proposed model.

To achieve these objectives, the research adopted a mixed-methods design and was conducted in three phases. In Phase 1, quantitative data were collected from 377 higher vocational students through a questionnaire survey, and qualitative data were collected through interviews with 15 experts in higher vocational education, industry collaboration, and employment development in Guizhou Province. In Phase 2, the model was constructed and refined through a focus group discussion with 10 experts. In Phase 3, the feasibility and appropriateness of the developed model were evaluated by a panel of 15 experts.

The research instruments included: (1) questionnaire, (2) interview form, (3) focus group discussion guidelines and the draft model, and (4) an evaluation form. Data were analyzed using descriptive statistics (mean and standard deviation), the Modified Priority Needs Index (PNI_{modified}), and content analysis to identify gaps between current and desired conditions, developed the model, and evaluated its feasibility and appropriateness in practice.

Conclusion

Phase 1 : Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

The findings from Phase 1 provide a comprehensive assessment of both the current situation and the desired conditions related to sustainable employment quality among higher vocational students. Quantitatively, the current and desired conditions were assessed across seven employment-quality dimensions, and the results indicated clear gaps between current conditions and desired conditions, with improvement priorities identified through PNI_modified.

To support model development, the qualitative findings and integrated interpretation further synthesized these improvement needs into five educational management domains: 1) students' career awareness and employability, 2) industry–education collaboration, 3) curriculum system, 4) career guidance services, and 5) vocational skill training—revealing that all five domains contained notable development gaps and therefore formed the empirical basis for constructing the proposed educational management model.

Across these five domains, the most prominent shortcomings can be summarized as follows: students demonstrated limited career planning awareness, weak interview competitiveness, insufficient internship experience, and inadequate understanding of labor market demands; school–enterprise collaboration remained underdeveloped, reflected in low enterprise participation, weak internship quality supervision, limited communication mechanisms, and insufficient joint curriculum development; curriculum systems were often misaligned with industrial upgrading and lacked timely updates, interdisciplinary innovation modules, enterprise involvement, and strong practical skill cultivation; career guidance services were fragmented, with limited individualized counseling, infrequent or ineffective activities, and shortages of professional guidance personnel; and vocational skill training faced constraints such as mismatches between training content and job requirements, inconsistent assessment standards, outdated equipment, and limited access to enterprise-supported training platforms.

Overall, Phase 1 indicates that while current practices provide some foundational support, they remain insufficient to meet students' desired conditions and the requirements for achieving high-quality and sustainable employment outcomes, thereby necessitating a structured educational management model for improvement.

Phase 2 : Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

Phase 2 focused on the development of a sustainable educational management model aimed at enhancing the employment quality of higher vocational students. Based on the gaps and improvement priorities identified in Phase 1, the model was systematically constructed through an iterative process involving literature review, expert consultation, and feedback from key stakeholders, including higher vocational institutions and industry partners. The resulting model was designed as a comprehensive and practical framework that addressed real-world employment challenges while remaining scalable for broader institutional application.

The educational management model to enhance the sustainable employment quality of higher vocational student

The educational management model to enhance the sustainable employment quality of higher vocational students was developed based on the empirical findings presented in Chapter 4. The model integrates the key results from Phase 1 with the theoretical framework derived from the literature review and expert consultations.

As illustrated in Figure 4.4, the model is composed of five main components: Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation. These components function as an integrated management system designed to improve the sustainable employment quality of higher vocational students.

The Principles emphasize sustainable development orientation, student-centered learning, and collaborative governance between educational institutions

and industry partners. These principles guide the implementation of the model and ensure alignment with the broader goals of sustainable development and vocational education reform.

The Objectives focus on enhancing students' sustainable employability by improving their professional competencies, career adaptability, and long-term employment stability. These objectives reflect the need to move beyond short-term employment outcomes toward a more comprehensive understanding of employment quality.

The Content of the model is operationalized through six core action modules identified in Chapter 4: (1) Curriculum System and Skill Development, (2) Teaching Innovation and Learning Approaches, (3) School–Enterprise Collaboration and Industry Alignment, (4) Career Guidance and Professional Development, (5) Institutional Safeguards and Policy Support, and (6) Quality Monitoring and Continuous Improvement. These modules directly respond to the priority needs identified through the PNI_modified analysis in Phase 1.

The Roles of Key Actors include administrators, teachers, and students. Administrators provide policy support, resource allocation, and institutional coordination; teachers implement curriculum innovation and career guidance activities; and students actively participate in learning, skill development, and career planning processes. The interaction among these stakeholders ensures effective implementation of the educational management model within vocational institutions.

Finally, Measurement and Evaluation mechanisms are incorporated to monitor employment quality outcomes and assess the effectiveness of educational management practices. Through continuous data collection, feedback, and evaluation, the model supports ongoing improvement and institutional adaptation to changing labor market conditions.

Phase 3 : Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

In the final phase of the study, a comprehensive evaluation was conducted to assess the feasibility and appropriateness of the proposed education management model for enhancing the sustainable employment quality of higher vocational students in higher vocational college contexts. An expert-based evaluation approach was adopted using a rubric-style five-point rating scale to judge whether the model was suitable for real institutional and labor-market conditions and whether it could be implemented with realistic procedures and resource requirements. A panel of 15 experts with professional experience in higher vocational education management, curriculum development, employment services, and industry–education collaboration participated in the evaluation. Experts provided numerical ratings for each evaluation item, and the results were synthesized to refine the model and strengthen its practical relevance.

The evaluation results indicated that the proposed model was assessed at a high level in both dimensions. Overall, the model achieved a total mean score of 3.97 for appropriateness (S.D. = 0.64) and 4.02 for feasibility (S.D. = 0.60), suggesting that experts generally agreed the model was suitable for the higher vocational education context and was practically implementable. At the structural level, experts rated the components of the model highly and confirmed that the model was coherent and complete. The principles and objectives were also evaluated as high, indicating strong consistency between the model’s value orientation, goal system, and management logic.

With regard to implementation content, experts gave high ratings to the model’s content and recognized that the action-oriented structure was well aligned with the goal of enhancing sustainable employment quality. In particular, the model operationalized its content through six core action modules-(1) Curriculum System and Skill Development, (2) Teaching Innovation and Learning Approaches, (3) School–Enterprise Collaboration and Industry Alignment, (4) Career Guidance and Professional

Development, (5) Institutional Safeguards and Policy Support, and (6) Quality Monitoring and Continuous Improvement—supported by safeguard measures including institutional support, resource support, capacity building, monitoring and accountability, and incentive mechanisms. Moreover, the roles of key actors were positively evaluated indicating that the responsibilities of administrators, teachers, and students were clearly defined and conducive to coordinated implementation. Notably, measurement and evaluation received the highest evaluation results, highlighting expert recognition of the model’s evaluation design and its capacity to support monitoring, feedback, and continuous improvement.

Overall, the evaluation confirmed that the developed education management model was both conceptually appropriate and operationally feasible in higher vocational education contexts. At the same time, the expert ratings and dispersion levels implied that successful implementation would depend on institutional conditions such as resource availability, administrative support, staff capacity, and the maturity of school–enterprise partnerships. Therefore, to promote effective implementation and sustained improvement, it was recommended that:

1. A phased pilot implementation be carried out in representative institutions;
2. Targeted policy support and resource allocation be provided, particularly for under-resourced settings;
3. A continuous monitoring and feedback mechanism be established to support data-driven refinement and localized adaptation.

These measures were expected to enhance the model’s long-term responsiveness to labor market dynamics and maximize its contribution to sustainable, employment-oriented development in higher vocational education.

Discussion

From the research results on the development of a sustainable educational management model aimed at enhancing the employment quality of higher vocational college students in Guizhou Province, the findings can be systematically discussed in alignment with the three research objectives across the following phases:

Phase 1 : Analysis of the current and desired conditions of the sustainable employment quality of higher vocational students.

Phase 1 examined the current and desired conditions of Sustainable Employment Quality of Higher Vocational Students across seven dimensions: Work Safety; Income and Benefits; Working Hours and Work-Life Balance; Employment Security and Social Protection; Social Dialogue; Skills Development and Training; and Workplace Relationships. The findings revealed significant gaps between the current and desired conditions, particularly in Skills Development and Training, Employment Security and Social Protection, and Income and Benefits.

These findings are consistent with the related research reviewed in Chapter 2, which conceptualized employment quality as a multidimensional construct. For example, Green (2006) referred to income level, job security, and working conditions as central components of employment quality, while the ILO (2013) emphasized employment security, social protection, and skills development within the framework of decent work. The seven dimensions adopted in this study reflect these theoretical perspectives and demonstrate conceptual alignment with SDG 8: Decent Work and Economic Growth.

A key strength of this phase lies in the integration of theoretical dimensions with empirical measurement. By applying the Priority Needs Index (PNI Modified), the study moved beyond descriptive analysis and identified priority areas for improvement. In contrast to previous studies that examined employment quality in general labor market contexts, this study specifically focused on Higher Vocational Students and linked Sustainable Employment Quality to institutional factors within higher vocational education.

However, certain limitations should be acknowledged. The data were collected from students only, and therefore represent students' perceptions rather than multi-stakeholder perspectives. In addition, the cross-sectional design does not capture long-term employment trajectories, which are essential to fully understanding Sustainable Employment Quality. Nevertheless, Phase 1 provides a solid empirical foundation for the development of the Educational Management Model.

Phase 2 : Development of an educational management model to enhance the sustainable employment quality of higher vocational students.

Based on the findings of Phase 1, Phase 2 developed the Educational Management Model consisting of Principles, Objectives, Content (six core modules), Roles of Key Actors, and Measurement and Evaluation (see Figure 4.4). The model translates the identified priority needs into structured management actions within higher vocational institutions.

The structure of the Educational Management Model corresponds closely with the related research reviewed in chapter 2. Previous studies have emphasized the importance of curriculum alignment, skills development, and school–enterprise collaboration in improving graduate employment outcomes. For example, Barth and Rieckmann (2012) highlighted that vocational education should integrate sustainability-oriented competencies and industry collaboration to enhance students' employability in a rapidly changing labor market. Similarly, Wall et al. (2018) argued that vocational institutions must strengthen practical training and industry engagement to ensure that graduates possess skills relevant to industrial transformation.

The Content component of the Educational Management Model developed in this study reflects these theoretical perspectives. Specifically, the inclusion of modules such as Curriculum System and Skill Development, Teaching Innovation and Learning Approaches, and School–Enterprise Collaboration operationalizes the recommendations proposed by previous scholars and adapts them to the context of higher vocational education in Guizhou Province.

Compared with earlier studies that focused primarily on employment rate or employability skills, this study places greater emphasis on Sustainable Employment Quality, which incorporates multiple dimensions such as employment stability, income quality, work-life balance, and long-term career development. This broader perspective aligns with the conceptualization of decent work proposed by the International Labour Organization (ILO, 2013) and with the multidimensional employment quality framework proposed by Green (2006).

Phase 3 : Evaluation of the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

Phase 3 evaluated the Appropriateness and Feasibility of the Educational Management Model through expert evaluation using a five-point scale. The results indicated that all components were rated at a High level, with two dimensions receiving the highest mean scores. This suggests strong professional agreement regarding the clarity, coherence, and practicality of the model.

Compared with related studies reviewed in Chapter 2, which often proposed educational reform frameworks without empirical validation, the present study strengthens methodological rigor by incorporating a structured expert evaluation process. For instance, Lozano et al. (2015) discussed the importance of integrating sustainability principles into higher education management but did not provide a systematic evaluation of implementation feasibility. Similarly, Katernyak et al. (2018) emphasized the relationship between vocational education reform and regional economic development, yet their research did not assess the operational feasibility of specific management models.

In contrast, this study employed an expert evaluation method using a five-point rating scale to assess both the appropriateness and feasibility of the developed Educational Management Model. The reporting of mean and standard deviation values provides quantitative evidence supporting the model's practicality and coherence. This approach enhances transparency and strengthens the empirical credibility of the research findings.

Recommendation

General Recommendations

1. Recommendations for Students

Based on the advantages identified in Chapter 1, this study emphasizes that students are the direct beneficiaries of the Educational Management Model grounded in Education for Sustainable Development (ESD). Therefore, practical application at the student level should focus on enhancing sustainable employability rather than short-term job acquisition.

First, students should actively participate in curriculum modules that integrate sustainable development principles, such as green technology awareness, responsible production practices, and social responsibility in professional contexts. By engaging in interdisciplinary and project-based learning activities, students can strengthen not only technical competencies but also critical thinking and problem-solving abilities required in sustainability-oriented industries.

Second, students are encouraged to take initiative in career planning processes supported by the model. Through structured career guidance services, internship programs, and industry-linked projects, students should continuously assess their skills, interests, and long-term career trajectories. This self-directed engagement aligns with the model's objective of cultivating lifelong learning capacity and adaptability in dynamic labor markets.

Finally, students should actively utilize feedback mechanisms embedded in the model, including employment quality evaluation tools and mentoring systems, to improve workplace adaptability, professional motivation, and career resilience. Through sustained engagement, students can translate institutional support into tangible employment stability and career development outcomes.

2. Recommendations for Teachers and Industry Leaders

For teachers and industry leaders, the model provides a structured framework for integrating sustainable development into vocational education practice and industry collaboration.

Teachers should incorporate sustainability-oriented competencies into curriculum design and classroom implementation. This includes embedding industry-relevant case studies, experiential learning strategies, and project-based collaboration with enterprises. Teaching practices should move beyond knowledge transmission toward cultivating transferable skills such as communication, teamwork, innovation, and ethical awareness.

Industry leaders, on the other hand, should deepen their participation in curriculum co-construction, internship supervision, and skills standard development. By aligning enterprise skill requirements with institutional training objectives, industry partners can ensure that graduates possess competencies that correspond to real labor market demands.

Moreover, teachers and industry leaders should jointly establish regular communication platforms to evaluate employment quality outcomes and refine cooperative mechanisms. Such collaboration enhances not only graduate employability but also enterprise sustainability and regional industrial upgrading.

3. Recommendations for Vocational Colleges

At the institutional level, vocational colleges play a decisive role in operationalizing the Educational Management Model.

First, colleges should institutionalize the integration of ESD principles into strategic planning, curriculum systems, and quality assurance frameworks. Sustainable employment quality should be incorporated into institutional performance indicators rather than being treated solely as a graduate placement statistic.

Second, colleges should strengthen governance structures to ensure coordinated implementation across departments. Clear administrative responsibilities, dedicated resource allocation, and systematic monitoring mechanisms are essential for sustaining the model's effectiveness.

Third, vocational colleges should establish data-driven quality monitoring systems to track multidimensional employment quality indicators, including job stability, income level, work-life balance, and career progression. Continuous feedback loops should inform policy adjustments and curriculum optimization.

Finally, colleges in economically underdeveloped regions such as Guizhou Province should implement phased pilot programs to adapt the model to local industrial characteristics. Through iterative refinement and stakeholder engagement, the model can gradually become embedded within institutional culture and management practice.

Suggestions for Further Research

1. Conducting the research about the long-term implementation of the Educational Management Model. Future research may focus on the long-term implementation of the Educational Management Model in higher vocational institutions. The present study evaluated the Appropriateness and Feasibility of the model through expert evaluation using a five-point scale; however, it did not examine the sustained impact of the model after practical application. Therefore, longitudinal studies are needed to investigate whether the model can continuously enhance the Sustainable Employment Quality of Higher Vocational Students, particularly in terms of Employment Security and Social Protection, Skills Development and Training, Income and Benefits, and career development stability over time.

2. Conducting the research about cross-regional and cross-institutional application. Future research may apply the Educational Management Model in different provinces, vocational colleges, or national contexts to examine its adaptability and generalizability. Since this study was conducted within the context of higher vocational education in Guizhou Province, comparative research could explore whether the Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation remain effective under different industrial structures and policy environments. Such studies would help refine the model and strengthen its applicability across diverse institutional conditions.

3. Conducting the research about multi-stakeholder evaluation of Sustainable Employment Quality. Further studies may expand the evaluation perspective by including employers, alumni, teachers, and administrators in addition to students. Although this study incorporated expert evaluation in Phase 3, the measurement of

Sustainable Employment Quality in Phase 1 was primarily based on student perceptions. Future research could integrate employer feedback and graduate tracking data to provide a more comprehensive assessment of employment stability, workplace adaptation, and long-term career development.

4. Conducting the research about the refinement of Measurement and Evaluation indicators. Future research may refine the Measurement and Evaluation component of the Educational Management Model by developing more detailed and operational indicators for each employment quality dimension. The use of mixed methods, including qualitative interviews and institutional performance data, may enhance the precision and reliability of monitoring Sustainable Employment Quality. This would further strengthen the data-driven optimization of the model.

5. Conducting the research about deeper integration with SDG 4, SDG 8, and SDG 10. Future research may further explore how the Educational Management Model contributes to SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities). Empirical studies examining the relationship between educational management reform and regional sustainable development outcomes would enhance the theoretical and policy significance of the model.

References

- Alimehmeti, G., Fia, M., & Paletta, A. (2024). The sustainability-to-employment pipeline: The impact of SDG-related curricula on graduates' employability. *Studies in Higher Education*, 49(12), 2328–2342.
<https://doi.org/10.1080/03075079.2023.2299328>
- Awad, A. (2025). Human capital theory and employability: A contemporary analysis. *Journal of Vocational Education and Training*, 77(2), 189-205.
<https://doi.org/10.1080/13636820.2024.2356789>
- Asukwo, A. E., Moses, D., Ibanga, I. J., & Yusuf, M. A. (2020). Achieving Sustainable Development Goals 2016-2030 in Nigeria through Technical and Vocational Education and Training. *International Journal of Vocational Education & Training*, 25(2).45-62.<https://doi.org/10.13162/ijvet-2020-25205>
- Bangkheow, P., & Bangkheow, P. (2025). A Learning Model via Design Thinking to Enhance Creative Writing Ability of Higher Education Students. *Journal of Humanities and Social Sciences Thonburi University*, 19(2), 120-134.
- Barth, M., & Rieckmann, M. (2012). Sustainability and competency development in higher education: From knowledge to action. *Journal of Education for Sustainable Development*, 6(1), 49 64. <https://doi.org/10.1177/147777301200600104>
- Bakhmat, O., Kravets, O., & Sydorenko, I. (2022). Quality management in higher education: Global trends and challenges. *Problems of Education in the 21st Century*, 80(1), 3-15. <https://doi.org/10.33225/pec/22.80.3>
- Barrows, H. S. (1986). A taxonomy of problem-based learning methods. *Medical Education*, 20(6), 481-486. <https://doi.org/10.1111/j.1365-2923.1986.tb00420.x>
- Bhate, M., Vaidya, R., & Vatharka, P. (2020). Factors Affecting Employability–A Student's Perspective. *International Journal of Management (IJM)*, 11(8).112-125.
<https://doi.org/10.31381/ijm.v11i8.2456>

- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis*. University of Chicago Press.
- Briede, L., & Drelinga, E. (2020). Personal sustainability and sustainable employability: Perspective of vocational education students. *Journal of Teacher Education for Sustainability, 22*(2), 40-48.
- Bush, T. (2011). *Theories of educational leadership and management (4th ed.)*. Sage.
- Best, J. W. (1977). *Research in education (4th ed.)*. Prentice-Hall.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.
<https://doi.org/10.3102/0013189X018001032>
- Cano-Guervos, A., Checa-Olivas, R., & de la Hoz-Rosales, M. D. (2020). Sustainable employability: A multidimensional concept for the 21st century. *Sustainability, 12*(19), 8105. <https://doi.org/10.3390/su12198105>
- Chankseliani, M., & Qoraboyev, O. (2020). Vocational education and training for sustainable development: Evidence from low-income countries. *International Journal of Educational Development, 75*, 102243.
<https://doi.org/10.1016/j.ijedudev.2020.102243>
- Cebrián, G., Junyent, M., & Mulà, I. (2020). Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability, 12*(2), 579.
- Cebrián, G., Junyent, M., & Mulà, I. (2021). Current practices and future pathways towards competencies in education for sustainable development. *Sustainability, 13*(16), 8733.
- Checa-Olivas, R., de la Hoz-Rosales, M. D., & Cano-Guervos, A. (2021). Sustainable employability: A systematic review. *Sustainability, 13*(9), 4987.
<https://doi.org/10.3390/su13094987>
- Chankseliani, M., Qoraboyev, O., & Gimranova, G. (2021). Vocational education and training for inclusive growth: Evidence from Central Asia. *Comparative Education Review, 65*(3), 489-522. <https://doi.org/10.1086/713277>

- Chen, P., Goncharova, A., Pilz, M., Frommberger, D., Li, J., Romanova, O., & Lin, Y. (2021). International curriculum comparison in vocational education and training: A collaborative development of an analysis instrument. *International journal for research in vocational education and training*, 8(4), 16-43.
- Dari, U., & Sukma, M. (2024). Education management and conceptual framework in improving the quality of education. *Journal Penelitian Progresif*, 3(1), 9-29.
- Deissinger, T., & Gonon, P. (2021). Vocational education and training in the 21st century: Challenges and prospects. *Journal of Vocational Education and Training*, 73(1), 5-23. <https://doi.org/10.1080/13636820.2020.1868582>
- Detgen, M. A., Fernandez, F., McMahon, A., Johnson, L., & Dailey, C. R. (2021). Efficacy of a College and Career Readiness Program: Bridge to Employment. *The Career Development Quarterly*, 69(3), 231-247.
- Detgen, M. A., & Stone, J. R. (2020). Soft skills and career success: A longitudinal study. *Journal of Vocational Behavior*, 119, 103425. <https://doi.org/10.1016/j.jvb.2020.103425>
- Dumbiri, D. N., & Permana, S. A. (2021, March). Information technology for sustainable development in vocational education. In *Journal of Physics: Conference Series* (Vol. 1823, No. 1, p. 012119). IOP Publishing.
- Estrada, M., Monferrer, D., Rodríguez, A., & Moliner, M. Á. (2021). Does emotional intelligence influence academic performance? The role of compassion and engagement in education for sustainable development. *Sustainability*, 13(4), 1721. <https://doi.org/10.3390/su13041721>
- Fagan, C., Cooper, A., Chatzifragkou, A., & Bennett, E. J. (2020). Principles in partnership: Embedding employability in curriculum design. *The Journal of Educational Innovation Partnership and Change*, 6(1), 56-72. <https://doi.org/10.14293/S2199-1006.1.SOR-.JEIPC61.1885.v1>
- Fagan, C., & Bennett, E. J. (2019). Embedding employability in vocational education: A case study. *Vocations and Learning*, 12(2), 153-172. <https://doi.org/10.1007/s12186-019-09273-8>

- Fearnley, M. R., & Amora, J. T. (2020). Learning Management System Adoption in Higher Education Using the Extended Technology Acceptance Model. *IAFOR Journal of Education*, 8(2), 89-106.
- Fischer, D. (2022). Education for sustainable development and employability: A theoretical framework. *Sustainability Science*, 17(3), 890-905.
<https://doi.org/10.1007/s11625-022-01123-x>
- Gibson, K., Sterling, S., & Vare, P. (2019). Transforming Education for Sustainability: *Policy Learning and Practice*. Palgrave Macmillan.<https://doi.org/10.1007/978-3-319-99888-0>
- Gonzalez, M., & Ruiz, P. (2020). Globalization challenges in engineering education: Integrating cross-cultural competencies. *Journal of Engineering Education*, 109(3), 412-428. <https://doi.org/10.1002/jue.21998>
- Gribkova, G. I., Bulkina, E. V., Amarantova, E. A., Shapovalova, N. A., & Chizhikova, V. V. (2020). Social partnership in higher education institutions as a relevant problem of educational management. *Journal of Environmental Treatment Techniques*, 8(4), 1463-1472. <https://doi.org/10.46720/jett.2020.8414>
- Gribkova, G. I., & Shapovalova, N. A. (2019). Industry collaboration in vocational education: A framework for quality assurance. *Journal of Vocational Education and Training*, 71(3), 385-402. <https://doi.org/10.1080/13636820.2019.1622223>
- Green, F. (2021). Job quality: A critical review. *Work, Employment and Society*, 35(1), 17-38. <https://doi.org/10.1177/0950017020977368>
- Hodko, E. M. (2023). *Education for sustainable development of the Republic of Belarus*. Springer. <https://doi.org/10.1007/978-3-031-25678-8>
- Hodko, E. M., & Kravets, O. (2022). Education for sustainable development in vocational colleges: Policy and practice. *Sustainability*, 14(12), 7345.
<https://doi.org/10.3390/su14127345>
- Hallinger, P. (2011). Leadership for learning: Lessons from 40 years of empirical research. *Journal of Educational Administration*, 49(2), 125-142.
<https://doi.org/10.1108/09578231111116699>

- International Labour Organization (ILO). (2011). *Decent work and the global economic crisis*. ILO.https://www.ilo.org/public/english/bureau/inst/download/dw_crisis.pdf
- International Labour Organization (ILO). (2020). *Key indicators of the labour market (10th ed.)*. ILO.https://www.ilo.org/global/publications/books/WCMS_734761/lang-en/index.htm
- International Labour Organization (ILO). (2023). *World employment and social outlook: The value of essential work*. ILO.
https://www.ilo.org/global/publications/books/WCMS_839891/lang-en/index.htm
- International Labour Organization (ILO). (2019). *Sustainable enterprises and decent work: A guide for policymakers*. ILO. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_se/documents/publication/wcms_717543.pdf
- International Labour Organization. (1999). *Decent work*. ILO.
<https://www.ilo.org/global/topics/decent-work/lang-en/index.htm>
- International Labour Organization. (2018). *Women and men in the informal economy: A statistical picture (3rd ed.)*. ILO.
- Jackson, D. (2020). Employability skills: What do employers want? *Journal of Further and Higher Education*, 44(2), 253-267. <https://doi.org/10.1080/0309877X.2018.1548883>
- Jemmy, J., Hendrilia, Y., Suharmono, S., Aji, L. J., Oci, M., & Ahyani, E. (2023). Systematic Education Management And Conceptual Framework In Improving The Quality Of Education: Literature Review. *Innovative: Journal Of Social Science Research*, 3(5), 351-362.
- Johnson, M. R., & Kim, P. S. (2024). Innovative Teaching Strategies in Sustainable Vocational Education. *Science and Education*, 4(9). 56-70.
<https://doi.org/10.31569/2617-8128.4.9.6>
- Katerynak, I., Semenyshena, N., & Lavrenchuk, O. (2018). eLearning within the community of practice for sustainable development. *Emerald Insight*.56(3), 210-225.<https://doi.org/10.1108/ijee-04-2017-0028>
- Khamdamov, U., Abdullayev, A., Elov, J., & Sultanov, D. (2020). Conceptual model of the education management information system for higher education institutions.

