THE DEVELOPMENT OF A MODEL OF TEACHERS' WORK ENGAGEMENT IN ENTERPRISE INTERNSHIP IN HENAN, CHINA

Wei Xiang
6419000023

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Educational Administration Innovation
Graduate School of Education
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Title	The Development of a Model of Teachers' Work Engagement in Enterprise Internship in Henan, China
Researcher	Wei Xiang
Advisor	Associate Professor Dr. Boonmee Nenyod
Co-advisor	Dr. LeeHsing Lu

Graduate School of Education, Siam University approved to accept this Dissertation as part of Doctoral of Philosophy Program in Educational Administration Innovation.

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Abstract

Title The Development of a Model of Teachers' Work Engagement in Enterprise Internship in Henan, China

Researcher Wei Xiang

Degree Doctor of Philosophy

Major Educational Administration Innovation

Dissertation Advisor

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(Associate Professor Dr. Boonmee Nenyod) (Dr. LeeHsing Lu)

This study had the following objectives: (1) to assess the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China; (2) to identify the factors that influence the relationship between teachers' work engagement in enterprise internships and the effectiveness of professional training programs; (3) to develop an evidence-based model to enhance teachers' work engagement and effectiveness in enterprise internship and professional development programs, focusing on meeting modern industries' technological demands; (4) to reveal teachers' insights and experts' opinions on the enterprise internship and professional development programs.

A mixed-methods approach was employed. Quantitative data were collected by distributing questionnaires through the WJX platform, resulting in 408 valid responses. Statistical analyses, including CFA and SEM, were conducted using SPSS 27 and AMOS 27. Qualitative data were obtained through online semi-structured interviews and updated report questionnaires, then analyzed through a triangulated method involving AI-assisted transcription with iFLYTEK, thematic coding, word cloud visualization, and word frequency analysis with MAXQDA 2020. The study incorporated enterprise internship as a moderating variable to examine its effects on the relationships among perceived subjective norms, perceived organizational support, job embeddedness, and teachers' work engagement. The SEM results indicated that perceived subjective norms ($\beta = 0.239$, $p < 0.001$), perceived organizational support ($\beta = 0.339$, $p < 0.001$), and job embeddedness ($\beta = 0.223$, $p < 0.001$) significantly predicted psychological contract, which subsequently predicted teachers' work engagement ($\beta = 0.529$, $p < 0.001$). Both the mediating role of psychological contract and the moderating role of enterprise internship were supported.

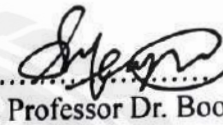
Qualitative findings supported the quantitative results and emphasized themes including propriety, feasibility, and utility. Ten experts representing five vocational colleges provided evaluative insights through semi-structured interviews and a refreshing report, ensuring academic rigor and practical relevance.

This study refines and expands existing training frameworks by integrating job embeddedness and psychological contract while introducing enterprise internship as a key moderating factor. These findings advance both theoretical understanding and

practical strategies for improving "double-qualified" teacher development in vocational education.

Keywords: double-qualified teachers, teachers' work engagement, psychological contract, job embeddedness, enterprise internship, vocational education

Approved By



Associate Professor Dr. Boonmee Nenyod
Advisor

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Their joint supervision gave me the ideal balance of academic freedom and structured support. This dissertation would not have been possible without their ongoing engagement, professionalism, and dedication to my academic growth.

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Wei Xiang

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List of Abbreviations

Abbreviation	Full Name
PSN	Perceived Subjective Norms
POS	Perceived Organizational Support
JE	Job Embeddedness
EI	Enterprise Internship
PC	Psychological Contract
TWE	Teachers' Work Engagement
SEM	Structural Equation Modeling
TAM	Technology Acceptance Model
JCM	Job Characteristics Model
HRM	Human Resource Management
OST	Organizational Support Theory
TPB	Theory of Planned Behavior
DIF	Differential Item Functioning
WJX	Online Survey Platform
RMSEA	Root Mean Square Error of Approximation
CFI	Comparative Fit Index
GFI	Goodness-of-Fit Index
AGFI	Adjusted GFI
NFI	Normed Fit Index
iFlytek	Technology AI Analysis software
CITC	Corrected Item-Total Correlation
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
KMO	Kaiser-Meyer-Olkin
CMIN/DF	Chi-square/df
IFI	Incremental Fit Index

CHAPTER 1

INTRODUCTION

1.1 Background

1.1.1 The Origin of "Double-Qualified" Teacher Certification

The concept of "Double-Qualified" teachers—who possess both theoretical knowledge and practical skills—originates from Germany's dual education system. This system integrates vocational training with academic education, ensuring that teachers are well-versed in academic content and have substantial practical field experience (Deissinger, 2015). In China, the rapid industrialization and technological advancements have intensified the need to align educational outcomes with industry requirements. The Ministry of Education has therefore introduced policies to encourage teacher certification, emphasizing the combination of theoretical and practical competencies (Rauner & Maclean, 2008).

Despite ongoing policy efforts, many vocational institutions continue to face challenges in accessing real-time industry practices. Teachers are often recruited directly from academic settings and have limited exposure to enterprise, which hampers their ability to effectively bridge theoretical content with evolving industrial technologies (Gonon, 2014). Traditionally, the training of "Double-Qualified" teachers in vocational education was based on a sequential model in which teachers first completed academic qualifications and subsequently gained practical experience through institution-arranged internships. While this approach provided a strong theoretical foundation, it often resulted in a disconnect between classroom knowledge and real-world application, as skills were integrated only after completing formal education (Norton et al., 1997).

To address these limitations, China has been piloting a new model since 2023 that emphasizes the concurrent development of theoretical and practical skills. Teachers engage in academic learning while participating in enterprise internships, enabling them to update their expertise in line with technological advancements and industry demands (Huang & Xu, 2024). While still experimental, this approach represents a significant shift aimed at bridging the gaps between the classroom and industry, and may become a new standard for creating a workforce responsive to global economic changes (Gonon, 2014).

1.1.2 China Government Initiatives on "Double-Qualified" Teachers in Vocational Education

The Chinese government has actively advanced a comprehensive policy framework for developing “Double-Qualified” teachers as a strategic initiative to improve the quality and industry alignment of vocational education. (Deissinger, 2015). Technological advancements have had a profound impact on vocational education globally, including in China. As industries adopt new technologies, vocational education must ensure that students acquire updated and relevant skills. This rapid technological transformation has increased the demand for educators proficient in both theoretical and practical domains (Billett, 2011).

In Henan, industrialization has accelerated, making it essential for vocational education to evolve rapidly to maintain a competitive workforce. Teachers require continuous professional development and real-world application opportunities, primarily through enterprise internships, to keep their skills aligned with industry standards (Rauner & Maclean, 2008).

Moreover, the competitive job market requires vocational institutions to equip students with workplace-ready skills. Enhancing teachers' practical teaching abilities is crucial for equipping students to meet industry challenges (Gonon, 2014). During Phase II (2010–2020) of the "Double-Qualified" teacher training model, which emphasized the integration of theoretical instruction with practical enterprise experience, teachers were required to participate in internships. This approach enabled them to remain updated with industry practices and technological developments, allowing them to transfer this practical expertise into classroom teaching and thereby improve students' employability (Klotz & Winther, 2017).

In response, the government has developed training programs, introduced incentives for teachers to obtain "Double-Qualified" certification, and promoted partnerships between schools and enterprises. These efforts aim to improve teachers' work engagement in internships—a critical component of the "Double-Qualified" model (Zhao et al., 2019).

1.1.3 The Current and New Developing Turning Model

In 2019, the Ministry of Education issued the "Implementation Plan for Deepening the Reform of the Construction of 'Double-Qualified' Teachers in Vocational Education in the New Era" (Ministry of Education of the People's Republic of China, 2019). This plan aimed to establish 100 "Double-Qualified" teacher training bases nationwide. These bases, jointly built by vocational colleges, universities, and Large and medium-sized enterprises, are designed to systematically strengthen vocational teachers' theoretical instruction and practical competencies (Xue & Li, 2022).

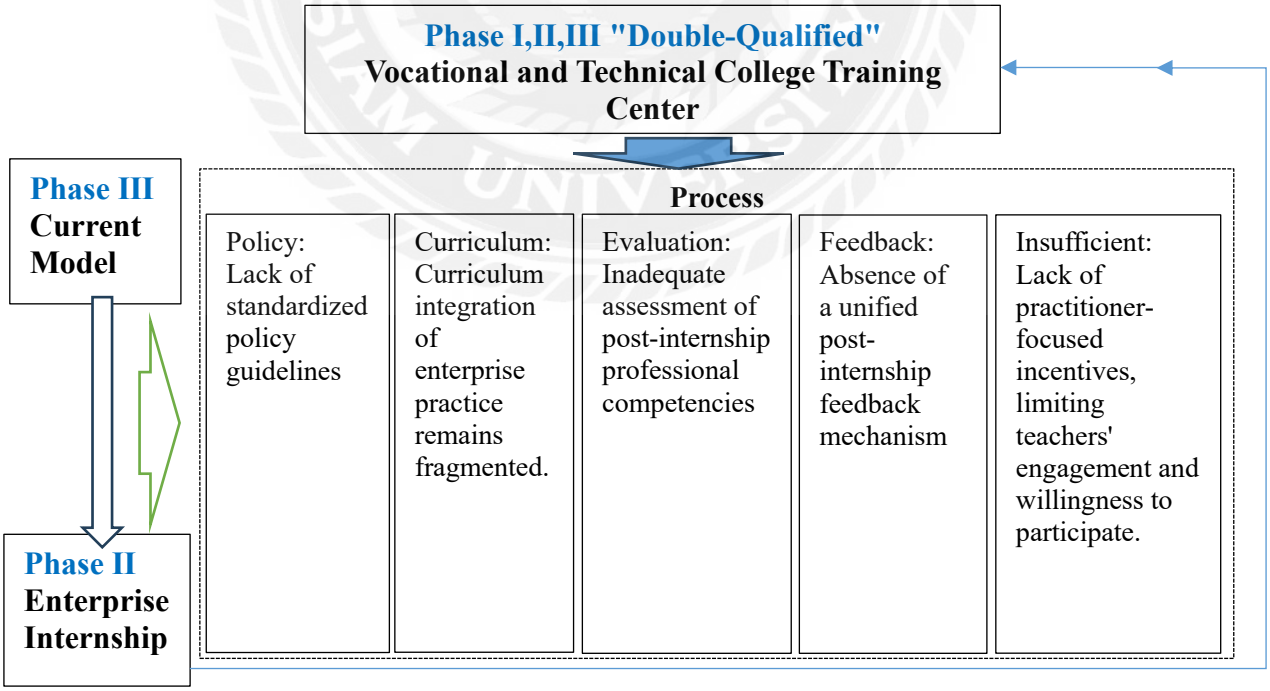
Since 2022, Henan Province has been designated as a pilot region, establishing five key national-level "Double-Qualified" teacher training centers: the Henan Institute of Science and Technology, the Henan Polytechnic Institute, Shangqiu Vocational and Technical College, Zhengzhou Electric Power College, and the Yellow River Water Conservancy Vocational and Technical College. These centers adopt a collaborative school-enterprise model. Large and medium-sized enterprises jointly build a "Double-Qualified" teacher training base, practical training platforms, and tailored curricula to form a comprehensive multi-level training system (Henan Provincial Department of Education, 2024). Despite substantial policy support and robust infrastructure, challenges persist. Many teachers, particularly those who are recent graduates, enter the profession directly after completing their studies without prior work experience in medium- or large-sized enterprises. Consequently, they lack genuine practical experience and rely primarily on theoretical knowledge. Even with policies emphasizing practical training, many teachers display a low willingness to participate actively in enterprise internships. This reluctance often stems from psychological resistance, unfamiliarity with industry standards, and perceived mismatches between school curricula and the rapidly changing demands of enterprises (Huang & Xu, 2024).

From an academic perspective, studies in China mainly focus on policy frameworks, general competency standards, and institutional management mechanisms. Few empirical studies examine the psychological and organizational factors that influence teachers' work engagement during internships (Tynjälä, 2013). Current training models emphasize policy implementation and training processes but often overlook teachers' psychological states, personal motivation, and implicit psychological contracts—key factors that impact engagement and practical application (Eraut, 2004; Billett, 2014).

Furthermore, the integration of enterprise practices into curricula, the adoption of standardized evaluation and feedback systems, and the development of specific incentives remain inadequate (Conway, 2005). These shortcomings hinder deeper engagement and effective knowledge transfer (Conway & Briner, 2009).

Established by universities and large or medium-sized companies (Huang et al., 2025), historically, vocational teacher enterprise practice in China has gone through three distinct phases (Figure 1.1). Phase I (before 2000): Teachers mainly accompanied students to companies, focusing on supervision rather than in-depth individual practice (Yu, Yan, & Jin, 2024). Phase II (2010–2020): Teachers began participating in independent enterprise internships to gain direct practical experience, reflecting broader national changes in vocational training (Chen et al., 2024). Phase III (2022–2025): The government launched "Double-Qualified" teacher certification through specialized training centers working together.

Figure 1.1: Current Model of Teachers' Work Engagement in Enterprise Internship in Henan, China



Henan's training centers, currently in phase III of development, thus represent both an opportunity and a challenge: they offer firm policy and infrastructural support yet face substantial barriers in enhancing teacher participation and fostering sustained work engagement (Huang & Xu, 2024).

Unlike earlier models, these training centers focus on an integrated school–enterprise co-creation approach, offering teachers simultaneous theoretical updates and practical industry skill development (Cheng et al., 2024). They include structured curricula, enterprise-based practical projects, and standardized assessments to ensure certification (Huang & Xu, 2024). However, despite strong policy support, challenges remain, such as teacher psychological resistance, unfamiliarity with changing industry standards, and perceived mismatches between curricula and enterprises (Cheng et al., 2024).

1.1.4 Preliminary Interview Study

To improve the credibility and methodological rigor of the qualitative analysis, this study used a triangulated approach by combining two complementary tools: iFLYTEK's "AI-Hearing Meeting Notes" and MAXQDA 2020. The initial interview data (Appendix A and B) were transcribed and processed with iFLYTEK. This AI-based platform provides automatic speech-to-text conversion (Le, 2022), thematic sentence extraction, discourse structuring, full-text summarization, speaker segmentation, and multilingual translation (Li, Wang, & Gu, 2019). This enabled an efficient initial scan of thematic content, allowing early identification of key terms across interview narratives (Zhang et al., 2019). Using triangulated tools in qualitative research aligns with Flick's (2018) recommendations, which highlight the importance of combining multiple data sources or techniques to improve analytic validity and trustworthiness.

Following this, qualitative data were analyzed through a four-step process to enhance analytic depth and transparency. First, interview audio recordings were transcribed using iFLYTEK AI-assisted transcription to ensure efficient and accurate initial text generation. Second, MAXQDA 2020 was used to perform word cloud analysis, visualizing keyword distributions and highlighting prominent thematic elements (Kuckartz & Rädiker, 2019). Third, a detailed word frequency analysis was conducted in MAXQDA to quantify keyword occurrences and support systematic thematic categorization. Fourth, preliminary thematic categorization was done based on the iFLYTEK AI-assisted outputs, followed by comprehensive manual coding and refinement to ensure interpretative rigor and reliability (Braun & Clarke, 2022; MacLean et al., 2004).

Subsequently, the processed data were imported into MAXQDA 2020 for in-depth lexical analysis (Kuckartz & Rädiker, 2019). This software facilitated systematic word frequency calculations and word cloud visualizations, identifying keywords that exceeded a relative frequency threshold of 0.50% as thematically significant. The two-step analytical strategy combined rapid thematic mapping with structured content coding, ensuring both comprehensiveness and analytical transparency. This layered approach established a foundation for developing an empirically grounded framework that supports subsequent conceptual categorization and variable construction.

1.1.4.1 Record of Preliminary Interview

The interviewees were teachers who had already earned "Double-Qualified" certification during the second phase of training. Many participants shared that although they understood the importance of improving their enterprise internship experiences to enhance classroom teaching, they faced significant barriers such as long commutes, lack of institutional support, and limited practical incentives. These challenges led to relatively low levels of teachers' work engagement, as teachers often felt detached from enterprise practices and saw limited connection between their practical training and actual teaching needs.

The semi-structured interviews guided discussions while allowing flexibility to explore emerging topics. Each participant answered seven key questions about their role (Appendix D: Preliminary Studies Interview Questions), the value of "Double-Qualified" teaching, institutional support, the usefulness of institutional resources, satisfaction with teaching support, and challenges faced in professional growth.

Theoretical teaching experts (A-E) acknowledged that the new training model aligns with industry needs but lacks flexibility and a strong mechanism for evaluating enterprise practices. They also highlighted the absence of a structured framework to guide current pilot policies, making it difficult for stakeholders to fully engage. They believed there's an urgent need to develop a model for assessing teachers' work engagement during the Enterprise internship, specifically tailored for Henan, China. Drawing from their experience, they identified gaps in earlier models and stressed that while my research approach is innovative and timely, it provides a solid starting point that requires further development. Theory experts supported the creation of a new framework but remain uncertain about how to implement it.

Enterprise experts (F-J) agreed that internships are valuable for skill development but expressed concerns about the lack of evaluation mechanisms for enterprise practice. They also noted that during the pilot phase, the absence of a comprehensive model hinders effective coordination among stakeholders. Both groups emphasized the need for an improved model that increases teachers' engagement in enterprise internships.

Table 1.1 Expert Group Interview Summary (Thematic Sentences Extracted from iFLYTEK Transcription)

Participant	Theme 1-6	
A Theoretical Training Expert	1	Support from supervisors is better, but collaboration among colleagues is limited.
	2	Sacrificing personal time has increased, especially when adapting to new teaching tools.
	3	Peers' expectations have increased, creating pressure to perform.
	4	Four promises made by the organization are somewhat fulfilled, but additional resources are needed.
	5	The enterprise Internship seems beneficial, but there is no clear long-term impact yet.
	6	Has increased motivation and introduced extra administrative

Participant	Theme 1-6	
		tasks.
B Theoretical Training Expert	1	The fit with my teaching style remains challenging due to the rigid structure of the new model.
	2	Collaboration with colleagues is more robust, but there is less interaction with industry experts.
	3	Personal time for research has decreased, limiting my professional growth.
	4	Peers expect rapid adaptation, which causes stress.
	5	The organization has fulfilled some commitments, but there is uncertainty about future support.
	6	Internships improve practical skills, but industry involvement is inconsistent.
C Theoretical Training Expert	1	The new approach is more industry-relevant, but it lacks flexibility for current theoretical teaching.
	2	I work closely with other teachers, but cross-departmental collaboration remains weak.
	3	Sacrificing personal and family time has increased, accompanied by limited professional development opportunities.
	4	Industry professionals have higher expectations, creating pressure.
	5	The organization has not fully met its promises; more investment is needed.
	6	Internships are helpful, but the link between training and career advancement is unclear.
D Theoretical Training Expert	1	The fit is better, especially in aligning with industry needs, but it still lacks support for academic growth.
	2	Collaboration has improved with industry experts; however, internal support remains minimal.
	3	More sacrifices in time management, with little professional growth.
	4	Expectations from supervisors are reasonable, but industry pressure is high.
	5	Promises have not been entirely fulfilled; there is a lack of mentorship
	6	Internships provide practical skills, but do not significantly enhance career prospects.
E Theoretical Training	1	Interactions with supervisors have improved, but peer collaboration needs work.
	2	Sacrifices include limited time for academic research and personal development.
	3	Industry expectations have raised pressure, but peer support helps alleviate it.
	4	The organization has partially fulfilled its commitments, but funding is lacking.
	5	The internships offer some value, but they need better coordination with the enterprise.

Participant	Theme 1-6	
	6	My engagement in teaching has improved, but administrative duties have increased.
F Theoretical Training Expert	1	I work closely with my team, but interactions with school faculty are limited.
	2	The amount of time sacrificed has increased, especially with tight deadlines.
	3	Industry professionals have set high standards, creating pressure to meet them.
	4	The organization fulfills most of its commitments, but some promises remain unmet.
	5	Internships are beneficial, but more structured mentorship programs are needed.
	6	Has increased my engagement in practical skills training, but reduced innovation opportunities.
G Enterprise Training Expert	1	It is too rigid for fast-changing sectors.
	2	Collaboration with industry peers is strong, but minimal interaction exists with academia.
	3	Sacrificing family time is common, but professional growth is evident.
	4	The expectations from supervisors and the industry are reasonable, but more support is needed.
	5	The organization has fulfilled some commitments, but could improve long-term support.
	6	Internships enhance skills, but they often lack a structured career path afterward.
H Enterprise Training Expert	1	I collaborate closely with my team, but interactions with school faculty are lacking.
	2	Sacrificing personal time is challenging, but the professional growth opportunities are worthwhile.
	3	Three industry professionals have set high expectations, which are motivating but also stressful.
	4	The organization has fulfilled most of its promises, but mentorship could be improved
	5	Internships are valuable, but could be better aligned with career progression.
	6	But offers little room for creative teaching.
I Enterprise Training Expert	1	The fit with industry standards is excellent, but the model is inflexible for unique training needs.
	2	Collaboration with peers is strong, but there is a disconnect with the school faculty.
	3	Sacrifices include long hours and a lack of time for personal growth.
	4	Expectations from industry professionals are reasonable but challenging.
	5	The organization fulfills some commitments but falls short of continuous support.

Participant	Theme 1-6	
	6	Internships offer skill development but lack follow-up on career paths.
J Enterprise Training Expert	1	Needs to adapt to rapid technological changes.
	2	I work closely with my colleagues, but interactions with academic staff are limited.
	3	Sacrificing personal time is a significant challenge, but professional growth is evident nonetheless.
	4	Expectations from the industry and peers are motivating, but also create pressure.
	5	The organization fulfills most of its commitments, but there is room for improvement in mentorship.
	6	Six internships are beneficial, but they need better integration with career advancement plans.

These responses highlight the challenges and considerations related to teachers' work engagement in enterprise internship, institutional support, connections, fit, sacrifice, and professional growth within the context of "Double-Qualified" teacher training in Henan, China.

This study interviewed four to six teachers from five major training centers to develop a comprehensive understanding of the 'Double-Qualified' training model. Selecting this range of participants enabled the study to strike a balance between depth and diversity, as qualitative research emphasizes capturing varied perspectives while maintaining a manageable sample size (Guest et al., 2006). Creswell and Poth (2016) suggested that sample sizes should be sufficient to uncover unique insights but small enough to permit detailed and in-depth analysis. Furthermore, including participants from diverse academic and industry backgrounds enhances the study's reliability and transferability, as it captures both shared and unique experiences within each training center (Mason, 2010).

Teachers were organized into groups from five national-level "Double-Qualified" teacher training centers for vocational education and interviewed online via the Tencent Meeting platform (Appendix D: Preliminary Studies Interview Questions). The groups consisted of 25 participants: Group A, comprising five teachers; Group B, six teachers; Group C, four teachers; Group D, five teachers; and Group E, five teachers. All participants had completed 'Double-Qualified' training and participated in corporate internships. The interviews aimed to understand the current status and challenges of the new training center model while identifying key areas for improvement (Appendix B: Interview Outline for Teachers from the Five Major Training Centers). Group A included five teachers from the Yellow River Conservancy Technical Institute at School 1. Group B had six teachers from Shang Qiu Vocational and Technical College at School 2. Group C consisted of four teachers from Zhengzhou Electric Power College, while Group D comprised five teachers from the Henan Institute of Science and Technology at School 4. Group E had five teachers from Henan Polytechnic at School 5.

Table 1.2 Teacher Group Interview Summary (Thematic Sentences Extracted from iFLYTEK Transcription)

Participant	Theme 1-5	
Group A School 1	1	The new model is more aligned, but it lacks integration with real enterprise needs, and a heavy time commitment is challenging.
	2	Collaboration has increased, but institutional support remains lacking.
	3	Expectations are high, but there is a lack of clear communication about post-training roles.
	4	Some promises were fulfilled, but there is still a gap in applying skills post-training.
	5	The internship helped me better understand the industry, but it was challenging to apply this knowledge in teaching; engagement increased, but it still required support.
Group B School 2	1	More practical but lacks depth for long-term development; training often takes up weekends, creating a sacrifice.
	2	Improved collaboration with enterprise trainers, but isolated from academic peers.
	3	High expectations from peers and industry, but unclear how to apply skills in the classroom.
	4	Meets basic requirements, but post-training support has not yet materialized.
	5	The internship was valuable, but it is challenging to align what I have learned with the academic curriculum. Although engagement increased, maintaining motivation without support is difficult.
Group C School 3	1	Improvement, but still lacks flexibility; workload and lack of growth opportunities present challenges.
	2	Engaged with enterprise trainers but disconnected from academic staff.
	3	The expectations of three industry professionals keep me motivated, but the school's expectations are unclear.
	4	There is a gap between what was promised and what is being delivered.
	5	The Internship was beneficial, but applying that knowledge in the classroom is challenging; I am engaged, but the lack of institutional support makes it hard for me to stay motivated.
Group D School 4	1	More relevant to the industry, but lacks specific training; time commitment is a significant sacrifice.
	2	A stronger sense of belonging with industry professionals, not as much with academic colleagues.
	3	Industry expectations push me, but the lack of involvement from academic peers is frustrating.
	4	Partially fulfills promises but lacks follow-through in long-term development.
	5	The five internships provided valuable experience, but applying that

Participant	Theme 1-5	
		in teaching is challenging; I am more engaged, but the lack of sustained support makes it difficult to maintain.
Group E School 5	1	A step in the right direction, but too generalized; weekend and evening commitments affect personal life.
	2	Interactions with enterprise professionals have improved, but collaboration with academic staff is still limited.
	3	Industry expectations are motivating, but there is a disconnect with academic expectations.
	4	Delivered on some promises, but needs improvement in post-training support.
	5	Five internships provided valuable insights, but translating them into classroom practices is complex; more engaged, but without continued support, it is challenging to maintain long-term engagement.

1.1.4.3 Preliminary Exploration of Key Variables

"Industry Needs" is the most frequently appearing keyword, appearing a total of 16 times. "Commitment" follows closely behind, occurring 19 times. "Personal Time Sacrifice," "Professional Growth," "Colleague Interaction," "Teamwork," "Loyalty," "Peer Expectations," "Superior Expectations," "Fulfillment of Promises," "Internships," "Skill Improvement," "Career Prospects," "Engagement," and "Motivation" also appear frequently, with each appearing between 7 and 13 times (See Table 1.3).

Table 1.3 Thematic Keywords Identified Across Expect Interview Group A–J (Word Frequency Analysis via iFLYTEK Meeting Transcription Software)

Keyword	A	B	C	D	E	F	G	H	I	J	Total Frequency
Teaching Style	1	0	1	0	1	0	0	0	1	0	4
Industry Needs	3	2	1	2	1	2	0	2	1	2	16
Curriculum	1	0	0	0	0	0	0	0	0	0	1
Personal Time Sacrifice	1	1	1	1	1	1	0	1	1	1	8
Professional Growth	1	1	1	1	1	1	0	1	1	1	9
Colleague Interaction	1	1	1	1	1	1	0	1	1	1	9
Supervisor Support	1	0	0	0	1	0	0	0	0	0	2
Teamwork	1	0	1	1	1	1	0	1	1	1	8
Commitment	3	2	1	2	1	2	1	2	1	2	19
Loyalty	2	1	1	2	1	1	1	1	1	1	13

Keyword	A	B	C	D	E	F	G	H	I	J	Total Frequency
Peer Expectations	2	1	1	1	1	1	0	1	1	1	11
Superior Expectations	1	1	1	1	1	1	0	1	1	1	9
Industry Professional Expectations	1	1	0	0	0	1	0	0	0	1	4
Fulfillment of Promises	2	1	1	1	1	1	1	1	1	1	11
Internships	1	1	1	1	1	1	1	1	1	1	10
Skill Improvement	1	1	1	1	1	1	1	1	1	1	10
Career Prospects	1	1	1	1	0	1	1	1	1	1	9
Engagement	2	1	1	1	1	1	1	1	1	1	12
Motivation	2	1	1	1	1	1	1	1	1	1	12
Hands-On Experience	0	1	0	0	1	1	0	1	0	1	5
Real-World Application	1	1	1	0	1	1	0	1	1	1	8
Practical Skills	1	1	0	1	1	1	1	1	1	1	9
Collaboration	0	0	1	1	1	1	0	1	1	1	7
Practical Focus	0	1	0	0	0	1	1	1	1	1	6
Resource Lack	1	0	0	0	0	0	0	0	0	0	1
Mentorship	0	1	0	0	0	0	0	0	0	0	1
Long-Term Support	0	1	0	0	0	0	0	0	0	0	1
Common Goal	0	0	0	1	0	0	0	0	0	0	1
Flexibility	1	0	0	0	0	0	0	0	0	0	1
Trade-Off	1	0	0	0	1	0	0	0	1	0	3
Work-Life Balance	1	0	0	0	1	0	0	0	0	0	2
Pressure	1	1	0	1	1	1	0	1	0	1	7
Real-Time Problem-Solving	0	0	0	0	0	0	0	0	0	1	1
Stronger Relationships	0	1	0	0	0	0	0	0	0	1	2
Direct Solutions	1	0	0	0	0	0	0	0	0	0	1
Support System	1	0	0	0	0	0	0	0	0	0	1
Investment in	1	1	1	1	1	1	1	1	1	1	10

Keyword	A	B	C	D	E	F	G	H	I	J	Total Frequency
Development											
Real-Time Industry Settings	0	0	0	0	0	0	0	1	0	1	2
Teaching Effectiveness	1	0	0	0	0	0	0	0	1	0	2
Joint Projects	1	0	0	0	0	0	0	0	0	0	1
Relevant	1	1	1	1	1	1	0	1	1	1	9
Administrative Tasks	1	0	0	0	0	0	0	0	0	0	1
Connection to Organization	1	1	0	1	0	1	0	1	0	1	6
Long-Term Benefits	0	1	0	0	0	0	0	0	0	0	1
Professional Belonging	0	0	0	0	0	1	0	0	0	1	2
Blended Theory with Practice	0	0	0	0	1	1	0	0	0	0	2
Cohesive Process	0	0	0	0	0	0	0	1	0	0	1

Note: Word frequency data generated from the iFLYTEK Meeting transcription and organized by the researcher.

The summary of keyword appearances across the five groups (Groups A-E) is as follows: "Organizational Support" and "Personal Time Sacrifice" were the most frequently mentioned keywords, each appearing once in all five groups (A, B, C, D, E), resulting in a total frequency of 5 for both keywords. This indicates that these are the most significant concerns across all the groups (Table 1.4).

"Professional Development," "Work Engagement," "Integration of Theory and Practice," "Industry Relevance," "Post-Training Support," "Teaching Alignment," and "Colleague Interaction" each appeared once in four of the five groups. These keywords suggest that they are common challenges for the participants, with "Professional Development," "Work Engagement," and "Industry Relevance" (along with the others mentioned) each having a total frequency of 4.

Table 1.4: Teacher Interview Group A-E Keywords Across the Groups (Key abstracts by iFLYTEK)

Keyword	Group A	Group B	Group C	Group D	Group E	Total Frequency
Organizational Support	1	1	1	1	1	5
Personal Time Sacrifice	1	1	1	1	1	5

Keyword	Group A	Group B	Group C	Group D	Group E	Total Frequency
Professional Development	1	1		1	1	4
Work Engagement	1		1	1	1	4
Integration of Theory and Practice	1	1	1		1	4
Industry Relevance	1	1		1	1	4
Post-Training Support	1	1		1	1	4
Teaching Alignment	1	1		1	1	4
Colleague Interaction	1		1	1	1	4

Note: Word frequency data generated from the iFLYTEK Meeting transcription and organized by the researcher.

These interviews aimed to gather insights into teachers' experiences with enterprise internship and identify the factors influencing their work engagement. Analyzing these preliminary findings revealed themes and high-frequency keywords (Appendices A and B).

Figure 1.2 Word Cloud of Preliminary Interview

This study utilizes a complementary tool, MAXQDA 2020, for systematic thematic coding and analysis, enhancing the rigor and credibility of qualitative data analysis (Kuckartz & Rädiker, 2019). The resulting visualization shows (Figure 1.2) that terms such as “training,” “industry,” “model,” and “teaching” emerged most prominently, reflecting the central themes present in the participant narratives.

These keywords align closely with the constructs outlined in the conceptual model, including internship experience, institutional collaboration, and teachers' work engagement. The prominence of "training" and "industry" indicates that participants consistently emphasized the importance of industry-aligned educational practices and structured enterprise internship. Similarly, the emergence of terms like "engagement," "commitment," and "support" highlights a strong focus on affective outcomes, organizational support, and motivational factors.

As shown in Table 1.5, the most frequently occurring keywords in the interview data—identified using MAXQDA 2020 while manually excluding stop words (e.g., "I," "was," "do," "does")—were "Training" (2.48%), "Industry" (2.30%), and "Teaching" (1.37%), all classified as high-frequency terms (above 0.50%). Additional high-frequency keywords included "Commitment," "Skills," and "Expectations." Medium-frequency keywords—such as "Organization," "Professional," "Engagement," "Personal," "Internships," and "Colleagues"—also appeared often across participant transcripts.

These findings suggest that participants consistently emphasized structured training processes and industry-oriented experiences. The frequent references to terms such as "engagement," "organization," and "internships" further highlight the perceived relevance of practical exposure and skill development in vocational education.

Table 1.5 Word Cloud Keyword Frequency

Keyword	Occurrence	Percentage
Training	80	2.48%
Industry	74	2.30%
Teaching	60	1.37%
Commitment	37	1.15%
Skills	37	1.15%
Expectations	33	1.02%
Organization	26	0.81%
Professional	26	0.81%
Engagement	25	0.78%
Personal	25	0.78%
Improved	23	0.71%
Influenced	23	0.71%
Internships	23	0.71%
Approach	22	0.68%
Colleagues	22	0.68%
Practical	22	0.68%
Sacrifices	22	0.68%
Belonging	20	0.62%
Growth	20	0.62%
Peers	20	0.62%
Program	20	0.62%
Engaged	19	0.59%
Influence	19	0.59%
Methods	19	0.59%

Keyword	Occurrence	Percentage
Motivation	18	0.59%
Previous	17	0.53%
Interactions	16	0.50%
Loyalty	16	0.50%
Professionals	16	0.50%
Supervisors	16	0.50%

Note: Keywords were extracted from interview transcripts using MAXQDA 2020. Common stop words (e.g., "I," "was," "do," "does") were excluded manually. Only keywords with a frequency percentage greater than 0.50% are included.

Table 1.6 presents the mapping of high-frequency keywords from qualitative interviews onto the study's core thematic dimensions. After generating word clouds and conducting frequency analyses in the qualitative phase, high-frequency keywords — including "support," "motivation," "expectations," "practical experience," and "professional growth" — were carefully reviewed and manually categorized thematic coding to these core dimensions.

Table 1.6 High-frequency Keywords

Variable	Keyword
Professional Expectations	Commitment, Expectations, Loyalty, Sacrifices, Fulfillment, Promises, Motivation, Personal, Influence, Influenced, Previous, Growth
Engagement	Engagement, Teaching, Motivation, Engaged, Enthusiasm, Dedication, Improved, Absorbed, Commitment, Satisfaction
Internship	Internship/Internships, Industry, Program, Practical, Training, Skills, Professional, Experience, Industry insights
Institutional Support Perception	Organization, Organizational, Support, Supervisors, Colleagues, Collaboration, Professional, Improved, Methods
Social and Peer Influence	Peers, Colleagues, Team, Interactions, Social, Influence, Belonging, Expectations, Pressure, Participation
Professional Connection and Stability	Belonging, Loyalty, Career development, Personal, Professional, Growth, Stability, Sacrifices, Connections

Professional Expectations emphasize teachers' sense of loyalty, commitment, and fulfillment of obligations, highlighting their intrinsic motivation and sense of personal responsibility (Rousseau, 1995; Cullinane & Dundon, 2006). Engagement captures the dimensions of dedication, enthusiasm, and absorption, consistent with the concept of teachers' work engagement that embodies energy, involvement, and focus in professional roles (Schaufeli et al., 2002). Internship underscores the role of practical experience and continuous professional growth, supporting the importance of hands-on learning and real-world application in vocational education (Tynjälä, 2013). Institutional Support Perception refers to teachers' perceptions of organizational recognition, fairness, and emotional support, which

strengthen their sense of belonging and psychological safety (Rhoades & Eisenberger, 2002; Billett, 2011). Social and Peer Influence reflects the impact of social expectations, peer endorsement, and collaborative culture in shaping teachers' attitudes toward participation and training engagement, in line with the Theory of Planned Behavior (Ajzen, 1991). Finally, Professional Connection and Stability integrate the ideas of career development, personal growth, and long-term professional security, mirroring the theoretical constructs of job embeddedness and stability (Mitchell et al., 2001; Klotz & Winther, 2017).

1.2 Research Problem

As Henan transitions from traditional labor-intensive industries to intelligent manufacturing, the demand for "Double-Qualified" teachers—those combining theoretical knowledge with practical expertise—has increased significantly. Historically, vocational teacher training evolved through three phases. In Phase I (before 2000), teachers primarily accompanied students to enterprises, acting as supervisors rather than active participants. In Phase II (2010–2020), teachers were required to complete enterprise internships independently to qualify for "Double-Qualified" certification. However, interviews with certified teachers trained under this model revealed persistent issues: limited willingness to engage in internships, psychological resistance, inadequate institutional support, and logistical challenges such as distant enterprise locations. These constraints weakened teachers' motivation and prevented effective integration of industry practices into classroom teaching.

Recognizing these shortcomings, the government introduced a Phase III reform (2022–2025), establishing localized, centralized training centers co-developed with large and medium-sized enterprises. This new approach aims to improve access to enterprise internships, provide stronger policy and institutional support, and enhance teachers' willingness to engage. However, it remains unclear whether these reforms effectively meet teachers' professional expectations, strengthen their psychological commitment, and promote sustained work engagement. Accordingly, this study evaluates the effectiveness of the Phase III training centers by examining how perceived subjective norms, perceived organizational support, and job embeddedness influence teachers' psychological contracts and, in turn, their work engagement.

This study focuses on teachers currently enrolled in Phase III training centers who have not yet obtained "Double-Qualified" certification. By analyzing this group, the research investigates whether the new model successfully addresses issues identified in Phase II and explores potential new challenges. Findings aim to refine and develop a comprehensive teachers' work engagement model tailored to Henan's vocational education context, offering empirical insights to guide the ongoing training reform.

1.3 Research Questions

1) What is the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China?

2) What factors influence the relationship between teachers' work engagement and the effectiveness of enterprise internship and professional training programs?

3) What evidence-based model can be proposed to enhance teachers' work engagement and effectiveness of enterprise internship and professional development programs?

4) What are teachers' insights and experts' opinions of the enterprise internship and professional development programs

1.4 Research Objectives

This research seeks to systematically assess the current level of teachers' work engagement to establish a comprehensive baseline for further analysis and policy development.

1) To assess the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China.

This objective seeks to dissect the complex interplay of social influences, institutional support, psychological expectations, and professional stability that shape whether teachers' enterprise internship truly translate into more effective teaching.

2) To identify the factors that influence the relationship between teachers' work engagement in enterprise internships and the effectiveness of professional training programs.

By analyzing quantitative data, this research aims to propose a robust, evidence-based engagement model to better prepare teachers for modern industrial challenges.

3) To develop an evidence-based model to enhance teachers' work engagement and effectiveness in enterprise internship and professional development programs, focusing on meeting modern industries' technological demands.

This objective combines qualitative and quantitative approaches to capture diverse perspectives, ensuring that any proposed model is not only theoretically sound but also practically relevant and aligned with teachers' and experts' real needs.

4) To reveal teachers' insights and experts' opinions on the enterprise internship and professional development programs.

This objective combines qualitative and quantitative approaches to capture diverse perspectives, ensuring that any proposed model is not only theoretically sound but also practically relevant and aligned with teachers' and experts' real needs.

1.5 Significance of the Research

As Henan continues to develop technologically and industrially, there is an increasing demand for "Double-Qualified" teachers who combine strong theoretical knowledge with practical industry experience. The province's Phase III training model (2022–2025), jointly developed by higher vocational institutions and large- and medium-sized enterprises, marks a significant policy shift. Unlike Phase I (before 2000), where teachers only supervised students in enterprises, and Phase II (2010–2020), where teachers began individual internships but faced barriers such as long travel distances and limited institutional support, Phase III introduces localized, centralized training centers with enhanced policy and enterprise collaboration aimed at improving teacher participation and work engagement.

Despite these improvements, challenges remain in ensuring psychological readiness and sustained work engagement among teachers currently enrolled in training who have not yet obtained “Double-Qualified” certification. Preliminary interviews with Phase II certified teachers highlighted persistent issues such as psychological resistance, weak professional alignment, and inadequate support mechanisms.

This research addresses these gaps by analyzing the psychological and organizational factors—professional expectations, perceived institutional support, social and peer influences, and job embeddedness—that shape teachers’ work engagement. Rather than creating an entirely new system, this study focuses on developing and refining a teachers’ work engagement model tailored to the Phase III training context. By integrating organizational, psychological, and relational perspectives, this study provides evidence-based recommendations for policymakers and vocational institutions to strengthen training effectiveness, better link theoretical instruction with practical enterprise experience, and foster long-term professional commitment among vocational educators.

1.6 Scope of the Research

This study focused on the Phase III reform of “Double-Qualified” teacher development (2022–2025) in Henan Province, China. Under this reform, the Ministry of Education established 100 national-level training bases to strengthen vocational teacher competencies through co-constructed training centers jointly operated by higher education institutions and large- to medium-sized enterprises.

Henan was selected as the research site because it is a designated pilot province in this nationwide initiative and hosts five national-level “Double-Qualified” teacher training centers: Yellow River Conservancy Technical Institute, Shangqiu Vocational and Technical College, Henan Institute of Science and Technology, Zhengzhou Electric Power College, and Henan Polytechnic Institute.

The study investigated teachers enrolled in these five training centers who are undergoing enterprise internships but have not yet obtained “Double-Qualified” certification. By focusing on this population within Henan’s Phase III pilot centers, the research aimed to provide theoretical insights and practical strategies for enhancing teachers’ work engagement, supporting scalable improvements in vocational education reform across China.

1.7 Definition of Terms

In this research, some terms need to be defined as listed in Table 1.7:

Table 1.7 Definition of Terms

Term	Definition
Teachers’ Work Engagement	The intrinsic motivation to participate in enterprise internship training and professional development activities. This motivation includes improving one's teaching ability and enhancing one's professional skills.
Enterprise Internship	They are part of the "Double-Qualified" teacher training system and are operationalized as mandatory enterprise practice periods.

Term	Definition
	During these internships, teachers engage directly in enterprise production environments to acquire practical skills. This experience allows teachers to align their teaching practices more closely with industry standards and effectively integrate real-world applications into vocational education.
Perceived Subjective Norms	Teachers' social pressure or expectations from significant others, such as colleagues and supervisors, regarding their participation in an enterprise internship.
Perceived Organizational Support	In the “Double-Qualified” framework, the concept is operationalized through the level of policy enforcement and the support schools provide to facilitate teachers’ participation in enterprise internship programs, enabling the development of both theoretical knowledge and practical skills.
Job Embeddedness	The extent to which teachers believe participating in enterprise internship training programs will enhance their teaching effectiveness and professional development.
Psychological Contract	The unwritten expectations between teachers and their enterprise internship training programs regarding mutual obligations, including professional growth opportunities and fair treatment, influencing their engagement and commitment.
"Double-Qualified" Teachers	Teachers with theoretical knowledge and practical experience in their teaching field.
"Double-Qualified" Teachers' Training Center	A training base established within a vocational higher education institution in collaboration with large- and medium-sized enterprises. It provides vocational teachers with integrated theoretical knowledge and practical skills, emphasizing school-enterprise co-construction and industry-education collaboration.
Theoretical Training Expert (School)	Academic experts from vocational institutions, who are responsible for teaching theoretical components of the curriculum.
Enterprise Training Expert (Enterprise)	Industry professionals who provide practical training to align vocational education with current industry practices.

CHAPTER 2

LITERATURE REVIEW

2.1 Review of Literature

2.1.1 Perceived Subjective Norms

2.1.1.1 Definition of Perceived Subjective Norms

Perceived Subjective Norms refer to an individual's perception of whether a particular behavior is approved or endorsed by their close social groups, such as family, friends, and significant others. This concept encompasses several aspects. Firstly, it reflects an individual's sense of social acceptance, which influences their motivation. Secondly, the formation of PSN depends on how individuals interpret signals and information from their social networks (Ajzen, 1991). Perceived subjective norms refer to an individual's belief about whether significant others think they should or should not perform a particular behavior. These perceptions are shaped by approval, expectations, and evaluative feedback from important social groups (Fishbein & Ajzen, 1975).

PSN consists of three dimensions: Normative Beliefs (whether individuals believe that key others support their entrepreneurial decisions), Normative Beliefs Compliance (the extent to which individuals are willing to adhere to the expectations and norms of these important others), and Social Evaluation (the level of respect and assessment society holds for entrepreneurial activities). Perceived subjective norms can also be understood as a form of social influence, referring to the degree to which individuals perceive that important others believe they should perform a particular behavior (Venkatesh et al., 2003). The theory of planned behavior suggests that by considering attitudes toward a specific behavior, subjective norms, and perceived behavioral control, one can predict an individual's intention to engage in that behavior (Ajzen, 1991; Kautonen et al., 2013).

2.1.1.2 Related Literature on Perceived Subjective Norms

Ephrem et al. (2021) further subdivided PSN into Normative Beliefs and Perceived Subjective Valuation. The higher the education level, the stronger the positive impact of PSN on Psychological Capital. This study examines the extent to which teachers believe that most people in their social and professional environments think they should incorporate critical media literacy education into their teaching practices. Numerous studies have confirmed that social pressure from others (colleagues) using technology significantly impacts teachers' intentions to integrate technology into their teaching practices (Al Breiki et al., 2023; Eskail & Afari, 2020; Teo, 2010). Furthermore, drawing from Wijnen et al. (2023) in the context of teachers' intentions to stimulate higher-order thinking, it was found that when teachers value the opinions of colleagues and school administrators on higher-order thinking, they demonstrate a positive intention to integrate it. This highlights the relationship between social normative beliefs and teaching intentions.

2.1.2 Perceived Organizational Support

2.1.2.1 Definition of Perceived Organizational Support

Perceived Organizational Support (POS) is a concept that encapsulates employees' beliefs about the extent to which their organization meets their socio-emotional needs, acknowledges their contributions, and demonstrates a willingness to reward them while also caring for their welfare (Eisenberger et al., 1986; Rhoades & Eisenberger, 2002). This perception does not form overnight; it develops gradually through ongoing interactions between employees and their employers, reflecting employees' evaluation of the organization's commitment to them (Rhoades & Eisenberger, 2002).

Employees who perceive organizational rewards and favorable working conditions, such as salary, promotions, job enrichment, and influence on organizational policies, as voluntary gestures rather than outcomes of external pressures, like union negotiations or governmental regulations, contribute more positively to POS. Health and safety regulations also play a crucial role in shaping POS (Eisenberger et al., 1986; Eisenberger et al., 1997; Shore et al., 1995). The essence of POS is to cultivate a tangible sense of obligation among employees to care about the organization's welfare and help it achieve its goals. POS's inherent care, recognition, and respect are intended to fulfill socio-emotional needs, guiding employees to integrate their organizational membership and role status into their social identity and reinforcing their belief that the organization acknowledges and rewards performance improvements (i.e., performance reward expectancy).

2.1.2.2 Related Literature on Perceived Organizational Support

Nayir (2012) emphasized that perceived organizational support reflects employees' overall belief about whether the organization values their contributions and cares for their well-being, significantly impacting teachers' organizational commitment and engagement. Farooqi et al. (2019) noted that organizational support theory elucidates how employees develop organizational commitment based on fair treatment, superior support, organizational rewards, and favorable working conditions. A notable correlation exists between various aspects of POS, such as fairness, supervisory support, organizational rewards, working conditions, and teacher performance; when teachers perceive greater organizational support, their performance tends to improve. The positioning of self (POS) is particularly vital in the educational sector, where path analysis has identified decision-making, professional development, status, self-efficacy, autonomy, and influence as factors that directly affect teachers (Bogle & Nair, 2012).

LaMastro (1999) highlighted the importance of enhancing teachers' professional organizational support (POS) and recommended that school administrators prioritize addressing teachers' organizational support needs to elevate teaching quality and retention. According to organizational support theory, employees often attribute human-like characteristics to the organization, which facilitates the development of organizational commitment (POS). Employees who experience high levels of POS feel compelled to reciprocate the organization's favorable treatment with positive attitudes and behaviors. Supportive leader behaviors and a facilitative organizational climate can be encompassed within the "perceived organizational support." Individuals are inclined to form global beliefs about how much the organization values their contributions and

cares for their well-being (Eisenberger et al., 1986).

Employees with higher POS levels exhibit greater loyalty than those who believe the organization places less emphasis on them. They are more likely to engage in extra-role or "organizational citizenship" behaviors (Organ, 1988). Holsblat, (2014) noted that POS represents teachers' perception of the school's recognition and concern for their contributions and well-being, signifying their perception of the school's support and care for their work, ultimately yielding positive outcomes for both employees and the organization (Rhoades& Eisenberger, 2002).

2.1.3 Job Embeddedness

2.1.3.1 Definition of Job Embeddedness

First introduced by Mitchell et al. (2001), job embeddedness is a framework for understanding why individuals stay in their jobs. It extends beyond factors such as job satisfaction and organizational commitment by focusing on three critical dimensions: fit, links, and sacrifice. According to Mitchell et al., job embeddedness refers to the forces that influence employee retention and commitment. Fit describes how well an employee perceives their alignment with the organization, links denote their connections with colleagues, and sacrifice relates to what they would lose if they left the job (Mitchell et al., 2001).

Crossley et al. (2007) further clarified the importance of job embeddedness, particularly in predicting employee retention and turnover. Their work illustrates how this concept goes beyond typical turnover models by considering the "web of relationships" and the personal cost of leaving an organization.

Ng and Feldman (2010) expanded on this by investigating how job embeddedness helps buffer against job stress. They discovered that embedded employees handle stress more effectively due to their stronger organizational ties and the personal sacrifices required for leaving.

Zhang et al. (2012) investigated the influence of job embeddedness on organizational retention. Their research particularly emphasized the role of job embeddedness in predicting employee turnover, a significant issue across various sectors, including education. They highlighted that employees who feel firmly embedded in their work through positive organizational links, fit, and perceived sacrifices are less likely to leave their jobs. The study utilized Mitchell et al.'s (2001) job embeddedness scale to assess these dimensions, further solidifying the scale's validity in retention studies. Their findings underscore the importance of enhancing organizational and community ties to promote excellent job retention.

Allen et al. (2016) extended the theory of job embeddedness by examining its interaction with other retention strategies, such as organizational support and development opportunities. Their research revealed that employees who perceive high embeddedness are more likely to remain with their organization, even in challenging situations like job dissatisfaction or career stagnation. This study reinforces the notion that job embeddedness is crucial in reducing turnover, particularly in highly relational fields such as education. The authors employed the established Job Embeddedness Scale, further confirming its effectiveness across various organizational contexts.

2.1.3.2 Related Literature on Job Embeddedness

Dechawatanapaisal (2022) examined how job embeddedness interacts with the psychological contract among nurses, particularly in the context of psychological contract breaches. The study revealed that high job embeddedness could mitigate the adverse effects of breached contracts, enhancing overall work attitudes. The questionnaire used in this study employed Mitchell et al.'s (2001) on-the-job embeddedness scale, affirming the predictive power of job embeddedness across various sectors.

Jiang et al. (2012) further analyzed job embeddedness within the organizational context, emphasizing how embeddedness improves job performance through stronger organizational identification. Their study also used Mitchell et al.'s scale, confirming that job embeddedness can buffer turnover intentions.

Holtom and O'Neill (2004) explored how job embeddedness interacts with organizational culture to influence employee commitment. Their study highlights that the organizational environment can have a significant impact on job embeddedness, particularly in teaching contexts where educators are closely tied to the institution and the surrounding community.

Felps et al. (2009) employed the concept of job embeddedness to investigate collective turnover and its effect on organizational productivity. The study shows how embeddedness affects individual turnover and influences group-level dynamics within organizations.

Stoner & Gallagher (2011) extended the theory of job embeddedness by analyzing how it influences employee satisfaction and organizational commitment, with special attention to professional services, including education. They highlighted that higher job embeddedness correlates with reduced turnover intentions, even among employees facing work-life conflicts.

2.1.4 Psychological Contract

2.1.4.1 Definition of Psychological Contract

The concept of the psychological contract has garnered significant attention in both academic and practical realms; yet, a universally accepted definition remains elusive. Anderson and Schalk (1998) noted that despite the emergence of extensive literature, no consensus on a definitive definition of the psychological contract exists. Various authors hold differing perspectives on its essence and scope, with some emphasizing the importance of implicit obligations on one or both parties. In contrast, others stress the necessity of understanding individuals' expectations regarding employment. Atkinson et al. (2003) and Tekleab and Taylor (2003) suggested that mutuality is a core determinant of the psychological contract. Rousseau and Tijoriwala (1998) reconceptualized the psychological contract, highlighting the sense of obligation held by individual employees rather than expectations, and posited that unfulfilled obligations lead to more destructive reactions than unsatisfied expectations.

Building on this, Conway and Briner (2002) further stated that the psychological contract refers to an individual's credible commitment to pursuing valuable goals or principles, which inherently exists within the reciprocal relationship between the individual and the organization. This concept can be divided into two types:

organizational-level idealistic psychological contracts and employee-level idealistic psychological contracts. Wang (2010) argued that, in addition to economic and socio-emotional currencies in the exchange of employment contracts, there is also an ideological component; that is, the psychological contract can be based on ideological rewards, where perseverance toward a specific goal serves as a clear incentive, prompting employees to exert more effort and enhance their commitment to the organization.

2.1.4.2 Related Literature on Psychological Contract

Over the past decade, literature on the psychological contract has gradually flourished and become firmly integrated into the lexicon of Human Resource Management (HRM) disciplines (Cullinane & Dundon, 2006). The psychological contract aligns with the shifting contours and pressures brought about by changes in global economic and employment patterns, recognizing that the economic and formal aspects of employment are inevitably influenced by informal social interactions (Herriot, 1992). Guest (2004) elaborated that workplaces are becoming increasingly decentralized due to newer, more flexible forms of employment, while managers are exhibiting decreased tolerance for time-consuming and slow negotiation processes within current employment relationship systems.

As collective bargaining declines and individualistic values rise within the labor force, informal arrangements are becoming increasingly essential in workplaces. Consequently, “current” employment relationship literature is viewed as disconnected from the evolving landscape of the working world. Both academia and practitioners are deeply interested in the psychological contract-seeking factors that may contribute to sustained employee motivation and commitment (Cullinane & Dundon, 2006). Research has demonstrated that psychological contracts provide managers with a valuable framework for considering and managing employment relationships (Guest & Conway, 2002). While research has primarily focused on the employee's perspective, it has largely overlooked the organization's viewpoint and the management of psychological contracts.