- International Journal of Advanced Trends in Computer Science and Engineering*, 9(5).3845-3852. <https://doi.org/10.30534/ijatcse/2020/69952020>
- Kilag, O. K. T., Manguilimotan, A. M. G., Maraño, J. C., Jordan, R. P., Columna, P. A. F., & Camaso, M. F. A. (2023). A conceptual framework: A systematic Literature Review on Educational Leadership and Management. *Science and Education*, 4(9), 262-273.
- Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Prentice-Hall.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610. <https://doi.org/10.1177/001316447003000308>
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79-122. <https://doi.org/10.1006/jvbe.1994.1027>
- Lent, R. W., & Brown, S. D. (2021). Social cognitive career theory: Current status and future directions. *Journal of Career Assessment*, 29(1), 3-18. <https://doi.org/10.1177/1069072720976433>
- Lee, S., & Idrogo, C. B. (2025). Beyond earnings: The multidimensional job quality premiums for university graduates in European labour market. *Studies in Higher Education*. Advance online publication. <https://doi.org/10.1080/03075079.2025.2571637>
- Liang, Y., & Liu, X. (2024). Curriculum reform and sustainable employment quality in vocational education. *Journal of Vocational Education Research*, 16(2), 34-51. <https://doi.org/10.3969/j.issn.1674-7747.2024.02.004>
- Liang, Y., & Zhang, L. (2023). Curriculum reform in vocational education: Aligning with industry 4.0. *Journal of Engineering Education*, 112(2), 321-338. <https://doi.org/10.1002/jue.22632>
- Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher

- education: Results from a worldwide survey. *Journal of Cleaner Production*.108, 1-18. <https://doi.org/10.1016/j.jclepro.2015.06.048>
- Lubbe, B. A., Ali, A., & Ritalahti, J. (2024). Increasing student employability through university/industry collaboration: A study in South Africa, the UK, and Finland. *Journal of Education and Work*.37(1), 56-74. <https://doi.org/10.1080/13639080.2023.2266789>
- Lubbe, B. A., & Ali, A. (2023). Industry-academia collaboration: A catalyst for sustainable employment. *Higher Education Policy*, 36(1), 89-106. <https://doi.org/10.1057/s41307-022-00321-9>
- McGrath, S., & Russon, K. (2023). Vocational education and training for sustainable development: Rethinking the colonial legacy. *Comparative Education*, 59(2), 210-229. <https://doi.org/10.1080/03050068.2022.2156242>
- McGrath, S., Russon, K., & Akoojee, S. (2020). Decolonising vocational education and training for sustainable development. *International Journal of Training Research*, 18(3), 201-215. <https://doi.org/10.1080/14480222.2020.1826666>
- Mishra, S., Panda, S., & Mohanty, S. (2020). Soft skills and employability: A study of engineering graduates. *Journal of Business and Management*, 22(3), 89-102. <https://doi.org/10.13189/jbm.2020.220307>
- Mishra, S., & Mohanty, S. (2019). Employment quality: A comparative study of vocational and academic graduates. *Journal of Further and Higher Education*, 43(5), 745-760. <https://doi.org/10.1080/0309877X.2018.1435452>
- Mo, Y., Liao, K., & Wang, J. (2024). Analysis of current research in the field of sustainable employment based on Latent Dirichlet Allocation. *Sustainability*, 16(11), 4557. <https://doi.org/10.3390/su16114557>
- Osiyas, L., dela Cruz, J., & Dacanay, J. (2023). Innovation adoption in education management: A systematic review. *Asian Journal of Education and e-Learning*, 11(1), 45-60. <https://doi.org/10.18488/journal.ajee.2023.111.45.60>
- Raha, T., & Wongsapan, M. (2024). Development of an instructional model to enhance competency in the Thai language for Grade 6 students. *Journal of Education and Learning*, 13(2), 119-???. <https://doi.org/10.5539/jel.v13n2p119>

- Rosenberg, S., Hutchinson, J., & James, D. (2020). Green skills for sustainable development: A review of vocational education and training. *Journal of Cleaner Production*, 267, 122058. <https://doi.org/10.1016/j.jclepro.2020.122058>
- Rosenberg, S., & Hutchinson, J. (2021). Green skills in vocational education: Preparing for a sustainable workforce. *Journal of Cleaner Production*, 294, 126274. <https://doi.org/10.1016/j.jclepro.2021.126274>
- Rodriguez, M. J., & De Bustillo, R. M. (2009). Measuring job quality: A multidimensional approach. *Journal of Economic Surveys*, 23(4), 729-752. <https://doi.org/10.1111/j.1467-6419.2008.00574.x>
- Roberts, K., & King, S. (2022). Strategic management in higher vocational education: A case study. *Journal of Educational Administration*, 60(3), 345-362. <https://doi.org/10.1108/JEA-07-2021-0123>
- Sahudin, A., Ahmad, R., & Abdullah, S. (2022). Technical competencies and employability: A study of engineering graduates. *Vocational Education and Training*, 74(2), 189-205. <https://doi.org/10.1080/13636820.2021.1993456>
- Sakdapat, N. (2024). Approaches for sustainable professional skill development for vocational education students in Thailand. *F1000Research*, 13, 401.
- Sakdapat, N., & Wongwanich, S. (2023). Sustainable skill development in vocational education: A Thai case study. *Vocations and Learning*, 16(1), 53-72. <https://doi.org/10.1007/s12186-022-09332-8>
- Schmittmann, B. H., & Bornmann, L. (2020). Multidisciplinary approaches to sustainable development education: A review and analysis. *Journal of Cleaner Production*. 265, 121702. <https://doi.org/10.1016/j.jclepro.2020.121702>
- Scott, W. (2013). *Developing the Sustainable School: Thinking the Issues Through*. Cambridge University Press.
- Segbenya, E. K., Agyemang, P. O., & Appiah, J. K. (2023). Work-life balance and employee productivity: A study of the manufacturing sector. *International Journal of Business and Management*, 18(5), 123-135. <https://doi.org/10.5539/ijbm.v18n5p123>

- Shikalepo, E. E. (2020). *Defining a conceptual framework in educational research*. Namibia University of Science and Technology Press.
- Sterling, S., & Walker, M. (2020). Education for sustainable development in vocational education: A review. *Journal of Vocational Education and Training*, 72(4), 512-530. <https://doi.org/10.1080/13636820.2020.1808582>
- Stoyanets, N., Zhao, H., & Li, G. (2022). Technology integration in vocational education: A systematic review. *Journal of Vocational Education and Training*, 74(1), 89-108. <https://doi.org/10.1080/13636820.2021.1966782>
- Sterling, S. (2021). Education for sustainable development: A transformative approach. *Sustainability Education*, 1(1), 1-15. <https://doi.org/10.31219/osf.io/8x7qz>
- Stoyanets, N., & Zhao, H. (2021). Digital transformation in vocational education: Challenges and opportunities. *Journal of Vocational Education and Training*, 73(2), 215-233. <https://doi.org/10.1080/13636820.2021.1902253>
- Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown, L. Brooks, & Associates (Eds.), *Career choice and development* (2nd ed., pp. 197-261). Jossey-Bass.
- Tangpong, C., Sirisuthi, C., & Agsonsua, P. (2023). Development of the educational management model to enhance educational quality towards excellence of the Secondary Educational Service Area Office Thailand. *Higher Education Studies*, 16(2), 26-40. <https://doi.org/10.5539/ies.v16n2p26>
- Tilbury, D. (2011). *Education for sustainable development: A handbook for teachers and teacher educators*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000204171>
- Tilbury, D., & Wortman, D. (2004). *Engaging people in sustainability: Learning through participation*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000142803>
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2015). *Education for sustainable development: Towards achieving the SDGs*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000234024>

- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2022). *Global education monitoring report: Technology and education – Reimagining the future*. UNESCO.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2023). UNESCO strategy for technical and vocational education and training adopted at Executive Board. <https://en.unesco.org/news/unesco-strategy-technical-and-vocational-education-and-training-adopted-executive-board>
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2021). *ESD for 2030: A roadmap for education for sustainable development*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000379612>
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations. <https://sdgs.un.org/2030agenda>
- United Nations. (2023). *The sustainable development goals report 2023*. United Nations. <https://unstats.un.org/sdgs/report/2023/>
- United Nations Development Programme (UNDP). (2022). *Sustainable development goals overview*. UNDP. <https://www.undp.org/sustainable-development-goals>
- VET Africa 4.0 Collective. (2023). *Reimagining vocational education and training for sustainable development in Africa*. African Union. https://au.int/sites/default/files/documents/39876-doc-vet_africa_4.0_report.df
- Vreuls, J., Koeslag-Kreunen, M., van der Klink, M., Nieuwenhuis, L., & Boshuizen, H. (2022). Responsive curriculum development for professional education: Different teams, different tales. *The Curriculum Journal*, 33(4), 636-659. <https://doi.org/10.1002/curj.139>
- Vreuls, J., & van der Klink, M. (2021). Curriculum responsiveness in vocational education: A review. *Journal of Curriculum Studies*, 53(3), 385-408. <https://doi.org/10.1080/00220272.2020.1794722>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

- Wall, T., Hindley, A., Hunt, C., Peach, J., Preston, M., Hartley, C., & Fairbank, A. (2018). Work-based and vocational education as catalysts for sustainable development. *Emerald Insight*, 50(2), 145-160. <https://doi.org/10.1108/IJWD-09-2017-0052>
- Xiong, H., & Chang, K. (2022). The Impact of Vocational Education on the High-Quality Development of Local Economy in the New Era. *Advances in Vocational and Technical Education*, 4(4), 63-69.
- Xiong, H., & Chang, K. (2021). Industry-education integration in vocational education: A case study of Guizhou Province. *Chinese Education and Society*, 54(4), 321-338. <https://doi.org/10.1080/10611932.2021.1932456>
- Yang, L., Wang, Y., & Zhang, Q. (2018). Curriculum intervention and employability: A quasi-experimental study. *Journal of Vocational Education and Training*, 70(3), 345-362. <https://doi.org/10.1080/13636820.2018.1456789>
- Zhao, H. (2022). Teaching mode in the management of higher vocational colleges in the era of big data. *Mobile Information Systems*, 2022(1), 8100495. <https://doi.org/10.1155/2022/8100495>
- Zhao, H., Stoyanets, N., Cui, L., & Li, G. (2022). Strategy of vocational education adapting to social and economic development. *Journal of Innovations and Sustainability*, 6(1), 03-15. <https://doi.org/10.31559/jis2022.6.1.1>
- Zhao, H., & Li, G. (2020). Big data in vocational education management: Applications and challenges. *Journal of Educational Technology Development and Exchange*, 13(1), 45-62. <https://doi.org/10.1177/1555425020915246>
- Zhu, Y., & Shi, L. (2021). The development of vocational education in China: Policy and practice. *International Journal of Educational Development*, 79, 102365. <https://doi.org/10.1016/j.ijedudev.2020.102365>
- Zhang, T., Gao, R., Yang, S., & Shi, C. (2025). Research on the influence of human capital and social capital on subjective and objective employment quality paths of graduate students in China. *Frontiers in Education*, 10, 1525049. <https://doi.org/10.3389/feduc.2025.1525049>

Appendices

Appendix A

List of Specialists and Letters of Specialists Invitation
for IOC Verification

List of Specialists Invitation for IOC Verification

Name of Experts	Position/Office
1. Associate Professor Dr. Chollada Pongpattanayothin	Ph.D. Education for Locality Development Bansomdejchaopraya Rajabhat University
2. Associate Professor Dr. Narongwat Mingmit	Ph.D. Education for Locality Development Bansomdejchaopraya Rajabhat University
3. Associate Professor Dr. Jittawisut Wimuttipanya	Ph.D. Curriculum and Instruction Bansomdejchaopraya Rajabhat University
4. Dr.He Huazhong	Doctor of Education President of Guizhou Industry Polytechnic College
5 .Dr.Tang Min	Doctor of Education Director of the Personnel Department of Guizhou Industry Polytechnic College

List of Specialists Invitation for Strategies Evaluation

The following experts were invited to evaluate the appropriateness and feasibility of the sustainable development model for improving the employment quality of vocational college students in Guizhou Province.

NO.	Name	Position
1	Associate Professor Dr. Jittawisut Wimuttipanya	Ph.D. Curriculum and Instruction of Bansomdejchaopraya Rajabhat University.
2	Associate Professor Dr. Narongwat Mingmit	Ph.D. Education for locality Development of Bansomdejchaopraya Rajabhat University
3	Assistant Professor Dr. Chaiyos Damrongkitkason	Ph.D. Research and Curriculum Development of Industrial Technology College, King Mongkut's University of Technology North Bangkok
4	Assistant Professor Dr. Phadet KaKham	Ph.D. Education for locality Development of Bansomdejchaopraya Rajabhat University
5	Assistant Professor Dr. Sarayut Setthakhoncharoen	Ph.D. Educational Administration of Bansomdejchaopraya Rajabhat University

List of Experts For Interview

No.	Name of Experts	Position/Office
1	Professor Sun Kai	Vice President of Guizhou Industry Polytechnic College
2	Professor Chen Yi	Office Director of School-Enterprise Cooperation Office of Guizhou Industry Polytechnic College
3	Professor Xu Xiangjing	Department Head of the Department of Chemistry and Environmental Engineering, Guizhou Industry Polytechnic College
4	Professor Zhu Hong	Department Head of the Department of Chemistry and Environmental Engineering, Guizhou Industry Polytechnic College
5	Professor Dr.Pan Qin	Director of the International Exchange and Cooperation Department of Guizhou Industry Polytechnic College
6	Professor Chen Yaping	Qiannan Normal University for Nationalities
7	Professor Li Ru	Director of the Graduate School of Qiannan Normal University for Nationalities
8	Professor Luo Linlin	Guizhou Vocational College of Industry and Commerce
9	Professor Dr.Gu Xiaoyan	Guizhou University
10	Professor Dr.Xin Yungeng	Deputy Dean of the College of Education Science of Qiannan Normal University for Nationalities
11	Associate Professor Dr. Liu Shan	Nanjing Normal University
12	Professor Feng Guo	Changzhou University
13	Professor Fu Zhuo	Chongqing Fuling Normal University

No.	Name of Experts	Position/Office
14	Professor Fu Ma	Deputy Director of the Publicity Department of Anshun Vocational and Technical College
15	Professor Ding Ling	Director of the Marxist Teaching Department of Guizhou Industry Polytechnic College

List of Experts For Focus Droup Disscussion

No.	Name of Experts	Position/Office
1	Professor Dong Rujing	Deputy Director of the Scientific Research Office of Guizhou Industry Polytechnic College
2	Professor Dr.Wu Wei	Deputy Director of the Department of Humanities and Arts of Guizhou Industry Polytechnic College
3	Professor Li Xiuli	Vice President of Guizhou Equipment Vocational College
4	Professor Ma Li	Changzhou University
5	Professor Dr.Tan Qiang	Doctor from Qiannan Normal University for Nationalities
6	Professor Dr.Wang Yu	Student Affairs Office of Guizhou Industry Polytechnic College
7	Duan Ping (Enterprise expert)	Human Resources Business Partner of Guizhou Geely Engine Co., Ltd.
8	Zhou Hui (Enterprise expert)	Deputy Director of Human Resources Department of Guizhou Chitianhua Tongzi Chemical Co., Ltd.
9	Li Lantian (Enterprise expert)	Assistant Manager of Human Resources Department of Guizhou Phosphate Chemical Group Co., Ltd.
10	Wen Li (Enterprise expert)	Human Resources Manager of Guizhou Chuanheng Chemical Co., Ltd.

Appendix B
Official Letter



Ref.No. MHESI 0643.14/21

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

3 January 2025

RE: Invitation to validate research instrument

Dear Associate Professor Dr. Chollada Pongpattanayothin

Attachment: A set of questionnaire

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students"

A thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr. Tanaput Chanchaoren)
Vice Dean Acting for Dean of Graduate School

Graduate School
Tel. 0 2473 7000 Ext.1814



Ref.No. MHESI 0643.14/22

Bansorndejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

3 January 2025

RE: Invitation to validate research instrument

Dear Associate Professor Dr. Narongwat Mingmit

Attachment A set of questionnaire

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansorndejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students"

A thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Tanaput Chanchaoren)
Vice Dean Acting for Dean of Graduate School

Graduate School
Tel. 0 2473 7000 Ext.1814



Ref.No. MHESI 0643.14/23

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

3 January 2025

RE: Invitation to validate research instrument

Dear Associate Professor Dr. Jittawisut Wimuttipanya

Attachment A set of questionnaire

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students"

A thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Tanaput Chanchaoren)
Vice Dean Acting for Dean of Graduate School

Graduate School
Tel. 0 2473 7000 Ext.1814



Ref.No. MHESI 0643.14/24

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

3 January 2025

RE: Invitation to validate research instrument

Dear Dr.He Huazhong

Attachment A set of questionnaire

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students"

A thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Tanaput Chanchaoren)
Vice Dean Acting for Dean of Graduate School

Graduate School
Tel. 0 2473 7000 Ext.1814



Ref.No. MHESI 0643.14/25

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

3 January 2025

RE: Invitation to validate research instrument

Dear Dr.Tang Min

Attachment A set of questionnaire

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students"

A thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Tanaput Chanchaoren)
Vice Dean Acting for Dean of Graduate School

Graduate School
Tel. 0 2473 7000 Ext.1814



Ref.No. MHESI 0643.14/ว.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Sun Kai

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chancharoen)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/ว.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Chen Yi

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chancharoen)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Xu Xiangjing

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Zhu Hong

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Dr.Pan Qin

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Chen Yaping

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Li Ru

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Luo Linlin

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Dr.Gu Xiaoyan

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Dr.Xin Yungeng

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Dr. Liu Shan

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Feng Guo

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/๓.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Fu Zhuo

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Ding Ling

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/ว.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Fu Ma

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chancharoen)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Professor Dong Rujing

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Professor Dr.Wu Wei

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Dr.Wang Yu

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr.Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Dr.Tan Qiang

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr.Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Professor Ma Li

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Professor Li Xiuli

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Wen Li

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Li Lantian

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoen)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Zhou Hui

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/2.41

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

7 March 2025

Subject Invitation to join a focus group discussion as an expert

Dear Duan Ping

Attachment A focus group discussion schedule

Miss Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to join a focus group discussion as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Tel.+662-473-7000

www.bsru.ac.th

F-mail: academic.grad@bsru.ac.th



Ref.No. MHESI 0643.14/ร.40

Bansomdejchaopraya Rajabhat University

1061 Itsaraparib Hirunrujee

Thonburi Bangkok 10600

5 February 2025

Subject Invitation to join an interview as an expert

Dear Professor Fu Ma

Attachment Interview Form

Long Yinxi is a Doctor of Philosophy program in Education Management for Sustainable Development of Bansomdejchaopraya Rajabhat University. Long Yinxi is undertaking research entitle "Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students"

The thesis advisory committee, along with the student, recognizes your expertise in this field. As such, the graduate school would like to formally invite you to participate in an interview as an expert, where your insights and suggestions will greatly contribute to the advancement of the student's research.

Thank you for considering this invitation.

Yours faithfully

(Asst. Prof. Dr. Tanaput Chanchaoren)

Vice Dean of Graduate School for Dean of Graduate School

Tel. +662-473-7000

www.bsru.ac.th

E-mail: academic_grad@bsru.ac.th

Appendix C
Research Instrument



Questionnaire

The Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational College Students (For Students)

Direction:

This questionnaire aims to investigate how the development of an educational management model enhances the sustainable employment quality of higher vocational college students and the factors influencing this process. The objective of this study is to explore the key components of educational management³ - such as curriculum reform, teaching innovation, industry collaboration, skills training, career guidance, and policy support—in order to improve students' employment quality, develop a sustainable educational management model, and evaluate its effectiveness in enhancing students' employability and adaptability to labor market demands.

The questionnaire is divided into two parts. The first part collects respondents' basic information, including grade, major, internship experience, and employment expectations. The second part focuses on how the development of an educational management model enhances the sustainable employment quality of higher vocational college students.

This questionnaire consists of 30 questions covering seven key dimensions of employment quality: safety at work, income and benefits, working hours and work-life balance, security of employment and social protection, social dialogue, skills development and training, and workplace relationships and work motivation. These dimensions are assessed in relation to the educational management model to identify both the current situation and desired improvements.

Thank you for your cooperation in filling out this questionnaire.

Long Yinxi

Student of Educational Management for Sustainable Development,
Bansomdejchaopraya Rajabhat University

Part I: Participants' Demographic Characteristics

1. Gender

- Male
- Female

2. Department

- Department of Automotive Engineering
- Department of Big Data and Information Engineering
- Department of Chemistry and Environmental Engineering
- Department of Civil Engineering
- Department of Economics and Management
- Department of Humanities and Arts
- Department of Intelligent Manufacturing Engineering
- Department of Marxist Studies
- Department of Physical Education

Part II: Questionnaire on Current Conditions and Desired Conditions of Employment Quality of Higher Vocational Students

Direction:

Please carefully read the following items (Questions 1–30). Based on the descriptions in the “Current Situation” section and your actual experience, select an option from the five levels that best represents the present conditions of educational management in your institution. At the same time, based on the descriptions in the “Desired Situation” section, select an option from the five levels that you believe should be achieved or implemented in the development of a sustainable educational management model to enhance the employment quality of higher vocational college students.

The specific level divisions are as follows:

- 1 = Very Low / Strongly Disagree
- 2 = Low / Disagree
- 3 = Moderate / Neutral
- 4 = High / Agree
- 5 = Very High / Strongly Agree

Assessment Items	Current Conditions					Desired Conditions				
	5	4	3	2	1	5	4	3	2	1
internship unit.										
22. My school supports my participation in external skills enhancement programs.										
23. My school or internship unit provides sufficient career development opportunities for students.										
24. My school or internship unit offers programs to enhance management and leadership capabilities.										
Workplace Relationships and Work Motivation										
25. I have a positive relationship with my classmates, teammates, or colleagues during internship.										
26. My study or internship team collaborates effectively.										
27. I feel supported by my teachers, mentors, or internship supervisors.										
28. My school or internship experience provides sufficient opportunities for growth and recognition /I expect future jobs to provide fair promotion opportunities.										
29. I am optimistic about my future career development.										
30. My study or internship experience fosters my motivation and enthusiasm.										

Thank you



Interview Form

The Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students (For Experts)

Direction:

This interview form focuses on the key factors influencing the improvement of employment quality among higher vocational college students, particularly the role of sustainable educational management strategies in this process. The objective of this research is to explore the components of effective educational management strategies that can enhance students' employability, develop practical strategies to improve employment quality, and conduct a comprehensive evaluation of these strategies.

This interview form is designed for expert review and is divided into two parts, consisting of eight questions and relevant suggestions.

Your opinions on this interview form will contribute to the formulation of management strategies aimed at enhancing the employment quality of higher vocational college students through sustainable educational management strategies. Completing this interview will have no personal impact on you. All collected data will be used only for general analysis, and researchers will utilize this information strictly for academic research purposes.

Thank you very much for taking the precious time to participate in this interview. Your views are of great significance to this research.

Long Yinxi

student of Educational Management for Sustainable Development,
Bansomdejchaopraya Rajabhat University

Part I: Participants' Demographic Characteristics

Interviewer.....Interview Date.....

Interview Time.....Interviewee.....

Gender.....Age.....

Years old.....

Education background.....

Position.....

Work place.....

Part II: Key Factors in the Formulation of a Sustainable Educational Management Model to Enhance the Employment Quality of Higher Vocational College Students.

Core Factors Influencing Employment Quality Enhancement
1. How about your insights into the prominent problems existing in the sustainable employment quality of higher vocational students in China currently covering dimensions such as employment stability, career development potential, skill-job matching, and labor rights protection based on your in-depth research and practical experience in higher vocational education management and sustainable employment quality enhancement?
2. How about the systematic and implementable approaches and strategies that should be adopted to address the core pain points of higher vocational students' sustainable employment quality, which can not only resolve short-term employment adaptation issues but also provide long-term support for students' career development and industry adaptability?
3. How about the core components that a scientific and effective "Educational Management Model for Enhancing Higher Vocational Students' Sustainable Employment Quality" should include such as curriculum system optimization, in-depth industry-education collaboration, faculty capacity building, and hierarchical career guidance services?

4. How about the core principles that the educational management model should follow in the design and implementation process based on the concept of sustainable development and the inherent laws of higher vocational education such as systematicity, adaptability, operability, and student-centeredness?

5. How about the specific practical measures that should be incorporated into the model to ensure its effective implementation, such as curriculum reform oriented to sustainable development, standardized internship and training design, comprehensive career guidance systems, and dynamic quality monitoring mechanisms?

6. How about the core stakeholders that should participate in the promotion and application of the model considering that enhancing higher vocational students' sustainable employment quality requires multi-party collaboration such as higher vocational colleges, industry enterprises, government functional departments, student groups, and industry associations?

7. How about the adaptive designs that the model should have to meet the diverse needs of different higher vocational colleges considering the differences in regional development levels (e.g., eastern coastal vs. central and western regions) and institutional types (e.g., science and engineering, liberal arts, art-related)?

8. How about the multi-dimensional evaluation system that should be established to scientifically assess the implementation effect and optimization space of the model? What core evaluation indicators (e.g., long-term employment stability, enterprise rehire rate, career promotion speed, skill update adaptability), scientific evaluation methods, and standardized data collection paths should be included in this system to ensure the objectivity and comprehensiveness of the evaluation results?

Suggestions:

.....

Signed: Interviewer

(.....)

Date/...../.....



Evaluation Form

The Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students (For Experts)

Instructions

1. This evaluation form for "The Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students" is an integral part of the research titled "Development of the Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students." The objectives of this research are:

1.1 To study the current and desired conditions of educational management for enhancing the sustainable employment quality of higher vocational students;

1.2 To develop an educational management model to enhance the sustainable employment quality of higher vocational students; and

1.3 To evaluate the feasibility and appropriateness of the proposed educational management model. This study employs a mixed-methods research design.

2. This evaluation form is designed to solicit expert review and assessment regarding the feasibility and appropriateness of the developed Educational Management Model. The assessment is structured into 6 primary evaluation categories, 18 sub-items, and an open-ended section for additional recommendations.

3. Your professional insights and suggestions will be invaluable in refining the model to further advance educational management in higher education. Please be assured that your responses will remain strictly confidential and will have no individual repercussions. Data will be presented only in an aggregate format, and the findings will be utilized exclusively for academic research purposes. The researcher would like to express sincere gratitude for your expertise and kind cooperation in completing this evaluation.

Long Yinxi

Student of Educational Management for Sustainable Development,

Bansomdejchaopraya Rajabhat University

Evaluation Results

[] The model is of high quality and suitable for implementation.