2.1.5 Enterprise Internship

2.1.5.1 Definition of Enterprise Internship

Internships are “structured and career-related work experiences that students obtain before graduation from an academic program” (Taylor, 1988). Internships bridge the gap between classroom learning and business practice, enabling students to gain practical experience in real-world organizational settings. This structured experience is crucial for developing career-related skills and adaptability, providing students with exposure to various organizational environments that contribute to their professional growth (Greenhaus et al., 2000). Garavan and Murphy (2001) focused on the role of practical experience during internships in developing career adapted. They argue that internships offer vital insights for on-site training and interventions that enhance an individual's readiness for their future career.

Enterprise internship serve as a crucial pathway for implementing education; however, challenges such as unclear personal positioning, simplistic formats, superficial content, and poor implementation outcomes frequently arise during the

process. The disconnect between internships and in-school curricula further diminishes their effectiveness. Thus, addressing current internship models, innovating internship courses and teaching methods, and developing practical internship curricula to enhance students' engineering skills are essential yet challenging components of delivering enterprise internship education (Dai et al., 2020). Wan et al. (2019) introduced a new paradigm that integrates the entire talent cultivation process, including cultivation objectives, models, curriculum systems, teaching models, teaching processes, content, and training quality standards. They highlighted the importance of improving engineering practice capabilities through collaborative education platforms between schools and enterprises, as well as establishing a second-classroom education system.

2.1.5.2 Related Literature on Enterprise Internship

As internships are increasingly used as a learning tool to bridge the gap between classroom education and business practice, understanding which aspects of internship experiences are most valuable is essential (D'abate et al., 2009). The Job Characteristics Model, proposed by Hackman and Oldham (1974), is an important framework for capturing the qualitative aspects of work, including Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback. These elements are vital in evaluating the quality of internships and understanding their impact on the career adaptability and job search outcomes of university graduates. Internships with these features allow students to apply diverse skills, complete identifiable tasks, perceive the significance of their work, exercise autonomy, and receive feedback, thereby enhancing their career readiness.

Despite the recognized importance of internships, researchers have rarely examined how occupation or work experience predicts career adaptability, particularly the combined effect of personal willingness (career adaptability) and practical workplace experience (contextual factors) on career adaptability. This gap is unfortunate, as understanding the role of contextual factors in the development of career adaptability remains incomplete without considering workplace-based experiences that expose individuals to various organizational environments and career-related skills (Garavan & Murphy, 2001).

Recent studies emphasize shifting the focus from the number of internships to their quality, highlighting the need for high-quality internship programs that include diverse skill training, comprehensive work tasks, autonomy, and timely feedback mechanisms (Pan et al., 2018). Furthermore, the role of industry mentors in guiding interns during their internship process is crucial, as they assist interns in integrating theoretical learning with practical application (Lester et al.,2016). For internships to be effective, companies must systematically plan these programs, ensuring that industry mentors have clear guidelines to follow, which alleviates the mentoring burden and enhances interns' workplace capabilities (Major et al., 2011).

2.1.6 Teachers' Work Engagement

2.1.6.1 Definition of Teachers' Work Engagement

Kahn (1990) was the first researcher to define work engagement as harnessing an organization's members to their work roles; in engagement, individuals employ and express themselves physically, cognitively, and emotionally during their

role performances. This definition solidifies teachers' work engagement as including physical involvement, cognitive focus on tasks, and emotional connection with others while fulfilling their duties.

Wilt and Revelle (2015) further enhanced our understanding of work engagement by investigating the components of the Big Five personality traits: affect, behavior, cognition, and desire. Affect (emotional engagement), behavior (behavioral engagement), and cognitive teachers' work engagement are closely tied to teachers' work engagement, creating a multidimensional model of teachers' work engagement.

Behavioral engagement pertains to observable, specific learning behaviors and serves as a crucial indicator of active participation. Cognitive engagement centers on thinking activities and cognitive processing. These three dimensions interact, collectively impacting learning outcomes and experiences while significantly enhancing quality (Ben-Eliyahu et al., 2018).

2.1.6.2 Related Literature on Teachers' Work Engagement

Teacher communication interrelates with the teachers' work engagement among the experimental subjects. Teacher immediacy more accurately predicts students' emotional interest than cognitive interest. The findings suggest that enhancing teaching methods will boost teachers' work engagement (Mazer, 2013). The study explored the relationship between affect (emotion), behavior, and cognitive dimensions in fostering teachers' work engagement through innovative teaching methods. By analyzing the generative engagement process via Twitter learning activities, the study revealed that the affective, behavioral, and cognitive dimensions significantly support teachers' work engagement and improve learning outcomes (Pérez-López et al., 2020). Together, the affective, behavioral, and cognitive dimensions influence engagement, with positive emotional experiences, proactive behavioral expressions, and effective cognitive strategies augmenting teachers' work engagement (Quin et al., 2017).

There is a close relationship among affect (emotion), behavior, cognition, and engagement, which together form a multi-dimensional assessment of teachers' performance in classroom teaching. Emotional engagement reflects teachers' responses to the learning content and the school environment. Behavioral engagement is demonstrated through specific actions taken by the teacher and adherence to established rules and procedures. Cognitive engagement involves the teachers' level of thinking and effort during the learning process (Gao et al., 2020). Teachers' work engagement impacts student achievement, with higher levels having a direct and positive effect on student performance. Furthermore, teachers' affective, behavioral, and cognitive engagement influences teachers' work engagement across multiple dimensions (Wang et al., 2022). Teacher self-efficacy is linked to teachers' work engagement, job satisfaction, and loyalty. While there is limited research on teachers' work engagement, it plays a crucial role in reducing teacher turnover. Additionally, increasing teachers' work engagement is essential, as it helps mitigate costs associated with low productivity, absenteeism, and illness (Granziera & Perera, 2019).

2.1.7 Summary of Previous Studies

Based on Table 2.1, the researcher has reviewed the variables examined in previous studies, summarizing the key constructs, research contexts, and major findings reported in the existing literature.

Table 2.1 Summary of Previous Studies

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
Perceived Subjective Norms	Azim & Islam (2022) (*)	Role of religiosity, social factors, and perceived subjective norms on entrepreneurial intention: a study on tertiary level students	Perceived Subjective Norms, Social Factors, Entrepreneurial Self-efficacy, Entrepreneurial Intention.	Theory of Planned Behavior
	Fishbein & Ajzen (1975)	Belief, attitude, intention, and behavior: An introduction to theory and research	Belief, Attitude, Intention, Behavior.	Theory of Planned Behavior
	Ajzen (1991)	The Theory of Planned Behavior	Attitudes, Subjective Norms, Perceived Behavioral Control.	Theory of Planned Behavior
	Kautonen et al. (2013)	Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions	Perceived Behavioral Control, Perceived Subjective Norms.	Theory of Planned Behavior
	Ephrem et al. (2021)	Perceived Subjective norms, psychological capital, and entrepreneurial intention among undergraduate students in	Entrepreneurship Education, Entrepreneurial intention, Undergraduate Students, Perceived Subjective Norms.	Theory of Planned Behavior

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		Bukavu		
	Venkatesh et al. (2003)	User acceptance of information technology: Toward a unified view.	Theory of Planned Behavior, Inno-Vation Characteristics.	Theory of Planned Behavior
	Al Breiki et al. (2023)	Investigating science teachers' intention to adopt virtual reality through integrating diffusion of innovation theory and theory of planned behavior: the moderating role of perceived skills readiness.	Virtual Reality, Behavioural Intention, Perceived Skills Readiness.	Theory of Planned Behavior
	Teo (2010)	Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers: a structural equation modeling of an extended technology acceptance model.	Subjective Norm, Pre-service Teachers.	Technology Acceptance Model
	Wijnen et al. (2023)	Primary school teachers' attitudes toward technology use and stimulating higher-order thinking in	Attitude, Technology, Higher-order Thinking, Perceived Subjective Norms,	Theory of Planned Behavior

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		students: a literature review.	Job Embeddedness	
	Eskail & Afari (2020)	Factors affecting trainee teachers' intention to use technology: A structural equation modeling approach	Perceived Subjective Norms, Critical Media Literacy.	Theory of Planned Behavior
Perceived Organizational Support	Nayir (2012)	The Relationship between Perceived Organizational Support and Teachers' Organizational Commitment	Perceived Organizational Support, Teachers' Organizational Commitment.	Theory of Planned Behavior
	Farooqi., et al. (2019).	Relationship of Perceived Organizational Support with Secondary School Teachers' Performance.	Organizational Support, Secondary Schools.	Organizational Support Theory
	Bogler & Nir (2012)	The importance of teachers' perceived organizational support to job satisfaction: What does empowerment have to do with it?	Satisfaction, Empowerment, Perceived Organizational Support.	Organizational Support Theory
	LaMastro (1999)	Commitment and perceived organizational support.	Perceived Organizational Support.	Organizational Support Theory
	Eisenberger et al. (1986)	Perceived organizational	Perceived Organizational	Job Characteristics

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
	(*) (1986) Holsblat (2014)	support The relationship between commitment to the organization, perceived organizational support, job satisfaction, and teachers' organizational citizenship behavior.	Support. Organizational Commitment, Perceived Organizational Support, Satisfaction.	Theory Social Exchange Theory
	Rhoades & Eisenberger (2002)	Perceived organizational support: a review of the literature.	Perceived Organizational Support.	Organizational Support Theory
	Eisenberger et al. (1997)	Perceived organizational support, discretionary treatment, and job satisfaction.	Perceived Organizational Support, Job Satisfaction.	Social Exchange Theory
	Organ (1988)	Organizational citizenship behavior: The good soldier syndrome. Lexington Book.	Organizational Citizenship Behavior, Perceived Organizational Support.	Organizational Support Theory
	Shore et al. (1995)	Managerial perceptions of employee commitment to the organization.	Affective Commitment, Perceived Organizational Support.	Organizational Support Theory
Job Embeddedness	Mitchell et al. (2001) (*)	When and how is job embeddedness predictive of turnover? A meta-analytic investigation	Job Embeddedness, Turnover, Retention.	Job Embeddedness Theory

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
	Holtom & O'Neill (2004)	Job embeddedness: A theoretical foundation for developing a comprehensive model of employee retention	Job Embeddedness, Employee Retention, Organizational Culture.	Job Embeddedness Theory
	Crossley et al. (2007)	Development of a global measure of job embeddedness and integration into a traditional model of voluntary turnover	Turnover, Job Embeddedness, Retention.	Job Embeddedness Theory
	Ng & Feldman (2010)	The effects of organizational embeddedness on the development of social capital and human capital	Organizational Job Embeddedness, Social Capital, Human Capital.	Embeddedness and Social Capital Theory
	Dechawatana paisal (2022)	Do broken promises matter? The effects of psychological contract breach on job embeddedness and nurses' work attitudes	Psychological Contract, Job Embeddedness, Work Attitudes.	Psychological Contract Theory
	Jiang et al. (2012)	When and how is job embeddedness predictive of turnover? A meta-analytic investigation	Job Embeddedness, Turnover, Retention.	Turnover Theory
	Felps et al. (2009)	Turnover contagion: How	Turnover Contagion,	Turnover Contagion

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		coworkers' job embeddedness and job search behaviors influence quitting	Job Embeddedness, Employee Retention.	Theory
	Stoner & Gallagher (2011)	Job embeddedness and retention of professional employees	Job Embeddedness, Professional Employees, Retention.	Job Embeddedness and Retention Theory
	Zhang et al. (2012)	The influence of job embeddedness on employee retention	Job Embeddedness, Organizational Retention.	Embeddedness and Retention Theory
	Allen et al. (2016)	Job embeddedness and retention strategies	Job Embeddedness.	Theory of Job Embeddedness
Psychological Contract	Cullinane & Dundon (2006)	The psychological contract: A critical review.	Psychological Contract.	Psychological Contract Theory
	Wang (2010)	Theoretical and empirical research on employees' ideal psychological contract during transition.	Psychological Contract Employment Relationship.	Psychological Contract Theory
	Conway & Briner (2002)	Full-time versus part-time employees: Understanding the links between work status, the psychological contract, and attitudes.	Psychological Contract, Attitudes.	Psychological Contract Theory
	Herriot (1992)	The career management challenge:	Careers, Psychological, Contract.	Psychological Contract Theory

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		Balancing individual and organizational needs		
	Guest (2004)	Flexible employment contracts, the psychological contract, and employee outcomes: an analysis and review of the evidence.	Workforce. Psychological, Contract.	Psychological Contract Theory
	Anderson & Schalk (1998)	The Psychological Contract: In Retrospect and Prospect.	Bond, Psychological, Contract..	Psychological Contract Theory
	Rousseau & Tijoriwala (1998)	Assessing psychological contracts: Issues, alternatives, and measures	Competing Demands, Considerations Psychological, Contract.	Psychological Contract Theory
	Atkinson & Connors (2003)	Models of police probationer career progression: preconceptions of the psychological contract.	Psychological, Contract.	Psychological Contract Theory
	Tekleab & Taylor (2003) (*)	Are there not two parties in an employment relationship? Antecedents and consequences of organization–employee agreement on contract obligations and	Leader-member exchange (LMX), Psychological, Contract.	Psychological Contract Theory

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		violations.		
	Guest & Conway (2002)	Communicating the Psychological Contract: An Employer's Perspective.	Psychological Contract, Reciprocity.	Psychological Contract Theory
Enterprise Internship	Taylor (1988)	Effects of college internships on individual participants	Enterprise Internship, College Internships.	N/A
	Greenhaus & Godshalk (2000)	Career Management (3rd ed)	Enterprise Internship.	Career Management Theory
	D'Abate & Wenzel (2009) (*)	The job diagnostic survey: An instrument for the diagnosis of jobs and the evaluation of job redesign projects	Enterprise Internship, Job Diagnostic, Job Redesign.	Job Characteristics Model
	Hackman & Oldham (1974)	The crisis of identities: the interpretation of a mutation	Professional.	Job Characteristics Model
	Garavan & Murphy (2001)	The co-operative Education process and organizational socialization: A Qualitative Study of Student perceptions of its effectiveness	Enterprise Internship, Cooperative Education, Organizational Socialization.	Organizational Socialization Theory
	Pan et al. (2018)	The interplay of proactive personality and internship quality in Chinese	Enterprise Internship, Internship Quality, Career Adaptability.	Proactive Personality Theory, Career Adaptability Theory

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		university graduates' job search success: The role of career adaptability		
	Lester & Webb (2016)	Work-integrated degrees: Context, engagement, practice and quality	Enterprise Internship, Work-integrated Degrees, Engagement.	Work-Integrated Learning Theory
	Major & Perrin (2011)	Building the capacity of higher education to deliver programs of work-based learning	Enterprise Internship, Higher Education, Work-based Learning.	N/A
	Wan et al. (2019)	New Paradigm of Applied Talent Cultivation by the Union of Enterprise and Schools Based on the Construction of New Engineering	Enterprise Internship, Talent Cultivation, School-Enterprise Union.	N/A
Teachers' Work Engagement	Wilt & Revelle (2015)	Affect, Behavior, Cognition, and Desire in the Big Five: An Analysis of Item Content and Structure	Affect, Behavior, Cognition, Engagement.	Big Five Personality Traits Theory
	May & Harter (2004) (*)	The psychological conditions of meaningfulness, safety, availability, and	Affect Behavior Cognition, Engagement	Theory of Engagement

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		the engagement of The human spirit at work		
	Ben-Eliyahu & Schunn (2018)	I am investigating the multidimensionality of engagement, encompassing affective, behavioral, and cognitive engagement across various science activities and contexts.	Affect, Behavior, Cognition, Engagement.	Theory of Engagement
	Mazer (2013)	Student emotional and cognitive interest as mediators of teacher communication behaviors and student engagement: Examining direct and interaction effects.	Immediacy, Clarity, Engagement.	Emotional Response Theory
	Pérez-López et al. (2020)	The generation of student engagement as a cognition-affect-behavior process in a Twitter learning experience.	Affect, Behavior, Cognition, Engagement.	Student Engagement Theory
	Quin et al. (2017)	Associations between teaching quality and secondary students'	Affect, Behavior, Cognition, Engagement.	Student Engagement Theory

Variable	AUTHOR (S)	References	Keyword	Adopted Theory
		behavioral, emotional, and cognitive engagement in school.		
	Gao et al. (2020)	N-gage: Predicting in-class emotional, behavioral, and cognitive engagement in the wild.	Student Engagement, Engagement Prediction.	Engagement Theory
	Wang & Zhang (2022)	Effects of teachers' engagement on students' achievement in an online English as a foreign language classroom: The mediating role of autonomous motivation and positive emotions.	Teachers' work engagement, Behavior, Cognition.	Self-Determination Theory
	Granziera & Perera (2019)	Relations among teachers' self-efficacy beliefs, engagement, and work satisfaction: A social cognitive view.	Teachers' self-efficacy beliefs, Engagement, Satisfaction, Directly.	Multidimensional Engagement
	Kahn (1990)	Psychological conditions of personal engagement and disengagement at work.	Psychological Meaningfulness Psychological Safety, Psychological Availability.	Theory of Engagement

Note: Questionnaire Source (*).

2.2 Relationship Between Variables

2.2.1 The Relationship between Perceived Subjective Norms and Psychological Contract

Lam et al. (2003) demonstrated that Perceived Subjective Norms can positively moderate the relationship between unmet expectations and job satisfaction. Their findings suggest that employees who experience strong social norms to remain satisfied at work are more likely to report higher job satisfaction, even when organizational expectations are not fully met.

Drawing on Theory of Planned Behavior, Zhang and Fang (2020) developed a model that shows how Chinese traditional culture influences employees' green behaviors through perceived value, Perceived Subjective Norms, and psychological contract.

Thomas et al. (2003) emphasized that cultural variations significantly impact the formation and fulfillment of psychological contracts. In multicultural work environments, perceived subjective norms shape employees' expectations of fairness and reciprocity, thereby influencing their perception of psychological contracts.

Karjaluoto and Leppäniemi (2013) found that perceived subjective norms and social identity jointly shape behavioral intentions, which subsequently affect the content and perceived fulfillment of psychological contract by influencing how employees define their roles and responsibilities within organizations.

Han et al. (2017) examined perceived subjective norms in the context of organizational policy compliance, specifically in the area of information security. They found that strong perceived subjective norms shape employees' expectations of reciprocity and fair treatment, reinforcing the psychological contract and promoting higher compliance.

Table 2.2 Influence of Perceived Subjective Norms on Psychological Contract

Source	Variable	Finding
Lam et al. (2003)	Perceived Subjective Norms, Job Satisfaction, Turnover Intentions	Perceived subjective norms positively moderate the relationship between unmet expectations and job satisfaction, indirectly supporting stronger psychological contract perceptions.
Zhang & Fang (2020)	Psychological Contract, Violation, Perceived Subjective Norms	Chinese cultural norms affect green behaviors through perceived subjective norms and psychological contract, emphasizing the mediating role of psychological obligations.
Thomas & Brown (2003)	Cultural Variation, Psychological Contract Perceived Subjective Norms	Subjective norms significantly influence expectations of fairness and reciprocity, shaping psychological contract formation and fulfillment in multicultural contexts.
Karjaluoto & Leppäniemi	Perceived Subjective Norms Social Identity,	Perceived subjective norms and social identity shape behavioral intentions, which subsequently influence psychological

Source	Variable	Finding
(2013)	Behavioral Intentions	contract content and perceived obligations.
Han & Chen (2017)	Perceived Subjective Norms, Information Security Policy, Employee Compliance	Strong perceived subjective norms enhance expectations of reciprocity and compliance, thereby reinforcing the psychological contract and promoting adherence to organizational policies.

2.2.2 The Relationship between Perceived Organizational Support and Psychological Contract

Ruzain (2024) highlighted the significant correlation between perceived organizational support and psychological contract fulfillment, which in turn influences work engagement. The study's key finding is that employees who perceive high organizational support are more likely to believe in the organization's commitment to fulfilling its obligations, thereby strengthening the psychological contract.

Settoon et al. (1996) examined the relationship between POS and organizational commitment through the lens of social exchange theory. The study demonstrates that POS cultivates employees' sense of obligation, enhancing their psychological contract with the organization.

Sylvia et al. (2024) discussed how POS can act as a buffer against the adverse effects of a psychological contract breach. The research indicates that when employees perceive their organization as offering strong support, they are more likely to overlook breaches in the psychological contract, thereby maintaining a positive relationship with the organization.

Chang (2024) examined the impact of POS on employee work attitudes through the lens of the psychological contract. The study confirms that higher levels of POS lead to more favorable perceptions of the psychological contract, fostering positive work attitudes.

Olaleye et al. (2024) examined how POS indirectly influences employee engagement through the PC, suggesting that POS enhances engagement by reinforcing employees' commitment to their roles.

Table 2.3 Influence of Perceived Organizational Support on Psychological Contract

Source	Variable	Finding
Ruzain (2024)	Perceived Organizational Support, Psychological Contract Fulfillment, Work Engagement.	This study identified psychological contract fulfillment as a mediator between perceived organizational support and work engagement, revealing a significant positive relationship between POS and employees' contractual expectations and engagement levels.
Settoon et al.	Perceived Organizational Support,	The study demonstrated that perceived organizational support enhances

Source	Variable	Finding
(1996)	Organizational Commitment, Employee Reciprocity.	organizational commitment through social exchange processes. POS was found to directly influence employees' psychological contracts and reciprocity behaviors, strengthening their sense of obligation to the organization.
Sylvia et al. (2024)	Psychological Contract, Perceived Organizational Support.	This research found that perceived organizational support reduces the negative effects of psychological contract breach by buffering employees' adverse emotional and behavioral reactions, thereby reinforcing the stability of the psychological contract.
Chang (2024)	Employee Work Attitudes, Perceived Organizational Support, Psychological Contract.	This study confirmed that perceived organizational support positively affects employees' work attitudes through its influence on the psychological contract, indicating that higher POS is associated with more favorable perceptions and stronger fulfillment of psychological contract expectations.
Olaleye et al. (2024)	Customer Satisfaction, Employee Engagement, Perceived Organizational Support.	Although focused on customer satisfaction, the study touched on perceived organizational support as a factor influencing employee engagement through the psychological contract, suggesting a positive correlation.

2.2.3 The Relationship between Job Embeddedness and Psychological Contract

Mitchell et al. (2001) introduced the concept of job embeddedness to describe the forces that keep individuals attached to their jobs. This study emphasizes the significance of the three core dimensions of job embeddedness — fit, links, and sacrifice — which are essential for maintaining the psychological contract between employees and their organizations. The research indicates that higher levels of embeddedness lead to a stronger sense of mutual obligations, thereby reinforcing the psychological contract.

Felps et al. (2009) explored how job embeddedness influences turnover behaviors and its connection to psychological contract breaches. This research demonstrates that job embeddedness reduces turnover and strengthens the psychological contract by enhancing organizational commitment and decreasing perceptions of unmet obligations. Additionally, this study connects the role of social links within the workplace to a more robust psychological contract.

Dechawatanapaisal (2022) investigated the impact of psychological contract breaches on the fit, links, and sacrifice dimensions of job embeddedness. The study

found that when the psychological contract is breached, it can weaken job embeddedness, leading employees to reassess their commitment and contemplate leaving the organization. However, high levels of embeddedness can mitigate the adverse effects of contract breaches by fostering strong ties and a sense of belonging.

Holtom et al. (2006) discussed the role of job embeddedness in organizational behavior, specifically its impact on fulfilling the psychological contract. The research concluded that employees with solid embeddedness are likelier to perceive their psychological contracts as honored, as they have deeper social and professional connections that reinforce mutual obligations with their employers.

Sekiguchi et al. (2008) examined the moderating role of job embeddedness on psychological contract breach and job performance. Their findings suggest that contract breaches have a lesser impact on employees with high job embeddedness, as they are more invested in their workplace relationships and organizational fit. This research highlights the buffering effect of embeddedness, demonstrating how it preserves job performance even when psychological contract obligations are not fully met.

Table 2.4 Influence of Job Embeddedness on Psychological Contract

Source	Variable	Finding
Dechawatanapaisal (2022)	Job Embeddedness, Psychological Contract Breach	High job embeddedness mitigates the adverse effects of psychological contract breach, reinforcing employee commitment.
Felps et al. (2009).	Job Embeddedness, Turnover, Psychological Contract	Job embeddedness reduces turnover and strengthens the psychological contract, with stronger organizational ties leading to reduced breaches.
Holtom et al. (2006).	Job Embeddedness, Retention, Psychological Contract	Job embeddedness enhances retention and strengthens the psychological contract by fostering a sense of mutual obligation, thereby promoting a more stable work environment.
Mitchell et al. (2001).	Job Embeddedness, Turnover	Job embeddedness significantly reduces turnover by increasing employees' emotional and social ties to their organization.
Sekiguchi et al. (2008)	Job Embeddedness, Employee Performance, Leader-Member Exchange	Job embeddedness moderates the effect of leader-member exchange on performance, helping employees navigate psychological contract breaches

2.2.4 The Relationship between Psychological Contract and Teachers' Work Engagement

Xiao and Chen (2022) examined the impact of psychological contract breaches on work engagement among university teachers. They emphasized that breaches lead to increased job insecurity, which in turn diminishes work engagement.

Yu (2024) found that psychological contract fulfillment positively impacts employees' work engagement, with perceived organizational support partially mediating this relationship.

Costa and Oliveira (2023) conducted a study in Portugal that focused on the relationship between psychological contract fulfillment and teachers' work engagement. They confirmed a positive and significant relationship between various dimensions of the psychological contract and teachers' work engagement, especially regarding performance support and development opportunities.

Wonda et al. (2024) demonstrated that both transactional and relational psychological contract fulfillment significantly predict work engagement. The findings suggest that the relational and transactional aspects of the psychological contract have a significant impact on work engagement, particularly when mutual obligations between the employer and employee are perceived as being fulfilled.

Ngobeni et al. (2022) emphasized the importance of fulfilling psychological contracts to maintain high levels of work engagement among teachers. Their study found that breaches lead to reduced work engagement, suggesting that preserving the integrity of the psychological contract is essential for sustaining teacher motivation and commitment.

Table 2.5 Influence of Psychological Contract on Teachers' Work Engagement

Source	Variable	Finding
Xiao & Chen (2022).	Psychological contract breach, Job insecurity, Work engagement.	The study found that a breach in the psychological contract negatively impacts work engagement by increasing work insecurity.
Costa & Oliveira (2023).	Fulfillment of psychological contract, Work engagement dimensions (vigor, dedication, absorption).	A significant positive relationship exists between fulfilling psychological contract dimensions (limitations, stability, performance support, development) and teachers' work engagement levels.
Wonda et al. (2024)	Six psychological contract variables (relational contract, transactional contract, employer/employee obligations)	The study found that the psychological contract has a significant impact on employee engagement, particularly for women in academia.
Ngobeni et al. (2022)	Psychological contract (obligations, breaches, fulfillment), Work Engagement.	The research highlights that fulfilling the psychological contract and avoiding breaches are critical for maintaining high levels of teachers' work engagement.
Yu (2022)	Psychological well-being, Psychological Contract, Work Engagement.	This study explored the mediating role of psychological well-being in the relationship between psychological contract and work engagement.

2.2.5 Moderating Effect of Enterprise Internship on the Relationship between Perceived Subjective Norms and Psychological Contract

Dong et al. (2022) examined how psychological contracts and subjective norms impact knowledge sharing within organizations. They find that subjective norms have a positive influence on knowledge sharing, but the power distance in the organizational culture moderates this effect.

When individuals gain positive experiences and perceive substantial organizational investment during internships, these experiences amplify the influence of subjective norms on the psychological contract (D'Abate, 2009). Research published in BMC Psychology (2023) examines the effects of social media usage on psychological and subjective well-being among university students.

In another study, Azim & Islam, (2022) discussed how perceived subjective norms and job satisfaction are influenced by psychological empowerment and proactive personality. They conclude that employees who feel psychologically empowered and possess a proactive personality are more likely to experience job satisfaction, particularly when they perceive high levels of organizational support.

Feng et al. (2023) found that Enterprise internships have been confirmed as a key mechanism for strengthening the psychological contract between individuals and organizations, especially in Chinese universities and vocational education contexts internship satisfaction not only directly influences career identity behaviors but also mediates these effects through different dimensions of the psychological contract, thereby reinforcing recognition of organizational commitment and social norms.

Table 2.6 Moderating Effect of Enterprise Internship on the Relationship between Perceived Subjective Norms and Psychological Contract

Source	Variable	Finding
Dong et al. (2022).	Perceived Subjective Norms, Knowledge sharing.	The study highlights that subjective norms have a positive influence on knowledge sharing.
D'Abate et al. (2009)	Enterprise Internship, Psychological Contract, Perceived Subjective Norms.	A satisfactory enterprise internship promotes stronger psychological contracts and trust relationships with the organization, and enhances the internalization of perceived subjective norms.
BMC Psychology (2023).	Social media usage, Psychological Contract, Subjective well-being.	The study found that social media usage has a positive impact on subjective well-being, with psychological well-being acting as a mediator. The effects of social media usage are more potent in environments that provide supportive feedback.
Feng et al. (2023).	Perceived Subjective Norms, Enterprise Internship	Enterprise Internship mediates the influence of career identification behavior through different dimensions of

Source	Variable	Finding
	Psychological Contract,	psychological contract, emphasizing that Enterprise Internship amplifies the impact of perceived subjective norms on psychological contract.
Azim & Islam, (2022)	Psychological contract, Job outcomes, Perceived Subjective Norms	Perceived social norms and social factors on the entrepreneurship intention of tertiary level students.

2.2.6 Moderating Effect of Enterprise Internship on the Relationship between Perceived Organizational Support and Psychological Contract

Jing and Yan (2022) examined the role of perceived organizational support (POS) in strengthening psychological contracts among employees, which in turn decreases their turnover intention. This indicates that when employees feel supported by their organization, they are more likely to cultivate a sense of ownership and responsibility toward their work, thereby reducing their likelihood of leaving the organization.

In research published in Bai & Othman, (2023), the authors found that perceived organizational support plays a critical moderating role in the relationship between work-family conflict and psychological well-being.

Atkinson et al. (2003) argue that breaches in the psychological contract are less likely when employees perceive strong organizational support. Such support enhances employees' trust in the organization, leading them to believe that the organization is committed to fulfilling its obligations.

Mathieu et al. (2016) examined the effects of organizational support on job satisfaction and turnover intention, finding that organizational support significantly reduces turnover by enhancing job satisfaction and commitment.

Newman et al. (2011) also contributed to this research by demonstrating that organizational and supervisory support is crucial in reducing turnover intentions among employees in the Chinese service sector.

Table 2.7 Moderating Effect of Enterprise Internship on the Relationship between Perceived Organizational Support and Psychological Contract

Source	Variable	Finding
Jing & Yan (2022).	Perceived Organizational Support, Psychological Contract, Turnover Intention.	The study found that perceived organizational support positively influences psychological Contracts, reducing turnover intention.
Bai & Othman, (2023).	Perceived Organizational Support, Psychological Contract, Psychological Well-being.	This research demonstrates that perceived organizational support moderates the impact of work-family conflict on psychological well-being, showing the protective role of organizational support.
Atkinson et al.	Perceived Organizational Support,	This is because organizations that actively demonstrate care and support are

Source	Variable	Finding
(2003)	Job satisfaction, Psychological Contract.	perceived as more trustworthy, leading employees to believe that the organization will fulfill its commitments.
Mathieu et al. (2016).	Organizational Support, Job Satisfaction, Turnover Intention.	This research found that organizational support reduces turnover intention by enhancing job satisfaction and organizational commitment.
Newman et al. (2011).	Perceived Organizational Support, Supervisor Support, Turnover Intention.	The study emphasizes the significance of organizational and supervisory support in reducing turnover intentions among employees in the Chinese service sector.

2.2.7 Moderating Effect of Enterprise Internship on the Relationship between Job Embeddedness and Psychological Contract

He et al. (2023) explored how job embeddedness mitigates the negative impact of psychological contract violations, particularly among knowledge workers. Their study found that firm job embeddedness, especially enhanced through enterprise internship experiences, reduces the likelihood of turnover when psychological contracts are breached.

De Vos & Meganck, (2009) investigated retention management, focusing on the interaction between psychological contracts and job embeddedness in employees who had undergone internships. The findings suggested that internships foster a deeper understanding of organizational culture, which in turn strengthens job embeddedness and solidifies the psychological contract.

Felps et al. (2009) demonstrated how job embeddedness reduces turnover by strengthening psychological contracts, primarily through structured work placements such as internships. Their study suggests that internships enhance organizational fit and improve employees' perceptions of fulfilling the psychological contract.

Cho et al. (2009) explored the role of perceived organizational support, job embeddedness, and psychological contracts among hospitality employees. Their study revealed that internships have a positive influence on job embeddedness by aligning expectations between employees and employers, thereby strengthening the psychological contract. Sekiguchi et al. (2008) discussed how internships moderate the relationship between job embeddedness and psychological contracts.

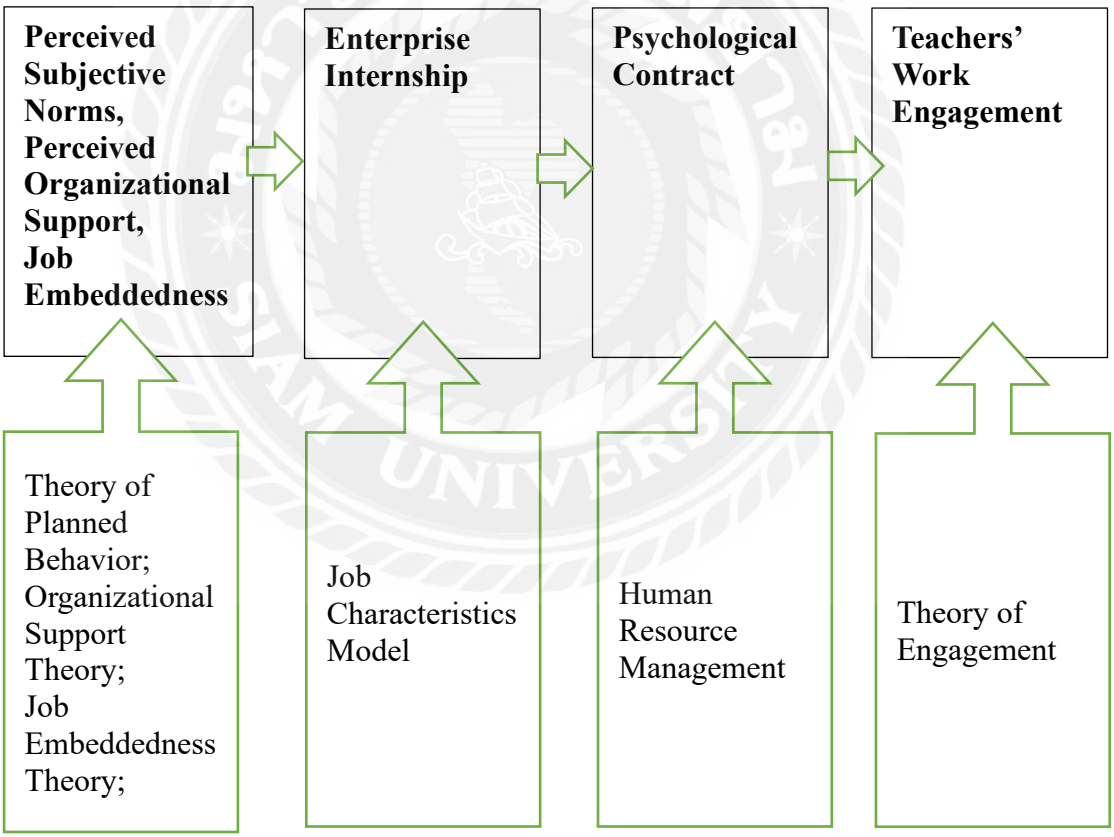
Table 2.8 Moderating Effect of Enterprise Internship on the Relationship between Job Embeddedness and Psychological Contract

Source	Variable	Finding
He et al. (2023)	Job Embeddedness, Psychological Contract.	Job embeddedness mitigates the adverse effects of psychological contract violations, reducing turnover intentions.
De Vos & Meganck, (2009)	Job Embeddedness, Psychological Contract.	Internships enhance job embeddedness, which strengthens the psychological contract and improves retention.

Source	Variable	Finding
Felps et al. (2009).	Job Embeddedness, Turnover Contagion, Psychological Contract	Job embeddedness reduces turnover contagion by enhancing the psychological contract, primarily through solid organizational ties.
Cho et al. (2015)	Job Embeddedness, Organizational support, Psychological Contract.	Perceived organizational support strengthens job embeddedness and aligns psychological contract expectations, reducing turnover.
Sekiguchi et al. (2008).	Job Embeddedness, Leader-Member Exchange, Psychological Contract.	Job embeddedness moderates the effect of leader-member exchange on performance, strengthening the psychological contract.

2.3 Theoretical Framework

Figure 2.1 Theoretical Framework



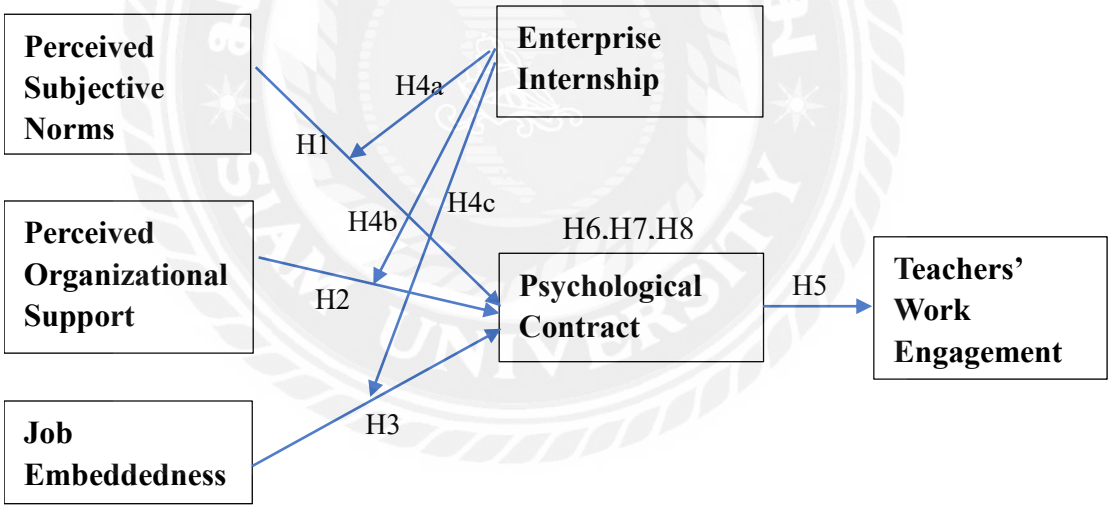
This theoretical framework integrates critical concepts from multiple theories to explain the mechanisms shaping "Double-Qualified" teachers' work engagement during enterprise internships. It highlights three key independent variables—perceived subjective norms, perceived organizational support, and job embeddedness—grounded respectively in Theory of Planned Behavior, Organizational Support Theory, and Job Embeddedness Theory.

2.4 Conceptual Framework

This study explores and optimizes the model of teachers' work engagement in enterprise internship in Henan Province, China. The target population comprises 'Double-Qualified' teachers from all five national vocational education 'Double-Qualified' teacher training centers in Henan. The research investigates how perceived subjective norms, perceived organizational support, and job embeddedness influence teachers' work engagement through the mediating variable of the psychological contract and the moderating variable of enterprise internship.

The objective is to innovate a developing enterprise internship model to enhance teachers' work engagement in the enterprise internship, particularly in light of the shift in training approach. Previously, teachers would complete their enterprise internship before obtaining their "Double-Qualified" certification. However, the current model requires teachers to undergo training and certification at the "Double-Qualified" Training centers before participating in an enterprise internship. This study aims to develop a more effective model for enhancing teachers' work engagement during enterprise internships, aligning with the evolving need to integrate technological advancements and specialized knowledge with the practical demands of enterprise production.

Figure 2.2 Conceptual Framework



2.5 Hypotheses

H1: Perceived Subjective Norms has a statistically significant effect on Psychological Contract.

H2: Perceived Organizational Support has a statistically significant effect on Psychological Contract.

H3: Job Embeddedness has a statistically significant effect on Psychological Contract.

H4a: Enterprise Internship moderates the relationship between Perceived Subjective Norms and Psychological Contract.

H4b: Enterprise Internship moderates the relationship between Perceived Organizational Support and Psychological Contract.

H4c: Enterprise Internship moderates the relationship between Job Embeddedness and Psychological Contract.

H5: Psychological Contract has a statistically significant direct effect on Teachers' Work Engagement.

H6: Psychological Contract has a statistically significant mediating effect on the relationship between Perceived Subjective Norms and Teachers' Work Engagement.

H7: Psychological Contract has a statistically significant mediating effect on the relationship between Perceived Organizational Support and Teachers' Work Engagement

H8: Psychological Contract has a statistically significant mediating effect on the relationship between Job Embeddedness and Teachers' Work Engagement.

2.6 Operationalization of Variables

Referring to the above literature, the operationalization of the variables is presented in Table 2.9 below.

Table 2.9 Operationalization of Variables

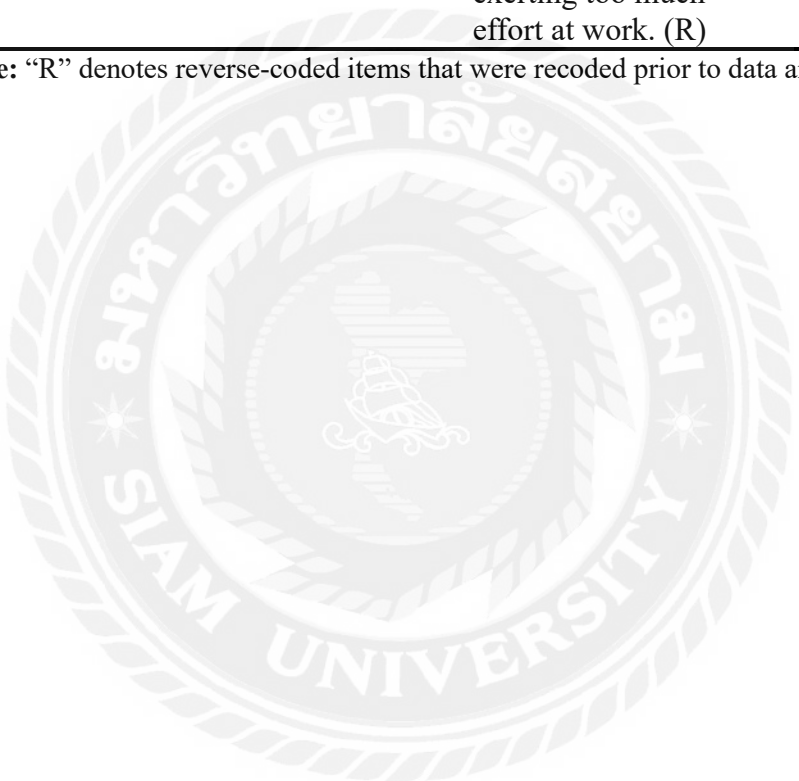
Variable	Operational Definition	Scale Item	Reference	Likert Scale
Perceived Subjective Norms	The social pressure or expectations from significant others, such as colleagues and supervisors, regarding participation in an enterprise internship. (Ephrem et al., 2019)	PSN1. My closest family members believe I should pursue an internship in the enterprise sector. PSN2. My colleagues think I should pursue participation in an enterprise internship. PSN3. I do not seek approval from people important to me regarding my career. (R) PSN4. Stories highlighting others' achievements often influence my decision to participate in an internship at a company. PSN5. My colleagues in enterprises view me as a competent and resourceful professional for participating in internships.	Ephrem et al. (2019)	Strongly Agree: 5, Agree: 4, Neutral: 3, Disagree: 2, Strongly Disagree: 1.
Perceived Organizational Support	Teachers are operationalized as the level of policy enforcement and the support the school provides to facilitate teachers' participation in enterprise internship training programs, thereby developing both theoretical knowledge	POS1. My school values my contribution to its success. POS2. My school fails to appreciate any extra effort I make. (R) POS3. My school takes my goals and values into strong consideration.	Eisenberger et al. (1986)	Strongly Agree: 5, Agree: 4, Neutral: 3, Disagree: 2, Strongly Disagree: 1.

Variable	Operational Definition	Scale Item	Reference	Likert Scale
	and practical skills. (Eisenberger et al., 1986)	POS4. My school does not take my feedback seriously. (R) POS5. Timely help is available from my school whenever I need it. POS6. My school provides me with limited opportunities to advance my career. (R)		
Job Embeddedness	The extent to which teachers believe that participating in enterprise internship training programs will enhance their teaching effectiveness and professional development has been widely recognized. (Dechawatanapaisal, 2022)	JE1. My job as a teacher does not effectively utilize my skills and talents during enterprise internship training programs. (R) JE2. My job as a teacher effectively utilizes my skills and talents during enterprise internship training programs. JE3. I actively promote my enterprise internship training programs to my colleagues. JE4. The prospects for continuing with the enterprise where I intern are helping with my teaching work at my school. JE5. I am willing to sacrifice time to participate in enterprise internship training programs.	Dechawat anapaisal (2022)	Strongly Agree: 5, Agree: 4, Neutral: 3, Disagree : 2, Strongly Disagree : 1.
Psychological Contract	The unwritten expectations between	PC1. I make an effort to contribute	Wang & Peng(2010)	Strongly Agree: 5,

Variable	Operational Definition	Scale Item	Reference	Likert Scale
	teachers and their enterprise internship training programs regarding mutual obligations, including professional growth opportunities and fair treatment, influencing their engagement and commitment. (Wang & Peng, 2010).	to the school's success. PC2. I encourage other in-service teachers to participate in the training. PC3. I do not encourage colleagues' engagement if the enterprise breaches the contract. (R) PC4. I propose improvements to Enterprise Internship contracts and policies. PC5. I advocate for a climate that fulfills contractual expectations.		Agree: 4, Neutral: 3, Disagree : 2, Strongly Disagree : 1.
Enterprise Internship	They are part of the "Double-Qualified" teacher training and are operationalized as mandatory practice periods within the enterprise. Teachers engage directly with the production environment during these internships to acquire practical skills. (Wu et al. 2022)	EI1: Have you ever participated in an internship at an enterprise?	Wu et al. (2022)	Y/N
Teachers' Work Engagement	The intrinsic motivation to participate in enterprise internship training and professional development activities. This motivation includes improving one's	WE1. I often find my thoughts drifting away when performing my job. (R) WE2. I put my heart into my job. WE3. I feel excited when I perform well at my job.	May et al. (2004)	Strongly Agree: 5, Agree: 4, Neutral: 3, Disagree : 2, Strongly Disagree : 1.

Variable	Operational Definition	Scale Item	Reference	Likert Scale
	teaching ability and enhancing one's professional skills. (May et al., 2004)	WE4. I often feel emotionally detached from my job. (R) WE5. I expend a great deal of energy while performing my job. WE6. I try to avoid exerting too much effort at work. (R)		

Note: "R" denotes reverse-coded items that were recoded prior to data analysis.



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

Mixed methods research is a comprehensive research strategy in which researchers systematically collect, analyze, and integrate qualitative and quantitative data within a single study, drawing inferences from the combined dataset (Cresswell et al., 2011). It covers both qualitative and quantitative dimensions. Mixed methods research transcends a simple combination of data, advocating for an integration that fuses theoretical frameworks, methodological approaches, and interpretive pathways (Creswell & Plano Clark, 2017).

In the qualitative phase, in-depth interviews were conducted with five teachers from each college and ten experts from five national-level vocational education training centers (Appendix D: Preliminary Studies Interview Questions). Each center provided two participants: one expert specializing in theoretical teaching and one representative from the enterprise, focusing on practical skills training. To enhance the credibility and methodological rigor of the qualitative analysis, this study adopted a triangulated approach (Annells, 2006) by integrating two complementary tools: iFLYTEK's "AI-Hearing Meeting Notes" and MAXQDA 2020. Following this, qualitative data were analyzed through a four-step process to support analytic depth and transparency further. First, interview audio recordings were transcribed using iFLYTEK AI-assisted transcription to ensure efficient and accurate initial text generation. Second, MAXQDA 2020 was used to generate word clouds, visualize keyword distributions, and identify preliminary thematic patterns. Third, a detailed word frequency analysis was conducted in MAXQDA to quantify keyword occurrences and support systematic thematic categorization. Fourth, preliminary thematic categories were derived from the iFLYTEK AI-assisted transcription outputs, followed by comprehensive manual coding and refinement to ensure interpretative rigor and reliability (Braun & Clarke, 2022; MacLean et al., 2004).

Based on insights gained from the qualitative phase, a quantitative phase was designed to systematically measure the influence of key relational factors on teachers' work engagement. A structured questionnaire was developed, consisting of 27 items related to relational factors and five items on demographic information. The relational factors were operationalized across five dimensions: WEK (6 items), PSN (5 items), POS (6 items), JE (5 items), and PC (5 items). The demographic section includes information on age, gender, college, education level, and whether the respondent has participated in an enterprise internship.

Following the completion of the quantitative analysis, a subsequent qualitative phase was conducted. Five theoretical teaching experts from the initial interview group was re-interviewed, and a follow-up questionnaire was distributed via email to validate and further refine the study findings (Appendix I: Follow-up questionnaire). The objective of this refreshing report was to evaluate the practical propriety, feasibility, and utility of the developed teachers' work engagement model (Appendix J: Expert Evaluation Result).

3.2 Population and Sample

3.2.1 Population

The types of data collected and the target population for data collection were crucial components of the research (Buchstaller & Khattab, 2013). Researcher need to gather valid data or information to enhance the credibility of their study. As part of the research population (Asiamah et al., 2017), participants impacted the study's credibility based on their understanding, definition, and selection.

This study's sample comprised "Double-Qualified" teachers from all five national-level "Double-Qualified" teacher training center vocational colleges in Henan Province, China. These colleges included the Henan Institute of Science and Technology, Henan Vocational and Technical College, Shangqiu Vocational and Technical College, Zhengzhou Electric Power College, and Yellow River Conservancy Technical Institute (Table 3.1).

Table 3.1 China's National Vocational Education "Double-Qualified" Teacher Training Center (2023-2025)

Number	Name	Province	Level	Nature	Focus
1	Yellow River Conservancy Technical Institute	He Nan	Junior College	Public	Science and Technology
2	Shang Qiu Vocational and Technical College	He Nan	Junior College	Public	Comprehen sive
3	Henan Institute of Science and Technology	He Nan	Undergradu ate	Public	Science and Technology
4	Zhengzhou Electric Power College	He Nan	Junior College	Public	Science and Technology
5	Henan Vocational and Technical College	He Nan	Junior College	Public	Science and Technology

3.2.2 Sample Size

The professional characteristics of each school have earned them a position and influence in the field of vocational education, and they strongly support the construction of national-level "Double-Qualified" teacher training centers. These universities are easily accessible and highly relevant to the research topic, facilitating data collection and enhancing the feasibility of the study (Table 3.2).

Table 3.2 Number of Teachers Participating in the "Double-Qualified" Teacher Training

Name of Universities	**Number of Teachers with Double-Qualified**
Yellow River Conservancy Technical Institute	674
Shang Qiu Vocational and Technical College	635
Henan Institute of Science and Technology	324
Zhengzhou Electric Power College	508
Henan Vocational and Technical College	800
Total	**2941**

Confidence level is a crucial metric for evaluating the positional uncertainty between linear and areal elements in GIS. It indicates the degree of certainty in interval estimates, where a wider confidence interval corresponds to a higher level of assurance sought, albeit at the expense of slightly reduced estimation precision (Israel,1992). Importantly, with equal sample sizes, a higher confidence level (e.g., 95%) results in a broader confidence interval.

Minimizing statistical errors and keeping them within scientifically reasonable limits is a cornerstone of statistical theory and practice. Exercising strict control over statistical errors at every phase of the statistical production process is vital for data authenticity and accuracy, as well as for enhancing the overall quality of statistical data. In large-scale nationwide sampling surveys, maintaining a sampling error of less than 5% is essential to ensure the reliability of survey outcomes (China National Bureau of Statistics, 2023).

Spray and Miller (1992) suggested that when population ability distributions are incongruent, using observed test scores as a proxy for actual ability in differential item functioning (DIF) analysis may not significantly compromise the ability to detect true DIF, particularly for tests that are generally free of DIF, assuming a population proportion of 50% for both groups.

To determine the recommended sample size for this study, it is essential to clearly define the parameters that must be included in the calculator: a 95% confidence level, a 5% margin of error, a 50% response distribution, and a population size of 2941. This calculator calculates the minimum number of required sample to meet the desired statistical constraints (Table 3.3).

Table 3.3 Calculation of the Teacher Sample Size

Steps	**Description**	**Value**
1	Population Size (Total Number of Teachers)	2941
2	Margin of Error	5%
3	Confidence Level	95%
4	Response Distribution (p)	50%

$$oneoneonethe\ nen_0 = \frac{z^2 \times\ P\ \times (1-P)}{e^2} onen_0$$

$$= \frac{(1.96)^2 \times\ (0.5)\ \times (1-0.5)}{0.05^2} n_0$$

$$= \frac{3.8416\ \times 0.5 \times 0.5}{0.0025} zeroeeroero, n_0 = \frac{0.9604}{onezero0.0025} \approx 34n$$

$$= \frac{n_0}{1 + \frac{n_0 - 1}{N}} one = \frac{4.16}{1 + \frac{384.16-1}{2941}} = \frac{,384.16}{1.1303} \approx 340$$

For instance, Dillman et al., (2014) in "Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method" suggest that researchers can enhance the calculated sample size by 10% to 30% to compensate for potential non-respondents. Similarly, Cochran (1977) recommends adjusting sample sizes upward to ensure the final number of respondents is adequate, even after accounting for expected non-responses. This practice helps maintain the statistical power and reliability of the study results.

Researchers commonly enhance their sample size estimates by 10% to 30% to compensate for individuals who cannot be reached and those who fail to respond. The original calculated sample size was 340. To adjust for potential non-responses by increasing it by 20%, we can calculate:

$$n_{adjusted} = n \times (1 + Adjust\ the\ scale)$$

$$n_{adjusted} = 340 \times (1 + 0.20)$$

$$n_{adjusted} = 408$$

This strategy ensures that the number of mailed surveys or scheduled interviews exceeds the minimum requirement to maintain the specified level of confidence and precision (Sudman, 1976). After accounting for a 20% increase to manage non-responses, the recommended sample size was approximately 408. This adjustment guarantees that even if some participants do not respond, the study would still maintain a sufficient sample size to uphold the desired confidence and precision levels.

3.2.3 Sampling Procedures

3.2.3.1 Purposive Sampling

In social science and related research fields, data collection is crucial for deepening researchers' understanding and interpretation of theoretical frameworks (Bernard, 2017). Given this importance, the selection of data acquisition methods and sources becomes particularly critical, as even the most sophisticated analytical techniques cannot compensate for flaws arising from inadequate data collection processes (Tongco, 2007).

Purposive sampling is a non-randomized strategy that intentionally selects participants based on specific qualities or characteristics. Unlike methods that rely on a

predetermined theoretical framework or strict rules regarding participant numbers, purposive sampling involves researchers actively identifying and inviting individuals or groups who can provide rich information based on their professional knowledge or practical experience, aligning with the research objectives (Bernard, 2017). This technique, commonly used in qualitative research, aims to utilize limited resources most efficiently by identifying and selecting information-rich cases (Patton, 2002), thereby demonstrating its practicality and effectiveness.