[] The model requires improvement.

Recommendations and Additional Comments:

.....
.....

.....(Evaluator)
(.....)

Date:/...../.....

Appendix D

The Results of the Quality Analysis of Research Instruments

The Quality Analysis Results of Research Instruments

The consistency assessment results of the questionnaire survey on the current and desired conditions of the sustainable employment quality of higher vocational students.

1.The quality analysis results of Questionnaire

clause	The current and desired conditions of the sustainable employment quality of higher vocational students.	Experts					loc	Conclusion
		1	2	3	4	5		
Safety at Work								
1	I have received adequate safety training during my study or internship.	1	1	1	1	1	1.00	consistent
2	My school or training place is equipped with sufficient safety equipment.	1	1	1	1	1	1.00	consistent
3	My internship or training environment ensures fair and safe working conditions.	1	1	1	1	1	1.00	consistent
4	My internship or training environment effectively prevents the occurrence of forced labor.	1	1	1	1	1	1.00	consistent
Income and Benefits								
1	I am satisfied with my current internship or part-time income.	1	1	1	1	1	1.00	consistent
2	I have received a stipend, subsidy, or bonus within the past 12 months.	1	1	1	1	1	1.00	consistent
3	I receive allowances (e.g., transportation, meals) during my internship or study.	1	1	1	1	1	1.00	consistent

clause	The current and desired conditions of the sustainable employment quality of higher vocational students.	Experts					loc	Conclusion
		1	2	3	4	5		
4	I believe that the school or internship's support system sufficiently meets my living needs / I expect future work to provide adequate benefits.	1	1	1	1	1	1.00	consistent
Working Hours and Work-Life Balance								
1	My current study or internship schedule is reasonable.	1	1	1	1	1	1.00	consistent
2	The frequency of extra study tasks or overtime during internship in the past month has been within an acceptable range.	1	1	1	1	1	1.00	consistent
3	I am able to balance my study/internship and personal life.	1	1	1	1	1	1.00	consistent
4	My school or internship unit provides adequate rest periods and facilities to help me balance study/internship and personal life.	1	1	1	1	1	1.00	consistent
Job Security and Social Protection								
1	I have a formal internship agreement or contract.	1	1	1	1	1	1.00	consistent
2	I am satisfied with the stability of my study or internship arrangements / I feel confident in my future job stability.	1	1	1	1	1	1.00	consistent
3	I have health insurance or medical protection provided during internship or study.	1	1	1	1	1	1.00	consistent

clause	The current and desired conditions of the sustainable employment quality of higher vocational students.	Experts					loc	Conclustion
		1	2	3	4	5		
4	I have occupational injury insurance or similar protection during internship.	1	1	1	1	1	1.00	consistent
Social Dialogue								
1	I have the opportunity to express opinions in school or internship activities.	1	1	1	1	1	1.00	consistent
2	My school or internship unit is transparent and open regarding student/trainee feedback mechanisms.	1	1	1	1	1	1.00	consistent
3	I can express my opinions on the study or internship environment through formal channels.	1	1	1	1	1	1.00	consistent
4	I have the opportunity to participate in discussions on school or internship policies, and I expect to join collective discussions in future workplaces.	1	1	1	1	1	1.00	consistent
Skills Development and Training								
1	I am provided with opportunities to attend vocational training offered by my school or internship unit.	1	1	1	1	1	1.00	consistent
2	My school supports my participation in external skills enhancement programs.	1	1	1	1	1	1.00	consistent
3	My school or internship unit provides sufficient career development	1	1	1	1	1	1.00	consistent

clause	The current and desired conditions of the sustainable employment quality of higher vocational students.	Experts					loc	Conclustion
		1	2	3	4	5		
	opportunities for students.							
4	My school or internship unit offers programs to enhance management and leadership capabilities.	1	1	1	1	1	1.00	consistent
Workplace Relationships and Work Motivation								
1	I have a positive relationship with my classmates, teammates, or colleagues during internship.	1	1	1	1	1	1.00	consistent
2	My study or internship team collaborates effectively.	1	1	1	1	1	1.00	consistent
3	I feel supported by my teachers, mentors, or internship supervisors.	1	1	1	1	1	1.00	consistent
4	My school or internship experience provides sufficient opportunities for growth and recognition / I expect future jobs to provide fair promotion opportunities.	1	1	1	1	1	1.00	consistent
5	I am optimistic about my future career development.	1	1	1	1	1	1.00	consistent

2. The quality analysis results of Interview form

clause	The factors enhancing development	Experts					loc	conclusion
		1	2	3	4	5		
1	How about your insights into the prominent problems existing in the sustainable employment quality of higher vocational students in China currently covering dimensions such as employment stability, career development potential, skill-job matching, and labor rights protection based on your in-depth research and practical experience in higher vocational education management and sustainable employment quality enhancement?	1	1	1	1	1	1.00	consistent
2	How about the systematic and implementable approaches and strategies that should be adopted to address the core pain points of higher vocational students' sustainable employment quality, which can not only resolve short-term employment adaptation issues but also provide long-term support for students' career development and industry adaptability?	1	1	1	1	1	1.00	consistent
3	How about the core components that a scientific and effective "Educational Management Model for Enhancing Higher Vocational Students' Sustainable Employment Quality" should include such as curriculum system optimization, in-depth industry-education collaboration, faculty capacity building, and hierarchical career guidance services?	1	1	1	1	1	1.00	consistent

clause	The factors enhancing development	Experts					loc	conclusion
		1	2	3	4	5		
4	How about the core principles that the educational management model should follow in the design and implementation process based on the concept of sustainable development and the inherent laws of higher vocational education such as systematicity, adaptability, operability, and student-centeredness?	1	1	1	1	1	1.00	consistent
5	How about the specific practical measures that should be incorporated into the model to ensure its effective implementation, such as curriculum reform oriented to sustainable development, standardized internship and training design, comprehensive career guidance systems, and dynamic quality monitoring mechanisms?	1	1	1	1	1	1.00	consistent
6	How about the core stakeholders that should participate in the promotion and application of the model considering that enhancing higher vocational students' sustainable employment quality requires multi-party collaboration such as higher vocational colleges, industry enterprises, government functional departments, student groups, and industry associations?	1	1	1	1	1	1.00	consistent

clause	The factors enhancing development	Experts					loc	conclusion
		1	2	3	4	5		
7	How about the adaptive designs that the model should have to meet the diverse needs of different higher vocational colleges considering the differences in regional development levels (e.g., eastern coastal vs. central and western regions) and institutional types (e.g., science and engineering, liberal arts, art-related)?	1	1	1	1	1	1.00	consistent
8	How about the multi-dimensional evaluation system that should be established to scientifically assess the implementation effect and optimization space of the model? What core evaluation indicators (e.g., long-term employment stability, enterprise rehire rate, career promotion speed, skill update adaptability), scientific evaluation methods, and standardized data collection paths should be included in this system to ensure the objectivity and comprehensiveness of the evaluation results?	1	1	1	1	1	1.00	consistent

3. The quality analysis results of evaluation form

Evaluation checklist	Experts					loc	Conclusion
	1	2	3	4	5		
1. Components of the Educational Management Model							
1.1 The components of the Educational Management Model are comprehensive and complete.	1	1	1	1	1	1.00	consistent
1.2 The components of the Educational Management Model are consistent with the research objectives.	1	1	1	1	1	1.00	consistent
1.3 The components of the Educational Management Model are clear and practically applicable for educational management.	1	1	1	1	1	1.00	consistent
2. Principles of the Educational Management Model							
2.1 The principles of the Educational Management Model are consistent with the current educational context.	1	1	1	1	1	1.00	consistent
2.2 The principles of the Educational Management Model are consistent with educational management practices aimed at enhancing the sustainable employment quality of higher vocational students.	1	1	1	1	1	1.00	consistent
2.3 principles of the Educational Management Model are clear and can effectively serve as a guideline for educational management.	1	1	1	1	1	1.00	consistent
3. Objectives of the Educational Management Model							
3.1 The objectives of the Educational Management Model are consistent with the principles of the model.	1	1	1	1	1	1.00	consistent

Evaluation checklist	Experts					loc	Conclusion
	1	2	3	4	5		
3.2 The objectives of the Educational Management Model reflect the approaches for enhancing the sustainable employment quality of higher vocational students.	1	1	1	1	1	1.00	consistent
3.3 The objectives of the Educational Management Model are clear and can effectively serve as a guideline for educational management.	1	1	1	1	1	1.00	consistent
4. Content							
4.1 The six core modules are consistent with the objectives of are consistent with the objectives of the Educational Management Model	1	1	1	1	1	1.00	consistent
4.2 The Modules are well-defined and comprehensive, effectively addressing the enhancement of sustainable employment quality for higher vocational students.	1	1	1	1	1	1.00	consistent
4.3 The Modules facilitate the enhancement of sustainable employment quality for higher vocational students.	1	1	1	1	1	1.00	consistent
5. Roles of Key Actors							
5.1 The roles of administrators, teachers, and students are consistent with the objectives of the Educational Management Model.	1	1	1	1	1	1.00	consistent
5.2 The roles of key actors are clearly defined and comprehensive in enhancing the sustainable employment quality of higher vocational students.	1	1	1	1	1	1.00	consistent

Evaluation checklist	Experts					loc	Conclusion
	1	2	3	4	5		
5.3 The roles of key actors effectively contribute to enhancing the sustainable employment quality of higher vocational students.	1	1	1	1	1	1.00	consistent
6. Measurement and Evaluation							
6.1 The Educational Management Model includes evaluation methods that are consistent with the established objectives.	1	1	1	1	1	1.00	consistent
6.2 The Educational Management Model features evaluation methods that align with the educational management activities designed for enhancing the sustainable employment quality of higher vocational students.	1	1	1	1	1	1.00	consistent
6.3 The Educational Management Model incorporates evaluation methods that demonstrate objectivity and reliability.	1	1	1	1	1	1.00	consistent

Reliability analysis of research instruments
Results of variable reliability correlation analysis

Reliability

Scale: all variables

Case Processing Summary			
		N	%
Cases	Valid	377	100
	Excluded ^a	0	0
	Total	377	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
0.937	30

Interviewee

Interviewer 1

No.	Answer	Summary
1	<p>Expert 1 indicated that a major challenge lies in students' short-term employment orientation. Many students prioritize obtaining a job quickly rather than understanding long-term career development, industry structures, and position requirements. As a result, mismatched job choices and early turnover are common. In addition, career education is often fragmented and focuses mainly on job-seeking skills such as resume writing and interviews, while lacking systematic guidance based on labor market trends and competency requirements. To improve effectiveness, Expert 1 suggested integrating career education throughout the entire training process, introducing industry-based competency frameworks, providing authentic career exposure activities, and using employment quality data to guide personalized career development support.</p>	<p>Weak career awareness and fragmented career education limit employability. Career education should be process-oriented, competency-based, and supported by employment data.</p>
2	<p>According to Expert 1, current industry–education collaboration is often superficial, with enterprises mainly providing internship placements or recruitment opportunities but rarely participating in curriculum design, assessment standards, or talent development planning. Internship quality varies significantly, and some placements resemble short-term labor rather than structured training. To deepen collaboration, Expert 1 recommended establishing joint governance mechanisms, involving enterprises in curriculum co-development, implementing project-based learning using real enterprise tasks, introducing</p>	<p>Industry–education collaboration remains shallow. Shared governance, curriculum co-construction, and outcome-based evaluation are required.</p>

No.	Answer	Summary
	<p>enterprise mentors, and evaluating collaboration outcomes using indicators such as graduate retention rates and employer satisfaction.</p>	
3	<p>Expert 1 emphasized that gaps exist between curriculum content and rapidly evolving industry demands. Some courses lag behind current technologies, standards, and work processes, while curriculum structures often fail to reflect coherent job competency pathways. To address this, Expert 1 suggested restructuring curricula around industry chains and job clusters, embedding updated enterprise standards and digital tools, adopting modular and micro-credential approaches for flexibility, and establishing regular curriculum review mechanisms based on employer feedback and graduate employment outcomes.</p>	<p>Curriculum gaps result from outdated content and weak competency alignment. Optimization should be industry- and job-cluster oriented.</p>
4	<p>Expert 1 noted that existing career guidance systems tend to concentrate on final-year employment services and lack a developmental perspective. Career planning activities are often uniform and fail to account for individual differences in goals and abilities. Moreover, follow-up support after graduation is limited. To improve effectiveness, Expert 1 proposed a structured, stage-based career development pathway, including early career awareness, mid-stage career exploration, and late-stage job matching and stabilization, supported by individualized career portfolios and continuous post-graduation tracking.</p>	<p>Career guidance is late-stage and fragmented. A structured, stage-based career development pathway is essential.</p>
5	<p>Expert 1 argued that vocational skills training often emphasizes isolated technical skills rather than integrated job tasks. Training frequently lacks</p>	<p>Skills training is fragmented and insufficiently job-oriented. Authentic tasks and future-oriented</p>

No.	Answer	Summary
	<p>exposure to real production standards, quality control requirements, and workplace norms. In addition, transferable skills such as teamwork, communication, and problem-solving receive insufficient attention. Expert 1 suggested redesigning training around authentic job tasks, strengthening scenario-based and project-based learning, aligning skill certificates with actual job competencies, and incorporating forward-looking skills such as digital tools and sustainability-related practices.</p>	<p>competencies should be emphasized.</p>
6	<p>Expert 1 identified fragmented resources and insufficient incentive mechanisms as major bottlenecks. Industry experts often lack institutionalized roles in education, while cooperation with industry associations and government agencies is inconsistent. To overcome these challenges, Expert 1 recommended establishing integrated resource platforms, formalizing industry expert participation through mentor or adjunct positions, collaborating with industry associations and industrial parks, and leveraging policy incentives to reduce collaboration costs and enhance sustainability.</p>	<p>Collaboration bottlenecks stem from fragmented resources and weak incentives. Institutionalized expert roles and integrated platforms are needed.</p>
7	<p>Expert 1 stated that information technology is currently used mainly as a supportive tool rather than an integrated management system. To enhance effectiveness, Expert 1 proposed using big data to build student competency profiles and job-matching systems, applying virtual simulation technologies to support high-risk or high-cost training scenarios, adopting AI-assisted formative assessment tools, and developing employment</p>	<p>Information technology integration is limited. Data-driven, AI-supported systems should support teaching and employment outcomes.</p>

No.	Answer	Summary
	quality data platforms to support continuous curriculum and guidance improvement.	
8	Expert 1 pointed out that employment evaluation systems primarily rely on employment rates and initial placement data, which fail to capture long-term employment quality. Major shortcomings include limited indicators, lack of longitudinal tracking, and insufficient employer feedback. To optimize evaluation, Expert 1 recommended establishing a multidimensional employment quality indicator system, implementing follow-up evaluations at multiple time points after graduation, integrating feedback from graduates and employers, and using evaluation results to inform continuous improvement in curriculum design, training, and career guidance.	Employment evaluation focuses on short-term outcomes. Multidimensional and longitudinal employment quality assessment is required.

Interviewer 2

No.	Answer	Summary
1	Expert 2 emphasized that the core difficulty is not “teaching students to find a job,” but enabling them to make informed occupational decisions early enough to avoid repeated trial-and-error after graduation. From the expert’s perspective, many higher vocational students have limited exposure to real workplaces and therefore rely on fragmented information from peers or social media, which leads to unrealistic expectations about income, workload, and promotion. Expert 2 suggested that career education should be redesigned as a decision-support system: schools should translate labor	The main challenge is weak early-stage career decision-making due to limited workplace exposure. Career education should function as a decision-support system with labor market translation and staged decision tasks.

No.	Answer	Summary
	<p>market information into understandable career maps (job families, entry routes, competency thresholds, typical growth curves), provide structured reflection tools (interest–ability–values matching), and require students to complete staged “career decision tasks” (e.g., choosing a job cluster by the end of year one, validating choices through workplace observation in year two).</p>	
2	<p>Expert 2 viewed the main deficiency in industry–education collaboration as a misalignment of incentives and timelines. Enterprises tend to evaluate cooperation by short-term recruitment efficiency, while schools evaluate it by the number of agreements, internship seats, or activities delivered. This creates “busy cooperation” without deep training value. To deepen collaboration, Expert 2 recommended shifting to co-invested training arrangements: enterprises should commit to defined skill standards, provide structured rotations, and assign mentors with time allocation, while schools should provide screening, foundational training, and joint assessment. The expert also proposed a “retention-oriented” cooperation mechanism, where enterprise participation is linked to graduate retention and early career development indicators rather than simple placement counts.</p>	<p>Collaboration is limited by incentive and time misalignment. Deepening requires co-invested training designs, structured rotations/mentoring, and retention-oriented evaluation rather than counting placements.</p>
3	<p>Expert 2 argued that curriculum–industry gaps are often less about “missing topics” and more about missing work logic. Students may learn techniques but not how tasks are prioritized, how quality is judged, or how production/service processes are coordinated across roles. The expert suggested</p>	<p>The gap is often the absence of workplace workflow logic rather than isolated content. Curriculum should be workflow-based and include change-readiness (digital</p>

No.	Answer	Summary
	<p>optimizing curricula through workflow-based structuring, where learning units mirror typical workplace processes (e.g., receiving tasks, planning, execution, quality checks, reporting, and continuous improvement). In addition, Expert 2 stressed the importance of embedding “change-readiness” elements—basic digital literacy, process thinking, and continuous learning routines—so that students can remain employable when technologies and job roles evolve.</p>	<p>literacy, process thinking, learning routines).</p>
4	<p>Expert 2 criticized current career planning systems for being overly generic and “one-off,” noting that students often receive the same guidance regardless of their competence level or career direction. The expert proposed building a tiered career development pathway: students with strong skills should receive fast-track pathways (higher-level internships, advanced projects, leadership roles in student production teams), while students with weak foundations should receive remedial pathways (intensive skill bootcamps, supervised practice, micro-goals for employability). Expert 2 also recommended integrating career planning with the academic advising system so that each student’s plan is continuously reviewed and adjusted based on performance and industry feedback.</p>	<p>Career planning is too generic. A tiered pathway (fast-track vs. remedial) and continuous review through academic advising can improve relevance and effectiveness.</p>
5	<p>Expert 2 believed that skills training often overestimates students’ readiness because it measures competence in controlled environments rather than under workplace constraints (time pressure, coordination, customer demands, safety rules). The expert suggested refining training through</p>	<p>Current training does not sufficiently test performance under real constraints. Training should adopt performance-based assessment and strengthen professional</p>

No.	Answer	Summary
	<p>performance-based assessment: students should be evaluated on completing integrated tasks within specified standards (quality, efficiency, documentation, teamwork). Expert 2 also highlighted the need for “professional reliability” training—punctuality, rule compliance, safety awareness, and responsibility—because employers frequently regard these as decisive factors for retention, even when technical skills are acceptable.</p>	<p>reliability (discipline, safety, responsibility).</p>
6	<p>Expert 2 identified a key bottleneck as the lack of a stable mechanism to integrate industry experts and social resources into routine teaching, rather than occasional lectures. The expert suggested creating a structured “external participation schedule” tied to course milestones (e.g., experts co-judge project defenses, review student portfolios, and participate in competency panels). In addition, Expert 2 recommended building cross-institution resource alliances (schools–enterprises–associations) to share training cases, equipment access, and internship quality standards, reducing duplication and improving consistency.</p>	<p>The bottleneck is episodic rather than routine integration of external resources. Solutions include scheduled expert participation tied to course milestones and cross-institution alliances for shared standards/resources.</p>
7	<p>Expert 2 stated that technology should not be used only for digital classrooms, but to support evidence-based training and employment management. The expert proposed using data systems to monitor skill progression (training attendance, task completion quality, error patterns) and to predict risk of unstable employment (low engagement, frequent absences, repeated skill failures). Virtual simulation was seen as particularly valuable for training rare, dangerous, or high-cost scenarios. Expert 2 also noted that AI tools</p>	<p>Technology should enable evidence-based training and early risk detection. Data monitoring, predictive signals for instability, simulation for high-risk scenarios, and AI formative feedback can strengthen employability.</p>

No.	Answer	Summary
	can be used to provide rapid formative feedback on reports, logs, and workplace documentation—capabilities closely linked to real job performance.	
8	Expert 2 argued that employment quality evaluation remains overly “front-end,” focusing on employment rates and initial job placement, while sustainable employment requires measuring trajectory and stability. The expert recommended a longitudinal evaluation framework with three layers: (1) stability indicators (retention at 6/12/24 months, contract continuity), (2) development indicators (skill upgrades, role expansion, promotion opportunities, wage growth), and (3) protection indicators (social insurance coverage, working-hour compliance, safety conditions). Expert 2 also stressed that evaluation must lead to action: programs with low retention or weak protection outcomes should trigger targeted curriculum and partnership adjustments.	Evaluation should shift from placement to trajectory: stability, development, and protection measured longitudinally, with results driving concrete program and partnership improvements.

Interviewer 3

No.	Answer	Summary
1	Expert 3 stressed that the main challenge is students’ limited understanding of workplace socialization and the tacit rules of employment. In the expert’s view, employability is not only technical competence, but also the ability to function within organizational norms—communication etiquette, problem escalation, teamwork routines, and professional conduct. Many students can perform tasks in school settings but struggle when expectations become implicit and standards are	The key challenge is weak workplace socialization and understanding of tacit organizational norms. Career education should include structured training on workplace behavior, communication, and reflection on real norms.

No.	Answer	Summary
	<p>enforced through workplace culture. Expert 3 suggested that career education should incorporate structured “workplace socialization training,” including scenario-based role plays, workplace communication writing, conflict handling, and exposure to real workplace norms through mentor sharing and internship reflection sessions.</p>	
2	<p>Expert 3 argued that industry–education collaboration often fails because internships are treated as a placement arrangement rather than a developmental process. Enterprises may assign repetitive tasks without structured learning goals, and schools may lack the capacity to monitor whether students are truly developing. Expert 3 recommended establishing “learning contracts” for internships: clearly defined competency targets, weekly feedback routines, and shared responsibility between school supervisors and enterprise mentors. The expert also suggested that enterprises should be encouraged to design internship roles with progressive difficulty, enabling students to transition from observation to independent task completion.</p>	<p>Collaboration is weakened by treating internships as placement rather than development. Internship learning contracts, joint monitoring, and progressive task design are needed.</p>
3	<p>Expert 3 noted that curriculum gaps are often reflected in students’ inability to connect knowledge to quality standards and accountability. In many sectors, graduates must follow strict procedures, documentation requirements, and safety protocols; however, these are sometimes treated as peripheral in school courses. The expert recommended integrating workplace standards into curriculum deliverables—students should learn to produce reports, logs, and compliance documentation</p>	<p>The curriculum gap lies in weak integration of quality standards, documentation, and accountability. Courses should embed compliance deliverables and assess quality/safety responsibility.</p>

No.	Answer	Summary
	<p>alongside technical outputs. Expert 3 also suggested embedding quality and safety responsibility into assessment, so that “doing it correctly and safely” becomes as important as “doing it at all.”</p>	
4	<p>Expert 3 observed that career planning systems often overlook the transition from “student identity” to “employee identity.” Many guidance programs focus on choosing industries or companies, but do not prepare students for adaptation during the first six months of employment, when turnover risk is highest. The expert recommended designing a structured “first-year employment support pathway” including pre-employment expectation alignment, onboarding preparation, coping strategies for workplace stress, and post-entry coaching through school–enterprise joint mentoring.</p>	<p>Career planning neglects the critical early employment transition period. A structured first-year employment support pathway can reduce early turnover and improve stability.</p>
5	<p>Expert 3 stated that skills training should be evaluated not only by technical completion but by reliability under pressure. In real workplaces, graduates are assessed on consistency, error control, time management, and coordination with others. The expert recommended competency assessments that simulate real constraints: time-limited tasks, teamwork assignments, and multi-step problem-solving under changing conditions. Expert 3 also emphasized training students to seek help appropriately, document issues, and learn from mistakes—behaviors strongly associated with long-term retention.</p>	<p>Skills training should measure reliability under workplace constraints. Assessments should simulate time pressure, teamwork, and changing conditions, and develop help-seeking and learning-from-error behaviors.</p>
6	<p>Expert 3 identified a bottleneck in collaboration as the lack of coordination between school, enterprise, and community support systems for students who</p>	<p>A key bottleneck is the absence of multi-support coordination for graduates’</p>

No.	Answer	Summary
	<p>face adaptation difficulties. Some graduates leave jobs due to housing, transportation, family pressure, or psychological stress, which are rarely addressed in training models. The expert suggested integrating social resources (counseling services, community support, local employment service centers) into employment stabilization efforts, forming a multi-support network for graduates during the high-risk transition stage.</p>	<p>adaptation challenges. Integrating community and support services can strengthen employment stability.</p>
7	<p>Expert 3 proposed that digital tools should support behavioral and reflective learning, not only technical instruction. For example, digital platforms can be used to collect internship reflection logs, mentor feedback, and incident reports, enabling schools to identify common adaptation problems and adjust training accordingly. The expert also supported virtual simulation for practicing communication scenarios (customer interaction, supervisor communication, safety incident response), which are difficult to replicate consistently in physical training environments.</p>	<p>Technology should support reflective learning and workplace behavior training. Digital platforms for reflection/feedback and simulations for communication and incident response can improve adaptation.</p>
8	<p>Expert 3 argued that employment quality evaluation should include indicators related to organizational fit and early-stage adaptation, because these are strong predictors of sustainable employment. Beyond retention, the expert recommended measuring factors such as onboarding satisfaction, mentor support quality, role clarity, workplace relationship stability, and early competency growth. The expert stressed that evaluation results should be shared with enterprise partners to improve onboarding design and workplace mentoring quality,</p>	<p>Sustainable employment evaluation should include organizational fit and early adaptation indicators. Results should feed back into enterprise onboarding and mentoring improvements.</p>

No.	Answer	Summary
	thereby creating a continuous improvement cycle.	