Specifically, purposive sampling involves identifying and selecting individuals or groups who are proficient or knowledgeable about the research phenomenon within a specific domain (Cresswell & Plano Clark, 2011). This process requires a high level of professional expertise and keen insight from researchers to accurately identify participants who can provide the most valuable and relevant information for the study. By carefully selecting participants, researchers can ensure the relevance and depth of the collected data, thereby enhancing the efficiency and quality of the research, especially when resources are limited.

The teacher population in this study was drawn from five vocational and technical colleges in Henan Province: the Henan Institute of Science and Technology, Henan Vocational and Technical College, Shangqiu Vocational and Technical College, Zhengzhou Electric Power College, and Yellow River Conservancy Technical Institute. These schools were selected through purposive sampling based on their status as national-level vocational education "Double-Qualified" teacher training centers, as designated by the Ministry of Education. This selection ensured the inclusion of critical institutions representing the new "Double-Qualified" teacher training initiatives. All of these institutions belong to the science and engineering category, making them particularly suitable for exploring the development of "Double-Qualified" teachers within vocational education.

3.2.3.2 Proportional Sampling

Proportional sampling is a method in which each subgroup in the population is represented in the sample in proportion to its size within the overall population. This approach enhances the sample's representativeness, particularly in diverse populations, ensuring that the critical characteristics of each subgroup are reflected in the data. Cochran et al., (1977) supported proportional sampling for its ability to improve estimate accuracy by closely mirroring population proportions, which is especially valuable when studying heterogeneous groups.

In educational research, proportional sampling is essential for preserving the diversity of the population. Aoyama (1954) emphasized that proportional representation reduces standard error and enhances the reliability of findings by including each subgroup in proportion to its actual presence in the population. This method is critical when studying diverse populations, such as "Double-Qualified" teachers, who may differ in their educational and industry backgrounds.

In this study, proportional sampling accurately reflected the number of "Double-Qualified" teachers across five national-level training centers in Henan Province. Sampling each subgroup in proportion to the number of teachers at each training center ensured that the sample represented the diversity of teachers in the population, aligning with the study's objective of understanding factors affecting their teacher' work engagement (Table 3.4).

Table 3.4 Sampling Procedure

Step	Description
Stratification	Divided "Double-Qualified" teachers into five distinct groups based on their university affiliations across five national-level training centers in Henan Province.
Sample Size Determination	A sample size calculator was used to establish an overall sample size of 408 participants, ensuring proportional representation from each subgroup.
Proportional Allocation	Allocated participants according to the proportion of "Double-Qualified" teachers in each university, ensuring a representative distribution.
Random Selection	Within each proportional subgroup, participants were selected randomly, taking into account factors such as age, gender, and educational background to ensure diverse representation.
Data Collection	Collected data through surveys, interviews, or other suitable methods, adhering to ethical research protocols.

By implementing this proportional sampling approach, the study ensured a balanced representation of "Double-Qualified" teachers from five vocational colleges, enabling a more nuanced understanding of the factors influencing their work engagement during enterprise internships. Proportional allocation (see Table 3.5) ensured that each subgroup was represented in proportion to its population size, thereby enhancing the reliability and generalizability of the findings.

Table 3.5 Proportion of Double-Qualified Teachers in Five Colleges

University	No. of Double-Qualified Teacher	Percentage	Sample Size
Yellow River Conservancy Technical Institute	674	22.9%	93
Shang Qiu Vocational and Technical College	635	21.6%	91
Henan Institute of Science and Technology	324	11%	45
Zhengzhou Electric Power College	508	17.3%	71
Henan Polytechnic	800	27.2%	111
Total	**2941**	**100%**	**408**

3.3 Research Instrument

3.3.1 Research Instrument Development

Based on the conceptual framework presented in Chapter 2, items for the independent variables (Perceived Subjective Norms, Perceived Organizational Support, and Job Embeddedness), the Mediator (Psychological Contract), and the dependent variable (Teachers' Work Engagement) were developed. All the items in the questionnaire originated from the published research of related scholars, and PSN, POS,

JE, PC, and TWE all set up a reverse question. To make them more suitable for the current research setting, the items were revised and refined (Appendix E: Questionnaire).

Teachers' Work Engagement

The Teachers' Work Engagement Scale, developed by May et al. (2004), is divided into three dimensions: Cognitive, Emotional, and Physical. The original scale demonstrated strong internal consistency (Cronbach's alpha: 0.77). In this study, two questions were selected for each dimension.

Perceived Subjective Norms

The scale for Perceived Subjective Norms was adapted from Ephrem et al. (2019), who examined how social factors, such as peer influence and institutional expectations, shape behavior and intentions. Originally designed to assess perceived social norms affecting entrepreneurial behavior, the scale was modified to measure the extent to which "Double-Qualified" teachers feel supported and encouraged by colleagues, institutions, and industry partners to participate in Enterprise Internship. The original scale demonstrated strong reliability and validity (Cronbach's alpha: 0.816; Composite Reliability: 0.871).

Job Embeddedness

The Job Embeddedness scale used in this study was based on the work of Dechawatanapaisal (2022), which examines dimensions such as fit, links, and sacrifice. Developed initially to assess organizational commitment and employee retention, the scale was adapted to measure how well "Double-Qualified" teachers integrate into their institutions and professional networks, as well as the potential costs of leaving their positions. The original scale reported high reliability (Cronbach's alpha: 0.842) and validity (Composite Reliability: 0.902). This study validated the adapted version, confirming its relevance to the vocational education setting.

Perceived Organizational Support

The Perceived Organizational Support Scale, adapted from Eisenberger et al. (1986), measures the extent to which employees believe their Organizational values their contributions and genuinely cares about their well-being. The scale was widely validated across various contexts, demonstrating strong reliability (Cronbach's alpha = 0.93) and construct validity. This study adapted the scale to assess how "Double-Qualified" teachers perceive institutional support during their Enterprise Internship, focusing on recognition, assistance, and alignment with professional goals. This study tested the adapted scale to confirm its validity and reliability in this specific context.

Psychological Contract

The Psychological Contract Scale in this study was adapted from the Ideological Psychological Contract Scale (IPCS) developed by Wang & Peng, (2010). Initially designed to measure unspoken mutual expectations between employees and organizations, the IPCS was tailored to explore how these contracts influence the engagement of "Double-Qualified" teachers during an Enterprise internship. The scale was validated through exploratory and confirmatory factor analyses, achieving internal consistency reliability scores of 0.877 and 0.863 for the two dimensions and an overall

reliability of 0.898. This confirms that the scale is robust for assessing psychological contracts in the vocational education framework, providing insights into how these agreements impact teachers' work engagement (Wang & Peng, 2010).

The questionnaires iterms used in this study were derived from previously established instruments, although some items were modified and refined for application in the current research. The modifications and refinements primarily focused on the descriptions of the items, resulting in revised descriptions that more closely aligned with the research objectives. All items in the instrument were presented in both English and Chinese to ensure bilingual accessibility.

3.3.2 Validity Test

To ensure content validity, the Item–Objective Congruence (IOC) method was employed, following the procedures proposed by Rovinelli and Hambleton (1977). This method allows experts to rate the consistency of each item with the intended construct on a scale ranging from –1 (irrelevant) to +1 (highly relevant). The content validation process also aligned with guidelines recommended by Polit and Beck (2017).

This study invited three experts, following Turner and Carlson's (2003) recommendation that at least three experts are required for IOC validation. The validity measure of the questionnaire was primarily adopted through expert evaluation methods, resulting in the formation of an expert panel, with leading members including Professor Yanqiong Wang (Guangxi Normal University), Associate Professor Dr. Sungworn Ngudgratoke (Director of Institute for Research and Development, Sukhothai Thammathirat Open University), and Associate Professor Dr. MUHAMMAD RIZWAN ULLAH (Xiangtan University). These experts reviewed and rated all questionnaire items. Items with IOC values greater than 0.50 were considered acceptable, while those above 0.75 were deemed highly relevant and logically coherent with the construct. Items that failed to meet the threshold were revised or removed based on expert feedback. The results of the IOC analysis confirmed the logical validity and content alignment of all final items (Appendix H: Item-Objective Congruence Examination).

3.3.3 Reliability Test

Reliability refers to the stability and consistency of a measurement instrument (Cohen et al., 2002). According to Hair et al. (2017), the current measure of consistency is Cronbach's alpha (See Table 3.6). Cronbach's alpha provides reliability estimates based on the correlation of each index within the same structure. Bardhoshi and Erford (2017) noted that Cronbach's alpha has been used multiple times to determine batch responses, such as with the liqueur scale. In 1951, Lee Klenbach proposed a plan for Klenbach's alpha: graph equal solidity and coefficient alpha. It is now one of the methods used to assess the validity of Likert scale surveys (Cronbach, 1951; Sijtsma, 2009). Following Cronbach, the alpha factor is defined based on the number of variables and correlation, serving as the primary metric for reliability assessment (Bujang et al., 2018).

Table 3.6 Cronbach's Alpha Coefficient Size Guidelines

Alpha Coefficient Range	Strength of Association
<0.6	Poor
0.6 to <0.7	Moderate
0.7 to <0.8	Good
0.8 to <0.9	Very good
≥0.9	Excellent

3.3.4 Pilot Test

According to Hassan et al. (2006), pilot research is a small-scale study that utilizes various methods, such as data collection, sampling, and evaluation, in preparation for a larger study. Pilot research is among the most critical phases of research, as it is essential to identify potential problem areas and shortcomings in the testing tools and methods during the research process before implementation. Cooper and Schindler (2014) suggested that the sample size should be between 25 and 100 participants.

Table 3.7 Cronbach's Alpha Coefficient

N of Items	N	Cronbach's Alpha
27	50	0.937

Based on the table above, the overall Cronbach's α coefficient of the questionnaire exceeds 0.7, indicating that the research data are highly reliable and of good quality, making them suitable for further analysis.

Table 3.8 Reliability Analysis of Each Variable

Dimension	Cronbach Alpha
Teachers' Work Engagement (WE)	0.914
Perceived Subjective Norms (PSN)	0.902
Perceived Organizational Support (POS)	0.921
Job Embeddedness (JE)	0.849
Psychological Contract (PC)	0.889

3.4 Data Collection

3.4.1 Ethical Research Procedures

This includes creating a consent form, establishing procedures to ensure anonymity, and implementing other safeguards related to data collection and ethical research practice. Ethical procedures are essential for protecting participants' rights, safety, and well-being while maintaining the integrity and credibility of the study. Such guidelines prevent harm, ensure informed consent, and safeguard confidentiality. These principles are particularly important in educational and social science contexts, where direct interaction with human participants is central to data collection and interpretation (Creswell & Poth, 2016).

3.4.2 Data Collection Procedures

Data collection is a critical component of the research process, and obtaining data from reliable sources is essential, as emphasized by Hair et al. (2007). Primary data refers to information collected directly by researchers (Ajayi, 2017). The content validity and reliability of the questionnaire were formally tested following a pilot study. Data were collected mainly through an online questionnaire created using the professional platform WJX. After developing the questionnaire, a QR code and a website link were generated. Respondents could easily access the survey by scanning the QR code with their mobile phones or visiting the WJX website via the link. Online platforms like WJX allowed seamless survey distribution, improving data management and analysis efficiency.

3.4.3 Survey Procedures

To gather data from all five “Double-Qualified” Teacher Training Centers in Henan Province (Henan Institute of Science and Technology, Henan Polytechnic Institute, Shangqiu Vocational and Technical College, Zhengzhou Electric Power College, and Yellow River Water Conservancy Vocational and Technical College), the study targeted pre-certification trainees who were undergoing systematic training for the “Double-Qualified” teacher certification but had not yet obtained formal certification. The researchers were primarily responsible for participating in the survey and data collection between November 2024 and February 2025, and the data underwent further analysis in March 2025. The questionnaires for this study were distributed and collected during the winter of 2024. The questionnaires were administered at five "Double-Qualified" teacher training centers in Henan to ensure a high response rate. Respondents were asked to submit their completed questionnaires on-site. The collected responses, including online questionnaires, were entered into an Excel spreadsheet, where any invalid responses were carefully removed and excluded.

3.5 Data Analysis

3.5.1 Quantitative Data Analysis

This mixed research method collected quantitative data through a questionnaire (Appendix E: Questionnaire). After the data were collected and preliminarily sorted out, three types of analysis were conducted: (1) variable impact analysis, (2) mediation effect analysis, and (3) moderator effect analysis.

The variable impact analysis included examining interactions among three independent variables (Perceived Subjective Norms, Perceived Organizational Support, and Job Embeddedness), a mediator (Psychological Contract), a moderating variable (Enterprise Internship), and a dependent variable (Teachers’ Work Engagement). This analysis used significance testing conducted via SPSS 27.

The mediation effect analysis examined whether the mediator (psychological contract) played a significant role in the relationship between the independent and dependent variables. This step was completed using AMOS 27, which is specifically designed for mediation and moderation analysis. The moderation effect analysis was also conducted using AMOS 27 to assess the moderating role of enterprise internship in the relationship between the independent and dependent variables.

Goodness-of-Fit Indices and Recommended Thresholds

Goodness-of-fit (GOF) indices are essential for assessing the fit of SEM. These indices determine how well the proposed model represents the data. Various fit indices provide different perspectives on model adequacy, and it is often recommended to report multiple indices for a comprehensive evaluation. The following are key GOF indices along with their recommended thresholds (Table 3.9):

CMIN/DF (Chi-Square/Degrees of Freedom): A value of ≤5.0 is generally acceptable. This index measures the ratio of the chi-square statistic to its degrees of freedom, with lower values indicating a better fit (Wheaton et al., 1977)

GFI (Goodness-of-Fit Index): The GFI assesses how well the model explains the observed covariance. A GFI value of ≥0.90 is considered indicative of a good fit, reflecting that the model adequately captures the observed data patterns (Bagozzi & Yi, 1989)

AGFI (Adjusted et al.): Similar to GFI but adjusted for degrees of freedom, AGFI values of ≥0.85 are recommended. This adjustment enhances reliability for models with more parameters (Schermelleh-Engel et al., 2003).

NFI (Normed et al.): The NFI compares the fit of the proposed model to a baseline (null) model. A value of 0.90 or greater indicates a good model fit (Arbuckle, 1995). This index is often preferred because it assesses improvement over a baseline model.

TLI (Tucker-Lewis Index) or NNFI (Non-Normed et al.): A TLI value of ≥0.90 indicates a model that fits well while adjusting for model complexity (Hair et al., 2014; Hopwood & Donnellan, 2010). Unlike NFI, TLI considers model complexity, offering a more nuanced evaluation.

CFI (Comparative et al.): Similar to TLI, a CFI of 0.90 or higher is recommended for an acceptable fit. This index is robust against variations in sample size and compares the proposed model to a baseline, indicating how much better the model fits than the null model (Hair et al., 2014; Hopwood & Donnellan, 2010).

RMSEA (Root Mean al. Error of Approximation): An RMSEA value of ≤0.10 is acceptable, with values closer to 0.05 indicating a perfect fit. RMSEA evaluates how well the model fits the population covariance matrix, taking into account model complexity. It is beneficial for comparing models (Hopwood & Donnellan, 2010).

Table 3.9 Goodness-of-Fit Acceptable Threshold

Fit Indices	**Recommended Value**
CMIN/DF	≤5.0(Wheaton et al.,1977)
GFI	≥0.90 (Bagozzi & Yi,1989)
AGFI	≥0.85(Schermelleh-engal et al.,2003)
NFI	≥0.90(Arbuckle,1995)
TLI(NNFI)	≥0.90 (Hair et al. 2014; Hopwood & Donnellan 2010)
CFI	≥0.90(Hair et al.2014; Hopwood & Donnellan,2010)
RMSEA	≤0.10(Hopwood & Donnellan,2010)

Note: The ratio of the chi-square value to the degree of freedom (CMIN/DF); Goodness-of-Fit Index (GFI); Adjusted Goodness-of-Fit Index (AGFI); Normed Fit al. (NFI); Comparative Fit al. (CFI); Tucker et al. (TLI); Root Mean Square Error of Approximation (RMSEA).

3.5.2 Qualitative Data Analysis

Qualitative data were analyzed through a four-step process to support analytic depth and transparency further. First, interview audio recordings were transcribed using iFLYTEK AI-assisted transcription to ensure efficient and accurate initial text generation. Second, MAXQDA 2020 was used to perform word cloud analysis, visualizing keyword distributions and highlighting prominent thematic elements (Kuckartz & Rädiker, 2019). Third, a detailed word frequency analysis was conducted in MAXQDA to quantify keyword occurrences and support systematic thematic categorization. This study utilized a complementary tool, MAXQDA 2020, for systematic thematic coding and analysis, thereby enhancing the rigor and credibility of qualitative data analysis. MAXQDA's MAXDictio module conducted word frequency analysis and supported thematic exploration. This enabled the identification of high-frequency terms and recurrent phrases, forming the basis for data-driven thematic mapping (Kuckartz & Rädiker, 2019). Fourth, preliminary thematic categorization was conducted based on the iFLYTEK AI-assisted outputs, followed by comprehensive manual coding and refinement to ensure interpretative rigor and reliability (Braun & Clarke, 2022; MacLean et al., 2004).

After completing the quantitative survey and validating the relationships between variables, this study conducted follow-up interviews with the same five experts from national-level vocational education "Double-Qualified" teacher training centers. These experts specialized in theoretical training. To ensure the accuracy and completeness of the responses, a follow-up written questionnaire (Refreshing Report) was emailed to all ten experts from the five vocational teacher training centers after the initial semi-structured interview. Experts were asked to provide reflective written feedback and score the proposed model across three dimensions: Propriety, Feasibility, and Utility. (Appendix F: Qualitative Expert Interviews).

3.5.3 Hypothesis Testing

The relevance of β values and parameters in SEM is crucial for establishing the validity of a hypothesis. Researchers can investigate causal linkages between observable and latent variables by using SEM to simultaneously examine complex relationships among several variables (Table 3.10). SEM determines direct and indirect effects between variables through model measurement and path analysis. Several fit indices, including the Chi-square test, RMSEA, and CFI, evaluate how well the model fits the data. SEM creates a coherent framework by combining causal, measurement, and structural models, making thorough data analysis and validation easier.

Table 3.10 Hypotheses and Statistical Methods

Hypothesis	Statement	Statistical Method
H1	Perceived Subjective Norms has a statistically significant effect on Psychological Contract.	Structural Equation

Hypothesis	Statement	Statistical Method
H2	Perceived Organizational Support has a statistically significant effect on Psychological Contract.	Modeling Structural Equation Modeling
H3	Job Embeddedness has a statistically significant effect on Psychological Contract.	Structural Equation Modeling
H4a	Enterprise Internship moderates the relationship between Perceived Subjective Norms and Psychological Contract.	PROCESS macro (Model 1)
H4b	Enterprise Internship moderates the relationship between Perceived Organizational Support and Psychological Contract.	PROCESS macro (Model 1)
H4c	Enterprise Internship moderates the relationship between Job Embeddedness and Psychological Contract.	PROCESS macro (Model 1)
H5	Psychological Contract has a statistically significant direct effect on Teachers' Work Engagement.	Structural Equation Modeling
H6	Psychological Contract has a statistically significant mediating effect on the relationship between Perceived Subjective Norms and Teachers' Work Engagement.	Structural Equation Modeling
H7	Psychological Contract has a statistically significant mediating effect on the relationship between Perceived Organizational Support and Teachers' Work Engagement.	Structural Equation Modeling
H8	Psychological Contract has a statistically significant mediating effect on the relationship between Job Embeddedness and Teachers' Work Engagement.	Structural Equation Modeling

3.6 Translation of Research Instruments

This study was initially developed in English. This translation process is crucial in cross-cultural research, as it preserves the integrity of the questionnaire content while making it accessible to the target population. The translation was conducted using a back-translation method, a widely recognized approach for maintaining the original meaning of the survey items (Brislin, 1970). This process helps to avoid cultural bias and ensures that the questions are interpreted as intended by the respondents, thereby enhancing the reliability and validity of the collected data (Behr, 2017).

Two English teachers from the School of Foreign Languages at Guangxi Normal University, both holding English Level 8 certificates, assisted with the translation of the research instrument. One teacher translated the original English scale into Chinese, and the other conducted the back-translation into English to ensure semantic equivalence between the two versions. This forward–backward translation procedure ensured that pre-certification "Double-Qualified" teachers could accurately understand each questionnaire item (Appendix G: English–Chinese Questionnaire).

CHAPTER 4

RESEARCH RESULTS

This chapter presents the empirical findings derived from both the quantitative and qualitative analyses, guided by the theoretical framework established in Chapters II and III. Grounded in Theory of Planned Behavior, Organizational Support Theory, Job Embeddedness Theory, and the Theory of Engagement, the study employed a mixed-methods approach.

Quantitative data were collected using structured questionnaires and analyzed with SPSS 27 and AMOS 27 for descriptive statistics, CFA, and SEM. Meanwhile, qualitative data were gathered through semi-structured online interviews and open-ended follow-up questionnaires designed to accommodate the relational sensitivities typical of Chinese academic contexts, where audio recording is often declined. Interviews were conducted through real-time note-taking, followed by reflective responses collected via email. All qualitative data were thematically coded and analyzed using MAXQDA 2020, including word cloud and code-document matrix functions, which facilitated the triangulation and contextual interpretation of the quantitative results. This two-phase, culturally sensitive qualitative strategy enhanced the validity and depth of the findings.

4.1 Quantitative Statistical Analysis

4.1.1 Sample's Demographic Characteristics

Demographic characterization refers to the detailed description and analysis of the demographic attributes of the research sample. This process enables researchers to understand participant diversity better, ensure the sample's representativeness, select appropriate statistical models, and interpret the findings more accurately. The study's key demographic indicators included gender, age, education, university, and experience with enterprise internship.

The questionnaire was administered via WJX, a widely used online survey platform in China for academic research. A total of 452 questionnaires were distributed and collected. After excluding incomplete submissions, duplicate responses, and entries completed in less than 90 seconds, 408 valid responses were retained for further analysis, resulting in a validity rate of 90.27%. This data cleaning process ensured the rationality and integrity of the dataset.

The final sample size met and exceeded the minimum requirement for SEM analysis, providing a statistically robust foundation for hypothesis testing and model evaluation.

Table 4.1 Demographic Profile of Respondents

Sample	Category	Frequency	Percent
Gender	Male	267	65.4
	Female	141	34.6
Age	Under 30	30	7.4
	30-40	200	49.0

Sample	Category	Frequency	Percent
	40-50	136	33.3
	50-60	42	10.3
Education	Associate degree	0	0
	Bachelor degree	108	26.5
	Master degree	264	64.7
	Doctoral Degree	36	8.8
University	Yellow River Water Conservancy Vocational and Technical College	93	22.8
	Shang Qiu Vocational and Technical College	91	22.3
	Henan Institute of Science and Technology	45	11
	Henan Vocational and Technical College	108	26.5
	Zhengzhou Electric Power College	71	17.4
Enterprise	NO	72	17.6
Internship	YES	336	82.4

Table 4.1 presents respondents' demographic characteristics, including gender, age, education, institution, and internship status. A total of 408 valid responses were collected. Among the participants, 65.4% were male and 34.6% were female. The majority (49.0%) were between the ages of 30 and 40, 33.3% were aged 40 to 50, 10.3% were aged 50 to 60, and 7.4% were under 30 years old. Regarding education, 64.7% held a master's degree, 26.5% held a bachelor's degree, and 8.8% held a doctoral degree; no respondents held an associate degree.

Respondents were selected from five vocational institutions in Henan province, with the largest groups coming from Henan Vocational and Technical College (26.5%) and Yellow River Water Conservancy Vocational and Technical College (22.8%). Participation in enterprise internships was notably high, with 82.4% of respondents having completed relevant internship experiences.

4.1.2 Descriptive Statistics of Variables

4.1.2.1 Reliability Analysis

Reliability analysis tests the stability, consistency, and reliability of measurement results. To ensure the accuracy of these results, the questionnaire data must be analyzed for reliability prior to analysis.

Table 4.2 Reliability Statistics

N of Items	N	Cronbach's Alpha
27	408	0.929

According to Table 4.2, the overall Cronbach's α coefficient of the questionnaire exceeds 0.7, indicating that the research data possess high reliability and quality and can be used for further analysis.

Table 4.3 Reliability Analysis of Each Dimension: Cronbach's Alpha Coefficients

Dimension	Cronbach Alpha
Teachers' Work Engagement (WE)	0.891
Perceived Subjective Norms (PSN)	0.871

Dimension	Cronbach Alpha
Perceived Organizational Support (POS)	0.899
Job Embeddedness (JE)	0.861
Psychological Contract (PC)	0.886

Table 4.3 shows that the Cronbach α coefficient for each dimension is greater than 0.7, indicating that the research data are highly reliable and can be used for further analysis.

4.1.2.2 Reliability

In the study, Cronbach's Alpha and CITC tests were conducted on the obtained data, along with Cronbach's Alpha if Item Deleted tests for each question item. The CITC is a measure of item discrimination. Analyzing the results reveals that the Cronbach's Alpha for each item, if an item is deleted, is less than the overall Cronbach's Alpha, indicating that each item meets the necessary criteria and can enhance the scale's reliability.

Teachers' Work Engagement

Table 4.4 shows that all Corrected Item–Total Correlation (CITC) values exceed 0.50, indicating adequate item discrimination. The scale also demonstrates strong internal consistency, with a Cronbach's alpha of 0.891, which is well above the commonly accepted threshold of 0.70.

Table 4.4 Teachers' Work Engagement Scale Reliability Analysis

Dimension	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Teachers' Work Engagement	WE1	0.713	0.871	0.891
	WE2	0.743	0.867	
	WE3	0.710	0.872	
	WE4	0.678	0.876	
	WE5	0.716	0.871	
	WE6	0.702	0.873	

Perceived Subjective Norms

Data analysis of Perceived Subjective Norms was conducted. According to the analysis results in Table 4.5, the CITC value for each question item in the Perceived Subjective Norms is higher than 0.5. Meanwhile, if the Item Is Deleted, the Cronbach's Alpha for each item is 0.850, 0.846, 0.844, 0.839, and 0.840, all of which are less than the Cronbach's Alpha of 0.871.

Table 4.5 Perceived Subjective Norms Scale Reliability Analysis

Dimension	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Perceived Subjective Norms	PSN1	0.672	0.850	0.871
	PSN2	0.687	0.846	
	PSN3	0.698	0.844	
	PSN4	0.718	0.839	
	PSN5	0.715	0.840	

Perceived Organizational Support

The data on Perceived Organizational Support were analyzed. According to the analysis results in Table 4.6, the CITC value for each question item in Perceived Organizational Support is higher than 0.5. Meanwhile, the Cronbach's Alpha if Item Deleted for each item is 0.879, 0.878, 0.878, 0.885, 0.886, and 0.878, all less than the Cronbach's Alpha of 0.899.

Table 4.6 Perceived Organizational Support Scale Reliability Analysis

Dimension	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Perceived Organizational Support	POS1	0.739	0.879	0.899
	POS2	0.744	0.878	
	POS3	0.744	0.878	
	POS4	0.700	0.885	
	POS5	0.688	0.886	
	POS6	0.741	0.878	

Job Embeddedness

Data analysis was conducted on Job Embeddedness. According to the analysis results in Table 4.7, the CITC for each question item in the Job Embeddedness value is higher than 0.5. Meanwhile, the Cronbach's Alpha if Item Deleted for each item is 0.830, 0.832, 0.835, 0.839, and 0.824, all less than the Cronbach's Alpha of 0.861. The Cronbach's Alpha value is more significant than 0.7.

Table 4.7 Job Embeddedness Scale Reliability Analysis

Dimension	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Job Embeddedness	JE1	.688	.830	0.861
	JE2	.679	.832	
	JE3	.665	.835	
	JE4	.650	.839	
	JE5	.709	.824	

Psychological Contract

Data analysis of Psychological Contract was conducted. According to the analysis results in Table 4.8, the CITC value for each question item in the Psychological Contract is higher than 0.5. Meanwhile, the Cronbach's Alpha if Item Deleted for each item is 0.858, 0.866, 0.855, 0.856, and 0.869, all lower than the Cronbach's Alpha of 0.886. The Cronbach's Alpha values are all greater than 0.7.