Interviewer 4

No.	Answer	Summary
1	<p>Expert 4 approached the issue from a governance and systems perspective, arguing that the key challenge in building career awareness and employability is the lack of institutional continuity. In many colleges, career education is treated as a set of activities rather than a structured developmental system. As a result, students receive inconsistent messages about what counts as “good employment” and how to plan for long-term growth. Expert 4 suggested establishing a unified employability framework at the institutional level, with clear competency benchmarks by semester and explicit links between learning outcomes and labor market requirements. The expert also emphasized training teachers and counselors to deliver consistent guidance, so that students do not depend solely on individual staff members’ experience.</p>	<p>The main challenge is weak institutional continuity and inconsistent guidance. A unified, semester-based employability framework and staff capacity-building are required.</p>
2	<p>Expert 4 argued that the main deficiency in current industry–education collaboration is the absence of standardized governance rules. Collaboration often depends on personal networks and is vulnerable to staff changes, leading to unstable internship quality and uneven enterprise participation. Expert 4 recommended formalizing cooperation through standardized agreements that specify training responsibilities, mentoring requirements, and student protection measures. The expert also proposed</p>	<p>Collaboration is unstable due to weak governance and reliance on personal ties. Standardized agreements and cross-stakeholder oversight can improve quality and sustainability.</p>

No.	Answer	Summary
	<p>establishing third-party or cross-stakeholder oversight (e.g., industry associations or joint committees) to ensure internship quality, protect students' rights, and maintain consistent collaboration standards across enterprises.</p>	
3	<p>Expert 4 stated that curriculum–industry gaps often occur because curriculum updates are not supported by a rapid response mechanism. Even when teachers identify outdated content, institutional procedures for revision can be slow, and enterprises may not provide timely signals about changing skill needs. Expert 4 suggested establishing a curriculum “early-warning” and fast-update mechanism: collecting signals from employer feedback, regional industry reports, and graduate tracking data; convening quick review panels; and allowing modular updates without waiting for full program revision cycles.</p>	<p>The gap is driven by slow curriculum revision procedures. A curriculum early-warning system and modular fast-update mechanism are needed.</p>
4	<p>Expert 4 believed that career planning and guidance systems are often weakened by unclear role division and accountability. Career guidance may be seen as the responsibility of a career office alone, while academic departments focus only on teaching, and enterprises focus only on recruitment. The expert proposed clarifying responsibilities through a coordinated governance model: departments lead competency development, the career office leads pathway design and placement support, enterprises contribute mentoring and growth opportunities, and institutional leadership ensures monitoring and accountability.</p>	<p>Career guidance suffers from unclear role division. A coordinated governance model with defined responsibilities and accountability can strengthen effectiveness.</p>
5	<p>Expert 4 emphasized that skills training must be more targeted by establishing standardized</p>	<p>Training is often broad but lacks clear standards.</p>

No.	Answer	Summary
	<p>competency benchmarks linked to job roles. The expert noted that training programs sometimes expand content but lack clear standards for what students must be able to do at different stages, which reduces training efficiency. Expert 4 recommended building benchmark-based training with milestone assessments, using recognized occupational standards where possible, and ensuring that training results are transparent to employers (e.g., competency transcripts or skill passports).</p>	<p>Benchmark-based training with milestone assessments and transparent competency records can improve job adaptability and credibility.</p>
6	<p>Expert 4 identified a bottleneck in integrating industry experts and social resources as the lack of institutional channels for participation. Industry experts may be invited for speeches, but there is no stable mechanism for them to contribute to curriculum decisions, assessment panels, or teacher training. The expert suggested institutionalizing participation through standing advisory boards, regular co-assessment panels, and joint teacher upskilling programs, so that external resources become part of routine governance rather than occasional support.</p>	<p>External resources are underused due to missing institutional channels. Standing advisory boards, co-assessment panels, and joint teacher development programs can institutionalize integration.</p>
7	<p>Expert 4 argued that modern technology should be used to support governance transparency and quality assurance, not only teaching delivery. The expert recommended developing integrated platforms that track internships, mentor feedback, safety incidents, and graduate outcomes, enabling administrators to identify weak enterprise partners and underperforming curriculum modules. Expert 4 also suggested that virtual simulation and digital learning resources should be governed by quality standards</p>	<p>Technology should strengthen governance transparency and QA. Integrated tracking platforms and standardized quality criteria for digital resources can support continuous improvement.</p>

No.	Answer	Summary
	to ensure consistency across departments and campuses.	
8	Expert 4 stated that employment quality evaluation systems often lack comparability and enforceability. Colleges may collect data, but the indicators are not standardized, and results do not lead to corrective action. The expert recommended adopting a standardized, multi-dimensional evaluation framework with clear definitions and measurement rules, combined with an institutional “response mechanism” (e.g., programs with low retention or poor protection outcomes must implement improvement plans). The expert emphasized that evaluation should function as governance, not as reporting.	Evaluation lacks standardization and corrective power. A comparable indicator framework and enforceable response mechanism are needed so evaluation becomes governance rather than reporting.

Interviewer 5

No.	Answer	Summary
1	Expert 5 spoke explicitly from an employer’s human resources perspective, emphasizing that the main challenge in employability development is students’ limited understanding of what enterprises actually value for long-term retention. According to the expert, many graduates equate employability with technical skill possession, while employers assess employability more broadly, including work attitude, reliability, learning willingness, and alignment with organizational expectations. Expert 5 suggested that career education should make employer evaluation logic transparent to students by explaining retention criteria, performance review standards, and common	The challenge lies in students’ misunderstanding of employer retention criteria. Career education should clarify enterprise evaluation logic and long-term employability standards.

No.	Answer	Summary
	<p>reasons for early turnover. This transparency would help students form more realistic expectations and adjust their behavior proactively.</p>	
2	<p>Expert 5 observed that industry–education collaboration often fails to meet enterprise needs because cooperation is organized around student placement rather than talent development. Enterprises may receive interns who are technically underprepared or lack workplace readiness, increasing training costs and management pressure. To improve collaboration quality, Expert 5 proposed earlier enterprise involvement in student screening and skill baseline definition, as well as joint design of pre-internship training modules. The expert also suggested limiting internship numbers to ensure quality mentoring and creating longer, more stable internship arrangements to support mutual commitment.</p>	<p>Collaboration is placement-driven rather than development-driven. Early enterprise involvement, joint skill baselines, and stable internship arrangements can improve outcomes.</p>
3	<p>From the enterprise perspective, Expert 5 stated that curriculum gaps are most visible when graduates cannot adapt to enterprise-specific processes and performance standards. While companies can train job-specific details, they expect graduates to understand process discipline, documentation habits, and basic quality awareness. Expert 5 recommended that curricula emphasize transferable workplace standards—process compliance, quality responsibility, and data recording—rather than attempting to mirror every company’s technical details.</p>	<p>Curriculum gaps appear in weak process discipline and quality awareness. Emphasizing transferable workplace standards can better support enterprise adaptation.</p>
4	<p>Expert 5 argued that career planning in colleges often underestimates the importance of early job</p>	<p>Career planning should extend beyond placement to early job</p>

No.	Answer	Summary
	<p>stabilization support. From HR experience, many resignations occur within the first three to six months due to unmet expectations, stress, or adaptation difficulties rather than skill deficiencies. The expert suggested that career guidance should extend into the early employment stage, providing graduates with adaptation coaching, communication channels with supervisors, and guidance on handling performance feedback and workplace pressure.</p>	<p>stabilization. Post-entry support can reduce early turnover and improve sustainability.</p>
5	<p>Expert 5 emphasized that vocational skills training should focus on consistent performance rather than peak performance. Employers value employees who can meet standards reliably every day, follow procedures, and avoid errors. The expert suggested incorporating repetitive, standards-based practice into training and assessing students on stability, error rates, and compliance, rather than only on one-time demonstrations of skill mastery.</p>	<p>Employers prioritize consistent, standards-based performance. Training should emphasize reliability, compliance, and error control.</p>
6	<p>Expert 5 identified a bottleneck in collaboration as the lack of mutual trust and information sharing between enterprises and schools. Enterprises may hesitate to invest deeply if past cooperation yielded high turnover, while schools may lack insight into enterprise retention challenges. The expert recommended establishing feedback loops where enterprises regularly share retention data and performance issues, and schools adjust training accordingly. Confidentiality mechanisms and stable partnership agreements were seen as essential to building trust.</p>	<p>Collaboration is constrained by limited trust and information sharing. Structured feedback loops and stable agreements can strengthen cooperation.</p>
7	<p>From an employer viewpoint, Expert 5 stated that technology should be used to support practical</p>	<p>Technology should support workforce readiness, especially</p>

No.	Answer	Summary
	workforce readiness. The expert highlighted the value of digital tools for standard operating procedure (SOP) training, safety simulations, and performance tracking during internships. Virtual simulation was considered especially useful for onboarding and safety training before students enter real production environments.	SOP learning, safety simulation, and performance tracking.
8	Expert 5 argued that employment quality evaluation should reflect enterprise-defined sustainability indicators. Beyond employment rates, the expert emphasized retention duration, attendance records, performance appraisal results, promotion eligibility, and compliance with labor and safety standards. Expert 5 also stressed that evaluation findings should be shared with enterprises to jointly improve training alignment and reduce avoidable turnover.	Employment quality should be evaluated using enterprise-relevant indicators such as retention, performance, promotion, and compliance, with results shared for joint improvement.

Interviewer 6

No.	Answer	Summary
1	Expert 6 approached employability from a regional labor market perspective, arguing that a key challenge is students' limited awareness of how individual careers connect to regional industrial development. Many students view employment as a personal decision detached from broader economic structures, which leads to short-sighted job choices and frequent mobility. From the expert's standpoint, career education should help students understand regional industry layouts, talent demand trends, and typical career pathways within key sectors, enabling them to position themselves strategically rather than	The challenge lies in students' weak understanding of the link between personal careers and regional industry development. Career education should incorporate regional labor market and industry structure awareness.

No.	Answer	Summary
	randomly in the labor market.	
2	Expert 6 noted that industry–education collaboration often lacks sector-level coordination. Individual enterprises may cooperate with colleges, but such cooperation is fragmented and does not reflect broader industry standards or long-term talent strategies. The expert suggested that industry associations should play a stronger coordinating role by defining common competency frameworks, internship quality standards, and shared training resources. This would reduce duplication, stabilize expectations across enterprises, and provide students with more predictable development pathways.	Collaboration is fragmented at the enterprise level. Sector-level coordination led by industry associations can improve consistency and sustainability.
3	From an industry association perspective, Expert 6 emphasized that curriculum gaps are evident when graduates are trained for narrow job roles rather than adaptable occupational profiles. Rapid industrial upgrading means that job content changes faster than formal job titles. The expert recommended that curricula focus on core occupational capabilities shared across a sector—such as process understanding, basic digital competence, and compliance awareness—so that graduates can transition within an industry even as specific roles evolve.	The gap lies in over-specialization. Curriculum should emphasize adaptable, sector-wide occupational capabilities to support mobility within industries.
4	Expert 6 argued that career planning systems often fail to guide students toward industries with sustainable demand, instead responding passively to short-term recruitment signals. The expert suggested that colleges integrate industry outlook analyses into career guidance, helping students evaluate not only current vacancies but also medium- and long-term	Career planning is overly reactive to short-term demand. Integrating industry outlook and long-term demand analysis can enhance sustainability.

No.	Answer	Summary
	<p>employment prospects. Structured guidance should encourage students to consider industry stability, technological trajectories, and policy orientation when planning their careers.</p>	
5	<p>Expert 6 stated that vocational skills training should prepare students for intra-industry mobility, not just initial job entry. From the association's experience, graduates who possess only firm-specific skills face higher risk when enterprises adjust production or restructure. The expert recommended emphasizing foundational skills, standard operating procedures common across the sector, and continuous learning capacity, enabling graduates to remain employable within the same industry over time.</p>	<p>Training should support intra-industry mobility. Emphasizing foundational and transferable sector skills can enhance long-term employability.</p>
6	<p>Expert 6 identified a major bottleneck in collaboration as the limited involvement of collective industry resources such as associations, training centers, and certification bodies. Cooperation often bypasses these intermediaries, reducing access to standardized training tools and policy support. The expert suggested building multi-party platforms where colleges, enterprises, and industry organizations jointly plan training, share facilities, and align certification systems with employment needs.</p>	<p>The bottleneck is weak use of collective industry resources. Multi-party platforms can integrate associations, enterprises, and colleges more effectively.</p>
7	<p>Expert 6 highlighted the role of digital technology in supporting industry-wide talent governance. From the expert's view, data platforms can be used to track skill supply and demand across regions, identify emerging shortages, and guide training adjustments. Virtual simulation technologies were also seen as valuable for standardizing training quality across institutions, especially in regions with uneven access</p>	<p>Technology can support industry-wide talent governance. Data platforms and virtual simulation help align training supply with sector demand and ensure quality consistency.</p>

No.	Answer	Summary
	to advanced equipment.	
8	Expert 6 argued that employment quality evaluation should reflect industry sustainability indicators, not only individual outcomes. Suggested indicators included sectoral retention rates, alignment between training specializations and regional industry demand, graduates' ability to remain within the same industry over time, and compliance with industry labor standards. The expert emphasized that such evaluation can inform policy, guide institutional adjustment, and support healthier regional labor markets.	Employment quality evaluation level sustainability indicators to inform policy and regional talent development.

Interviewer 7

No.	Answer	Summary
1	Expert 7 approached employability from the perspective of public employment services, arguing that a key challenge is students' limited understanding of employment as a regulated and protected social relationship, rather than merely a job position. Many graduates focus on entry wages or job titles, while neglecting employment stability, labor contracts, social insurance, and legal protection. Expert 7 suggested that career education should incorporate basic labor market literacy, including employment rights, contract awareness, social security systems, and risk prevention, so that students can make informed decisions and avoid unstable or informal employment.	The challenge lies in weak labor market literacy. Career education should strengthen understanding of employment rights, contracts, and social protection.
2	Expert 7 noted that industry–education collaboration often overlooks the role of public employment	Collaboration neglects public employment institutions. Early

No.	Answer	Summary
	<p>institutions. Cooperation is typically limited to schools and enterprises, while employment service agencies are engaged only after graduation. The expert suggested integrating public employment services earlier into the training process, such as providing labor market information, policy briefings, and targeted employment services for key groups. This would help align training outcomes with regional employment policies and stabilize graduate employment.</p>	<p>integration of employment services can improve alignment with policy and stabilize employment outcomes.</p>
3	<p>From a policy implementation perspective, Expert 7 stated that curriculum gaps are reflected when graduates lack awareness of regulatory standards and compliance requirements related to their occupations. In many sectors, compliance with labor regulations, safety standards, and certification requirements is critical for long-term employment. The expert recommended embedding basic regulatory knowledge and compliance training into vocational curricula, especially for occupations with higher safety or legal risks.</p>	<p>Curriculum gaps include insufficient regulatory and compliance education. Embedding policy and safety standards can support sustainable employment.</p>
4	<p>Expert 7 argued that career planning systems should be connected to employment policy pathways, particularly for graduates from higher vocational colleges who may benefit from targeted support programs. Career guidance should inform students about available subsidies, training programs, and mobility policies, helping them plan realistic and policy-supported career trajectories rather than relying solely on market signals.</p>	<p>Career planning should incorporate employment policy pathways. Policy-informed guidance can support realistic and sustainable career decisions.</p>
5	<p>Expert 7 emphasized that vocational skills training should be evaluated not only by immediate</p>	<p>Skills training should support stability and compliance.</p>

No.	Answer	Summary
	<p>employability but by its contribution to employment stability and compliance. From the expert's experience, graduates with weak safety awareness or regulatory understanding face higher risks of job loss or labor disputes. The expert suggested strengthening training related to workplace safety, standard procedures, and lawful conduct, especially in industries with high turnover or occupational risk.</p>	<p>Safety awareness and lawful conduct are essential for sustainable employment.</p>
6	<p>Expert 7 identified a bottleneck in collaboration as the lack of data sharing and coordination mechanisms among schools, enterprises, and employment authorities. Without shared data, it is difficult to identify unstable employment patterns or provide timely intervention. The expert recommended establishing coordinated data systems to monitor graduate employment status, mobility, and risk indicators, enabling early support and targeted policy responses.</p>	<p>Collaboration is hindered by weak data coordination. Shared employment data systems can enable early intervention and policy support.</p>
7	<p>Expert 7 highlighted the role of information technology in building early-warning systems for employment risk. Data analytics can be used to identify graduates at risk of unemployment or frequent job changes, allowing public employment services to offer retraining, counseling, or placement support. Virtual platforms can also deliver policy information and employment services more efficiently to young graduates.</p>	<p>Technology can support early-warning systems and targeted employment services. Data analytics and digital platforms enhance policy responsiveness.</p>
8	<p>Expert 7 argued that employment quality evaluation should reflect policy-relevant indicators, such as employment continuity, participation in social insurance, contract compliance, and access to public employment services. The expert emphasized that</p>	<p>Employment quality evaluation should include policy-relevant indicators and inform both institutional improvement and policy</p>

No.	Answer	Summary
	evaluation results should inform both institutional improvement and policy adjustment, ensuring that vocational education contributes to stable and inclusive labor markets.	adjustment.

Interviewer 8

No.	Answer	Summary
1	Expert 8 emphasized that from a frontline teaching perspective, the main difficulty in cultivating career awareness and employability is students' low self-assessment accuracy. Many students either overestimate their abilities or underestimate the requirements of real jobs, which leads to frustration during internships and early employment. Expert 8 argued that career education should be closely integrated with teaching and assessment, allowing students to understand their strengths and limitations through repeated performance feedback rather than abstract guidance.	The challenge is students' inaccurate self-assessment. Career awareness should be developed through performance-based feedback embedded in teaching rather than abstract guidance.
2	Expert 8 noted that industry–education collaboration often becomes disconnected from daily teaching. Enterprises may cooperate at the institutional level, but frontline teachers receive limited guidance on how to translate collaboration into classroom activities. The expert suggested involving teachers directly in enterprise projects, short-term industry placements, and joint lesson planning, so that industry requirements are reflected in teaching design rather than added on as separate	Collaboration is weakly connected to daily teaching. Direct teacher involvement in enterprise projects and joint lesson planning can improve alignment.

No.	Answer	Summary
	activities.	
3	<p>According to Expert 8, curriculum gaps are most visible when students struggle to integrate knowledge across courses. From a teaching standpoint, students often treat courses as isolated units and fail to see how different skills combine in real work situations. Expert 8 recommended designing cross-course integrated tasks and capstone projects that require students to apply multiple skills simultaneously, helping them develop a holistic understanding of job competence.</p>	<p>Curriculum gaps appear in weak integration across courses. Cross-course projects and integrated tasks can strengthen job competence.</p>
4	<p>Expert 8 argued that career planning systems often operate separately from academic advising. Teachers may observe students' learning difficulties or potential, but this information is rarely incorporated into formal career guidance. The expert suggested linking career planning with academic performance monitoring, so that students' career paths are adjusted based on learning outcomes, practice performance, and teacher evaluations. This integration would make career planning more concrete and actionable.</p>	<p>Career planning is disconnected from academic advising. Integrating learning performance data into career guidance can improve relevance.</p>
5	<p>From a teaching perspective, Expert 8 stated that skills training should focus more on learning persistence and error correction. In real classrooms, some students give up quickly after repeated failures, which later affects their workplace adaptability. The expert suggested incorporating iterative practice cycles, structured error analysis, and peer-assisted</p>	<p>Skills training should cultivate persistence and error correction. Iterative practice and structured reflection can strengthen adaptability.</p>

No.	Answer	Summary
	learning into skills training, enabling students to develop resilience and problem-solving habits essential for long-term employment.	
6	Expert 8 identified a bottleneck in collaboration as limited support for teachers to engage with external resources. Teachers often face heavy teaching loads and lack time or incentives to coordinate with enterprises or social partners. The expert recommended providing workload recognition, training credits, or promotion incentives for teachers who actively participate in industry collaboration and employment-related initiatives.	Teacher participation is constrained by workload and incentives. Institutional support and recognition are needed to deepen collaboration.
7	Expert 8 viewed educational technology as a tool to support teaching differentiation. Digital platforms can help teachers track individual student progress, identify learning gaps, and provide targeted practice tasks. Virtual simulation was considered useful for offering repeated practice opportunities when physical equipment or enterprise access is limited, ensuring that weaker students are not excluded from skill development.	Technology should support differentiated teaching. Learning analytics and simulation can help address student diversity and resource constraints.
8	Expert 8 argued that employment quality evaluation should reflect teaching effectiveness, not only employment outcomes. Indicators such as students' skill progression, task completion quality, and readiness for internships should be included. The expert emphasized that evaluation results should be fed back to teaching teams, allowing them to adjust content, pacing, and instructional	Employment quality evaluation should link outcomes back to teaching effectiveness, supporting continuous instructional improvement.

No.	Answer	Summary
	strategies to better support sustainable employment.	

Interviewer 9

No.	Answer	Summary
1	Expert 9 approached employability from an evaluation and research perspective, arguing that the main challenge is the absence of a shared conceptual framework for career awareness and employability within institutions. Different departments often interpret employability inconsistently, leading to fragmented interventions and unclear learning expectations for students. Expert 9 suggested that career education should be grounded in an explicit, operational definition of sustainable employability, with measurable competencies and developmental milestones that can be communicated clearly to both teachers and students.	The key challenge is conceptual inconsistency. Career education should be based on a shared, operational employability framework with measurable milestones.
2	Expert 9 noted that industry–education collaboration is difficult to evaluate because cooperation outcomes are rarely specified in measurable terms. Agreements often describe activities rather than expected competency gains or employment outcomes. From an evaluation standpoint, the expert recommended defining collaboration outputs in advance, such as specific skills acquired, internship learning outcomes, or post-graduation retention benchmarks, making collaboration assessable and comparable across programs.	Collaboration lacks measurable outcome definitions. Pre-defined, assessable collaboration outputs are needed for evaluation and comparison.
3	Expert 9 argued that curriculum–industry gaps persist partly because curriculum effectiveness is rarely assessed using employment-related evidence. Course	Curriculum gaps are reinforced by weak evidence use. Employment and

No.	Answer	Summary
	<p>evaluation often relies on student satisfaction rather than post-course performance in workplaces. The expert suggested linking curriculum review to graduate tracking data and employer feedback, enabling evidence-based judgments about whether curriculum content actually supports workplace competence and long-term employability.</p>	<p>employer data should inform curriculum evaluation and revision.</p>
4	<p>Expert 9 observed that career planning systems frequently lack formative evaluation, focusing on final employment outcomes instead of monitoring the development process. The expert recommended incorporating formative indicators such as clarity of career goals, decision-making confidence, and alignment between skills and chosen pathways, allowing institutions to intervene before students enter unstable employment.</p>	<p>Career planning lacks formative evaluation. Monitoring developmental indicators can enable early intervention.</p>
5	<p>From an assessment perspective, Expert 9 stated that vocational skills training should be evaluated not only by task completion but by competency transferability. Graduates should demonstrate the ability to apply learned skills across different contexts, tools, or tasks. The expert recommended designing assessment rubrics that explicitly measure adaptability, learning transfer, and problem-solving, which are critical for sustainable employment.</p>	<p>Skills assessment should emphasize transferability and adaptability, not just task completion.</p>
6	<p>Expert 9 identified a bottleneck in collaboration as the lack of integrated evaluation systems across institutions, enterprises, and other stakeholders. Data collected by schools, enterprises, and employment services are often isolated, limiting comprehensive analysis. The expert suggested developing shared evaluation frameworks and data standards to support</p>	<p>Collaboration is hindered by fragmented evaluation systems. Shared frameworks and data standards can support integrated analysis.</p>

No.	Answer	Summary
	cross-sector analysis of employability and employment quality.	
7	Expert 9 highlighted the role of technology in strengthening evaluation validity and reliability. Digital systems can support longitudinal tracking, automate data collection, and reduce subjective bias in assessment. The expert also noted that simulation data and learning analytics can provide fine-grained evidence of competency development, supporting more robust evaluation of training effectiveness.	Technology can improve evaluation validity through longitudinal tracking, automation, and learning analytics.
8	Expert 9 argued that employment quality evaluation must move beyond descriptive statistics toward analytical and diagnostic use. Indicators should not only describe outcomes but also help identify causal factors influencing employment sustainability. The expert emphasized that evaluation results should directly inform decision-making, policy adjustment, and model refinement within institutions.	Employment quality evaluation should be analytical and diagnostic, directly supporting decision-making and model refinement.

Interviewer 10

No.	Answer	Summary
1	Expert 10 emphasized that from a student support perspective, a major challenge in employability development is students' low psychological readiness for work life. Many students underestimate the emotional pressure, discipline requirements, and interpersonal complexity of real workplaces. When expectations clash with reality, anxiety, avoidance, or rapid resignation may occur. Expert 10 suggested that career education should explicitly address psychological adaptation, including stress management,	The key challenge is weak psychological readiness for employment. Career education should incorporate mental preparation and expectation management.

No.	Answer	Summary
	emotional regulation, and realistic expectation setting, rather than focusing solely on occupational information and skills.	
2	Expert 10 observed that industry–education collaboration rarely considers students’ well-being during internships. While task arrangements and supervision are discussed, emotional support, communication channels, and problem-reporting mechanisms are often absent. The expert recommended that schools and enterprises jointly establish student support protocols during internships, including designated contact persons, regular check-ins, and clear procedures for addressing stress, conflict, or unfair treatment.	Collaboration often neglects student well-being. Joint support and communication mechanisms during internships are necessary.
3	From the perspective of student development, Expert 10 stated that curriculum gaps are evident when learning activities ignore students’ adaptive capacity. Heavy workloads, abrupt transitions, or unclear expectations can overwhelm students, reducing learning effectiveness. The expert suggested designing curricula with progressive difficulty, clear task expectations, and built-in reflection opportunities to support gradual adaptation to workplace-like demands.	Curriculum gaps include insufficient support for adaptive capacity. Progressive difficulty and reflective design can improve learning and adaptation.
4	Expert 10 argued that career planning systems often treat students as rational decision-makers while overlooking emotional and contextual factors. Students facing family pressure, financial stress, or low confidence may make unstable career choices. The expert recommended integrating counseling services with career guidance, enabling individualized support that addresses both career decisions and personal circumstances.	Career planning overlooks emotional and contextual factors. Integrating counseling with guidance can support more stable decisions.

No.	Answer	Summary
5	Expert 10 emphasized that skills training should also cultivate emotional resilience and help-seeking behavior. In real workplaces, the ability to cope with mistakes, criticism, and workload pressure strongly affects retention. The expert suggested embedding reflection sessions, peer support activities, and guided feedback discussions into skills training to normalize challenges and encourage adaptive coping strategies.	Skills training should foster emotional resilience and help-seeking behavior alongside technical competence.
6	Expert 10 identified a bottleneck in collaboration as limited coordination between academic units and student support services. Employment difficulties are often treated as performance issues rather than support needs. The expert proposed establishing cross-functional teams involving teachers, counselors, and career staff to provide coordinated intervention for students at risk of unstable employment.	A bottleneck is weak coordination between teaching and support services. Cross-functional teams can improve intervention effectiveness.
7	Expert 10 highlighted the role of technology in supporting early identification of at-risk students. Digital Technology can support tools can track attendance, engagement, and reflective feedback, allowing counselors to identify students experiencing stress or disengagement. Online counseling platforms and self-help resources were also seen as effective supplements to face-to-face support, especially during internship periods.	early identification and intervention for at-risk students through engagement data and online support tools.
8	Expert 10 argued that employment quality evaluation should include indicators related to psychological adaptation and support effectiveness, such as job satisfaction, perceived support, stress levels, and willingness to seek help. These indicators can provide insight into hidden factors behind early turnover and help institutions design more supportive employment management models.	Employment quality evaluation should include psychological adaptation and support-related indicators to address hidden causes of instability.

Interviewer 11

No.	Answer	Summary
1	Expert 11 approached employability from the perspective of enterprise talent development, arguing that a key challenge is graduates' limited understanding of employment as a developmental relationship rather than a static position. Many new employees expect rapid returns but lack patience for gradual skill accumulation and performance validation. From the expert's viewpoint, career education should help students understand typical enterprise development cycles, including probation, skill consolidation, performance assessment, and progression stages, so that expectations align with organizational realities.	The challenge lies in unrealistic expectations about career progression. Career education should clarify enterprise development cycles and growth logic.
2	Expert 11 observed that industry–education collaboration often fails to connect with enterprise internal training systems. While schools focus on pre-employment preparation, enterprises emphasize post-entry training, and the two systems operate independently. The expert suggested aligning school curricula with enterprise training frameworks, such as competency levels or role-based training modules, enabling smoother transition from school learning to internal corporate development pathways.	Collaboration lacks linkage with enterprise internal training systems. Aligning curricula with enterprise competency frameworks can improve continuity.
3	From the enterprise training perspective, Expert 11 stated that curriculum gaps become evident when graduates lack the ability to learn effectively within organizations. Enterprises expect new employees to absorb procedures, standards, and feedback quickly. The expert recommended that curricula incorporate learning-to-learn competencies, such as documentation reading, standard interpretation, and feedback utilization, which are critical	Curriculum gaps include weak organizational learning skills. Teaching learning-to-learn competencies can support long-term employability.

No.	Answer	Summary
	for long-term employability but often underemphasized in vocational programs.	
4	Expert 11 argued that career planning systems should introduce students to multiple internal career pathways within enterprises. Graduates often perceive promotion as the only form of success, overlooking lateral development paths such as technical specialization or cross-functional roles. The expert suggested that career guidance include examples of internal mobility and skill-based progression, helping students identify sustainable growth routes aligned with their strengths.	Career planning should highlight diverse internal pathways, including lateral and skill-based progression, not only promotion.
5	Expert 11 emphasized that skills training should prepare students for continuous performance improvement, not just entry-level competence. From the expert's experience, enterprises value employees who respond positively to evaluation and actively close performance gaps. The expert suggested integrating performance feedback cycles, self-improvement planning, and goal tracking into training, mirroring enterprise performance management practices.	Skills training should reflect continuous performance improvement processes and feedback-driven development.
6	Expert 11 identified a bottleneck in collaboration as insufficient communication about enterprise talent needs beyond entry-level roles. Schools often design training around immediate job requirements, while enterprises seek employees with long-term potential. The expert recommended regular dialogue on medium-term skill needs and leadership pipelines, enabling schools to cultivate broader developmental capacity rather than narrow job readiness.	Collaboration focuses too narrowly on entry-level needs. Dialogue on medium-term and pipeline skills can enhance sustainability.
7	Expert 11 highlighted the role of digital tools in supporting enterprise-style training simulation. Learning management systems, digital performance dashboards,	Technology can simulate enterprise training environments, reducing

No.	Answer	Summary
	and virtual onboarding modules can help students familiarize themselves with enterprise training environments before entry. This familiarity reduces adaptation costs and accelerates early-stage productivity.	adaptation costs and improving early productivity.
8	Expert 11 argued that employment quality evaluation should reflect internal development outcomes, such as skill certification within the enterprise, role expansion, participation in training programs, and readiness for promotion or advanced responsibilities. The expert emphasized that these indicators provide stronger evidence of sustainable employment than initial placement data alone.	Employment quality should be evaluated through internal development indicators, not only placement outcomes.

Interviewer 12

No.	Answer	Summary
1	Expert 12 approached employability from a regional economic development perspective, arguing that a major challenge is the misalignment between students' career aspirations and regional employment capacity. Many graduates prefer short-term opportunities in limited sectors or urban centers without considering regional industrial needs or long-term development potential. Expert 12 suggested that career education should incorporate regional economic planning information, helping students understand how their skills can contribute to local industries and how sustainable employment often emerges from alignment with regional development strategies.	The challenge is misalignment between individual aspirations and regional employment capacity. Career education should integrate regional economic and industry planning perspectives.
2	Expert 12 observed that industry-education collaboration often lacks coordination with local	Collaboration is weakly linked to regional policy. Government

No.	Answer	Summary
	<p>development policies. While schools and enterprises may cooperate, such efforts are sometimes disconnected from regional talent strategies, resulting in oversupply in some occupations and shortages in others. The expert recommended strengthening government coordination to align school–enterprise cooperation with regional industrial planning, ensuring that collaboration supports both graduate employment and local economic sustainability.</p>	<p>coordination can align talent training with local development strategies.</p>
3	<p>From a policy standpoint, Expert 12 stated that curriculum gaps become apparent when training programs fail to anticipate future-oriented skill demands related to regional industrial upgrading. The expert emphasized the need for curricula to incorporate emerging skills such as digital transformation, green development, and service innovation, which are increasingly embedded in regional development agendas.</p>	<p>Curriculum gaps involve insufficient attention to future-oriented regional skill demands. Anticipatory curriculum design can support industrial upgrading.</p>
4	<p>Expert 12 argued that career planning systems should guide students to consider regional career sustainability, not only immediate job availability. This includes understanding industry stability, policy-supported sectors, and long-term employment prospects within the region. The expert suggested that guidance programs integrate policy briefings and regional labor market analyses to help students make informed and sustainable career choices.</p>	<p>Career planning should emphasize regional career sustainability. Integrating labor market analysis and policy information can support informed decisions.</p>
5	<p>Expert 12 emphasized that vocational skills training should support regional labor market resilience. Graduates with adaptable skills are better able to respond to industrial restructuring or economic</p>	<p>Skills training should enhance regional labor market resilience through adaptability and continuous learning capacity.</p>

No.	Answer	Summary
	<p>fluctuations. The expert recommended strengthening transferable skills and continuous learning capacity, enabling graduates to remain employed within the region even as specific job roles evolve.</p>	
6	<p>Expert 12 identified a bottleneck in collaboration as insufficient integration of public resources, such as training subsidies, employment incentives, and regional development funds, into school–enterprise cooperation. The expert suggested establishing coordinated platforms where educational institutions and enterprises can access policy tools more efficiently, reducing training costs and improving employment outcomes.</p>	<p>Collaboration is constrained by underutilization of public resources. Coordinated platforms can integrate policy tools into training and employment initiatives.</p>
7	<p>Expert 12 highlighted the role of digital technology in supporting regional talent management systems. Data platforms can be used to monitor graduate employment flows, identify skill shortages, and evaluate the effectiveness of training programs. Such systems provide evidence for policy adjustment and more precise talent planning at the regional level.</p>	<p>Technology can support regional talent management through data-driven monitoring and policy evaluation.</p>
8	<p>Expert 12 argued that employment quality evaluation should incorporate regional sustainability indicators, including local retention rates, alignment between training supply and industry demand, and graduates’ contribution to regional economic development. The expert emphasized that evaluation results should inform both institutional reform and regional policy optimization.</p>	<p>Employment quality evaluation should include regional sustainability indicators to guide institutional reform and policy optimization.</p>

Interviewer 13

No.	Answer	Summary
1	<p>Expert 13 emphasized that from a frontline management perspective, the main challenge is graduates' limited understanding of daily job demands and performance expectations. Many students believe employability depends mainly on technical knowledge, while in actual work settings, consistency, discipline, and responsiveness are decisive. The expert noted that new employees often struggle with workload rhythm, shift arrangements, and coordination with colleagues. Expert 13 suggested that career education should expose students to realistic job routines and performance standards early, so they understand what long-term employment actually requires on the ground.</p>	<p>The challenge lies in unrealistic expectations about daily job demands. Career education should emphasize real work routines and performance standards.</p>
2	<p>Expert 13 observed that industry–education collaboration often focuses on recruitment numbers rather than job readiness. From a production department's viewpoint, interns may meet formal requirements but lack readiness for real workloads. The expert suggested that collaboration should include pre-entry readiness checks, clearer job descriptions, and shared responsibility for early-stage supervision, ensuring that interns gradually meet operational standards before full integration.</p>	<p>Collaboration is recruitment-oriented rather than readiness-oriented. Pre-entry readiness checks and shared supervision can improve outcomes.</p>
3	<p>Expert 13 stated that curriculum gaps become obvious when graduates cannot follow standard operating procedures (SOPs) accurately. In frontline operations, deviations from procedures affect safety, quality, and efficiency. The expert recommended</p>	<p>Curriculum gaps appear in weak procedural discipline. Emphasizing SOP adherence and standard-based assessment can improve job</p>

	that curricula emphasize procedural discipline, repetition under standard conditions, and assessment based on adherence to SOPs rather than only on task completion.	fit.
4	Expert 13 argued that career planning often overlooks position suitability. Graduates may pursue roles that appear attractive but do not match their temperament, physical capacity, or tolerance for routine. From the expert's experience, mismatched placement is a major cause of early resignation. Career guidance should therefore help students evaluate personal fit for specific job characteristics, not only industry or salary level.	Career planning neglects job-person fit. Guidance should assess suitability for specific roles to reduce early turnover.
5	Expert 13 emphasized that skills training should prepare students for stable output over time, not just initial competence. In production and service settings, supervisors value employees who can maintain quality and efficiency across long shifts and repeated tasks. The expert suggested incorporating endurance-based tasks, consistency checks, and long-cycle practice into training to better simulate real work demands.	Skills training should emphasize stability and endurance. Long-cycle practice and consistency checks can simulate real work demands.
6	Expert 13 identified a bottleneck in collaboration as limited feedback from frontline supervisors to schools. Problems observed during internships—such as slow adaptation or rule violations—are not systematically communicated back. The expert recommended establishing simple, regular feedback channels so that schools can adjust training content based on real operational issues.	Collaboration lacks frontline feedback loops. Regular supervisor feedback can inform training improvement.
7	Expert 13 viewed technology mainly as a tool to support standardization and safety. Digital systems for SOP learning, safety drills, and performance	Technology can support standardization and safety through SOP training, drills,

	tracking can help students internalize required behaviors before entering real production environments. Virtual simulation was seen as especially useful for training safety-critical procedures without disrupting operations.	and simulation.
8	Expert 13 argued that employment quality evaluation should include operational indicators, such as attendance stability, error rates, compliance with safety and quality rules, and supervisors' assessments of reliability. These indicators, from the expert's view, are strong predictors of whether graduates can remain employed and grow within frontline roles.	Employment quality should include operational indicators like attendance, error rates, and reliability, which predict long-term retention.

Interviewer 14

No.	Answer	Summary
1	Expert 14 approached employability from an international and sustainability-oriented perspective, emphasizing that a central challenge is the tendency to equate employability with immediate labor market insertion. From a comparative standpoint, sustainable employability in vocational education is understood as the capacity to maintain meaningful employment over time while adapting to technological, economic, and social change. Expert 14 suggested that career education should therefore focus not only on occupational preparation, but also on cultivating adaptability, lifelong learning orientation, and value awareness consistent with Education for Sustainable Development (ESD).	The challenge lies in a narrow, short-term view of employability. Career education should adopt a sustainability-oriented perspective emphasizing adaptability and lifelong learning.
2	Expert 14 noted that industry-education collaboration in many systems remains transactional,	Collaboration is often transactional rather than

No.	Answer	Summary
	<p>whereas international good practice emphasizes partnerships for co-development. In successful models, enterprises, educational institutions, and social actors jointly define competency standards, participate in assessment, and share responsibility for long-term workforce development. The expert argued that deeper collaboration requires a shift from project-based cooperation to institutionalized partnerships grounded in shared sustainability goals.</p>	<p>developmental. Institutionalized partnerships with shared sustainability goals can deepen cooperation.</p>
3	<p>From an international comparison perspective, Expert 14 stated that curriculum gaps emerge when programs focus excessively on current occupational skills and neglect future-oriented and transversal competencies. Global vocational education reforms increasingly emphasize digital literacy, green skills, ethical responsibility, and systems thinking. The expert recommended embedding these transversal competencies into vocational curricula to ensure graduates remain employable in evolving labor markets.</p>	<p>Curriculum gaps include insufficient attention to transversal and future-oriented competencies. Integrating digital, green, and ethical skills supports long-term employability.</p>
4	<p>Expert 14 argued that career planning systems should be reframed as career development learning, a concept widely used in international vocational education. Rather than guiding students toward a single occupational choice, career planning should develop their capacity to manage transitions, reassess goals, and navigate uncertainty across the life course. This approach better aligns with sustainable employment objectives.</p>	<p>Career planning should be reframed as career development learning, focusing on managing transitions and uncertainty rather than fixed choices.</p>
5	<p>Expert 14 emphasized that vocational skills training must balance specialization with transferable capacity. While technical proficiency is essential,</p>	<p>Skills training should balance specialization with transferable capacity. Reflective and</p>

No.	Answer	Summary
	international evidence suggests that graduates who possess problem-solving skills, learning autonomy, and reflective capacity are more resilient in changing labor markets. The expert suggested incorporating reflective practice and interdisciplinary learning into skills training to enhance transferability.	interdisciplinary learning enhances resilience.
6	Expert 14 identified a bottleneck in collaboration as limited alignment between vocational education and broader social sustainability systems, such as labor protection frameworks, lifelong learning institutions, and qualification recognition systems. The expert recommended strengthening vertical and horizontal policy alignment so that vocational graduates can access continuous training and mobility opportunities throughout their careers.	Collaboration is constrained by weak alignment with broader sustainability systems. Policy alignment can support lifelong employability and mobility.
7	Expert 14 highlighted the role of digital technology in supporting sustainable learning ecosystems. Online platforms, open educational resources, and digital credentialing systems can extend learning beyond initial education and support continuous skill renewal. The expert argued that technology should be viewed as an enabler of lifelong learning rather than only a teaching tool.	Technology can enable sustainable learning ecosystems and lifelong skill renewal through digital platforms and credentials.
8	Expert 14 argued that employment quality evaluation should be aligned with sustainability indicators, including employability over time, access to continuous learning, job quality, and social inclusion. From an international perspective, such evaluation frameworks provide a more comprehensive understanding of vocational education outcomes than short-term employment statistics.	Employment quality evaluation should adopt sustainability-oriented indicators reflecting long-term employability and inclusion.

Interviewer 15

No.	Answer	Summary
1	<p>Expert 15 emphasized that the fundamental challenge in cultivating sustainable employability lies in the systemic fragmentation of career awareness development. Students receive signals from courses, career guidance, enterprises, and society, but these signals are often inconsistent or disconnected. From the expert's integrated perspective, employability should be understood and communicated as a long-term developmental capacity shaped jointly by individual learning, institutional design, and labor market structures. Career education should therefore function as a coherent system rather than isolated activities.</p>	<p>The core challenge is systemic fragmentation. Career awareness should be developed through a coherent, system-wide approach to employability.</p>
2	<p>Expert 15 argued that industry–education collaboration frequently lacks strategic integration. While many cooperative activities exist, they are often operational rather than systemic, addressing immediate needs without contributing to a shared long-term talent development vision. The expert suggested that collaboration should be embedded within an institutional governance framework that aligns educational objectives, enterprise development needs, and policy orientation, ensuring continuity and sustainability.</p>	<p>Collaboration is operational but not strategic. Embedding cooperation into institutional governance can support long-term talent development.</p>
3	<p>From a system-building perspective, Expert 15 stated that curriculum–industry gaps persist when curriculum design is treated as a technical issue rather than a strategic alignment mechanism. The expert emphasized that curricula should translate labor market demand, industrial change, and sustainability goals into</p>	<p>Curriculum gaps stem from weak strategic alignment. Curriculum should function as a bridge between industry change and student competence development.</p>

No.	Answer	Summary
	structured learning pathways, enabling students to progressively build competencies relevant to evolving employment contexts.	
4	Expert 15 argued that career planning and employment guidance should be repositioned as a developmental management process. Rather than focusing solely on placement outcomes, guidance systems should monitor students' progression, adaptability, and stability over time, providing timely interventions and adjustments. This requires integration between academic advising, career services, and employment tracking mechanisms.	Career guidance should be a developmental management process focused on progression and stability, not only placement.
5	Expert 15 emphasized that vocational skills training must be designed within a long-term employability framework. Entry-level competence is necessary but insufficient; training systems should cultivate continuous learning capacity, adaptability, and responsibility for skill renewal. The expert stressed that these qualities enable graduates to remain employable despite job transitions and industrial change.	Skills training should be framed around long-term employability, emphasizing adaptability and continuous learning capacity.
6	Expert 15 identified a key bottleneck as the lack of cross-boundary coordination mechanisms. Schools, enterprises, industry organizations, and public institutions often operate within their own domains, limiting collective impact. The expert recommended establishing integrated coordination platforms that support shared planning, resource integration, and joint evaluation of employment outcomes.	The bottleneck is weak cross-boundary coordination. Integrated platforms can enhance collective effectiveness.
7	Expert 15 highlighted that information technology should support system-level integration rather than isolated applications. Digital platforms can link curriculum management, training delivery, employment tracking, and evaluation, enabling evidence-based	Technology should enable system-level integration and evidence-based management rather than isolated use.

No.	Answer	Summary
	decision-making and continuous improvement across the educational management system.	
8	Expert 15 argued that employment quality evaluation is the core feedback mechanism of a sustainable educational management model. Evaluation systems should capture employment stability, development, protection, and adaptability, and feed results back into curriculum design, training arrangements, collaboration strategies, and policy alignment. In the expert's view, only through such feedback loops can vocational education sustainably enhance employment quality.	Employment quality evaluation functions as a central feedback mechanism, enabling continuous system improvement and sustainable employment outcomes.

Interview Summary Report

Topic 1: Career Awareness and Career Education emphasized the need to strengthen students' career development capacity. Experts most frequently highlighted the necessity of process-oriented career education throughout the training period (86.7%) and the problem of weak early career decision-making (80.0%). In addition, experts noted limited authentic workplace exposure (73.3%) and fragmented, late-stage career education (66.7%). Supporting sub-themes included integration of labor market information (60.0%) and psychological readiness and labor rights awareness (53.3%), indicating that sustainable employment preparation was viewed as both competency-oriented and protection-oriented.

Topic 2: Industry–Education Collaboration showed strong consensus that current cooperation remained insufficiently deep. The most prominent concern was superficial collaboration (93.3%), followed by a lack of shared governance mechanisms (80.0%) and misaligned incentives and timelines between schools and enterprises (73.3%). Experts further emphasized the importance of curriculum co-

development (66.7%) and structured mentoring/rotational training arrangements (60.0%). Although less frequently mentioned, retention- and development-oriented evaluation (53.3%) was still considered necessary to shift collaboration from placement-oriented outputs toward sustainable employment outcomes.

Topic 3: Curriculum–Industry Alignment reflected experts’ shared concern regarding curriculum responsiveness and relevance. Outdated curriculum content (86.7%) and weak alignment with job competency chains (80.0%) were identified as major barriers. Experts also pointed to the absence of workplace workflow logic in curriculum design (66.7%) and recommended restructuring curricula around industry chains and job clusters (73.3%). Institutional constraints were reflected in the sub-theme of slow curriculum update mechanisms (60.0%), while evidence-based curriculum review using employer and graduate data (53.3%) was emphasized as an important improvement direction.

Topic 4: Career Planning and Employment Guidance highlighted the developmental weakness of existing guidance systems. Experts strongly endorsed the need for developmental and staged pathways (86.7%) and criticized late-stage and fragmented guidance (80.0%). One-size-fits-all guidance practices (73.3%) were viewed as limiting effectiveness, while experts recommended tiered career pathways (66.7%) and stronger integration of academic performance data (60.0%) into career planning. Extending guidance into the transition period after graduation was also emphasized, with insufficient early-employment support reported by 53.3% of experts.

Topic 5: Skills Training and Assessment received particularly strong endorsement regarding problems of training structure and authenticity. Experts most frequently identified fragmented skills training (93.3%) and stressed the need for authentic task-based assessment (86.7%). Concerns about the misalignment with real

workplace constraints (80.0%) and insufficient attention to reliability and consistency (73.3%) were also prominent. Furthermore, experts called for stronger development of transferable skills such as communication and teamwork (66.7%). Although less frequently reported, limited attention to future-oriented competencies (53.3%) suggested that sustainability-related and learning-to-learn capabilities remained underdeveloped.

Topic 6: Integration of Industry Experts and Social Resources pointed to structural constraints in sustaining external participation. Experts noted unstable external participation mechanisms (86.7%) and fragmented resources (80.0%) as major bottlenecks. Recommended solutions included establishing institutionalized expert roles (73.3%) and improving incentives through support mechanisms (66.7%). Experts also emphasized the importance of cross-institution coordination platforms (60.0%) and integration of community/public services (53.3%) to support employment stabilization and broaden the resource base for sustainable collaboration.

Topic 7: Information Technology Empowerment demonstrated that technology was perceived as underutilized for system-level management. Experts most frequently reported that technology was still used mainly as a support tool rather than an integrated system (80.0%). They highlighted the need for data-driven competency profiling (73.3%) and more process-based formative evaluation (66.7%). Strong endorsement was given to the importance of simulation technologies (86.7%), reflecting their value in high-risk, high-cost, or difficult-to-replicate training scenarios. In addition, experts emphasized early-warning mechanisms for employment risk (60.0%) and improved governance transparency and oversight through digital systems (53.3%).

Topic 8: Employment Quality Evaluation System revealed the strongest critique of current evaluation practices. Experts overwhelmingly noted overreliance on employment rate indicators (93.3%) and the need for longitudinal tracking (86.7%). They emphasized the importance of multidimensional indicators capturing stability, development, and protection (80.0%). Moreover, experts called for stronger integration of employer feedback (66.7%) and stressed that evaluation should function as a driver for improvement, as indicated by the sub-theme that evaluation results were not effectively fed back into institutional improvement (73.3%). Finally, 53.3% of experts emphasized that evaluation should operate as a governance mechanism that triggers accountability and corrective actions.

Appendix E

Action Guide of Educational Management Model

Action Guidelines of Educational Management Model

The formulation of this Action Guideline adheres to the following fundamental principles:

First, the principle of systematic integration, which emphasizes coordination and synergy among all elements of educational management, thereby avoiding fragmented or piecemeal reforms;

Second, the principle of student-centered sustainable employment quality, which positions students' long-term and sustainable employment outcomes as the core orientation, ensuring that all management decisions consistently serve students' long-term career development;

Third, the principle of practice orientation and operational feasibility, which ensures that the Action Guideline can be effectively implemented within real-world contexts of higher vocational institutions;

Fourth, the principle of continuous improvement, which promotes the dynamic optimization of educational management models through ongoing feedback and evaluation mechanisms.

1. Vision

The vision of this Action Guide is to construct a systematic and sustainable educational management model, comprehensively enhance the sustainable employment quality of higher vocational college students, facilitate their long-term career development in a safe, stable, and growth-oriented employment environment, and drive the in-depth integration of vocational education with regional economies, industrial structures, and sustainable development goals.

2. Mission

Guided by the concept of Education for Sustainable Development (ESD), this Action Guide aims to systematically promote the transformation of higher vocational colleges from an "outcome-oriented" approach to a "process-outcome balanced"

paradigm in improving students' employment quality. This transformation will be achieved through optimizing the educational management system, strengthening school-enterprise collaboration, improving curriculum and teaching mechanisms, and enhancing employment support and quality assurance.

3. Goals

Based on research findings, this Action Guide sets the following five core goals:

- 1) Construct an educational management goal system with sustainable employment quality as the core indicator.
- 2) Enhance the alignment between the curriculum system and industrial demands.
- 3) Strengthen students' vocational competence, career awareness, and employment adaptability.
- 4) Improve the school-enterprise collaboration mechanism to enhance employment stability and development prospects.
- 5) Establish a continuous monitoring and feedback mechanism to promote the dynamic optimization of the educational management model.

4. Roles Definitions

This section defines the responsibilities of key actors involved in implementing the Action Guidelines. Clear role definition ensures coordinated action, effective execution, and accountability throughout the model.

1) 4.1 Administrators

Administrators are responsible for overall coordination and institutional support for the implementation of the Action Guidelines.

Their main responsibilities include:

- (1) Integrating sustainable employment quality objectives into institutional policies and management systems;

(2) Coordinating cross-departmental collaboration and school–enterprise cooperation;

(3) Allocating resources to support curriculum reform, teaching practice, and employment services;

(4) Monitoring the implementation of action modules and organizing evaluation and improvement activities.

2) 4.2 Teachers

Teachers are responsible for implementing the Action Guidelines in teaching and learning processes. Their main responsibilities include:

(1) Implementing employment-oriented curriculum content and teaching methods;

(2) Organizing practice-based learning activities and guiding student participation;

(3) Providing career guidance and mentoring during learning and internship stages;

(4) Collecting feedback on teaching effectiveness and employment relevance.

3) 4.3 Students

Students are responsible for actively participating in learning and practice activities guided by the Action Guidelines.

Their main responsibilities include:

(1) Actively engaging in competency-oriented learning activities;

(2) Participating in practical training, internships, and school–enterprise cooperation programs;

(3) Developing personal career awareness and employability skills;

(4) Providing feedback on learning experiences and support services.

5. Guideline Modules

Integrating research results and model construction, this Action Guide includes the following core action modules:

1) Curriculum System and Skill Training Module: Focuses on curriculum reform and skill development, integrating sustainable development concepts and industrial needs into curriculum design, and emphasizing practice-oriented and vocational competence cultivation.

2) Teaching Innovation and Learning Mode Module: Promotes project-based learning, situational teaching, and school-enterprise joint teaching to enhance students' comprehensive literacy and practical abilities.

3) School-Enterprise Collaboration and Industry Linkage Module: Establishes stable school-enterprise cooperation mechanisms, expands internship, training, and employment channels, and strengthens students' employment stability and development potential.

4) Career Guidance and Development Support Module: Improves career planning, employment consulting, and information services to enhance students' career cognition and decision-making capabilities.

5) Institutional Guarantee and Policy Support Module: Provides organizational and policy guarantees for the implementation of the Action Guide through institutional construction and resource allocation.

6) Employment Quality Monitoring and Continuous Improvement Module: Establishes an employment quality evaluation index system and feedback mechanism to continuously optimize the educational management model.