Table 4.8 Psychological Contract Scale Reliability Analysis

Dimension	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Psychological Contract	PC1	.735	.858	0.886
	PC2	.705	.866	
	PC3	.748	.855	
	PC4	.744	.856	
	PC5	.691	.869	

4.1.2.3 Validity Analysis

Validity refers to the extent to which a test or scale can accurately measure psychological and behavioral characteristics; in other words, it relates to the accuracy and reliability of the test results. Generally, the lower the significance level of Bartlett's sphericity test (P<0.05), the more likely a meaningful relationship exists between the original variables. The KMO value compares the simple correlation and partial correlation coefficients between items, ranging from 0 to 1. The criteria for suitability for factor analysis are as follows: greater than 0.9 is very suitable; 0.7 to 0.9 is suitable; 0.6 to 0.7 is relatively suitable; 0.6 to 0.5 is not very suitable; and below 0.5 is considered unsuitable. The Bartlett's sphericity test value evaluates whether the correlation coefficients between items are significant. Each item is considered suitable for factor analysis if the significance is less than 0.05.

Table 4.9 KMO and Bartlett's Test Results

KMO and Bartlett's test		
KMO value		0.930
Bartlett sphericity test	Chi-square	6103.577
	df	351
	P-value	0.000

Table 4.9 indicates that the KMO value is 0.930, which exceeds the recommended threshold of 0.8. This indicates that the research data are highly suitable for extracting information, indirectly reflecting good validity, and factor analysis can be performed.

4.1.2.4 Descriptive Statistics

In descriptive statistical analysis, the indicator level of each variable is typically measured through the mean and standard deviation. A higher mean signifies a greater average sample level for this indicator. The discrete trend describes the degree of data dispersion in the distribution. In Table 4.10, the standard deviation highlights the differences in size among various samples for the same indicator. This questionnaire primarily employs a five-level Likert scale for dimensional observation. A mean above 3 suggests that most respondents tend to be satisfied.

Table 4.10 Descriptive Statistical Analysis

Item	M	SD
WE1	3.745	0.988
WE2	3.755	0.953
WE3	3.463	1.085
WE4	3.681	0.967
WE5	3.765	0.934
WE6	3.520	1.054
Teachers' Work Engagement (WE)	3.655	0.803
PSN1	3.748	0.944
PSN2	3.684	1.016
PSN3	3.654	0.933
PSN4	3.483	1.028
PSN5	3.451	1.078
Perceived Subjective Norms (PSN)	3.604	0.814
POS1	3.571	0.961

Item	M	SD
POS2	3.35	1.089
POS3	3.267	1.102
POS4	3.632	0.972
POS5	3.500	1.006
POS6	3.581	1.062
Perceived Organizational Support (POS)	3.484	0.842
JE1	3.613	1.022
JE2	3.581	1.037
JE3	3.596	1.031
JE4	3.554	1.045
JE5	3.574	1.040
Job Embeddedness (JE)	3.583	0.829
PC1	3.370	1.048
PC2	3.25	1.098
PC3	3.534	1.056
PC4	3.515	1.025
PC5	3.500	0.946
Psychological Contract (PC)	3.434	0.858

4.1.2.5 Independent Samples Test

Table 4.11 presents the descriptive statistics (group means and standard deviations) for each psychological contract item (PC1–PC5), comparing teachers who have participated in enterprise internships with those who have not. Across all items, teachers with internship experience consistently reported higher mean scores (e.g., PC1: M = 3.42 vs. 3.15; PC5: M = 3.55 vs. 3.26), suggesting that internship experience is associated with stronger perceptions of psychological contract fulfillment.

Table 4.11 Descriptive Statistics of Enterprise Internship

	Have you ever participated in an enterprise internship?	N	Mean	Std. Deviation	Std. Error Mean
PC1	0	72	3.15	1.122	.132
	1	336	3.42	1.027	.056
PC2	0	72	3.04	1.156	.136
	1	336	3.29	1.082	.059
PC3	0	72	3.33	1.035	.122
	1	336	3.58	1.057	.058
PC4	0	72	3.33	1.113	.131
	1	336	3.55	1.003	.055
PC5	0	72	3.26	1.007	.119
	1	336	3.55	.926	.051

Note. N = 408. Group 0 = No enterprise internship experience; Group 1 = With enterprise internship experience. PC1–PC5 refer to individual items in the psychological contract survey.

Table 4.12 presents the results of Levene's Test for Equality of Variances and the t-tests comparing psychological contract items (PC1–PC5) between teachers with and without enterprise internship experience. The results indicate that variances were generally equal across groups (p-values of Levene's Test > .05), allowing for standard t-test interpretation. Among the five items, PC5 showed the strongest t-value (t = –2.347, p = .019), suggesting a significant difference in this item. This suggests that

participation in enterprise internships enhances teachers' perceptions of their psychological contract fulfillment, particularly in terms of proactive advocacy and policy improvement.

Table 4.12 Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
PC1	Equal variances assumed	.496	.482	-1.945	406
	Equal variances not assumed.			-1.838	98.159
PC2	Equal variances assumed	.488	.485	-1.779	406
	Equal variances not assumed.			-1.704	99.391
PC3	Equal variances assumed	.206	.650	-1.785	406
	Equal variances not assumed.			-1.810	105.168
PC4	Equal variances assumed	1.837	.176	-1.657	406
	Equal variances not assumed.			-1.549	97.224
PC5	Equal variances assumed	.863	.353	-2.347	406
	Equal variances not assumed.			-2.223	98.370

Note. PC1–PC5 represent individual elements of the psychological contract. Levene's Test assessed variance equality; p-values < .05 in the t-test column indicate statistically significant group differences.

Table 4.13 Independent Samples Test (Detailed Mean Differences)

Independent Samples Test					
		t-test for Equality of Means			
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower
PC1	Equal variances assumed	.052	-.264	.136	-.531
	Equal variances not assumed	.069	-.264	.144	-.549
PC2	Equal variances assumed	.076	-.253	.142	-.532
	Equal variances not assumed	.092	-.253	.148	-.548
PC3	Equal variances assumed	.075	-.244	.137	-.513
	Equal variances not assumed	.073	-.244	.135	-.511
PC4	Equal variances assumed	.098	-.220	.133	-.481
	Equal variances not assumed	.125	-.220	.142	-.502
PC5	Equal variances assumed	.019	-.287	.122	-.527
	Equal variances not assumed	.028	-.287	.129	-.543

Note. Negative mean differences indicate lower scores in the non-internship group. PC1–PC5 represent individual elements of the psychological contract. P-values < .05 are considered statistically significant.

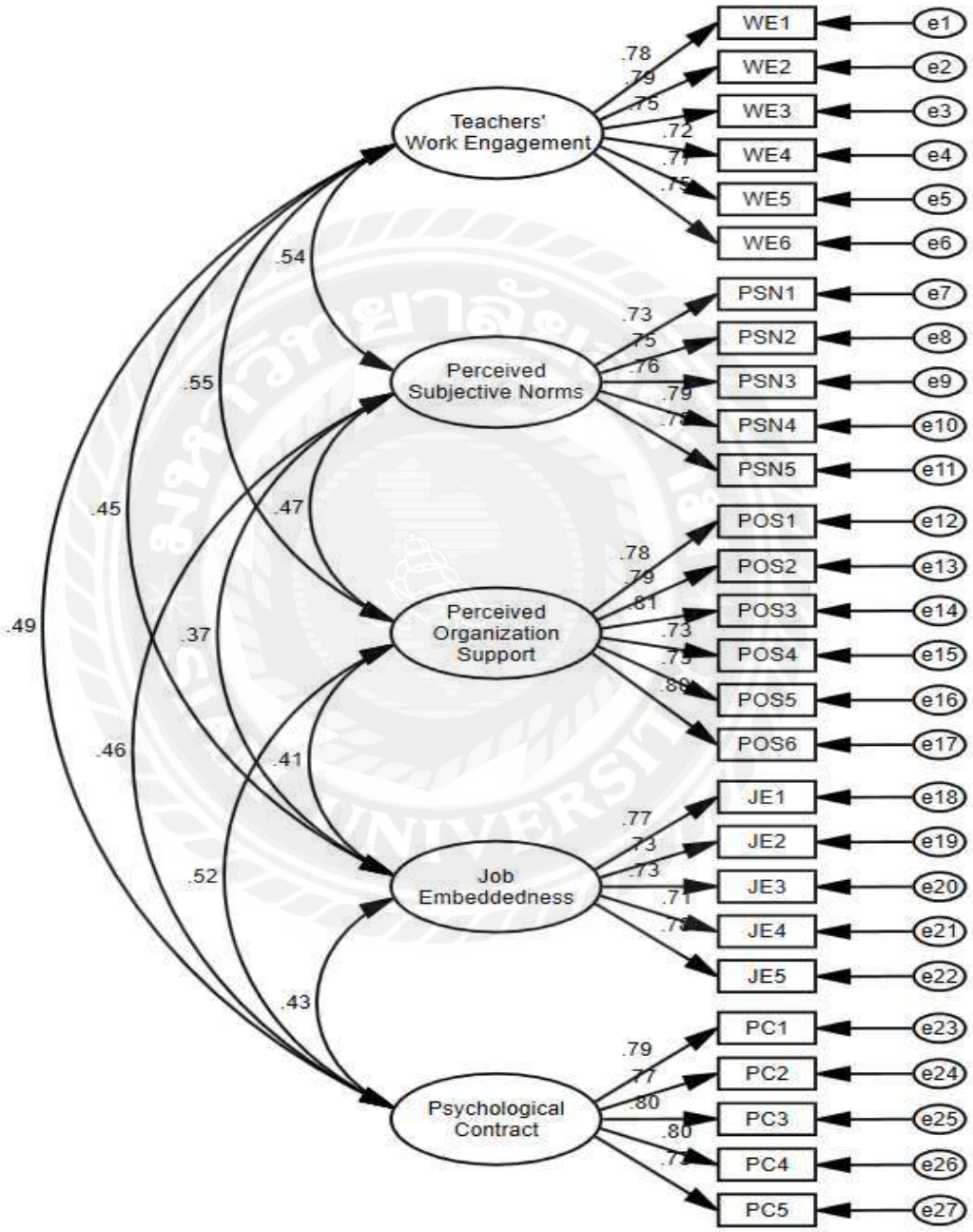
Table 4.13 details the mean differences, standard errors, and confidence intervals for each psychological contract item (PC1–PC5) between the two groups. While most items approached significance, PC5 showed a statistically significant mean difference (–0.287, p = .019), indicating that teachers with internship experience perceive a stronger sense of mutual commitment and engagement. The consistent negative mean differences suggest that teachers without internships reported lower scores across all

dimensions of the psychological contract.

4.1.3 Confirmatory Factor Analysis

4.1.3.1 Model Diagram

Figure 4.1 Confirmatory Factor Analysis of Variables



4.1.3.2 Model Fitting Index

In constructing a structural equation model, the first step is to conduct a goodness-of-fit test for the measurement model to verify whether the model can

adequately describe the relationships between observed and latent variables. Evaluating the fit of a model is a complex task since different fit indices emphasize distinct aspects of model performance. Therefore, it is generally agreed that the adequacy of a model should be assessed using multiple criteria rather than relying on a single indicator. In this study, the model fit is evaluated based on three categories of indices: absolute fit indices, relative fit indices, and parsimonious fit indices. The specific indices employed include:

Table 4.14 Model Fitting Indices for the CFA Model

Index	**Acceptable Value**	**Statistical Value**	**Fit Condition**
CMIN	-	464.964	-
DF	-	314	-
CMIN/DF	<3	1.481	Good
GFI	>0.90	0.923	Good
AGFI	>0.90	0.908	Good
RMSEA	<0.08	0.034	Good
NFI	>0.90	0.926	Good
ILI	>0.90	0.975	Good
(TLI) NNFI	>0.90	0.971	Good
CFI	>0.90	0.974	Good

Table 4.14 shows that the χ^2/df value is 1.481, which is less than 3; the RMSEA is 0.034, indicating a good fit, as it is below the threshold of 0.08. The GFI value is 0.923, AGFI is 0.908, NFI is 0.926, IFI is 0.975, TLI (NNFI) is 0.971, and CFI is 0.974—all meeting excellent criteria. All goodness-of-fit indices have reached commonly accepted standards, demonstrating that the model fits well.

4.1.3.3 Composite Reliability

CR is one of the criteria for assessing the internal quality of a model, reflecting whether all measurement items within a latent variable consistently explain that latent variable. The table shows that all CR values exceed 0.7, indicating that all measurement items within each latent variable consistently explain the latent variable. The convergent validity of each dimension is evaluated through the AVE, which quantifies the proportion of variance in the measurement variables explained by the latent variable relative to measurement error. A higher AVE value implies that a more significant percentage of variance is accounted for by the latent variable, with less measurement error. The generally accepted threshold for AVE is above 0.5.

Table 4.15 Factor Load Coefficient

Divisor	Variable	Non-standard load factor	S.E.	C.R.	P	Standardized load coefficient	CR	AVE
Teachers' Work Engagement	WE1	1				0.776	0.892	0.579
	WE2	0.984	0.059	16.67	***	0.793		
	WE3	1.067	0.068	15.726	***	0.754		
	WE4	0.908	0.061	14.911	***	0.72		
	WE5	0.94	0.058	16.166	***	0.772		
	WE6	1.029	0.066	15.607	***	0.749		
Perceived Subjective Norms	PSN1	1				0.728	0.872	0.577
	PSN2	1.102	0.078	14.197	***	0.746		
	PSN3	1.03	0.071	14.438	***	0.759		
	PSN4	1.177	0.079	14.96	***	0.787		
	PSN5	1.217	0.082	14.752	***	0.776		
Perceived Organizational Support	POS1	1				0.779	0.899	0.598
	POS2	1.149	0.068	16.826	***	0.79		
	POS3	1.189	0.069	17.283	***	0.808		
	POS4	0.953	0.062	15.402	***	0.734		
	POS5	0.977	0.064	15.237	***	0.727		
	POS6	1.129	0.067	16.979	***	0.796		
Job Embeddedness	JE1	1				0.765	0.861	0.553
	JE2	0.972	0.067	14.435	***	0.733		
	JE3	0.957	0.067	14.293	***	0.726		
	JE4	0.948	0.068	13.935	***	0.709		
	JE5	1.043	0.067	15.478	***	0.784		
Psychological Contract	PC1	1				0.791	0.886	0.61
	PC2	1.022	0.062	16.389	***	0.772		
	PC3	1.025	0.059	17.236	***	0.805		
	PC4	0.99	0.058	17.129	***	0.801		
	PC5	0.837	0.054	15.424	***	0.734		

From Table 4.15, it can be observed that all AVE values exceed 0.5, and all CR values are higher than 0.7. These results demonstrate that the structural model of the questionnaire exhibits strong convergent validity.

4.1.3.4 Discriminant Validity

One method for assessing discriminant validity involves comparing the correlation coefficients between constructs with the square root of the average variance extracted (AVE). The underlying principle is that each construct has its AVE value and is correlated with other constructs. If the square root of a construct's AVE is greater than its correlation coefficients with other constructs, this indicates strong discriminant validity.

Table 4.16 Pearson Correlation and AVE Square Root Values

	Teachers' Work Engagement	Perceived Subjective Norms	Perceived Organizational Support	Job Embeddedness	Psychological Contract
Teachers' Work Engagement	**0.761**				
Perceived Subjective Norms	0.476**	**0.759**			
Perceived Organizational Support	0.491**	0.421**	**0.773**		
Job Embeddedness	0.391**	0.320**	0.352**	**0.744**	
Psychological Contract	0.436**	0.402**	0.460**	0.378**	**0.781**

Note: Diagonal black bold numbers are AVE square root values

The analysis of discriminant validity, as presented in Table 4.16, demonstrates that the square root of the AVE for each construct exceeds the maximum absolute value of the correlation coefficients between constructs. This indicates strong discriminant validity.

4.1.3.5 Path Coefficient Estimation in CFA

Pearson correlation analysis was used to verify the direct effects between key variables. Specifically, the focus is on examining the relationships between teachers' work engagement and four independent variables: Perceived Subjective Norms, Perceived Organizational Support, Job Embeddedness, and Psychological Contract. The Pearson correlation coefficients represent the strength and significance of these relationships.

Table 4.17 Pearson Correlation

	Teachers' Work Engagement	Perceived Subjective Norms	Perceived Organizational Support	Job Embeddedness	Psychological Contract
Teachers' Work Engagement	1				
Perceived Subjective Norms	**0.476****	1			
Perceived Organizational Support	**0.491****	0.421**	1		
Job Embeddedness	**0.391****	0.320**	0.352**	1	
Psychological Contract	**0.436****	0.402**	0.460**	0.378**	1

Note: * p<0.05 ** p<0.01

Table 4.17 presents the Pearson correlation coefficients among the five key variables. The values illustrate the strength and direction of linear relationships. A double asterisk (**) indicates significance at the 0.01 level, indicating a high level of

confidence in the relationships.

Teachers' Work Engagement and Perceived Subjective Norms: The correlation coefficient is 0.476 ($p < 0.01$), indicating a moderate and statistically significant positive relationship. This suggests that higher levels of Perceived Subjective Norms are associated with greater teacher work engagement.

Teachers' Work Engagement and Perceived Organizational Support: The correlation coefficient is 0.491 ($p < 0.01$), representing a moderate positive relationship. This implies that when teachers perceive stronger support from their organization, their level of work engagement tends to increase.

Teachers' Work Engagement and Job Embeddedness: The coefficient of 0.391 (** $p < 0.01$) suggests a moderately positive relationship, indicating that teachers who feel more embedded in their jobs will likely be more engaged.

Teachers' Work Engagement and Psychological Contract: A correlation of 0.436 (** $p < 0.01$) shows a moderate and positive relationship, meaning that the fulfillment of psychological contracts correlates with higher levels of work engagement.

All four independent variables show significant positive correlations with teachers' work engagement, supporting the direct effects hypothesis.

Table 4.18 provides a more detailed validation of the direct effects between the variables, using Pearson correlation coefficients again.

Table 4.18 Validation of the Direct Effects between the Variables

		Teachers' Work Engagement	Perceived Subjective Norms	Perceived Organizational Support	Job Embeddedness	Psychological Contract
Teachers' Work Engagement	Pearson Correlation	1	**.476****	**.491****	**.391****	**.436****
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	408	408	408	408	408
Perceived Subjective Norms	Pearson Correlation	.476**	1	.421**	.320**	.402**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	408	408	408	408	408
Perceived Organizational Support	Pearson Correlation	.491**	.421**	1	.352**	.460**
	Sig. (2-tailed)	0.000	0.000		0	0
	N	408	408	408	408	408
Job Embeddedness	Pearson Correlation	.391**	.320**	.352**	1	.378**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	408	408	408	408	408
Psychological Contract	Pearson Correlation	.436**	.402**	.460**	.378**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	408	408	408	408	408

Note: ** Correlation is significant at the 0.01 level (2-tailed).

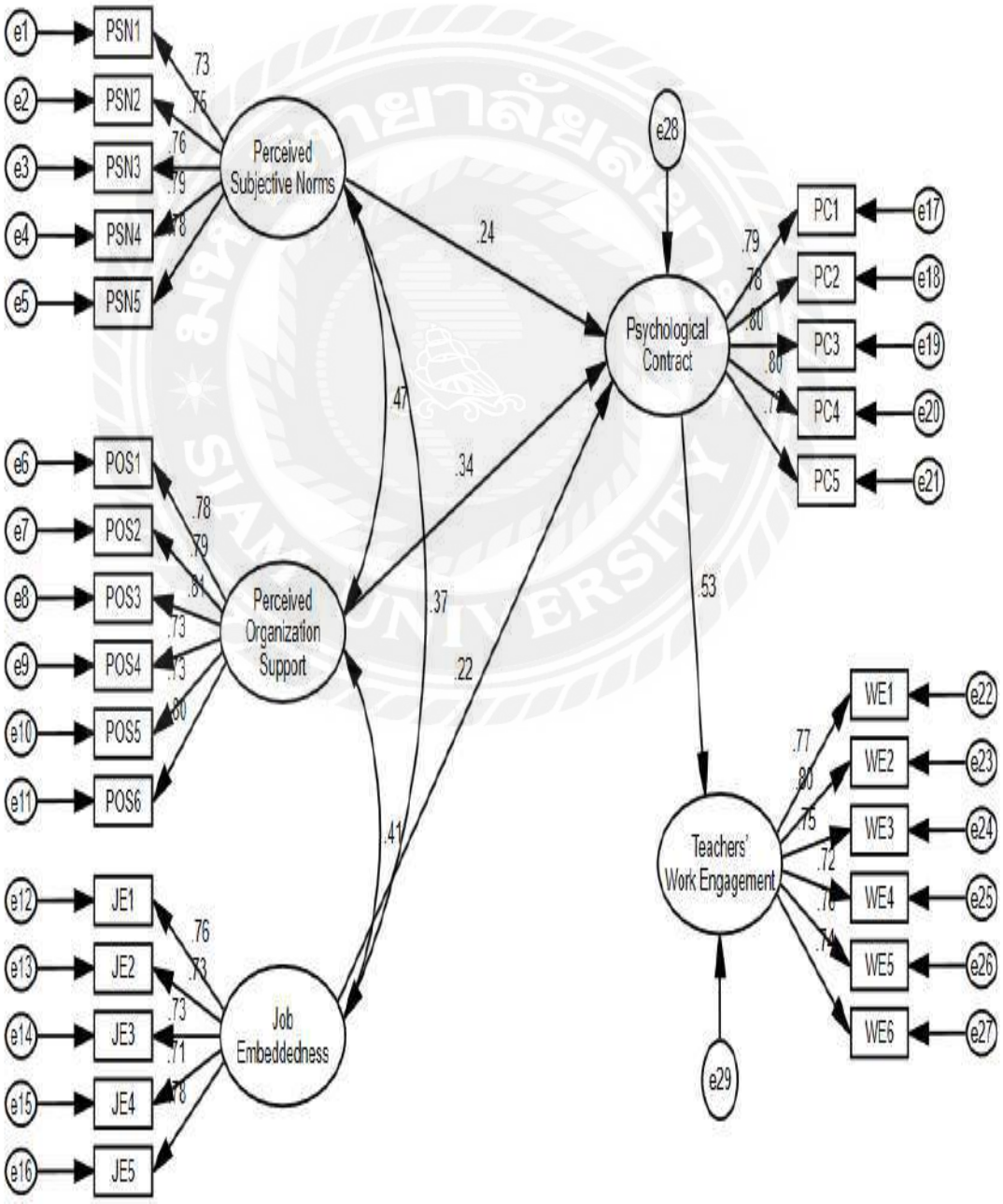
Exact p-values (Sig. 2-tailed): All values are 0.000, which means the probability of these results occurring by chance is less than 0.01 (i.e., highly significant).

Sample Size (N = 408): This consistent sample size across all relationships enhances the reliability of the correlation estimates. Table 4.18 reinforces the finding that each pair of variables shows a statistically significant correlation and presents the same pattern of moderately strong, positive relationships.

4.1.4 The Structural Equation Models and Hypothesis Testing

4.1.4.1 Structural Model Diagram Structural Model Diagram

Figure 4.2 The Modified Structural Equation Model



4.1.4.2 Direct Effect Validation

AMOS 27 software was used to construct and validate the SEM to test the hypothesized relationships among the key variables in this analysis phase. Before interpreting the path coefficients and validating the hypotheses, it is essential to evaluate how well the model fits the observed data. This is done through a series of model fit indices.

Table 4.19 Structural Equation Model Fitting Index

Index	Acceptable Value	Statistical Value	Fit Condition
CMIN	-	555.730	-
DF	-	317	-
CMIN/DF	<3	1.753	Good
GFI	>0.90	0.910	Good
AGFI	>0.90	0.892	Acceptable
RMSEA	<0.08	0.043	Good
NFI	>0.90	0.911	Good
ILI	>0.90	0.960	Good
(TLI) NNFI	>0.90	0.955	Good
CFI	>0.90	0.960	Good

Table 4.19 summarizes the key model fit indices commonly used to assess the adequacy of SEM models:

CMIN/DF (Chi-square/df): The value is 1.753, less than the recommended threshold of 3. This indicates that the model has a good overall fit.

RMSEA (Root Mean Square Error of Approximation): The RMSEA value is 0.043, well below the maximum acceptable level of 0.08. This suggests an excellent approximation of the model to the population.

GFI (Goodness-of-Fit Index): The GFI is 0.910, exceeding the standard threshold of 0.90, indicating strong model fit.

AGFI (Adjusted GFI): Although the AGFI is 0.892, slightly below 0.90, it still falls within the acceptable range (> 0.80), and thus does not detract significantly from the model's validity.

NFI (Normed Fit Index) and CFI (Comparative Fit Index): Both values exceed 0.90 (0.911 and 0.960, respectively), supporting a well-fitting model.

IFI (Incremental Fit Index) and TLI (Tucker-Lewis Index) also surpass 0.95, suggesting excellent fit.

These indices indicate that the structural model provides a good fit to the observed data. The model satisfies the essential conditions for structural equation modeling, providing a robust basis for interpreting the direct path effects among the variables. Therefore, proceeding with hypothesis testing and analysis of causal relationships is appropriate.

4.1.4.3 Structural Model Hypotheses Testing Results

Table 4.20 presents the standardized path coefficients (β), standard errors (S.E.), critical ratios (C.R.), and significance levels (P-values) for the structural equation model. These values are used to test the hypotheses regarding the relationships among the core variables.

Table 4.20 Hypotheses Testing Results

Path	Parameter	β	Estimate	S.E.	C.R.	P	Result
H1	Perceived Subjective Norms→ Psychological Contract	0.239	0.287	0.069	4.175	***	Support
H2	Perceived Organizational Support→Psychological Contract	0.339	0.373	0.065	5.781	***	Support
H3	Job Embeddedness→ Psychological Contract	0.223	0.235	0.058	4.058	***	Support
H5	Psychological Contract→ Teachers' Work Engagement	0.529	0.49	0.053	9.252	***	Support

H1: The standardized path coefficient from Perceived Subjective Norms to Psychological Contract is 0.239 and statistically significant (C.R. = 4.175, P < 0.001), indicating a significant positive effect. Thus, H1 is supported.

H2: Perceived Organizational Support significantly influences Psychological Contract, with a path coefficient of 0.339 (C.R. = 5.781, P < 0.001). This supports H2.

H3: The effect of Job Embeddedness on Psychological Contract is also significant and positive, with a coefficient of 0.223 (C.R. = 4.058, P < 0.001), confirming H3.

H5: The path from Psychological Contract to Teachers' Work Engagement is highly significant and strongly positive, with a coefficient of 0.529 (C.R. = 9.252, P < 0.001). Therefore, H5 is supported.

In summary, all hypothesized direct effects in this model are statistically significant and positively associated, indicating that perceived subjective norms, organizational support, and job embeddedness have a positive influence on the psychological contract, thereby significantly enhancing teachers' work engagement.

4.1.5 The Mediating Effect of Psychological Contract

To further validate the mediating role of Psychological Contract in the relationships between the independent variables (Perceived Subjective Norms, Perceived Organizational Support, and Job Embeddedness) and the dependent variable (Teachers' Work Engagement), the bootstrapping method was applied using AMOS 27. A bias-corrected percentile bootstrap with 5,000 resamples was conducted.