6. Measures

1) To ensure the effective implementation of the Action Guide, the following guarantees are required:

2) Institutional Guarantee: Improve systems related to educational management and employment support.

3) Resource Guarantee: Rationalize the allocation of human, financial, and information resources.

4) Capacity Building: Strengthen the professional development of teachers and administrators.

5) Supervision and Evaluation: Establish regular evaluation and accountability mechanisms.

6) Incentive Mechanism: Promote the active participation of all stakeholders through incentive measures.

7. Steps of Implementing

Step 1. Define implementation objectives

Based on the actual conditions of higher vocational colleges, clarify the implementation objectives and key areas of the Action Guide, define the target groups and scope of application, and lay the foundation for subsequent work.

Step 2. Clarify roles and allocate resources

Based on the actual conditions of higher vocational colleges, clarify the implementation objectives and key areas of the Action Guide, define the target groups and scope of application, and lay the foundation for subsequent work.

Step 3. Implement guideline modules in phases

Adopt a phased promotion strategy, sequentially conducting pilot implementation, promotion and application, and institutionalization to gradually implement the content of each action module, ensuring an orderly and controllable implementation process.

Table 1. Action Guide for the Curriculum System and Sustainable Skill Training

Module	
Dimensions	Content
Theoretical Basis	<p>Human capital theory posits that educational investment is an important pathway to enhancing individuals' long-term employability;</p> <p>Education for Sustainable Development (ESD) theory emphasizes the continuous renewal and adaptability of skills;</p> <p>Competency-based education theory focuses on the cultivation of cross-occupational and transferable competencies, providing theoretical support for constructing a curriculum system oriented toward sustainable employment.</p>
Module Objectives	<ol style="list-style-type: none"> 1) Construct a curriculum system oriented toward sustainable employment quality; 2) Enhance students' long-term vocational competence, cross-occupational transferability, and lifelong learning ability; 3) Reduce the risk of mismatch between students' skill structures and job requirements.
Management Mechanism	<p>Establish a curriculum governance mechanism led by the school's Academic Affairs Department, with the participation of program directors, core teachers, and industry enterprises; develop a regular curriculum evaluation and dynamic adjustment mechanism; integrate</p>

Dimensions	Content
	<p>the effectiveness of curriculum reform into the quality assurance and performance evaluation system.</p>
Implementation path	<p>Specific Task 1: Curriculum System Diagnosis and Demand Analysis</p> <ul style="list-style-type: none"> • Execution Steps: 1) Systematically sort out the existing curriculum structure; 2) Analyze graduate employment data and job requirements; 3) Solicit opinions from enterprises and industry experts. • Responsible Party: Academic Affairs Department (leading), program directors, enterprise representatives. • Timeline: First half of the 1st academic year. • Evaluation Criteria: Completion of a curriculum diagnosis report; finalization of a job competency requirement list.
	<p>Specific Task 2: Curriculum Structure and Content Reconstruction</p> <ul style="list-style-type: none"> • Execution Steps: 1) Identify core competence and sustainable competence modules; 2) Design a modular curriculum structure; 3) Revise curriculum syllabi and teaching objectives. • Responsible Party: Program directors, curriculum teams, industry experts. • Timeline: Second half of the 1st academic year. • Evaluation Criteria: Approval of the curriculum plan through internal review; achievement of the predefined enterprise participation rate.
	<p>Specific Tasks 3: Practice-Oriented and School-</p>

Dimensions	Content
Corresponding Employment Quality Dimensions	<p>Enterprise Collaborative Implementation</p> <ul style="list-style-type: none"> • Execution Steps: 1) Introduce real work tasks; 2) Develop school-enterprise joint teaching resources; 3) Organize students to participate in practical projects. • Responsible Party: Curriculum teams, enterprise mentors, Practical Teaching Management Department. • Timeline: 2nd academic year. • Evaluation Criteria: Increased proportion of practical courses; results of students' skill achievement assessments.
	<p>Specific Task 4: Continuous Evaluation and Optimization</p> <ul style="list-style-type: none"> • Execution Steps: 1) Collect feedback from students, teachers, and enterprises; 2) Analyze employment quality-related data; 3) Dynamically adjust curriculum content. • Responsible Party: Quality Assurance Department, Academic Affairs Department. • Timeline: Continuous (annual evaluation). • Evaluation Criteria: Curriculum-job matching degree; graduates' skill satisfaction; employer evaluations.
	<p>Skills development and training (core); employment stability; work motivation (enhanced career confidence through competence improvement).</p>

Table 2. Action Guide for the Teaching Innovation and Learning Mode Transformation Module

Dimensions	Content
Theoretical Basis	<p>Constructivist learning theory emphasizes that learners actively construct knowledge and meaning in real contexts. Learner-centered theory highlights students' subjectivity and the formation of learning motivation, while experiential learning theory argues that competence development relies on the experiential cycle of "learning by doing." Based on these theories, this module focuses on transforming teaching and learning modes to promote students' in-depth learning and competence transformation, thereby enhancing their employment adaptability and career development potential.</p>
Module Objectives	<ol style="list-style-type: none"> 1) Improve students' learning participation and engagement, and strengthen intrinsic learning motivation; 2) Promote the effective transformation of knowledge into competence, focusing on developing problem-solving, communication and collaboration, and situational response abilities; 3) Enhance students' employment adaptability and vocational situational transferability, improving their ability to cope with job changes and work challenges.
Management Mechanism	<p>Establish a trinity teaching innovation support mechanism consisting of "institutional incentives, competence-oriented evaluation, and teacher professional development":</p>

Dimensions	Content
	<p>1) Teaching innovation incentive mechanism (integrate teaching innovation into teacher evaluation, rewards, and professional title assessment);</p> <p>2) Teaching evaluation reform mechanism (emphasize competence achievement, process-oriented evaluation, and performance in real tasks);</p> <p>3) Teacher professional development mechanism (provide systematic training and teaching research community support for project-based learning, situational teaching, and enterprise real-task design);</p> <p>4) Collaborative teaching mechanism (promote cross-curriculum team collaboration, school-enterprise joint teaching, and curriculum co-construction)</p>
	<p>Specific Task 1: Teaching Status Diagnosis and Competence Objective Reconstruction</p> <ul style="list-style-type: none"> • Execution Steps: 1) Systematically sort out current teaching and evaluation methods; 2) Reconstruct curriculum competence objectives based on job requirements and graduation standards; 3) Establish the correspondence between "competence objectives, learning activities, and evaluation tasks." • Responsible Party: Academic Affairs Department/Teaching Development Center (leading); program directors, curriculum teams (collaborating).
	<ul style="list-style-type: none"> • Timeline: First half of the 1st academic year. • Evaluation Criteria: Completion of a teaching diagnosis report; formulation of a competence objective system and

Dimensions	Content
	alignment table; approval through expert/departmental review.
	<p>Specific Task 2: Teaching Mode Pilot (Project-Based/Situational/Problem-Oriented)</p> <ul style="list-style-type: none"> <li>• Execution Steps: <ol style="list-style-type: none"> <li>1) Select pilot courses and classes; <li>2) Design real tasks or project scenarios (enterprise cases may be introduced); <li>3) Organize implementation and conduct recording and reflection on learning process data. <li>• Responsible Party: Course directors (leading); curriculum teams, enterprise mentors (collaborating); class teachers/counselors (supporting learning management). <li>• Timeline: Second half of the 1st academic year to the first half of the 2nd academic year (at least 1–2 semesters). <li>• Evaluation Criteria: Indicators of students’ classroom participation (attendance, task submission rate, discussion engagement); quality of project outcomes; student self-assessment and peer evaluation; enterprise mentor feedback.
	<p>Specific Task 3: Strengthening Practical Teaching and Off-Campus Learning (Work-Based Learning)</p> <ul style="list-style-type: none"> <li>• Execution Steps: 1) Establish a list and standards for on-campus and off-campus practical learning; 2) Link off-campus practical tasks with curriculum objectives; 3) Develop a portfolio of practical learning outcomes.

Dimensions	Content
	<ul style="list-style-type: none"> • Responsible Party: Practical Teaching Management Department (leading); program directors, cooperative enterprises (collaborating). • Timeline: 2nd academic year (rollable implementation). • Evaluation Criteria: Practical learning achievement (competence scale/rubric); evaluation from practical training units; quality of students' practical reflection reports.
	<p>Specific Task 4: Reform of Teaching Evaluation and Construction of Learning Support System</p> <ul style="list-style-type: none"> • Implementation Steps: <ol style="list-style-type: none"> 1) Develop process evaluation and performance assessment tools (rubrics, learning portfolios); 2) Incorporate competency attainment into course assessments; 3) Establish support mechanisms for students with learning difficulties (tutoring, study guidance). • Responsible Parties: Academic Affairs/Quality Assurance Department (Lead); Course Teams and Student Support Departments (Collaborate). • Timeline: Second semester of the 2nd academic year (institutionalized), with ongoing implementation thereafter. • Evaluation Criteria: completeness of assessment tools; competency attainment rate; student learning satisfaction; learning stress and workload survey results (to balance learning intensity).

Dimensions	Content
	<p>Specific Task 5: Teaching Team Collaboration and Teacher Capacity Building (Routine Mechanism)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish a teaching community and implement regular teaching research; 2) Organize demonstration classes and peer evaluations; 3) Conduct training on teaching innovation and action research. • Responsible Party: Teaching Development Center/College (Lead); Course Team (Implement). • Timeline: Ongoing (with at least one review and improvement per semester). • Evaluation Criteria: Teacher participation rate; Quantity and quality of innovative teaching cases; Trends in student learning outcomes; Expert reviews from both on-campus and off-campus sources.
<p>Corresponding to the Employment Quality Dimension</p>	<p>Work motivation: learning participation and autonomy enhance professional confidence and work engagement;</p> <p>Skills development and training: Promote competency formation through real tasks and deep learning;</p> <p>Work-life balance: reduce overload and promote sustainable learning and future work adaptation through learning load management, process support and learning stress monitoring.</p>

Table 3. Action Guidelines for the School-Enterprise Collaboration and Industry

Alignment Module

Dimensions	Content
Theory Evidence	<p>The collaborative governance theory emphasizes multi-stakeholder participation, consultative decision-making, and resource integration in public affairs. The industry-education integration theory highlights deep collaboration between educational and industrial systems in talent development standards, practical platforms, and evaluation mechanisms. The stakeholder theory underscores shared responsibilities and balanced interests among schools, enterprises, students, and industry organizations in enhancing talent cultivation and employment quality. Building on these theories, this module adopts the logical framework of "collaborative governance—joint training—mutual evaluation—shared outcomes," embedding industry demands throughout the talent development process to improve job fit and employment sustainability.</p>
Module Objective	<ol style="list-style-type: none"> 1) Enhance the alignment between students' career prospects and their academic training to bridge the gap between learning and application. 2) Enhance employment stability by reducing frequent job-hopping and short-term employment among new graduates; 3) Expand students' career development space and growth channels, enhancing their long-term occupational adaptability and promotion potential;

Dimensions	Content
<p>Management Mechanism</p>	<p>4) Enhance students' employment security by standardizing internship quality and rights protection.</p> <hr/> <p>1) Multi-tiered collaborative governance mechanism between schools and enterprises: Establish a school-level industry-education integration (or school-enterprise cooperation) committee, a collaborative working group for professional clusters/secondary colleges, and a joint curriculum and training team, forming vertical integration and horizontal coordination.</p> <p>2) Division of responsibilities and consultation decision-making mechanism: Clarify the boundaries of rights and responsibilities between schools and enterprises in training programs, curriculum development, practical guidance, evaluation, and employment support, and establish regular consultation meetings and information-sharing systems;</p> <p>3) Quality Management and Feedback Mechanism for Internship and Training: Establish a closed-loop system encompassing job entry standards, process supervision, corporate mentor evaluations, student feedback, risk management, and continuous improvement; complemented by an internship-to-employment transition mechanism (job matching, mutual selection, retention, and follow-up support).</p>
<p>Implementation Path (Action Implementation Matrix)</p>	<p>Specific Task 1: Establishing the Organizational Framework and Cooperation Mechanism for School-Enterprise Collaborative Governance</p> <ul style="list-style-type: none"> <li>• Implementation Steps: 1) Identify key industries and partner enterprises (including industry associations, leading

Dimensions	Content
	<p>enterprises, or SME consortia); 2) Establish a collaborative governance body (committee, alliance, or working group) between the university and enterprises; 3) Sign cooperation agreements specifying the scope of collaboration, resource allocation, rights and responsibilities, and exit mechanisms; 4) Develop an annual cooperation plan and establish a regular meeting system.</p> <ul style="list-style-type: none"> • Responsible Party: The school's industry-education integration/enterprise cooperation department (lead); secondary colleges, enterprise management, and industry organizations (collaborate). • Timeline: The system was completed in the first semester of the first academic year, with subsequent annual updates. • Evaluation Criteria: Coverage rate of key aspects in cooperation agreements; annual plan implementation rate; completeness of meeting and decision-making records; stability of corporate participation.
	<p>Specific Task 2: Aligning Industry Demand Analysis with "Job Competency-Cultivation Standards"</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Conduct job and competency requirement research (including job descriptions, competency models, and career development paths); 2) Collaborate with enterprises to revise talent development plans and curriculum systems; 3) Convert job competencies into course objectives, practical training standards, and evaluation metrics; 4) Establish an annual review and update mechanism.

Dimensions	Content
	<ul style="list-style-type: none"> • Responsible Party: Professional lead/curriculum team (initiating); Enterprise technical backbone/HR, industry experts (collaborating); Academic affairs department (supporting). • Timeline: The first edition will be finalized in the second semester of the first academic year, with annual reviews and updates. • Evaluation Criteria: Alignment between training programs and job competencies (expert review/enterprise confirmation); completeness of curriculum alignment tables; trends in employer satisfaction.
	<p>Specific Task 3: Jointly Establishing a Training Base and Real-Task Practice Platform (Dual-Mentor System)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Determine the base construction model (industry-academy collaboration, on-campus production training, off-campus base); 2) Establish operational guidelines, quality standards, and safety management protocols; 3) Introduce real-world projects and tasks; 4) Assign on-campus instructors and corporate mentors to implement dual-mentor guidance and joint evaluation. • Responsible Party: The Practical Teaching Management Department (lead); Business departments of enterprises and secondary colleges (collaborate). • Timeline: Established and operational in the second academic year, with ongoing enhancements. • Evaluation Criteria: Base utilization rate; actual task

Dimensions	Content
	<p>coverage; quality of student practical outcomes (rubric); safety compliance (accident rate, complaint rate).</p> <p>Specific Task 4: Implementing Joint Training and Corporate Participation in Teaching Evaluation</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Design joint training programs (order-based classes, apprenticeship systems, or corporate project courses); 2) Engage enterprises in curriculum development and instruction (covering case studies, technical standards, and workflows); 3) Establish an enterprise-participated competency assessment and evaluation system; 4) Facilitate teacher enterprise internships and corporate mentor training. • Responsible Party: The secondary college/program group (lead); corporate mentors and course teams (collaborate); the Teaching Development Center (support). • Timeline: Pilot program in the second academic year; full-scale implementation and institutionalization in the third academic year. • Evaluation Criteria: Coverage rate of joint cultivation among students; teaching hours contributed by enterprises; consistency and validity of evaluations; achievement rate of student competencies. <p>Specific Task 5: Establishing the Channel of Internship-to-Employment Transformation and Employment Tracking Support</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish high-quality internship position admission criteria (including compensation,

Dimensions	Content
	<p>benefits, security conditions, career development opportunities, and labor compliance); 2) Implement a two-way selection and retention mechanism; 3) Monitor employment stability and job security for graduates 6–12 months post-graduation; 4) Provide additional support to students with unstable employment (e.g., job recommendations, supplementary training, or re-internship opportunities).</p> <ul style="list-style-type: none"> • Responsible Party: Career Guidance Center/Industry-Academia Collaboration Department (Lead); HR personnel, counselors/class advisors (Collaborate). • Timeline: Implementation will be rolled out starting from the second academic year, with continuous tracking for each graduating cohort. • Evaluation Criteria: Internship-to-employment conversion rate; stable employment rate at 6/12 months post-graduation; turnover rate and its causes; employer retention satisfaction; student satisfaction with career development opportunities.
<p>Corresponding to the Employment Quality Dimension</p>	<p>Employment security: Risk reduction through job entry standards, practical safety protocols, and rights protection;</p> <p>Employment stability and social security: Enhanced stability and protection levels via retention mechanisms, compliance safeguards, and follow-up support.</p> <p>Skills development and training: real tasks and dual mentors promote skills development and transferable skills formation;</p>

Dimensions	Content
	<p>Income and welfare: The selection of high-quality positions and industrial alignment can help improve income and welfare levels (this requires further verification with empirical data).</p>

Table 4. Action Guide for the Employment Guidance and Career Development Support Module

Dimensions	Content
<p>Module Objective</p>	<p>1) To enhance students' professional awareness and job information acquisition skills, enabling them to develop a clear understanding of industries, positions, and career development paths;</p> <p>2) Enhance decision-making skills for employment and career planning awareness, improving the alignment and foresight in job selection;</p> <p>3) Enhance employability (including workplace adaptability, communication and collaboration skills, stress management, etc.) and job stability, thereby reducing early turnover risks;</p> <p>4) Promote students' formation of positive work motivation and healthy occupational lifestyle through support and guidance.</p>
<p>Management Mechanism</p>	<p>1) A comprehensive career guidance system: Career development education is integrated throughout the entire process from enrollment to graduation, with phased</p>

Dimensions	Content
	<p>service modules established.</p> <p>2) Multi-stakeholder collaborative support mechanism: Integrating resources from the school's career center, academic departments, class advisors/counselors, subject teachers, corporate HR/mentors, alumni, and social organizations to achieve resource sharing and coordinated services;</p> <p>3) Personalized consultation and guidance mechanism: Establish tiered support systems based on student differences (e.g., employment-challenged groups, career-doubting groups, dual-path groups for further education/employment).</p> <p>4) Information Platform and Data Support Mechanism: Establish an employment information platform and student career portfolio to enable data-driven tracking and precision services.</p>
<p>Implementation Path(Action Implementation Matrix)</p>	<p>Specific Tasks 1: Developing a Comprehensive Career Education Curriculum and Service System (From Enrollment to Graduation)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Design a phased curriculum framework (Adaptation to Schooling/Career Exploration/Competency Preparation/Job Hunting Skills/Onboarding); 2) Develop course content and teaching resources (Job Information, Case Studies, Assessment Tools); 3) Align with specialized courses (Match vocational competencies with curriculum objectives); 4) Establish a course implementation and quality evaluation system. • Responsible Party: Career Guidance Center/Student

Dimensions	Content
	<p>Development Center (lead); secondary colleges, course teams, and counselors (collaborate).</p> <ul style="list-style-type: none"> • Timeline: Framework development and pilot implementation in the first academic year; expansion in the second year; institutionalization in the third year. • Evaluation Criteria: Course coverage rate (percentage of students enrolled); improvement in students' career awareness assessment; course satisfaction; course completion rate. <p>Specific Tasks 2: Providing individual and group employment counseling services</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish a counseling service process (appointment—assessment—consultation—follow-up); 2) Conduct group counseling (job-seeking skills training, interview simulation, stress management); 3) Provide tiered support for key groups (students with employment difficulties, groups under significant psychological stress, etc.); 4) Establish a counseling record and follow-up mechanism. • Responsible Party: Career Guidance Instructor/Vocational Consultant (Lead); Counselor, Mental Health Center (Collaborate). • Timeline: The program runs throughout the entire academic year, with at least one major event per semester. • Evaluation Criteria: Coverage of counseling services; improvement in students' self-efficacy for employment (SCCT-related scales/questionnaires); changes in job-seeking success rates; student feedback satisfaction.

Dimensions	Content
	<p>Specific Task 3: Construction of Employment Information Platform and Career File System</p> <ul style="list-style-type: none"> <li>• Implementation Steps: 1) Develop a job posting and screening system (including quality assessment criteria); 2) Create student career portfolios (containing competency evidence, practical experience, certifications, and reflection records); 3) Match job recommendations with students' competency profiles; <li>4) Implement a data update and information review mechanism. <li>• Responsible Party: Career Guidance Center (lead); Information Technology Department and secondary colleges (collaborate). <li>• Timeline: Platform development completed during the first two academic years, with ongoing iterative updates thereafter. <li>• Evaluation Criteria: Platform activity (visits, submissions, and successful matches); validity of job postings; completeness of student profiles; improvement in job matching.
	<p>Specific Task 4: Introducing Alumni and Industry Mentor Resources</p> <ul style="list-style-type: none"> <li>• Implementation Steps: 1) Establish an alumni and industry mentor database (including industry distribution and job levels); 2) Implement a mentorship system (one mentor for multiple students); 3) Conduct career interviews, industry seminars, and job experience activities;

Dimensions	Content
	<p>4) Develop a mentor evaluation and incentive mechanism.</p> <ul style="list-style-type: none"> • Responsible Party: Alumni Office/Career Center (lead); HR departments of enterprises, industry mentors, and secondary colleges (collaborate). • Timeline: Pilot program in the second academic year; expanded coverage and normalization in the third academic year. • Evaluation Criteria: Mentor participation rate and retention; Student participation rate; Career network expansion indicators (internship/interview opportunities); Student career identity and motivation enhancement (interviews/questionnaires). <p>Specific Task 5: Post-Graduation Follow-up and Employment Stability Support</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish a 6-12 month post-graduation tracking mechanism; 2) Collect data on employment stability, reasons for resignation, and satisfaction; 3) Provide additional support (supplementary training, re-recommendation, counseling) for students with unstable employment; <p>5) Compile an annual employment quality analysis report and provide feedback to the training system.</p> <ul style="list-style-type: none"> • Responsible Party: Career Guidance Center (lead); secondary colleges, alumni networks, and enterprises (collaborate). • Timeline: Each graduating class is tracked continuously for at least 12 months. • Evaluation Criteria: Stable employment rate at 6/12

Dimensions	Content
	months post-graduation; Turnover rate and its structural analysis; Re-employment effectiveness (re-employment rate); Indicators of job satisfaction and work-life balance.
Corresponding to the Employment Quality Dimension	<p>Work motivation: to enhance the professional commitment through the construction of professional meaning and the promotion of self-efficacy;</p> <p>Employment stability: Early turnover can be reduced by improving the matching degree and providing post-graduation support.</p> <p>Work-life balance: reduce the risk of imbalance through stress management, career adaptation and support systems;</p> <p>Income and benefits: Better job fit and transparency may lead to improved income and benefits.</p>

Table 5. Action Guidelines for Institutional Safeguards and Educational Management Support Modules

Dimensions	Content
Module Objective	<p>1) Establish institutional safeguards for implementing action guidelines to prevent reforms from remaining at the level of slogans or short-term projects;</p> <p>2) Integrate the "sustainable employment quality" objective into the school's governance framework, development planning, and performance evaluation system to establish strategic guidance;</p>

Dimensions	Content
	<p>3) Enhance management execution and cross-departmental collaboration efficiency to ensure all modules are implemented with clear assignment to positions, individuals, and processes.</p> <p>4) Promote continuous improvement and stability of resource investment through supervision and incentive mechanisms.</p>
<p>Management Mechanism</p>	<p>1) Division of responsibilities and accountability mechanisms: Establish clear organizational structures, defined boundaries of authority and responsibility, and accountability procedures;</p> <p>2) Resource allocation and coordination mechanism: establish budgetary guarantee, human resource allocation, cross-departmental coordination and resource integration system;</p> <p>3) Performance evaluation and incentive mechanism: Key indicators of the action guide are incorporated into departmental and individual performance, with corresponding rewards and improvement requirements;</p> <p>4) Transparency and governance communication mechanisms: Establish mechanisms for information disclosure, feedback communication, and stakeholder participation (including enterprises, alumni, and student representatives) to enhance governance transparency and collaboration.</p>
<p>Implementation Path (Action</p>	<p>Specific Task 1: Establish a dedicated working body and governance framework</p>

Dimensions	Content
<p>Implementation Matrix)</p>	<ul style="list-style-type: none"> • Implementation Steps: 1) Establish a "Sustainable Employment Quality Enhancement" steering committee/task force; 2) Define the membership (school leadership, academic affairs, student affairs, employment services, quality assurance, and secondary colleges); 3) Set up a working office with a clear list of responsibilities; 4) Implement a regular meeting system and decision-making process. • Responsible Party: The Party Committee of the school or school leadership (as the lead); heads of relevant functional departments (as collaborators). • Timeline: Established and operational by the first semester of the first academic year. • Evaluation Criteria: Complete organizational structure documents and job descriptions; comprehensive meeting minutes and decision-making process records; improved efficiency in resolving cross-departmental issues. <p>Specific Task 2: Institutional Embedding of Action Guidelines into School Development Plans and Systems</p> <ul style="list-style-type: none"> • Implementation Steps: <ul style="list-style-type: none"> 1) Incorporate "sustainable employment quality" into the school's medium-and long-term development plan and annual key tasks; 2) Revise relevant regulations (aligning curriculum reform, practical teaching, school-enterprise cooperation, and career guidance policies); 3) Clearly define annual task breakdowns and responsibility agreements for each department;

Dimensions	Content
	<p>5) Establish a system implementation monitoring mechanism.</p> <ul style="list-style-type: none"> • Responsible Parties: Development Planning Department/Academic Affairs Department (lead); Quality Assurance Department, Career Center, and Secondary Colleges (collaborate). • Timeline: Alignment to be completed by the second semester of the first academic year; regular implementation to commence from the second academic year. • Evaluation Criteria: Inclusion level of planning and institutional documents; Coverage rate of responsibility agreements; Results of compliance checks on institutional implementation. <p>Specific Task 3: Develop implementation guidelines and evaluation criteria (standardization and assessability)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Develop detailed implementation guidelines (including processes, forms, and standards) for each module; 2) Establish an indicator system (comprising process indicators and outcome indicators); 3) Define data collection criteria and responsible units; 4) Create a template for annual evaluation reports and establish a review process. • Responsible Party: Quality Assurance Department (lead); Academic Affairs, Employment, and IT Departments (collaborate). • Timeline: Completion and trial operation in the first

Dimensions	Content
	<p>semester of the second academic year; optimization in the second semester.</p> <ul style="list-style-type: none"> • Evaluation Criteria: Completeness and operability of the guidelines; measurability of the indicator system; data quality (completeness rate, accuracy rate); timely production of the evaluation report. <p>Specific Task 4: Establish a resource guarantee mechanism (budget, human resources, platform)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish dedicated funds or secure funding channels in the annual budget; 2) Define staffing quotas and workload recognition (for career guidance, school-enterprise collaboration, curriculum reform, etc.); 3) Deploy digital platforms (for employment data, curriculum reform, and practice management); 4) Implement a performance-linked mechanism for resource utilization. • Responsible Parties: Finance/HR (lead); IT/Operations (collaborate). • Timeline: Integrated into annual budget and staffing plans starting from the second academic year, with ongoing optimization. • Evaluation Criteria: Implementation rate of special funds; Key position occupancy rate; Platform launch and utilization rate; Correlation analysis between resource investment and outcomes. <p>Specific Task 5: Establishing Coordination and Information Disclosure Mechanisms (Transparency Governance and Social Dialogue)</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Establish cross-departmental

Dimensions	Content
	<p>coordination meetings and thematic seminar mechanisms;</p> <p>2) Release annual progress reports on the implementation of action guidelines; 3) Create feedback channels for students, enterprises, and alumni (through seminars, questionnaires, or platforms); 4) Establish a closed-loop system of problem identification, rectification, and feedback.</p> <ul style="list-style-type: none"> • Responsible Party: Special Task Force Office (Lead); Departments and secondary colleges (Collaborate); Corporate/alumni representatives (Participate). • Timeline: Operates throughout the academic year (with at least one public feedback and improvement session per semester). • Evaluation Criteria: Frequency of coordination meetings and issue resolution rate; timeliness and completeness of public information; stakeholder engagement; closed-loop rate of feedback issues.
<p>Corresponding to the Employment Quality Dimension</p>	<p>This module provides "indirect support" through institutional governance and establishes systematic safeguards:</p> <p>Employment security (through standardized job access and rights protection systems);</p> <p>Employment stability and social security (through institutionalized employment support and tracking mechanisms);</p> <p>social dialogue (through information disclosure, feedback mechanism and multi-subject participation);</p> <p>It also provides basic governance support for other</p>

Dimensions	Content
	dimensions (skill development, work motivation, work-life balance, income and welfare).