Table 4.21 Mediating Effect Test Results Based on Bootstrapping (N = 5000)

Path	Parameter	Estimate	SE	Lower	Upper	P
H6	Perceived Subjective Norms→ Psychological Contract→ Teachers' Work Engagement	0.141	0.045	0.061	0.238	0.000
H7	Perceived Organizational Support→ Psychological Contract →Teachers' Work Engagement	0.183	0.045	0.105	0.285	0.000
H8	Job Embeddedness →Psychological Contract → Teachers' Work Engagement	0.115	0.034	0.058	0.192	0.000

As shown in Table 4.21, all three indirect paths through the mediating variable Psychological Contract are statistically significant. Specifically:

The confidence intervals (95%) for all indirect effects do not include zero, which indicates that the mediating effects are statistically significant.

The p-values for all three mediation paths are less than 0.001, confirming that the mediation is significant at a high level of confidence.

These findings suggest that Psychological Contract plays a significant mediating role in the effects of Perceived Subjective Norms, Perceived Organizational Support, and Job Embeddedness on Teachers' Work Engagement.

4.1.6 The Moderating Effect of Enterprise Internship

4.1.6.1 The Moderating Effect of Enterprise Internship on the Relationship between Perceived Subjective Norms and Psychological Contract

As shown in Table 4.22, the F-value for the final model (Model 4) is 14.862, with a p-value < 0.001, indicating that including all variables significantly improves the prediction of Psychological Contract. This suggests that the overall regression model has strong explanatory power.

Table 4.22 Model Summary of Hierarchical Regression Analysis Predicting Psychological Contract

Model	R	R^2	ΔR^2	Adjusted R^2	Std. Error of Estimate	Description
1	0.119	0.014	–	0.004	0.856	Control variables only
2	0.419	0.176	0.162	0.166	0.784	+ PSN
3	0.443	0.196	0.020	0.184	0.775	+ Enterprise Internship
4	0.454	0.206	0.010	0.193	0.771	+ PSN × Enterprise Internship

Note: R = correlation coefficient; R^2 = coefficient of determination.

In Model 1, which includes only the control variables (gender, age, education, and university), the F-value is 1.439 and the p-value is 0.220, more significant than the 0.05 threshold. This indicates that the control variables alone do not significantly predict the outcome variable. Hence, demographic characteristics and institutional background do not have a significant standalone effect on Psychological Contract.

When the independent variable PSN is added in Model 2, the F-value increases substantially to 17.152 with a p-value of 0.000, indicating that PSN has a statistically significant positive effect on Psychological Contract. Upon including the Enterprise Internship variable in Model 3, the model remains significant ($F = 16.313$, $p = 0.000$), suggesting that Experience Internship also have a meaningful impact on Psychological Contract.

In Model 4, the interaction term PSN × Enterprise Internship is added. The F-value remains high at 14.862, with a p-value of 0.000, confirming that the interaction between PSN and EI significantly contributes to the prediction of PC.

The R-squared change (ΔR^2) was computed across the four hierarchical regression models to evaluate the explanatory power added by each predictor. From Model 1 to Model 2, including PSN led to a substantial increase in explained variance ($\Delta R^2 = 0.162$), indicating a strong main effect. Adding an Enterprise Internship in Model 3 improved the model fit with an incremental ΔR^2 of 0.020.

Finally, Model 4 introduced the interaction term (PSN × EI), resulting in a marginal but meaningful R-square change ($\Delta R^2 = 0.010$), suggesting a moderating effect.

Table 4.23 ANOVA Results for Hierarchical Regression

Model	F	Sig. (P-value)	Description
1	1.439***	0.220	Control variables only
2	17.152***	0.000	+ PSN
3	16.313***	0.000	+ Enterprise Internship
4	14.862***	0.000	+ PSN × Enterprise Internship

Note: Sig. = significance level; F = ANOVA F-test result.

The regression equation based on the coefficients in Table 4.20 is as follows:

Psychological Contract=2.546+0.230×PSN+0.307×Enterprise Internship+0.260×(PS N×Enterprise Internship). Table 4.23 reveals the following insights:

1) Among the control variables, gender approaches significance ($p = 0.054$). However, age, education, and university do not show significant effects ($p > 0.05$), which reinforces the conclusion that demographic controls exert a limited influence on Psychological Contract.

2) Perceived Subjective Norms have a standardized coefficient (Beta) of 0.218, with a significance level of $p = 0.024$, indicating a statistically significant positive relationship with Psychological Contract.

3) Enterprise Internship shows a Beta of 0.136 and is highly significant ($p = 0.003$), suggesting a meaningful and positive contribution.

4) The interaction term PSN × Enterprise Internship has a standardized coefficient (Beta) of 0.219 with p = 0.024, meeting the criteria for statistical significance. This confirms that EI significantly moderates the relationship between PSN and the PC, such that the positive effect of PSN on PC is stronger among individuals who have more intensive enterprise internship experiences.

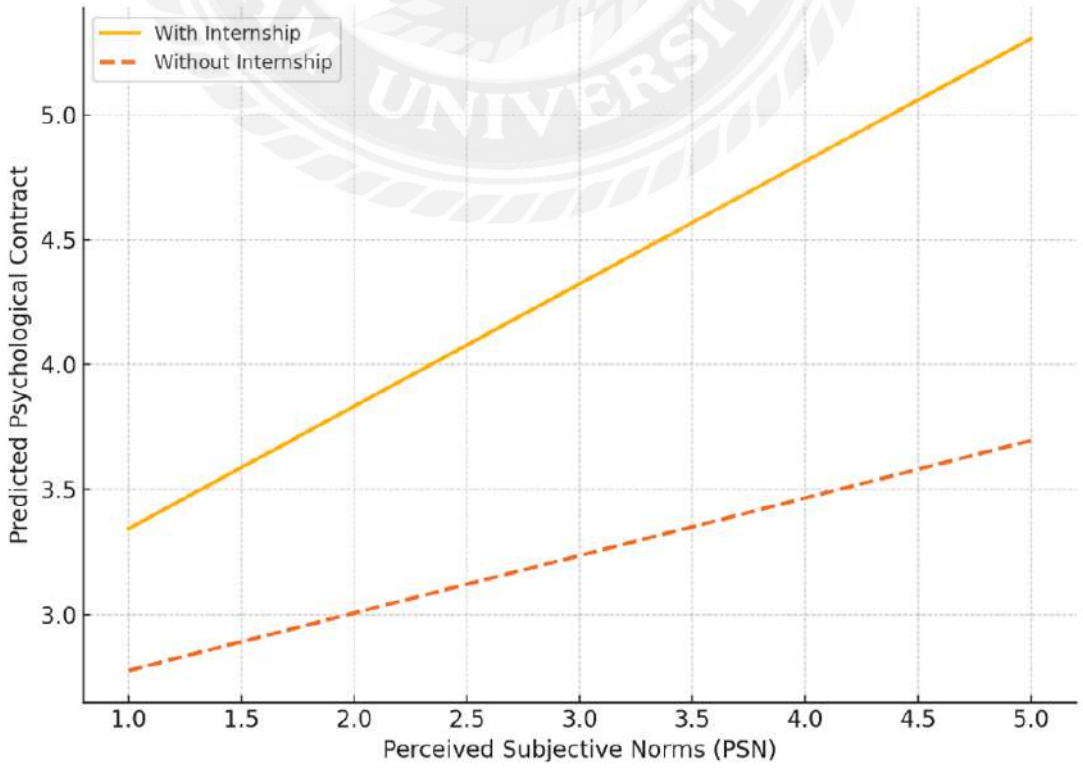
Table 4.24 Regression Coefficients for the Full Model

Predictor	B	Std. Error	Beta	t	Sig.
(Constant)	2.546	0.465	—	5.478	0.000
Gender	0.158	0.082	0.088	1.930	0.054
Age	-0.053	0.050	-0.048	-1.069	0.286
Education	-0.061	0.068	-0.040	-0.891	0.373
University	-0.034	0.027	-0.057	-1.275	0.203
PSN	0.230	0.102	0.218	2.260	0.024
Enterprise Internship	0.307	0.102	0.136	3.017	0.003
PSN × Enterprise Internship	0.260	0.115	0.219	2.268	0.024

Note: PSN = Perceived Subjective Norms; Sig. = p-value; B = unstandardized coefficient; Beta = standardized coefficient.

The Interaction Effect of PSN and EI on PC is statistically significant. The dashed orange line represents the predicted PC level for teachers without EI, while the solid orange line represents those with EI. The positive relationship between PSN and PC is significantly stronger among teachers participating in EI. This confirms Hypothesis H4a, indicating a significant moderating effect of EI.

Figure 4.3 Interaction Effect of Perceived Subjective Norms and Enterprise Internship on Psychological Contract



These Figure 4.3 results support Hypothesis H4aa, indicating that Enterprise Internship significantly moderates the positive relationship between Perceived Subjective Norms and Psychological Contract.

4.1.6.2 The Moderating Effect of Enterprise Internship on the Relationship between Perceived Organizational Support and Psychological Contract

This section examines the moderating role of EI in the relationship between POS and the PC. A hierarchical regression analysis was conducted, and the interaction term was derived by multiplying the centered independent variable (POS) by the centered moderating variable (EI).

Table 4.25 Hierarchical Regression Results Predicting Psychological Contract from Perceived Organizational Support and Enterprise Internship

Model	Predictor	R	R^2	Adjusted R^2	ΔR^2	F	Sig.(p-value)
1	Control variables	.119	.014	.004	.014	1.439***	.220
2	Control variables, POS	.471	.221	.212	.207	22.875***	.000
3	Control variables, POS, Enterprise Internship	.489	.239	.227	.018	20.972***	.000
4	Control variables, POS, Enterprise Internship, POS× Enterprise Internship	.496	.246	.233	.007	18.686***	.000

Note: POS = Perceived Organizational Support; EI = Enterprise Internship.
***p < .001, **p < .01, *p < .05

The final regression model presented in Table 4.25 explained 24.6% of the variance in the PC, indicating a substantial model fit ($F = 18.686$, $p < .001$). Each incremental step—from including the main effects of POS and EI to adding their interaction term—significantly improved the model fit, providing robust support for the moderation hypothesis. Specifically, the addition of the interaction term (POS × EI) further enhanced the explained variance and confirmed the significant moderating role of EI in strengthening the relationship between POS and PC.

Table 4.26 Regression Coefficient Analysis

Variable	B	SE	β	t	p	Tolerance	VIF
Constant	2.256	0.438	-	5.150	.000	-	-
Gender	0.117	0.080	0.065	1.467	.143	.966	1.035
Age	-0.074	0.049	-0.067	-1.528	.127	.973	1.028
Education	-0.005	0.066	-0.003	-0.070	.944	.975	1.026
University	-0.021	0.026	-0.035	-0.806	.421	.981	1.019

Variable	B	SE	β	t	p	Tolerance	VIF
POS	0.299	0.096	0.293	3.124	.002	.214	4.679
Enterprise Internship	0.290	0.099	0.129	2.942	.003	.976	1.024
POS × EI (Interaction)	0.216	0.108	0.188	2.006	.046	.214	4.672

Note: *p < .05, **p < .01, ***p < .001

The standardized coefficients (β) and their significance tests reveal that:

POS significantly and positively predicts Psychological Contract (β = 0.293, p = 0.002). This finding suggests that higher perceptions of organizational support are positively associated with the psychological contract that teachers perceive as being in place.

Enterprise Internship experience also shows a significant positive effect (β = .129, p = .003), suggesting teachers with internship experience tend to report stronger psychological contracts.

The interaction term (POS × EI) has a significantly positive effect on Psychological Contract (β = 0.188, p = 0.046). This interaction indicates that an enterprise internship moderates the relationship between Perceived Organizational Support and Psychological Contract, thus confirming Hypothesis H4b.

The control variables—Gender (β = .065, p = .143), Age (β = -.067, p = .127), Education (β = -.003, p = .944), and University (β = -.035, p = .421)—did not yield statistically significant results, indicating a limited direct influence on the PC in this analysis. Collinearity statistics, including Tolerance and VIF values, indicate that there are no multicollinearity issues in the model. Specifically, all tolerance values were well above the recommended threshold of 0.10, and all VIF values were below 10, confirming the stability and reliability of the regression estimates. Based on these robust results, the findings provide strong evidence supporting the moderating role of EI in enhancing the positive effect of POS on the PC among teachers.

Figure 4.4 Interaction Effect of Perceived Organizational Support and Enterprise Internship on Psychological Contract

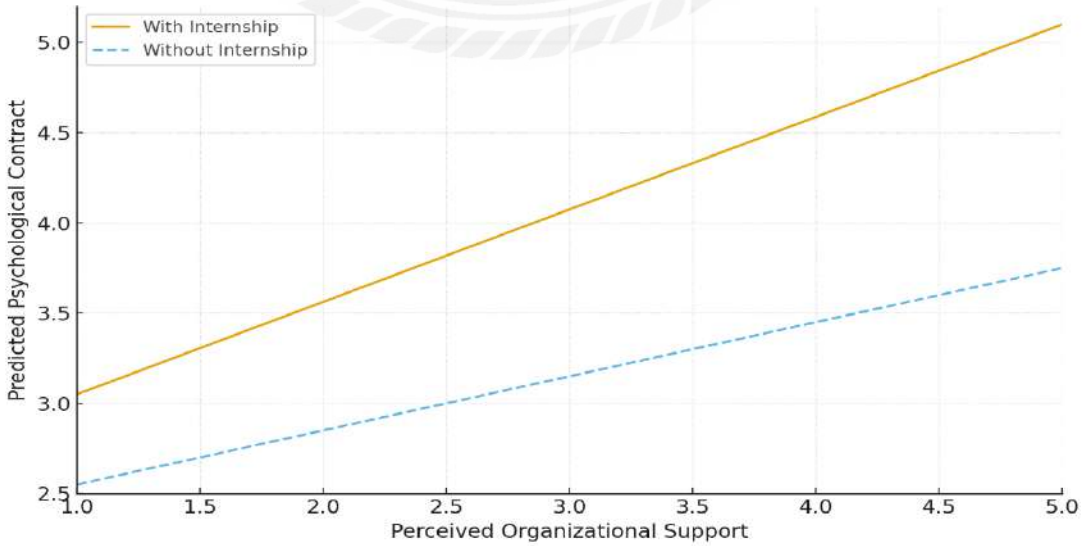


Figure 4.4 visually illustrates the interaction effect presented in Table 4.25. In the figure, POS is plotted on the horizontal axis, and the predicted value of PC is plotted on the vertical axis. The solid line represents teachers who have participated in EI, while the dashed line represents those who have not participated in EI. The noticeably steeper slope of the solid line indicates that the positive relationship between POS and PC is stronger among teachers with EI. Specifically, teachers who reported higher levels of POS and participated in EI demonstrated significantly stronger PC than those who did not participate in EI. This graphical representation provides explicit visual confirmation of the significant moderating effect identified in the regression analysis, thereby supporting Hypothesis H4ba.

4.1.6.3 The Moderating Effect of Enterprise Internship on the Relationship between Job Embeddedness and Psychological Contract

To evaluate Hypothesis H4c, the moderating effect of EI on the relationship between JE and PC was examined using hierarchical regression analysis.

Table 4.27 Hierarchical Regression Results Predicting Psychological Contract from Job Embeddedness and Enterprise Internship

Model	R	R^2	Adjusted R^2	ΔR^2	F	Sig. (P-value)
1. Control variables	.119	.014	.004	—	1.439	.220
2. Control variables + Job Embeddedness	.395	.156	.145	.142	14.847***	<.001
3. Control variables + Job Embeddedness + Enterprise Internship	.407	.165	.153	.009	13.254***	<.001
4. Full Model (+ Interaction)	.432	.187	.172	.022	13.112***	<.001

Note: * N = 408; ***p < .001.

Table 4.27 presents the hierarchical regression results, demonstrating incremental improvements in model fit with the successive inclusion of JE, EI, and their interaction term (JE × EI). The final model accounted for approximately 18.7% of the variance in the Psychological Contract (Adjusted R^2 = .172; F = 13.112; p < .001).

To further examine the contribution of each predictor, the R-squared change (ΔR^2) was calculated across the four models. Model 2 showed a substantial increase in explained variance (ΔR^2 = .142) when Job Embeddedness was added, indicating its strong main effect. Model 3, which introduced Enterprise Internship, produced a modest R^2 increase (ΔR^2 = .009). Model 4 added the interaction term (Job Embeddedness × Enterprise Internship), resulting in a meaningful R^2 change of .022, thereby providing evidence of a moderating effect.

Table 4.28 Regression Coefficients for Predicting Psychological Contract from Job Embeddedness, Enterprise Internship, and Their Interaction

Predictor	B	SE	β	t	p
Constant	2.110	0.312	-	6.758	<.001
Job Embeddedness	0.388	0.047	.375	8.274	<.001
Enterprise Internship	0.249	0.103	.111	2.416	.016
Job Embeddedness × Enterprise Internship	0.395	0.122	.148	3.225	.001

Note: *p < .05, **p < .01, ***p < .001

Table 4.28 shows the regression coefficients of the final model. Job Embeddedness (β = .375, p < .001) and Enterprise Internship (β = .111, p = .016) significantly and positively predict Psychological Contract. Importantly, the interaction term (Job Embeddedness × Enterprise Internship) was significant (β = .148, p = .001), indicating that Enterprise Internship significantly moderates the relationship between Job Embeddedness and Psychological Contract, thereby supporting Hypothesis H4c.

Figure 4.5 Interaction Effect of Job Embeddedness and Enterprise Internship On Psvchooaica Contract

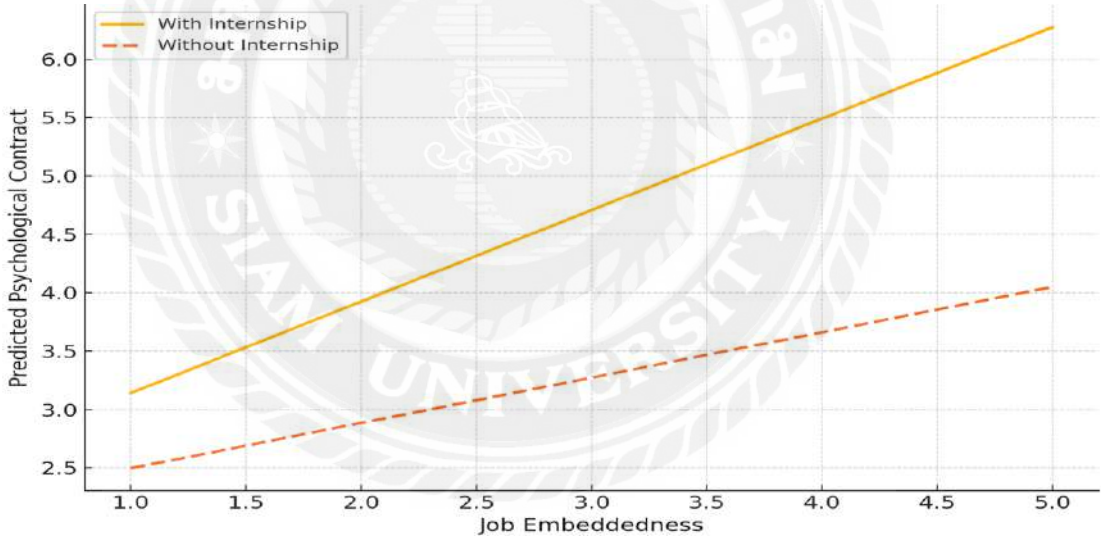


Figure 4.5 illustrates the interaction effect between JE and EI on PC. The horizontal axis represents the level of Job Embeddedness, ranging from low to high, while the vertical axis shows the predicted values of Psychological Contract. Two regression lines are presented: the solid line represents teachers who have participated in an enterprise internship, and the dashed line represents teachers without such internship experience. This figure demonstrates the significant moderating role of EI on the relationship between JE and PC. Specifically, EI strengthens the positive effect of JE on PC. This graphical representation provides strong visual support for Hypothesis H4c, confirming that the beneficial impact of Job Embeddedness on Psychological Contract is amplified when teachers have more Enterprise Internship.

Table 4.29 summarizes the effect sizes (Cohen's d, Hedges' correction, and Glass's delta) for the group comparisons on Psychological Contract items. The point estimates for Cohen's d range from −0.21 to −0.31, indicating small to moderate effect sizes in favor of teachers with enterprise internship experience. These findings complement the t-test results, highlighting the practical significance of the observed differences and supporting the hypothesis that enterprise internships make a meaningful contribution to teachers' perceptions of their psychological contract.

Table 4.29 Independent Samples Effect Sizes

				95% Confidence Interval	
		Standardizer[a]	Point Estimate	Lower	Upper
PC1	Cohen's d	1.045	-.253	-.508	.003
	Hedges' correction	1.046	-.252	-.507	.003
	Glass's delta	1.027	-.257	-.512	-.001
PC2	Cohen's d	1.095	-.231	-.486	.024
	Hedges' correction	1.097	-.231	-.485	.024
	Glass's delta	1.082	-.234	-.489	.021
PC3	Cohen's d	1.053	-.232	-.487	.023
	Hedges' correction	1.055	-.231	-.486	.023
	Glass's delta	1.057	-.231	-.486	.024
PC4	Cohen's d	1.023	-.215	-.470	.040
	Hedges' correction	1.025	-.215	-.469	.040
	Glass's delta	1.003	-.220	-.474	.036
PC5	Cohen's d	.941	-.305	-.560	-.049
	Hedges' correction	.942	-.304	-.559	-.049
	Glass's delta	.926	-.310	-.565	-.054

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

4.2 Qualitative Analysis

A word cloud analysis was performed as part of the thematic coding process using MAXQDA 2020 to further validate and contextualize the qualitative findings. Due to the relational and cultural sensitivities inherent in Chinese academic and professional environments, most participants chose not to be recorded. Therefore, semi-structured interviews were conducted online and documented in real time through detailed note-taking:Refreshing Report. After the initial interviews, participants were invited to complete an open-ended follow-up questionnaire, which was emailed to them as part of the "Refreshing Report" phase. These interviews served as a rapport-building phase, helping participants become more comfortable with the researcher and the study's purpose.

To enhance the credibility and methodological rigor of the qualitative analysis, this study adopted a triangulated approach by combining iFLYTEK AI-assisted transcription with MAXQDA 2020. The qualitative data analysis involved four main

steps. First, interview audio recordings and written notes were transcribed and initially processed using iFLYTEK AI-assisted transcription to ensure efficient and accurate text generation. Second, MAXQDA 2020 was used to create word cloud analyses, which visually map the distribution of keywords and highlight the main thematic elements. Third, a detailed word frequency analysis was performed in MAXQDA to quantify keyword appearances and support systematic thematic categorization. Fourth, a preliminary thematic categorization was developed based on iFLYTEK AI-assisted outputs, followed by manual coding and refinement through a focus group (Appendix I: A Follow-up Questionnaire was Sent Via Email after the Interview) to ensure interpretive accuracy and reliability. This layered approach combined automated efficiency with manual interpretive depth, aligning with best practices in qualitative research.

The collected responses were translated from Chinese to English with the help of two academic experts to ensure conceptual fidelity and linguistic accuracy (Appendix I). These translated texts were then imported into MAXQDA 2020 for thematic coding. Word frequency analysis was performed and visualized using word clouds.

4.2.1 In-Depth Interviews and Validation Strategy

Position and Department: Expert Details

Table 4.30 displays the professional backgrounds of five senior experts involved in the qualitative phase. All participants hold roles such as associate professors, vice deans, or department heads at leading vocational undergraduate institutions in Henan Province, each recognized as a National Training Expert in China's Ministry of Education's "Double-Qualified" teacher development program.

Their expertise covers music education, technical training, educational technology, marketing, and economics, showing the interdisciplinary nature of vocational teacher training. As leaders of "Double-Qualified" teams, their insights span curriculum development, enterprise collaboration, and teacher mentoring.

Table 4.30 Position and Department

Code	Institution	Education Background	Current Position	Role in Research Context
A4	Yellow River Conservancy Technical Institute	MBA Master's Degree	Associate Professor, Marketing Dept; Leader of "Double-Qualified" Team	Key contributor to vocational management training and internship coordination
C2	Shangqiu Vocational and Technical College	Master's Degree	Vice Dean, Public Basic Education; Leader of "Double-Qualified" Team	Expert in education-service coordination and local vocational policy implementation
E3	Henan Institute of Science and Technology	Master's Degree	Director, Educational Technology; Leader of "Double-Qualified" Team	Practitioner and planner in technical pedagogy and enterprise alignment
G1	Henan Polytechnic	PhD in Music Education	Vice Dean, Public Art Education; Leader of "Double-Qualified" Team	Representative of art-integrated vocational education strategies
I5	Zhengzhou	Master's	Associate Professor;	Expert in enterprise collaboration

Code Institution	Education Background	Current Position	Role in Research Context
Electric Power College	Degree in Economics	Member of Provincial Think Tank; Leader of "Double-Qualified" Team	and applied economic education.

Role Relevance and Thematic Focus

The interviewed experts are key figures in their institutions' "Double-Qualified" policy implementation. Their roles are vital in achieving the research goals, especially in understanding how school culture, curriculum design, and industry collaboration influence teachers' work engagement (Appendix F: Qualitative Expert Interviews). Conducted in March 2025 via Tencent Meeting, each online interview lasted about 40 minutes. Because of cultural sensitivities in Chinese academic settings, most participants declined to be recorded. As a result, interview data were first transcribed using iFLYTEK AI-assisted transcription and then manually supplemented and refined with detailed field notes to ensure completeness and accuracy.

4.2.2 Word Frequency Analysis

Figure 4.6. MAXQDA 2020 Thematic Word Cloud Based on Interview

The word cloud generated from the follow-up interviews highlights the terms "model", "industry", "internship", "training", "teaching", "organization", and "support" as the most prominent, indicating that these themes were central to participants' reflections. The frequent appearance of "industry" and "internship" underscores the importance of industry-relevant experience and enterprise-based training in current vocational education reform. Notably, terms such as "support", "commitment", and "collaboration" further demonstrate the significance of organizational support and professional relationships in shaping teachers' work engagement and career development.

To complement the thematic coding and gain a clearer sense of which topics were most frequently mentioned by participants, a simple keyword frequency analysis was also conducted (Table 4.31). For instance, the term "internship" appeared frequently across responses, highlighting its perceived importance in terms of teachers' work engagement and practical experience. It provided helpful insight into the recurring focus areas in participants' narratives and supported the interpretation of themes mapped onto the study's hypotheses (H1–H8).

Table 4.31 Keyword Frequency by Thematic Dimension

Dimension	Keyword	Frequency	Weighted %
Enterprise Internship	internship	15	6.00%
	industry	14	5.60%
	training	13	5.20%
	teaching	12	4.80%
Job Embeddedness	skills	11	4.40%
	commitment	10	4.00%
	fit	7	2.80%
	integration	6	2.40%
	sacrifice	4	1.60%
	retention	3	1.20%
Perceived Organizational Support	support	14	5.60%
	resources	9	3.60%
	supervisors	7	2.80%
	organization	6	2.40%
	feedback	5	2.00%
	encouragement	5	2.00%
Perceived Subjective Norms	expectations	12	4.80%
	colleagues	9	3.60%
	recognition	8	3.20%
	influence	7	2.80%
	peer pressure	6	2.40%
	approval	5	2.00%
Psychological Contract	loyalty	9	3.60%
	obligation	7	2.80%
	trust	6	2.40%
	fairness	5	2.00%
Teachers' Work Engagement	engagement	13	5.20%
	motivation	9	3.60%
	vigor	7	2.80%
	energy	6	2.40%

Note. Keywords were extracted from interview transcripts using MAXQDA 2020. Common stop words (e.g., "I," "was," "do," "does") were excluded manually. Only keywords with a frequency percentage greater than 1.2 % are included.

The thematic coding results presented in Table 4.31 align strongly with the theoretical dimensions, and high-frequency keywords identified in the study were carefully reviewed and manually categorized according to these core dimensions. The keywords were mapped onto six core dimensions— Enterprise Internship, Job Embeddedness, Perceived Organizational Support, Perceived Subjective Norms, Psychological Contract, and Teachers' Work Engagement — reflecting both theoretical expectations.