Table 6. Action Guide for the Employment Quality Monitoring and Continuous Improvement Module

Dimensions	Content
Module Objective	<p>1) Establish a monitoring and evaluation system with "sustainable employment quality" as its core, making employment quality a key basis for educational management decisions;</p> <p>2) Establish a continuous data collection, analysis, interpretation, and feedback mechanism to enhance the scientific rigor and transparency of management decisions;</p> <p>3) Build a closed-loop system for continuous improvement, driving evidence-based iterative optimization of action guidelines and educational management models.</p> <p>4) To achieve the linkage improvement of employment quality indicators with curriculum reform, teaching innovation, school-enterprise collaboration, and employment guidance modules.</p>
Management Mechanism	<p>1) Employment quality indicator system: Establish a seven-dimensional framework with clear definitions, data standards, and weighting logic;</p> <p>2) Data collection and governance mechanisms: Establish multi-source data collection (from students, graduates, employers, platforms, and administrative data) and ensure</p>

Dimensions	Content
	<p>data quality control (completeness, accuracy, and comparability).</p> <p>3) Analysis, interpretation and reporting mechanism: Establish standardized data analysis protocols, annual/semester reporting systems, and visual dashboard interfaces;</p> <p>4) Feedback loop and improvement mechanism: Through evaluation meetings, problem lists, rectification plans, and review mechanisms, institutionalized continuous improvement is achieved, with clearly defined responsible entities and timelines.</p>
<p>Implementation path(Action Implementation Matrix)</p>	<p>Specific Task 1: Establishing the Employment Quality Indicator System and Manual</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Define the seven-dimensional indicator framework and hierarchical metrics (primary dimensions—secondary indicators—observable metrics); 2) Specify each metric's definition, calculation formula, data source, and collection frequency; 3) Develop the "Employment Quality Indicator Manual" and conduct expert review; 4) Establish an annual update and version control mechanism. • Responsible Party: Quality Assurance Department/Research Department (lead); Career Center, Academic Affairs Department, IT Department (collaborate); External Experts (participate in review). • Timeline: Complete the first draft in the first semester of the first academic year; conduct trial runs and revisions in

Dimensions	Content
	<p>the second semester.</p> <ul style="list-style-type: none"> • Evaluation Criteria: Indicator system coverage (complete coverage of seven dimensions); measurability and operability of indicators; expert consensus review results; completion rate of indicator manual release and training. <p>Specific Task 2: Establishing a Data Collection System and Data Governance Process</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Identify data sources: graduate surveys, employer surveys, in-process data from current students, internship platform data, and employment destination data; 2) Establish data collection procedures and ethical guidelines (informed consent, anonymization, etc.); 3) Develop data cleaning, verification, and quality review processes; 4) Formulate data storage and access control policies. • Responsible Party: Information Technology Department/Data Platform Management Unit (Lead); Employment Center, Secondary Colleges, Quality Assurance Department (Collaborate). • Timeline: Implementation in the second semester of the first academic year; regular operation starting from the second academic year. • Evaluation Criteria: Data completeness rate, accuracy rate, and recovery rate; data comparability (across cohorts and specialties); data security and compliance records; timeliness of data updates. <p>Specific Task 3: Establishing a Visual Dashboard and</p>

Dimensions	Content
	<p>Analysis Report System</p> <ul style="list-style-type: none"> <li>• Implementation Steps: 1) Create a job quality dashboard (filterable by major, cohort, position type, and employer type); <li>2) Develop semester and annual report templates; <li>3) Perform in-depth analysis (trends, disparities, key influencing factors); <li>4) Define the report review process and release mechanism. <li>• Responsible Party: Quality Assurance Department (lead); Data Analysts/Research Team, Employment Center (collaborate). <li>• Timeline: Launch the dashboard in the first semester of the second academic year; produce analytical briefs per semester; compile comprehensive annual reports. • <p>Evaluation Criteria: Dashboard adoption rate (managers/faculties); on-time report delivery rate; interpretability and actionable nature of analysis conclusions; accuracy of critical issue identification.</p> <p>Specific Task 4: Hold an evaluation and improvement meeting and close the rectification loop</p> <ul style="list-style-type: none"> <li>• Implementation Steps: 1) Conduct semester evaluation meetings (at both university and college levels); 2) Generate a "problem list" based on data (e.g., declining stability, reduced employer satisfaction); 3) Develop corrective action plans and resource allocation strategies; 4) Establish timelines for rectification and a review

Dimensions	Content
	<p>mechanism; 5) Document improvement measures and create version iterations.</p> <ul style="list-style-type: none"> • Responsible Parties: Specialized working body/Quality Assurance Committee (lead); Academic Affairs, Employment, and secondary colleges (implement); Enterprise representatives/alumni representatives (participate in discussions). • Timeline: At least one evaluation session per semester, with corrective actions typically implemented within one semester to one academic year. • Evaluation Criteria: Issue closure rate (initiation—rectification—re-review); implementation rate of improvement measures; improvement magnitude of key indicators; cross-departmental collaboration efficiency. <p>Specific Task 5: Revise the action guide based on monitoring results and establish an institutionalized iterative mechanism</p> <ul style="list-style-type: none"> • Implementation Steps: 1) Identify trigger conditions for revisions (e.g., indicator fluctuations, external policy changes, or shifts in industry demand); 2) Conduct module effectiveness evaluations (to determine which modules have a greater impact on employment quality); 3) Revise the content, measures, and standards of the action guide modules; 4) Release the updated guidelines and organize training sessions. • Responsible Party: Special Task Office/Quality Assurance Department (Lead); Heads of relevant modules (Collaborate). • Timeline: Annual version evaluation and

Dimensions	Content
	<p>revision; interim revisions when necessary.</p> <ul style="list-style-type: none"> • Evaluation Criteria: timeliness of revisions; sufficiency of evidence supporting revisions; consistency of implementation in new versions; trends in the effectiveness of continuous improvement.
<p>Corresponding to the Employment Quality Dimension</p>	<p>This module covers and monitors all seven dimensions of employment quality:</p> <p>Work safety, income and welfare, work-life balance, employment security and social protection, social dialogue, skills development and training, work relationships and work motivation. Through an indicator system and a closed-loop improvement mechanism, continuous monitoring and governance support are provided for each dimension, while also offering evidence-based references for the improvement of other modules.</p>

Step 4. Monitor, feedback and continuous improvement

Establish a quality monitoring and feedback mechanism for employment, regularly collect feedback from students, teachers, and enterprises, and dynamically adjust and continuously optimize the action guidelines based on the evaluation results.

Appendix F
Certificate of English

**BS
RU** BANSOMDEJCHAOPRAYA
RAJABHAT UNIVERSITY

This is to certify that

Miss Long Yinxi

Achieved BSRU English Proficiency Test (BSRU-TEP) level

C2

Given on 3rd November 2023



(Assistant Professor Dr Kulsirin Aphiratvoradej)
Director

Appendix G

The Document for Acceptance Research

The Editorial Board of Higher Education Studies
Canadian Center of Science and Education
1595 Sixteenth Ave, Suite 301, Richmond Hill, Ontario, L4B 3N9, Canada
Tel: 1-416-642-2606
Fax: 1-416-642-2608
E-mail: hes@ccsenet.org
Website: www.ccsenet.org

February 3, 2026

Dear Yinxi Long,

Thanks for your submission to *Higher Education Studies*.

We have the pleasure to inform you that your manuscript has been accepted for publication. It will be published in the issue of Vol. 16, No. 1, in March 2026.

Title: Development of the Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational Students

Authors: Yinxi Long, Phatchareephorn Bangkheow, Chollada Pongpattanayothin, Phisanu Bangkheow

If you have any questions, please do not hesitate to contact with us.

Sincerely,

Sherry Lin



On behalf of,
The Editorial Board of *Higher Education Studies*
Canadian Center of Science and Education

Development of the Educational Management Model for Enhancing the Sustainable Employment Quality of Higher Vocational Students

Yinxi Long^{1,2}, Phatchareephorn Bangkheow¹, Chollada Pongpattanayothin¹, Phisanu Bangkheow¹,

¹Graduate School, Bansomdejchaopraya Rajabhat University, Bangkok, Thailand

²Department of Physical Education, Guizhou Industry Polytechnic College, Guizhou, China

Correspondence: Yinxi Long, Graduate School, Bansomdejchaopraya Rajabhat University, Bangkok 10600, Thailand. Tel:+660838030925 E-mail:Longyinxi600@163.com

Abstract

The objectives of this research were 1) To study the current and desired conditions of educational management for enhancing the sustainable employment quality of higher vocational students, 2) To develop an educational management model to enhance the sustainable employment quality of higher vocational students, and 3) To evaluate the feasibility and appropriateness of the proposed educational management model. This research employed a mixed-methods design. The sample group was selected using stratified random sampling and purposive sampling methods, comprising 377 students from higher vocational and 15 experts from educational institutions and industry sectors in Guizhou Province. Data were collected through questionnaires, semi-structured interviews, focus group discussions, and expert evaluations. The research instruments included 1) questionnaire 2) interview form 3) focus group discussion guidelines 4) Educational Management Model 5) evaluation form. Statistical techniques such as percentage, mean, standard deviation, Modified Priority Needs Index (PNI_{modified}), and content analysis were used for data analysis.

The research findings revealed that the current and desired conditions of educational management regarding the sustainable employment quality of higher vocational students were analyzed across seven dimensions: safety at work, income and benefits, working hours and work-life balance, job security and social protection, social dialogue, skills development and training, and workplace relationships and work motivation. The Priority Needs Index indicated that safety at work was the most urgent area for improvement, followed by income and benefits. Based on these results, the researcher developed an educational management model comprising five essential components: Principles, Objectives, Content, Roles of Key Actors, and Measurement and Evaluation. Expert evaluation confirmed a high level of appropriateness and feasibility, indicating that the model is suitable for practical application in enhancing the sustainable employment quality of higher vocational students

Keywords: Educational management model, Sustainable employment quality, Higher vocational students.

1. Introduction

1.1 The Dilemmas and Research Motivation of Sustainable Education Models

Globally, enhancing the quality of higher vocational education management has become a pivotal challenge amid shifting labor market dynamics and industrial transformation. Vocational colleges worldwide face mounting pressure to bridge the gap between educational outputs and employers' evolving demands, with graduates often confronting issues of skill mismatches, short-term employment stability, and limited career progression (Ra et al., 2021). In China, this challenge is particularly pronounced as vocational education expands rapidly, while the number of higher vocational colleges and student enrollment have grown significantly, core issues such as declining employment rates, inadequate job-skill alignment, and precarious employment persist. Many graduates encounter the paradox of "holding qualifications yet lacking sustainable employment opportunities" (Barth &

Rieckmann, 2012; Wall et al., 2018) characterized by low skill-job matching, unstable working conditions, and insufficient pathways for long-term career growth.

The transition from vocational education to sustainable employment has grown increasingly complex as global labor markets prioritize adaptability, interdisciplinary competence, and sustainability literacy (ILO, 2021). While the core mission of vocational education lies in cultivating job-ready talent, existing educational management models in China often fall short: curricula tend to lag behind industrial upgrading, industry-education collaboration remains superficial, and career guidance focuses on short-term employment rather than long-term employability (UNESCO-UNEVOC, 2020). Critically, these models rarely integrate Education for Sustainable Development (ESD) principles, failing to equip students with the resilience and ethical awareness needed to navigate environmental, social, and economic changes in the workplace (Lozano et al., 2015).

For Chinese vocational students, these systemic gaps are amplified by broader structural constraints: uneven access to high-quality internship resources across regions, insufficient integration of digital technologies in teaching, and a lack of targeted support for aligning individual career paths with national industrial development strategies (Katernyak et al., 2018). Graduates often secure initial employment but struggle to retain positions or advance professionally, due to gaps in practical skills, workplace adaptability, and understanding of sustainable career practices. This not only undermines individual well-being but also hinders national economic resilience, as vocational education fails to fully fulfill its role as a driver of skilled workforce development.

Against this backdrop, the need to reform vocational education management models in China has become urgent. Sustainable employment quality, defined as graduates' ability to obtain stable, skill-matched positions with access to fair treatment, career progression, and lifelong learning opportunities (ILO, 2023)—cannot be achieved through fragmented interventions. Instead, it requires a holistic management framework that integrates ESD principles, deepens industry-education collaboration, and prioritizes long-term employability over short-term employment rates.

This study is motivated by the pressing need to address these dilemmas. By investigating the current gaps in educational management and developing a targeted, feasible model, the research aims to tackle three core challenges: a) the misalignment between vocational curricula and national industrial demands; b) the superficial nature of industry-education collaboration that fails to foster practical competence; and c) the lack of systemic support for students' sustainable career development. The ultimate goal is to provide vocational colleges across China with an actionable framework to enhance graduates' employment quality, thereby contributing to both individual career success and national socio-economic sustainability.

1.2 Explore Importance of the Problem

The importance of this research is underscored by both theoretical and practical imperatives. Theoretically, it contributes to the literature on vocational education management by integrating ESD principles with employment quality enhancement, expanding the understanding of how sustainable development can be operationalized in educational settings. Practically, the model responds to the urgent need to improve graduate employability in underdeveloped regions, where vocational education serves as a key driver of social mobility and economic transformation (Katernyak et al., 2018).

For vocational students, improved sustainable employment quality translates to enhanced career stability, skill adaptability, and well-being. For educational institutions, the model provides a structured framework to reform curriculum, teaching methods, and industry partnerships. For policymakers, the findings offer evidence-based recommendations to optimize vocational education policies and resource allocation, fostering regional economic resilience (UNESCO, 2023).

1.3 Literature Review on Education for Sustainable Development

Recent literature highlights the integration of Education for Sustainable Development (ESD) in curriculum design as a tool to promote long-term employability (Barth & Rieckmann, 2012; Lozano et al., 2015). Participatory and experiential teaching methods can be employed, encouraging students to apply their knowledge through project-based learning, case studies, and hands-on activities. These methods enable students to gain a deeper understanding of sustainable development while enhancing

their practical skills (Tilbury, 2011; Barth & Rieckmann, 2012). Collaboration with local enterprises and communities can facilitate internships and projects based on ESD principles, allowing students to apply and develop their skills in real-world professional environments. At the same time, companies can enhance their sustainable practices by participating in educational programs (Barth & Rieckmann, 2012; Hodko, 2023).

However, gaps remain: (1) Most studies focus on developed regions, with limited attention to underdeveloped areas like Guizhou; (2) Few models systematically integrate ESD with vocational education management; (3) Employment quality is often measured by short-term outcomes (e.g., employment rate) rather than sustainable indicators (e.g., career development, work-life balance) (ILO, 2023). This study fills these gaps by developing a holistic model for Guizhou's context.

1.4 State Hypotheses and Their Correspondence to Research Design

This study was conducted to address the following core research questions: a) what are the current and desired conditions of the sustainable employment quality among higher vocational students? b) how can an educational management model be developed to enhance the sustainable employment quality of higher vocational students? and c) how feasible and appropriate is the educational management model for enhancing the sustainable employment quality of higher vocational students?

Guided by the aforementioned research questions, the objectives of this study are defined as follows: a) to analyze the current and desired conditions of the sustainable employment quality of higher vocational students. b) to develop an educational management model to enhance the sustainable employment quality of higher vocational students. c) to evaluate the feasibility and appropriateness of the developed educational management model in enhancing the sustainable employment quality of higher vocational students.

To achieve the above research objectives, three core research hypotheses were proposed to guide the study:

H1: Significant disparities exist between the current status and desired orientations of educational management practices targeted at enhancing the sustainable employment quality of higher vocational students.

H2: An educational management model that embeds Education for Sustainable Development (ESD) principles and addresses six core dimensions, including curriculum reform and industry collaboration—can exert a positive and effective impact on improving higher vocational students' sustainable employment quality.

H3: The proposed educational management model is feasible and adaptable for practical implementation in higher vocational institutions, with particular applicability in economically underdeveloped regions.

To verify these hypotheses, a three-phase mixed-methods research design was employed. Phase one involved investigating the current and desired conditions of relevant educational management practices through questionnaires and semi-structured interviews. Phase 2 focused on the development of the educational management model, which was accomplished via focus group discussions with interdisciplinary experts. Phase three entailed evaluating the feasibility and adaptability of the proposed model through expert review and validation. This phased mixed-methods design ensures triangulation across multiple data sources, thereby reinforcing the validity and reliability of the research findings.

2. Method

This study employs a mixed research method, which integrates quantitative and qualitative approaches, and is conducted in three phases. The initial phase involves a current situation analysis, primarily using quantitative research. Through descriptive statistics, including mean and standard deviation, it examines the gap between the current state and expectations. It identifies specific deficiencies in the existing educational management model that affect employment quality, such as the disconnect between curricula and market demands, and insufficient safety training. This phase provides data support for the design of the model. The second phase focuses on model design and intervention, utilizing mixed

research methods. The aim is to develop and preliminary test the effectiveness of the ESD educational management model, optimizing its structure, including curriculum modules and teaching methods, through teaching practice. The third phase is a feasibility evaluation, primarily qualitative research, which assesses the model's feasibility from the perspectives of various stakeholders. Based on feedback, the model's details are refined to ensure its applicability to other higher vocational colleges. The choice of mixed research methods aims to balance the precision of data (quantitative) with the depth of insights (qualitative). The three-stage design creates a closed loop of "problem identification, scheme verification, optimization, and implementation," ensuring that the research outcomes are both academically rigorous and practically valuable.

2.1 Participants

This study adopted a phased research design, with distinct participant groups for each phase to ensure targeted data collection, model development, and validation. The characteristics of participants in each phase are detailed below, including eligibility criteria, demographic information, and sampling rationale.

2.1.1 Phase 1: Analysis of Current and Desired Conditions

1) Population: The population for Phase 1 included third-year students (graduating class of 2025) from 48 higher vocational colleges in Guizhou Province, China comprising 40 public and 8 private institutions. As of 2025, the total population size was approximately 200,000 students, with an average of 4,000 students per college. These students represented both technical disciplines (e.g., science and engineering, medical, finance and economics) and non-technical disciplines (e.g., normal education, sports, humanities and arts), reflecting the diversity of Guizhou's higher vocational education system.

2) Sample group: Using the Morgan sampling table (Krejcie & Morgan, 1970), a minimum sample size of 377 students was determined to ensure statistical representativeness. Stratified random sampling was employed to proportionally select participants across institutional types (public/private) and disciplinary categories. The final sample included 196 male students (52.0%) and 181 female students (48.0%), with the largest proportion from the Department of Civil Engineering (15.4%), followed by the Department of Humanities and Arts (14.3%), Department of Automotive Engineering (13.8%), and Department of Economics and Management (13.0%). Other participating departments included Big Data and Information Engineering (10.9%), Physical Education (10.6%), Chemistry and Environmental Engineering (7.4%), Marxist Studies (7.4%), and Intelligent Manufacturing Engineering (6.9%).

3) Expert Interview Participants: To complement quantitative data, 15 educational experts and administrators were selected via purposive sampling. Eligibility criteria included: (1) holding an academic rank of Associate Professor or above; (2) having at least 10 years of teaching or administrative experience in higher vocational education; (3) demonstrating scholarly engagement in student employment or educational management (e.g., published research, curriculum development). Participants included curriculum designers, department heads, deans, and employment service coordinators from both public and private colleges across Guizhou Province, ensuring diverse perspectives on institutional mechanisms and policy implementation.

2.1.2 Phase 2: Development of the Educational Management Model

Focus Group Discussion: A focus group of 10 experts was convened to co-develop the model, selected based on professional expertise in core research domains: Education for Sustainable Development (ESD), higher vocational education management, institutional policy planning, and industry-education collaboration. Participants included educators from universities, vocational colleges, and research institutions in Guizhou Province, with all having more than 10 years of experience in educational leadership, model design, or employment-related program development. The group's diversity ensured the model integrated theoretical rigor, practical applicability, and alignment with regional labor market demands.

2.1.3 Phase 3: Evaluation of Model Feasibility and Appropriateness

Expert Evaluation Panel the model evaluation panel consisted of 15 experts, divided into two

subgroups to ensure comprehensive validation:

Educational Experts (n=5): Eligibility criteria included (1) holding a master's degree or higher; (2) having over 10 years of experience in higher vocational education management, curriculum design, or student employment services. Participants included senior administrators and faculty members from participating vocational colleges, with expertise in educational governance and program evaluation.

Industry Leaders (n= 10): Selected based on having over 10 years of relevant industry experience in sectors closely aligned with Guizhou's vocational education focus (e.g., manufacturing, logistics, healthcare, digital services). These participants provided insights into labor market relevance and practical implementability of the model from an employer perspective.

All participants across phases were informed of the study's purpose, data usage, and confidentiality policies. Informed consent was obtained prior to participation, and ethical approval was granted by the University Research Ethics Committee.

2.2 Sampling Procedures

2.2.1 Sampling Method

Stratified random sampling was used for students to ensure proportional representation across institutional types (public/private) and disciplines. Expert participants were selected based on professional expertise in vocational education management, ESD, and industry-education collaboration.

2.2.2 Data Collection Settings and Ethics

Data were collected between September 2024 and August 2025. Questionnaires were distributed via online platforms (Wenjuanxing) with informed consent obtained from all participants. Interviews and focus group discussions were conducted online (via WeChat and email) and audio-recorded with permission. Ethical approval was obtained from the University Research Ethics Committee, ensuring anonymity and confidentiality of data.

2.2.3 Sample Size, Power, and Precision

The student sample size (n=377) was determined to provide sufficient statistical power for detecting differences between current and desired conditions. The expert sample size was based on the need for diverse perspectives, ensuring comprehensive model development and evaluation.

2.3 Measures and Instruments

To address the research objectives across three phases, targeted measures and instruments were developed or adapted, ensuring alignment with phase-specific goals, from assessing current conditions to model development and validation. All instruments underwent rigorous quality checks (validity and reliability) to ensure data credibility.

2.3.1 Phase 1: Questionnaire

a) Student Questionnaire

Structured questionnaire (30 items) covering seven dimensions of sustainable employment quality. Responses were rated on a 5-point Likert scale for current and desired conditions. Validated via expert review (IOC=0.60-1.00) and pilot test (Cronbach's $\alpha=0.87$), ensuring internal consistency.

b) Expert Interview Guide

In-depth interviews were conducted with 15 faculty members to collect qualitative data, using a semi-structured interview guide consisting of nine open-ended questions that focused on three core themes: definitions of sustainable employment, its influencing factors, and gaps in educational management practices. The participants were selected via purposive sampling, based on their extensive professional experience and solid academic background—all interviewees had no less than a decade of higher education teaching experience and maintained active scholarly engagement in the field. Specifically, they all met the following three criteria: a) holding an academic rank of Associate Professor or above; b) having accumulated at least ten years of teaching experience in higher education institutions; and c) possessing demonstrable academic achievements related to higher education student employment, such as the publication of relevant monographs, papers, or audio-visual materials.

2.3.2 Phase 2: Development of the Educational Management Model

a) Draft Model Framework

Preliminary framework integrating Phase 1 data, educational management theory, and ESD principles, outlining core components and implementation pathways.

b) Focus Group Discussion Protocol

A structured protocol guided the focus group of 10 experts, with three key sections: (1) review of Phase 1 findings to confirm improvement priorities; (2) feedback on the draft model's structure, components, and practicality; (3) recommendations for optimizing implementation strategies. The protocol included open-ended prompts (e.g., "Which components of the draft model are most critical for addressing regional employment challenges?") and collaborative activities (e.g., ranking component priorities). Discussions were audio-recorded and transcribed verbatim for content analysis.

Discussions were audio-recorded and transcribed verbatim for content analysis.

2.3.3 Phase 3: Evaluation of Model Feasibility and Appropriateness

a) Model Evaluation Form

5-point Likert scale form (8 criteria: conceptual soundness, policy alignment, etc.) assessing feasibility and appropriateness. Validated by three experts, with test-retest ICC=0.83.

b) Expert Feedback Questionnaire

Supplementary open-ended questionnaire collecting qualitative input on model strengths, revisions, and implementation barriers from the evaluation panel.

2.4 Data analysis

Data analysis was tailored to each phase's objectives, combining quantitative and qualitative methods to ensure rigorous interpretation and alignment with research goals.

2.4.1 Phase 1: Analysis of Current and Desired Conditions

Quantitative data (questionnaire): Descriptive statistics (mean, standard deviation, percentage) summarized student perceptions of current and desired conditions. Modified Priority Needs Index (PNI modified) calculated gaps between current and desired states to identify improvement priorities.

Qualitative data (expert interviews): Transcribed interview content underwent thematic analysis, extracting key themes related to sustainable employment determinants and educational management gaps.

2.4.2 Phase 2: Development of the Educational Management Model

Qualitative content analysis was applied to focus group discussion records. Expert feedback was coded and categorized to refine the draft model, aligning components with identified needs (e.g., curriculum reform, industry collaboration) and theoretical frameworks.

2.4.3 Phase 3: Evaluation of Model Feasibility and Appropriateness

Quantitative data (evaluation form): Mean and standard deviation analyzed expert ratings of the model's feasibility and appropriateness across eight criteria.

Qualitative data (feedback questionnaire): Thematic analysis synthesized expert comments to identify model strengths, revision needs, and implementation considerations.

3. Results

3.1 Phase 1: Analysis of Current and Desired Conditions

1) Analysis of Current and Desired Conditions

Table 1 Analysis of the Current of Employment Quality of Higher Vocational College Students

No.	Dimension	Current Conditions		Desired Conditions		PNI modified (I-D)/D	Rank
		\bar{X}	S.D.	\bar{X}	S.D.		
1	Safety at Work	3.62	1.29	4.78	0.61	0.32	1
2	Income and Benefits	3.66	1.29	4.54	0.66	0.24	2
3	Working Hours and Work-Life Balance	3.74	1.22	4.54	0.63	0.21	6

No.	Dimension	Current Conditions		Desired Conditions		PNI modified (I-D)/D	Rank
4	Social Dialogue	3.70	1.24	4.55	0.64	0.23	3
5	Skills Development and Training	3.92	1.15	4.70	0.62	0.20	7
6	Job Security and Social Protection	3.80	1.18	4.68	0.64	0.23	3
7	Workplace Relationships and Work Motivation	3.77	1.20	4.61	0.63	0.22	5
Total	—	3.74	1.22	4.63	0.63	0.24	—

This table presents a comparison between the current and desired conditions of sustainable employment quality across seven dimensions, revealing significant development gaps in all areas. The analysis of the Modified Priority Needs Index (PNI_{modified}) identifies "Workplace Safety" as the highest priority for improvement (PNI = 0.32), followed by "Income and Benefits". Overall, the mean score for desired conditions (4.63) is markedly higher than that of current conditions (3.74), underscoring an urgent need to develop a management model to enhance students' quality of work.

2) Thematic Analysis of Interview Results

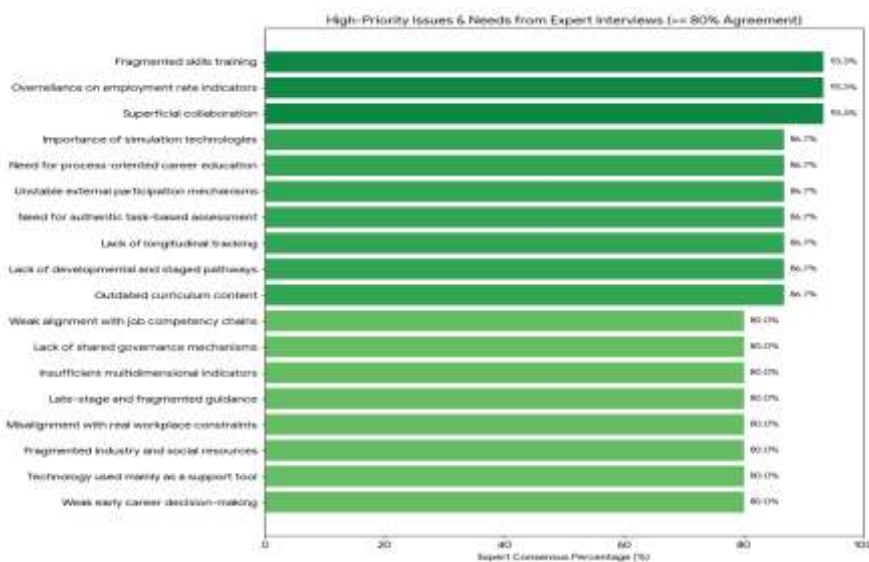


Figure 1 interview results

Figure 3.1 interview results presents the thematic analysis of interview results from 15 experts, identifying eight key dimensions that influence sustainable employment quality. The findings reveal that the most critical challenges include an over-reliance on employment rate metrics (93.3%), superficial industry-enterprise collaboration (93.3%), and fragmented skill training that lacks alignment with actual workplace demands (93.3%). To address these issues, the experts recommended implementing long-term tracking systems, performance-based assessments, and the integration of information technology to analyze competencies. These measures serve as a vital data foundation for developing an educational management model that is both effective and sustainable.

3.2 Phase 2: Development of the Educational Management Model

This model is constructed upon a systemic framework comprising five core components: Principles, Objectives, Content, Development Process, and Measurement and Evaluation. It is grounded in four fundamental principles: system integration, student-centeredness for sustainable employment, practice-oriented operability, and continuous improvement. The model's content is operationalized through six action modules, including curriculum system and skill development, teaching innovation, school-enterprise collaboration, and career guidance. These modules are driven by five categories of supporting measures: institutional support, resource allocation, capacity building, monitoring and accountability, and incentive mechanisms. Furthermore, the model explicitly defines the roles of three

key actors—administrators as strategic designers, teachers as practitioners and mentors, and students as active learners—to ensure cohesive implementation. Finally, the model has been validated by experts for its appropriateness and practical feasibility, serving as a robust database for the sustainable enhancement of employment quality in higher vocational education. The details are as below:

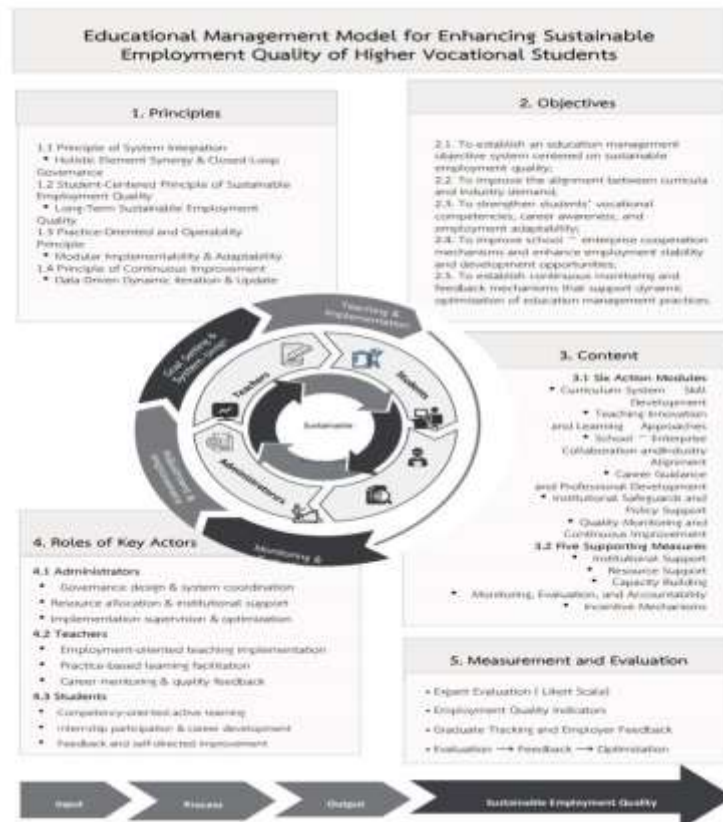


Figure.2 The Educational Management Model to Enhance the Sustainable Employment Quality of Higher Vocational Students

3.3 Phase 3: Evaluation of Model Feasibility and Appropriateness

Table 3 Analysis of The feasibility and appropriateness evaluation results of the proposed education management model

No.	Assessment Checklist	Feasibility			Appropriateness		
		\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
1	Components of the Educational Management Model	3.87	0.60	High	3.80	0.62	High
2	Principles	3.93	.55	High	3.91	.65	High
3	Objectives	4.00	.574	High	3.91	.603	High
4	Content	4.05	.632	High	4.00	.701	High
5	Roles of Key Actors	4.07	.630	High	4.09	.645	High
6	Masurement and Evaluation	4.20	.585	High	4.11	.603	High
Total		4.02	0.60	High	3.97	.64	High

Table 3 presents the evaluation results of the educational management model's appropriateness and feasibility as assessed by experts, with all dimensions rated at a "High" level. The overall mean scores were 3.97 for appropriateness and 4.02 for feasibility. Notably, the "Measurement and Evaluation" dimension received the highest scores (4.11 and 4.20, respectively). These findings confirm that the developed model is well-aligned with the research context and can be effectively implemented to enhance sustainable employment quality.

4. Discussion

This section discusses the study's key findings in strict alignment with the three research objectives, linking results to theoretical frameworks, practical applications, and existing literature, while acknowledging limitations and future research directions.

4.1 Discussion on Objective 1: Current and Desired Conditions of Sustainable Employment Quality

The first research objective aimed to analyze the current and desired conditions of sustainable employment quality among higher vocational students. Phase 1 results clearly showed that students' current sustainable employment quality was at a moderate level, while their desired conditions scored significantly higher, confirming significant gaps between existing educational management practices and students' needs. This finding supports the initial research hypothesis (H1) and is consistent with prior studies on vocational education challenges in underdeveloped regions (Katernyak et al., 2018).

Among the seven dimensions of sustainable employment quality, Safety at Work had the largest gap (PNI modified=0.32), with "fair and safe internship/training environment" and "prevention of forced labor" being the top priority items for improvement. This reflects students' urgent concerns about workplace protection during internships, which may be attributed to inadequate supervision of internship quality and insufficient safety training in some vocational colleges. Income and Benefits ranked second (PNI modified=0.24), with "adequate living support from school/internship unit" being the most prominent gap, indicating that students' economic security needs during the transition from study to employment are not fully met.

Expert interviews further supplemented quantitative findings by identifying three core systemic barriers: skill-job mismatch, weak career planning awareness, and insufficient industry-education collaboration. These barriers are interrelated: weak career awareness leads to blind career choices, while disjointed industry-education collaboration and outdated curricula result in mismatched skills, ultimately affecting employment stability and quality. These findings align with Zhao et al.'s (2022) observation that vocational education often overlooks the integration of career guidance and real-world practice, and provide empirical evidence for the subsequent model development.

4.2 Discussion on Objective 2: Development of the Educational Management Model

The development of this educational management model underscores a transition from short-term employment metrics to a systemic, student-centered approach focused on long-term career sustainability. Grounded in sustainable development and participatory management, the model's emphasis on system integration and continuous feedback aligns with the "holistic governance" perspective found in modern vocational education research. Similar to the findings of Nurcahya et al. (2022), this study confirms that effective management requires a synergy between curriculum innovation, deep industry-education collaboration, and robust institutional safeguards. Furthermore, the model's six action modules directly address the "skill-job mismatch" and "superficial cooperation" challenges frequently cited in recent literature by institutionalizing shared governance and quality monitoring. By integrating data-driven improvement loops, this model offers a more scalable and adaptable framework than traditional, isolated teaching interventions. Ultimately, the expert validation reinforces that a multidimensional approach—linking principles, actors, and operational measures—is essential for enhancing employment quality in the evolving labor market.

4.3 Discussion on Objective 3: Feasibility and Appropriateness of the Model

The expert evaluation confirmed that the developed model possesses high conceptual rigor and operational viability, achieving mean scores of 3.97 for appropriateness and 4.02 for feasibility. These results align with the findings of Nurcahya et al. (2022), which emphasize that successful vocational management requires a synergistic relationship between curriculum design and institutional support.

Specifically, the "Measurement and Evaluation" dimension received the highest ratings ($X=4.20$ for feasibility), highlighting the critical role of data-driven feedback loops in modern education governance. Similar to other contemporary models, experts noted that the model's effectiveness is contingent upon institutional readiness, particularly regarding resource allocation and the maturity of school-enterprise partnerships. Ultimately, the high consensus on the roles of key actors ($X \geq 4.07$) validates the model's design as a collaborative and practically implementable framework for enhancing sustainable employment outcomes.

4.4 Contributions and Practical Implications

Theoretically, the study enriches vocational education literature by integrating ESD into a region-specific, phase-tested model (Lozano et al., 2015) and adds local empirical evidence to global sustainable employment frameworks. Practically, the model offers actionable strategies:

- Prioritize workplace safety training and internship protection.
- Deepen industry partnerships to reduce skill-job mismatch.
- Embed career guidance throughout students' academic journey.

For policymakers, findings support targeted investments in vocational infrastructure and industry-education collaboration incentives.

4.5 Limitations and Future Research

Limitations include the focus on Guizhou Province (limiting generalization) and lack of long-term tracking of the model's impact on graduates. Future research should conduct cross-regional studies and longitudinal evaluations. Additional work could explore digital transformation in model implementation and address the needs of disadvantaged student groups.

4.6 Conclusion

This study was conducted to achieve three core objectives, and the key findings are summarized as follows in accordance with these objectives:

First, regarding the analysis of current and desired conditions (Objective 1): The sustainable employment quality of higher vocational students in Guizhou Province is currently at a moderate level, with significant gaps between current practices and desired conditions across all seven dimensions. Safety at Work and Income and Benefits are the top priority areas for improvement, while skill-job mismatch, weak career awareness, and insufficient industry-education collaboration are the main systemic barriers. These findings clarify the specific problems that need to be addressed in vocational education management.

Second, regarding the development of the educational management model This research concluded Phase 2 by systematically developing a comprehensive educational management model grounded in sustainable development and participatory management. The model integrates five core components—principles, objectives, content, development processes, and evaluation—to transition vocational education from short-term placement targets to long-term career sustainability. Its operational core features six action modules, including curriculum reform and industry alignment, supported by institutional safeguards and capacity-building measures. Furthermore, the model institutionalizes a tripartite governance logic where administrators, teachers, and students function as mutually reinforcing actors within a closed-loop feedback system. Ultimately, this framework provides an executable and data-driven pathway for higher vocational institutions to dynamically adapt to evolving labor market demands.

The final phase of this research concluded with a robust validation of the developed educational management model, which was rated at a high level for both appropriateness and feasibility by a panel of experts. The evaluation results, yielding mean scores of 3.97 and 4.02 respectively, confirm that the model's structural components and action modules are well-aligned with the institutional context of higher vocational education. Particular consensus was reached regarding the "Measurement and Evaluation" dimension, highlighting the model's strength in facilitating data-driven, continuous improvement. Experts also verified that the clearly defined roles for administrators, teachers, and students provide a practical framework for cohesive implementation. Ultimately, these findings demonstrate that the model is a viable and effective governance tool for enhancing the sustainable employment quality of graduates in a dynamic labor market.

In summary, this study identifies the key issues in enhancing the sustainable employment quality of higher vocational students, develops a targeted and operable educational management model, and

verifies its practical value. The model provides a valuable tool for vocational education institutions in underdeveloped regions to reform their management practices, and offers evidence-based recommendations for policymakers to optimize vocational education policies. By promoting the implementation of this model, it is expected to improve the sustainable employment quality of higher vocational graduates, support regional economic resilience, and contribute to the sustainable development of vocational education.

Acknowledgments

This thesis focuses on the research of enhancing employment quality in higher vocational colleges. Here, we would like to extend sincere gratitude to all students who participated in the questionnaire survey, teachers and experts involved in structured interviews, the expert team engaged in the focused discussion for strategy formulation, and specialists who participated in strategy evaluation. We also appreciate the selfless support from family members, classmates, and friends throughout the research process. A special thanks goes to my supervisors, who dedicated substantial time and energy to guiding and assisting me in completing this thesis.

References

- Asukwo, A. E., Moses, D., Ibanga, I. J., & Yusuf, M. A. (2020). Achieving Sustainable Development Goals 2016-2030 in Nigeria through Technical and Vocational Education and Training. *International Journal of Vocational Education & Training*, 25(2).<https://ijtvvet.com>
- Bakhmat, O., Kravets, O., & Sydorenko, I. (2022). Quality management in higher education: Global trends and challenges. *Problems of Education in the 21st Century*, 80(1), 3-15.
- Barth, M., & Rieckmann, M. (2012). Sustainability and Competency Development in Higher Education: From Knowledge to Action. *Journal of Education for Sustainable Development*. <https://journals.sagepub.com/home/jsd>
- Bhate, M., Vaidya, R., & Vatharka, P. (2020). Factors Affecting Employability—A Student's Perspective. *International Journal of Management (IJM)*, 11(8).<https://iaeme.com/home/journal/ijm>
- Briede, L., & Drelinga, E. (2020). Personal sustainability and sustainable employability: Perspective of vocational education students. *Journal of Teacher Education for Sustainability*, 22(2), 40-48.<https://doi.org/10.3316/JTES20200204>
- Cebrián, G., Junyent, M., & Mulà, I. (2020). Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability*, 12(2), 579.
- Cebrián, G., Junyent, M., & Mulà, I. (2021). Current practices and future pathways towards competencies in education for sustainable development. *Sustainability*, 13(16), 8733. <https://www.mdpi.com/2071-1050/13/16/8733>
- Chankseliani, M., Qoraboyev, O., & Gimranova, G. (2021). Vocational education and training for inclusive growth: Evidence from Central Asia. *Comparative Education Review*, 65(3), 489-522.
- Chen, P., Goncharova, A., Pilz, M., Frommberger, D., Li, J., Romanova, O., & Lin, Y. (2021). International curriculum comparison in vocational education and training: A collaborative development of an analysis instrument. *International journal for research in vocational education and training*, 8(4), 16-43.<https://doi.org/10.13152/ijrvet.8.4.2>
- Detgen, M. A., Fernandez, F., McMahan, A., Johnson, L., & Dailey, C. R. (2021). Efficacy of a College and Career Readiness Program: Bridge to Employment. *The Career Development Quarterly*, 69(3), 231-247.<https://onlinelibrary.wiley.com/doi/10.1002/cdq.12270>
- Dumbiri, D. N., & Permana, S. A. (2021, March). Information technology for sustainable development in vocational education. In *Journal of Physics: Conference Series (Vol. 1823, No. 1, p. 012119)*. IOP Publishing.<https://doi.org/10.1088/1742-6596/1823/1/012119>
- Deissinger, T., & Hellwig, B. (2015). The dual system of vocational education and training in Germany: A model for Europe? *European Journal of Education*, 50(1), 89-104.<https://doi.org/10.1111/ejed.12115>
- Estrada, M., Monferrer, D., Rodríguez, A., & Moliner, M. Á. (2021). Does emotional intelligence influence academic performance? The role of compassion and engagement in education for sustainable development. *Sustainability*, 13(4), 1721.<https://doi.org/10.3390/su13041721>

- Fagan, C., Cooper, A., Chatzifragkou, A., & Bennett, E. J. (2020). Principles in partnership: Embedding employability in curriculum design. *The Journal of Educational Innovation Partnership and Change*, 6(1).<https://www.emerald.com/insight/content/doi/10.1108/JEIPC-04-2020-0026/full/html>
- Fearnley, M. R., & Amora, J. T. (2020). Learning Management System Adoption in Higher Education Using the Extended Technology Acceptance Model. *IAFOR Journal of Education*, 8(2), 89-106.
<https://doi.org/10.22492/ije.8.2.03>
- Gribkova, G. I., Bulkina, E. V., Amarantova, E. A., Shapovalova, N. A., & Chizhikova, V. V. (2020). Social partnership in higher education institutions as a relevant problem of educational management. *Journal of Environmental Treatment Techniques*, 8(4), 1463-1472.
- Guo, Y., & Wang, X. (2018). School-enterprise cooperation in Chinese higher vocational education: Problems and countermeasures. *Chinese Education and Society*, 51(3), 213-225.
<https://doi.org/10.1080/10611932.2018.1467002>
- Hodko, E. M. (2023). Education for sustainable development of the Republic of Belarus. *SpringerLink*.<https://link.springer.com/book/10.1007/978-3-031-20434-3>
- International Labour Organization (ILO). (2023). World employment and social outlook: *The value of essential work*. ILO.
- Jemmy, J., Hendrilia, Y., Suharmono, S., Aji, L. J., Oci, M., & Ahyani, E. (2023). Systematic Education Management And Conceptual Framework In Improving The Quality Of Education: Literature Review. *Innovative: Journal Of Social Science Research*, 3(5), 351-362.
<https://doi.org/10.31004/innovative.v3i5.4561>
- Johnson, M. R., & Kim, P. S. (2024). Innovative Teaching Strategies in Sustainable Vocational Education. *Science and Education*, 4(9).
- Katernyak, I., Semenyshena, N., & Lavrenchuk, O. (2018). eLearning within the community of practice for sustainable development. *Emerald Insight*.<https://www.emerald.com/insight>
- Khamdamov, U., Abdullayev, A., Elov, J., & Sultanov, D. (2020). Conceptual model of the education management information system for higher education institutions. *International Journal of Advanced Trends in Computer Science and Engineering*, 9(5).<http://warse.org/ijatcse.htm>
- Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a worldwide survey. *Journal of Cleaner Production*, 108, 1-18.
- Scott, W. (2013). *Developing the Sustainable School: Thinking the Issues Through*. Cambridge University Press.
- Tilbury, D. (2011). *Education for sustainable development: A handbook for teachers and teacher educators*. UNESCO.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2023). *UNESCO strategy for technical and vocational education and training adopted at Executive Board*.
- Wall, T., Hindley, A., Hunt, C., Peach, J., Preston, M., Hartley, C., & Fairbank, A. (2018). Work-based and vocational education as catalysts for sustainable development. *Emerald Insight*, 50(2), 145-160.
- Xiong, H., & Chang, K. (2022). The Impact of Vocational Education on the High-Quality Development of Local Economy in the New Era. *Advances in Vocational and Technical Education*, 4(4), 63-69.
- Yang, P., Guo, J. R., & Jin, Y. N. (2015). Analysis of employment quality of Chinese vocational and technical college graduates. *Chinese Education & Society*, 48(1), 1-22.
<https://doi.org/10.1080/10611932.2014.994940>
- Zhao, H., Stoyanets, N., Cui, L., & Li, G. (2022). Strategy of vocational education adapting to social and economic development. *Journal of Innovations and Sustainability*, 6(1), 03-15.

Appendix A:

Supplementary Expert-Related Materials

Table 3.9 Interview Summary Report

NO.	Question	Summary
1	From your professional experience, what kind of employment status can be regarded as sustainable employment for higher vocational college graduates?	Experts generally described sustainable employment as a long-term and relatively stable employment status characterized by sustained job retention, continuous career development, and adequate income and welfare protection. Beyond stability, experts emphasized graduates' ability to adapt to changes in job roles, technologies, and industry environments, indicating that sustainable employment reflects both continuity and adaptability rather than short-term job placement.
2	Compared with "successful employment" or "obtaining the first job," what do you think are the core differences of sustainable employment?	Most experts emphasized that successful employment mainly refers to initial job acquisition, whereas sustainable employment focuses on long-term employability and career development. Key differences included continuity of employment, opportunities for career progression, accumulation of professional experience, and stable working conditions. Experts highlighted that sustainable employment is a process-oriented concept centered on long-term growth rather than short-term employment outcomes.
3	Based on your observations, what key conditions or support factors are usually required for higher vocational college graduates to achieve long-term and stable development?	Frequently mentioned factors included occupational and technical skills necessary for job-task matching, communication and teamwork abilities, and clear career planning awareness. Experts also stressed the importance of learning motivation and willingness to improve. In addition, enterprise support (such as training opportunities and development pathways) and institutional support mechanisms were identified as essential enabling conditions for long-term development.
4	Among the conditions you mentioned, which mainly come from students themselves, which from educational institutions, and which from enterprises or the external environment?	Experts generally classified the influencing factors into three sources. Individual-level factors included skills foundation, work attitudes, adaptability, and learning initiative. Educational-level factors involved curriculum and training design, guidance and mentoring, and quality monitoring and improvement mechanisms. External factors included enterprise collaboration, availability of suitable job opportunities, and policy and institutional protection mechanisms such as labor protection and social security.
5	From an employer's perspective, what are the key factors determining whether higher vocational college graduates can stay and grow in the long term?	From the employer perspective, experts emphasized performance and fit in real work contexts. Key factors included professional competence, ability to complete job tasks, adaptability to organizational routines, teamwork and communication skills, and a proactive learning attitude. Compliance with workplace norms, including discipline, safety awareness, and professional conduct, was also regarded as fundamental for long-term retention and development.
6	From the perspective of educational training and management, which practices or mechanisms have the	Experts highlighted the importance of curriculum relevance and alignment with industry needs. Practical training opportunities, such as hands-on practice,

NO.	Question	Summary
	greatest impact on graduates' long-term employment development?	internships, and project-based learning, were considered crucial for strengthening employability. Career guidance services were frequently mentioned, along with feedback mechanisms that track graduates' employment outcomes and use the results to improve training. Sustained cooperation with industry was also regarded as a key institutional practice.
7	In practice, what problems are most likely to lead to unstable employment or frequent job mobility among higher vocational college graduates, and what key elements do these problems reflect as missing?	Commonly identified problems included insufficient matching between graduates' skills and job requirements, leading to difficulties in job performance and early turnover. Weak career awareness and unclear career goals were also frequently mentioned as causes of frequent job changes. Limited development opportunities, unstable employment conditions, and inadequate long-term protection mechanisms were seen as structural factors, reflecting deficiencies in employability development, career planning, and employment security support.
8	If you were asked to classify these influencing factors, into how many categories or dimensions would you divide them, and what would be the core meaning of each category?	Experts tended to group the influencing factors into several higher-level categories. These included competence-related factors (such as technical ability, communication, and adaptability), personal development factors (such as career awareness, motivation, and learning initiative), and institutional and policy support factors (such as school support systems, enterprise collaboration, and governance mechanisms). Additional categories related to employment stability and protection, as well as continuous learning capacity, which together reflect sustainability over time.
9	If only a few key aspects could be prioritized to promote sustainable employment for higher vocational college graduates, which aspects should be emphasized and why?	Priority areas identified by experts included strengthening skill development to improve job-task matching and performance, enhancing career awareness to reduce blind job selection and frequent turnover, and deepening enterprise collaboration to provide authentic work-based learning and clearer development pathways. Experts also emphasized the importance of employment security and protection mechanisms, as well as opportunities for continuous learning, to support long-term employability and sustainable career development.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).

Researcher Profile

- Name:** Long Yinxi
- Gender:** Female
- Date of birth:** June 15, 1989
- Employer:** Guizhou Industry Polytechnic College
- Mailing address:** Guizhou Industry Polytechnic College, Changling
South Road, Guanshanhu District, Guiyang City, Guizhou
Province, P.R.China
- Position:** Teacher, Guizhou Industry Polytechnic College
- Work experience:**
- **November 2020 – 2026**
Guizhou Industry Polytechnic College: Lecturer
- Education background:**
- **September 2008 – July 2012**
Coventry University
Major: Business Management
Degree: Bachelor's Degree
 - **September 2012 – December 2013**
Coventry University
Major: International Business
Degree: Master's Degree
 - **January 2023 – January 2026**
Bansomdejchaopraya Rajabhat University
Major: Educational Management
Degree: Doctoral Candidate