Specifically, keywords such as “training,” “industry,” “skills,” and “teaching” confirm the centrality of Enterprise Internship in enhancing practical competence and bridging academic-industry gaps, consistent with Rauner and Maclean (2008) and Klotz and Winther (2017). The presence of “fit,” “integration,” “sacrifice,” and “commitment” within the Job Embeddedness dimension supports the idea that shared values and organizational fit are crucial for teachers' long-term engagement, echoing the theoretical assertions of Mitchell et al. (2001).

In the Perceived Organizational Support dimension, frequent keywords such as “support,” “resources,” “supervisors,” and “feedback” underscore the importance of emotional support, recognition, and fair treatment in fostering teacher loyalty and motivation, aligning with Rhoades and Eisenberger (2002) and Billett (2014). The dimension of Perceived Subjective Norms, characterized by terms such as “expectations,” “colleagues,” “recognition,” and “peer pressure,” illustrates the influence of social and peer expectations on teachers’ work engagement decisions, reflecting Ajzen’s (1991) theory of planned behavior.

Furthermore, the Psychological Contract dimension is characterized by keywords such as “loyalty,” “obligation,” “trust,” and “fairness,” highlighting the significance of mutual obligations and perceived contract fulfillment, as discussed by Rousseau (1995) and Cullinane and Dundon (2006). Finally, keywords like “engagement,” “motivation,” “vigor,” and “energy” within the Teachers' Work Engagement dimension capture the emotional and behavioral manifestations of active participation and dedication, in line with Wang et al. (2022).

4.3 Juxtaposition Between Qualitative and Quantitative Findings

Following the quantitative survey and model validation, qualitative data were analyzed to substantiate the findings and triangulate them. This integrated evidence reinforces the robustness of the proposed model and highlights the importance of psychological and organizational mechanisms in driving teachers’ work engagement within the "Double-Qualified" framework. The use of methodological triangulation, which combines AI-assisted transcription, MAXQDA analyses, and manual coding, further strengthens the validity and credibility of the findings (Flick, 2018; Patton, 1999; Denzin, 1978).

Using MAXQDA’s Code–Document–Quote system, each keyword and excerpt was mapped to the corresponding constructs and hypotheses (H1a–H8a). Thematic analysis followed Braun and Clarke’s (2006) six-phase framework: (1) data familiarization, (2) initial coding, (3) theme identification, (4) theme review relative to hypotheses, (5) theme definition and naming, and (6) narrative synthesis aligned with the conceptual model. Participants were also invited to provide feedback on the proposed conceptual model via the final questionnaire, offering suggestions and highlighting potential missing dimensions.

Overall, qualitative evidence strongly aligned with the significant paths identified in the structural model. Participants emphasized that perceived subjective norms, organizational support, and job embeddedness all reinforced the strength of the psychological contract, subsequently fostering higher work engagement among teachers. Moreover, enterprise internships amplified these relationships, supporting the hypothesized moderating effects.

Key findings from the interviews revealed consistent thematic alignment with quantitative paths:

H1 (PSN → PC): Participants I and G described experiencing intense motivational pressure from peers and supervisors, perceiving these norms as legitimate social obligations that reinforced their professional identity.

H2 (POS → PC): Participants A, I, and E highlighted the impact of institutional support, noting increased emotional connection and loyalty due to visible leadership involvement and recognition.

H3 (JE → PC): All five participants discussed job embeddedness through improved curriculum alignment (I), stronger collegial bonds (C and G), and willingness to sacrifice personal time (A).

H4a–H4c (Moderating role of EI): Internships were reported to enhance responsiveness to subjective norms (I), consolidate commitment (E), and improve alignment with industry needs (C).

H5 (PC → TWE): Participants A, C, and E emphasized that fulfilling psychological expectations significantly enhanced motivation and teachers' work engagement.

H6–H8 (PC mediation paths): Narratives from all five participants (A, C, E, I, G) consistently supported the mediating role of the psychological contract in linking PSN, POS, and JE to TWE.

This integrated evidence reinforces the robustness of the proposed model and highlights the importance of psychological and organizational mechanisms in driving teachers' work engagement within the "Double-Qualified" framework.

Table 4.32 Juxtaposition of Quantitative and Qualitative Findings

Hypothesis	Quantitative Result	Qualitative Result	Conclusion
H1	Statistically Significant	E: "My department head checks in and supports me... this has deepened my loyalty." C: "Knowing that I have strong support and that promises were kept... contributes to a sustained engagement." A: "I feel a loyalty to this supportive community; it is easier to go the extra mile when you know the organization and your colleagues have your back." I: "I feel that the organization has kept its promises with this training model, and that has positively affected my loyalty."	Supported
H2	Statistically Significant	A: "There has been a noticeable improvement in support from my supervisors – I feel the organization values my	Supported

Hypothesis	Quantitative Result	Qualitative Result	Conclusion
		efforts more now." E: "I now frequently discuss challenges and successes with colleagues, which creates a camaraderie that I value deeply." G: "Supervisors are more engaged with our work under this new model... they join our workshops, listen to our feedback, and often implement our suggestions."	
H3	Statistically Significant	A: "This greater alignment with industry needs improves the fit aspect of my role." G: "My skill set has expanded – for example, I learned a new manufacturing process during one internship that I have since incorporated into my classroom demonstrations." C: "These internships have increased my fit with industry practices... and made me feel more connected to the broader field, not just my school."	Supported
H4a	Statistically Significant	A: "The enterprise internship has been quite beneficial so far – I can already see improvements in my practical skills." C: "The internships built into the program have been extremely valuable. They have given me new insights into the industry that I would not have had otherwise." E: "By participating in the internships, I have been able to apply classroom teachings in a real industrial setting, which significantly improved my practical skills."	Supported
H4b	Statistically Significant	E: "I have noticed a much stronger sense of teamwork now. The new model has introduced regular collaborative planning sessions and cross-feedback meetings." A: "The internship component should strengthen my job embeddedness by creating new links with industry professionals and increasing my sense of investment in this dual role." G: "Through the internships, I have been able to step directly into the industry environment and update my practical knowledge."	Supported
H4c	Statistically Significant	A: "This hands-on experience increases my fit with industry requirements (since I am learning skills directly relevant to the field)." I: "The internships have been crucial in developing the skills I need for my dual role as a teacher with industry expertise." G: "My sense of belonging has increased due to closer collaboration with enterprise trainers."	Supported
H5	Statistically Significant	C: "Promises were kept, now I am more dedicated to my teaching mission." E: "Seeing the institution invest in my development and keep their word has greatly strengthened my loyalty to them." I: "I feel that the organization has kept its promises with	Supported

Hypothesis	Quantitative Result	Qualitative Result	Conclusion
		this training model, and that has positively affected my loyalty."	
H6	Statistically Significant	C: "Knowing that we are working together towards common goals has boosted my commitment to both the program and the institution." I: "Peer and industry expectations push me to stay committed to the training. Knowing that my colleagues and the industry count on me motivates me."	Supported
H7	Statistically Significant	A: "There has been a noticeable improvement in support from my supervisors – I feel the organization values my efforts more now, reflecting stronger Perceived Organizational Support." G: "Supervisors are more engaged with our work under this new model... they join our workshops, listen to our feedback, and often implement our suggestions."	Supported
H8	Statistically Significant	C: "Frequent discussions have helped me build stronger relationships and strengthen my commitment to the program." E: "These links further enhance my sense of belonging in the school, because work is now a place of social fulfillment as well as professional activity." I: "This enhanced fit contributes to my overall satisfaction and effectiveness."	Supported

Note: Full interview records and responses are provided in Appendix I.

As shown in Table 4.28, all qualitative insights consistently support the quantitative hypotheses, providing robust triangulation evidence that validates the conceptual framework and highlights the interplay factors.

4.4 Research Findings Validation

Refreshing Report

After receiving the qualitative results from MAXQDA 2020, additional qualitative analyses were conducted to enrich and cross-validate the findings. Triangulation was also applied by combining data from interviews, expert evaluations, and document analyses (Refreshing Report). This multi-method triangulation strategy strengthened the trustworthiness, confirmability, and transferability of the study outcomes, aligning with best practices in qualitative research validation (Patton, 1999; Flick, 2018).

Furthermore, a Delphi method was employed through multiple rounds of feedback collection involving a panel of ten experts. These experts provided iterative evaluations and suggestions, which were synthesized and integrated into the refinement of the final conceptual model. This iterative consultation process ensured convergence of opinions and enhanced the credibility and practical relevance of the validation process.

To ensure the validity and reliability of the expert evaluation process, two domain experts were selected from each participating institution, totaling ten experts across five universities. Following the semi-structured interviews, a refreshing report summarizing

the key discussion points and reflections was provided to each expert. Based on this summary, the experts were invited to complete a structured evaluation questionnaire using a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

The evaluation items were categorized into three primary dimensions—Propriety, Feasibility, and Utility, each comprising five specific indicators. Experts independently rated each indicator, and the collected data were subsequently analyzed by calculating mean scores and standard deviations. This approach is consistent with established practices in content validity studies (Lynn, 1986; Hyrkäs et al., 2003).

The mean and standard deviation of each item were calculated to supplement the qualitative findings. A high mean combined with a low standard deviation indicates strong consensus among experts, supporting the conceptual model's content validity and structural consistency (Creswell & Plano Clark, 2018).

This two-phase methodology, which combines qualitative interviews with quantitative scoring, provides a robust validation mechanism. It ensures that the expert feedback is contextually grounded and empirically measurable, enhancing the trustworthiness and rigor of the study's qualitative validation process.

Table 4.33 Expert Evaluation of the Conceptual Framework

Criteria Category	Item	5	4	3	2	1	Expert Rating
Propriety	1. Relevance to the teachers' work engagement concept 1.与教师参与概念的相关性						
	2. Alignment with the theoretical framework 2. 与理论框架的契合度						
	3. Clarity of construct definition 3. 概念定义的清晰度						
	4. Suitability for vocational education context 4. 适用于职业教育环境						
	5. Representativeness of item content 5. 项目内容的代表性						
Feasibility	1. Ease of implementation in internship programs 1. 在实习项目中的易实施性						
	2. Applicability across school types 2. 适用于不同类型的学校						
	3. Compatibility with policy environment 3. 与政策环境的兼容性						
	4. Practicality in real internship scenarios 4. 在实际实习场景中的实用性						
	5. Institutional resource requirement suitability 5. 机构资源需求的适用性						
Utility	1. Value for policy recommendation 1. 政策建议的价值						
	2. Insightfulness for improving engagement practices 2. 对改进参与实践的洞察力						
	3. Actionability for school leaders 3. 对学校领导的可操作性						

4. Ability to inform future teacher development plans 4. 为未来教师发展规划提供参考的能力
5. Capacity to adapt across disciplines 5. 跨学科适应能力

Mean Scores: Across all items, the mean values ranged between 4.4 and 4.8 (out of 5), indicating a strong positive assessment of the conceptual model's propriety, feasibility, and utility.

Table 4.34 Expert Evaluation Criteria Category

Criteria Category	Expert A1	Expert A2	Expert E1	Expert E2	Expert I1	Expert I2	Expert C1	Expert C2	Expert G1	Expert G2	Mean Score	SD
Propriety	4	4	4	5	4	5	5	5	5	4	4.5	0.53
	5	5	4	5	4	5	5	5	4	4	4.6	0.52
	4	5	5	4	4	5	5	5	5	4	4.6	0.52
	4	5	5	5	4	4	5	5	4	4	4.5	0.53
	4	4	5	5	4	5	5	4	4	4	4.4	0.52
Feasibility	5	5	4	4	5	4	5	5	5	5	4.7	0.48
	4	4	5	5	5	5	5	4	5	4	4.6	0.52
	4	5	4	4	4	4	5	5	4	5	4.4	0.52
	4	5	4	5	5	5	5	5	5	5	4.8	0.42
	5	5	4	4	5	4	4	4	5	5	4.5	0.53
Utility	4	5	4	5	5	4	4	5	5	4	4.5	0.53
	4	5	4	5	5	5	5	4	4	4	4.5	0.53
	4	5	5	4	4	4	5	5	4	4	4.4	0.52
	4	5	5	4	5	5	5	5	4	4	4.6	0.52
	5	5	5	4	4	5	5	4	4	5	4.6	0.52

Standard Deviation (SD): The standard deviations ranged from 0.42 to 0.53, suggesting a high degree of expert agreement. Lower SD values reflect stronger consensus. The expert evaluation results supported the propriety, feasibility, and utility of the conceptual model. While most indicators achieved high mean scores close to 5.0, Feasibility 4 demonstrated relatively lower agreement among experts, suggesting an area for potential refinement.

To assess expert consensus regarding the content validity of the evaluation indicators, the interquartile range (IQR) was calculated for each item following the Delphi technique, which recommends using IQR as a robust non-parametric measure of agreement among expert ratings (Diamond et al., 2014). The IQR, defined as the range between the 75th percentile (Q3) and the 25th percentile (Q1), reflects the dispersion of expert opinions.

$$IQR = Q3 - Q1$$

Where Q1 and Q3 denote the first and third quartiles of the expert scores, according to Delphi guidelines (von der Gracht, 2012), IQR ≤ 1.0 represents acceptable consensus;

IQR < 0.5 indicates high consensus. In this study, most items exhibited an interquartile range (IQR) of 1.0, indicating a moderate level of consensus. Notably, “Feasibility 4” had an IQR of 0.4, indicating a high consensus among experts. According to the classification proposed by von der Gracht (2012), an IQR of < 1 is generally acceptable in Delphi-based evaluations, and an IQR of < 0.5 indicates strong consensus.

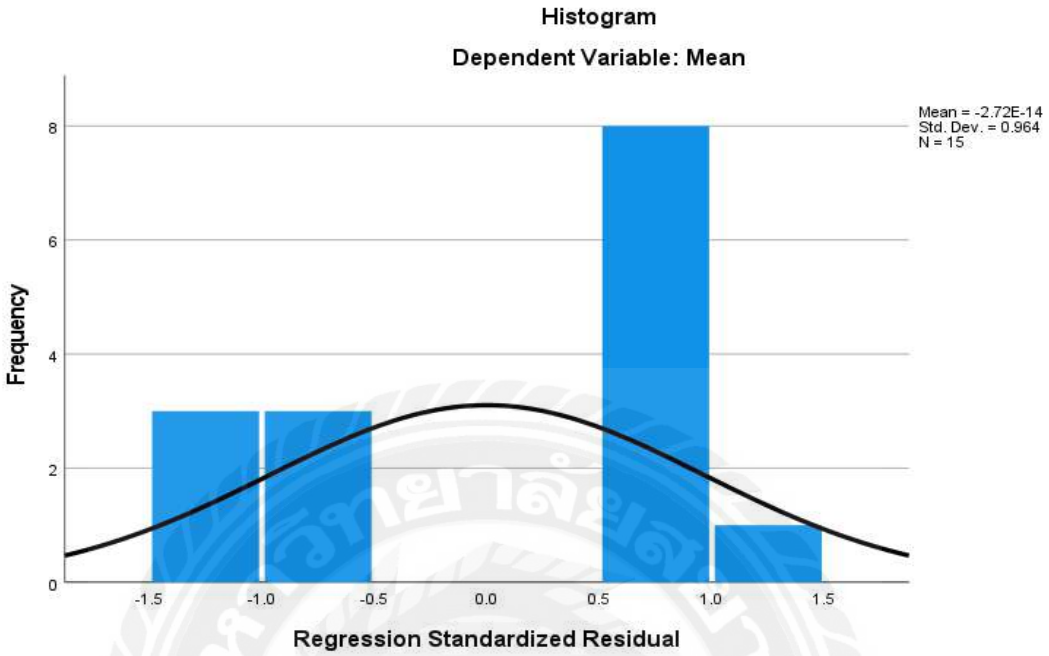
These results support the content validity of the evaluation model and suggest that the indicators were interpreted consistently across experts. A histogram with a superimposed standard curve was generated using the mean scores from 15 evaluation items rated by 10 domain experts to assess the distributional characteristics of the expert evaluation data. These items span three conceptual dimensions: Propriety, Feasibility, and Utility. The histogram visually represents the standardized residuals associated with these mean scores.

Table 4.35 Expert Consensus Analysis (IQR)

Item	After sorting	Q1	Q3	IQR	Consensus Level
Feasibility 1	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Feasibility 2	4, 4, 4, 5, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Feasibility 3	4, 4, 4, 4, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Feasibility 4	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4.6	5	0.4	High Consensus
Feasibility 5	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Propriety 1	4, 4, 4, 4, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Propriety 2	4, 4, 4, 4, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Propriety 3	4, 4, 4, 4, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Propriety 4	5, 5, 5, 5, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Propriety 5	4, 4, 4, 4, 4, 4, 5, 5, 5, 5	4	5	1	Moderate Consensus
Utility 1	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Utility 2	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Utility 3	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Utility 4	4, 4, 4, 4, 4, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus
Utility 5	4, 4, 4, 4, 5, 5, 5, 5, 5, 5	4	5	1	Moderate Consensus

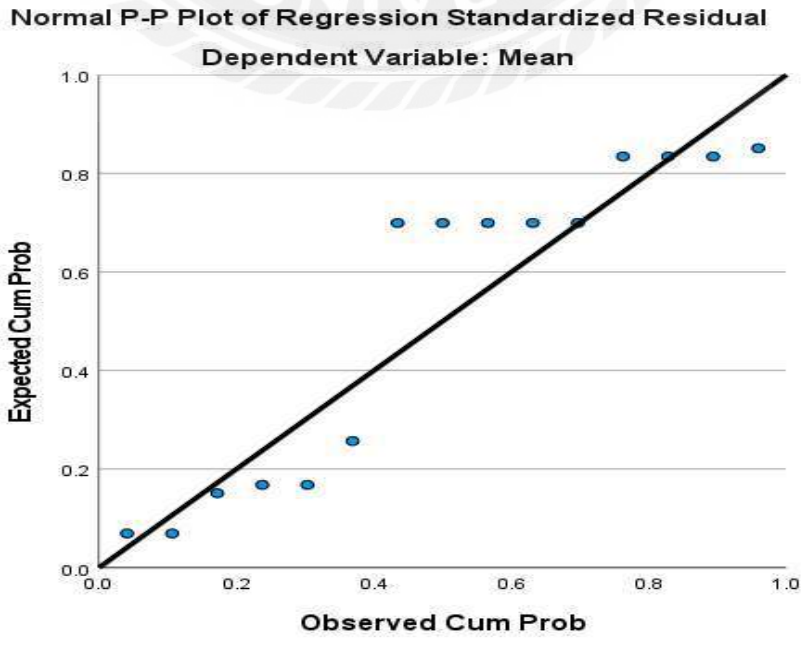
Note: IQR (Interquartile Range) = Q3 − Q1, where Q1 and Q3 represent the 25th and 75th percentiles of expert ratings, respectively. Items with IQR ≤ 1 indicate acceptable consensus; IQR < 0.5 indicates high consensus (von der Gracht, 2012).

Figure 4.7 Normality Assessment of Expert Mean Scores



These results support the content validity of the evaluation model and suggest that the indicators were interpreted consistently across experts. A histogram with a superimposed standard curve was generated using the mean scores from 15 evaluation items rated by 10 domain experts to assess the distributional characteristics of the expert evaluation data. These items span three conceptual dimensions: Propriety, Feasibility, and Utility. The histogram visually represents the standardized residuals associated with these mean scores.

Figure 4.8 Normal P–P Plot of Expert Evaluation Mean Scores



According to Razali and Wah (2011), the P–P plot, in combination with the histogram, provides an effective visual method for evaluating distributional assumptions when sample sizes are moderate. This study's combined use of these two plots confirms that the expert evaluation data meet the normality assumption and are appropriate for further statistical inference. A Normal P–P (probability–probability) plot was employed to assess the normality of the standardized residuals derived from the mean scores across the 15 expert-evaluated items. As shown in Figure 4.9, the plotted points closely follow the 45-degree diagonal reference line, indicating a reasonably good fit between the observed cumulative probabilities and those expected under a normal distribution. This alignment suggests that the residuals are approximately normally distributed, with no substantial deviations in the tails or evident clustering away from the diagonal.

CHAPTER 5

DISCUSSION, CONCLUSION, AND RECOMMENDATION

5.1 Discussion

This study had the following objectives: (1) To assess the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China.; (2) To identify the factors that influence the relationship between teachers' work engagement in enterprise internships and the effectiveness of professional training programs; (3) To develop an evidence-based model to enhance teachers' work engagement and effectiveness in enterprise internship and professional development programs, focusing on meeting modern industries' technological demands; (4) To reveal teachers' insights and experts' opinions on the enterprise internship and professional development programs..

5.1.1 Research Questions

1) What is the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China?

This study identified multiple factors that significantly influence teachers' work engagement during enterprise internships and professional development programs. Based on both quantitative and qualitative evidence, PSN, POS, JE, and PC were identified as the key relational and organizational factors.

First, PSN shapes teachers' expectations and behavioral intentions. Strong social norms motivate teachers to engage actively, even in challenging situations, aligning with prior findings by Lam et al. (2003) and Zhang and Fang (2020). Second, POS fosters a sense of being valued and recognized, which enhances teachers' work engagement. This finding is consistent with those of Ruzain (2024), Settoon et al. (1996), and Sylvia et al. (2024), who demonstrated that organizational support strengthens the psychological contract and buffers the adverse effects of potential breaches.

Third, JE strengthens organizational fit and social ties, which are crucial for sustaining teachers' work engagement. The quantitative findings from SEM confirm that higher levels of embeddedness promote teachers' work engagement, supporting the view of Mitchell et al. (2001), Felps et al. (2009), and Holtom et al. (2006). Qualitative evidence further illustrates that teachers feel more engaged when enterprise internships are well-integrated with training programs, and institutional recognition is evident.

Finally, the psychological contract itself directly shapes teachers' work engagement. Fulfillment of mutual obligations leads to higher motivation and commitment, as shown in studies by Xiao and Chen (2022) and Costa and Oliveira (2023). The analysis corroborates these findings, highlighting that strong psychological contracts reinforce teachers' willingness to actively participate in enterprise internships and integrate practical experiences into their teaching.

In conclusion, PSN, POS, JE, and PC collectively interact to enhance teachers' work engagement, providing a comprehensive understanding of the mechanisms behind

sustained commitment and professional growth. These insights not only align with existing research but also offer valuable implications for policymakers and educational leaders seeking to optimize teacher development programs.

2) What factors influence the relationship between teachers' work engagement and the effectiveness of enterprise internship and professional training programs?

This study demonstrates that the relationship between teachers' work engagement and the effectiveness of enterprise internship and professional development programs is profoundly shaped by a complex interplay of psychological contract, perceived organizational support, and contextual factors. The quantitative findings from the SEM analysis revealed that PSN, POS, and JE significantly influence the PC, which in turn drives TWE. Additionally, the moderating role of EI further amplifies these relationships.

From a psychological contract perspective, PSN was shown to shape the expectations and reciprocal obligations embedded in the contract. Dong et al. (2022) highlighted that in high-power distance cultures, strong perceived subjective norms amplify the likelihood of employees aligning their behaviors with organizational expectations. This effect is further reinforced by supportive environments, as noted in Frontiers in Psychology (2023), which demonstrated that social support enhances the positive effects of psychological contracts on job outcomes. Our qualitative findings echoed this, showing that teachers often refer to peer expectations and societal norms as key motivators for deeper work engagement.

Similarly, POS plays a pivotal role in sustaining psychological contracts. The work of Aselage and Eisenberger (2003) and Mathieu et al. (2016) emphasized that strong perceived organizational support reduces breaches in psychological contract, thereby fostering higher levels of teachers' work engagement and lowering turnover intentions. In our study, qualitative data indicated that institutional support structures, such as mentorship, resources, and administrative recognition, are crucial in helping teachers internalize the value of enterprise internships, thereby increasing their willingness to actively participate in and integrate these experiences into their teaching practice.

JE emerged as another crucial mechanism connecting teachers' work engagement to program effectiveness. Costa & Oliveira (2023) similarly noted that internships strengthen cultural understanding and social connections, which are essential for solidifying the psychological contract and enhancing long-term commitment. In our analysis, teachers who experienced firm embeddedness described a greater sense of belonging and professional identity, which directly contributed to higher teachers' work engagement and more effective transfer of practical skills to classroom teaching.

Furthermore, the moderating role of EI reinforces the dynamic relationship between these factors. Research from Guchait et al. (2015) and Sekiguchi (2008) has illustrated that internships not only facilitate organizational socialization but also strengthen job embeddedness and the psychological contract, thereby amplifying teachers' work engagement levels. Our qualitative evidence supported this, with high-frequency terms such as "integration," "fit," and "organizational culture" highlighting how real-world practice environments reinforce the theoretical foundations established during training programs.

Emotional drivers of teachers' work engagement, including motivation, vigor, and loyalty, were also prominent in the qualitative results, highlighting the internalization of social and institutional expectations through a sense of fairness and mutual commitment. This aligns with Bai, Yan, and Othman (2023), who found that strong organizational support buffers work-related stress and enhances psychological well-being, ultimately reinforcing teachers' work engagement.

In summary, the relationship between teachers' work engagement and the effectiveness of enterprise internship manifests through a multifaceted system of psychological contract, perceived organizational support, perceived subjective norms, and job embeddedness, all of which are further reinforced by the experiential learning context of enterprise internship. These findings offer practical insights for policymakers and institutional leaders aiming to design professional development programs that not only meet industry demands but also foster sustained teachers' work engagement and commitment.

3) What evidence-based model can be proposed to enhance teachers' work engagement and effectiveness of enterprise internship and professional development programs?

Based on the findings of this study, an evidence-based model has been developed to systematically enhance teachers' work engagement and the overall effectiveness of enterprise internship and professional development programs. This model integrates PSN, POS, and JE as key predictors of the PC, which subsequently mediates their collective influence on TWE. Furthermore, EI plays a moderating role, strengthening the relationship between these predictors and the psychological contract.

The model was validated through SEM, which confirmed the significant paths from PSN, POS, and JE to PC, and from PC to TWE. The moderation analysis demonstrated that the presence of well-structured and meaningful enterprise internship experiences amplifies the impact of organizational and relational factors on the psychological contract, thereby enhancing teachers' work engagement.

The theoretical foundation for this model is strongly supported by prior research. Guchait, Cho, and Meurs (2015) demonstrated that internships enhance job embeddedness by aligning expectations and fostering a shared understanding between employees and organizations, thus reinforcing the psychological contract. Sekiguchi et al. (2008) further emphasized that internships facilitate the development of deeper social and professional connections within the workplace, contributing to stronger perceptions of contract fulfillment and institutional loyalty. These studies align with our qualitative findings, which revealed high-frequency terms such as "fit," "integration," "commitment," and "loyalty," underscoring the crucial role of enterprise internships in strengthening teachers' psychological contract, job embeddedness, and institutional alignment.

This model offers actionable strategies for vocational education institutions and policymakers. First, fostering structured career development pathways that clearly articulate growth opportunities and institutional expectations can help reinforce perceived organizational support and subjective norms. Second, implementing regular feedback systems enhances the fulfillment of psychological contracts by continuously aligning teachers' work engagement with organizational realities. Third, promoting

deeper collaborations between schools and enterprises provides authentic experiential learning environments, which are critical for building job embeddedness and bridging theoretical knowledge with practical industry needs.

Overall, this evidence-based model highlights the dynamic interplay of social, organizational, and experiential factors in promoting sustained teachers' work engagement among vocational education teachers. By integrating these components into professional development and internship programs, institutions can cultivate a workforce that is not only technically proficient but also deeply committed and aligned with the evolving demands of the industry.

4) What are teachers' insights and experts' opinions of the enterprise internship and professional development programs

Thematic analysis of the qualitative data provided rich insights into the experiences and perceptions of teachers and experts regarding enterprise internship and associated professional development programs. Across multiple interviews, teachers consistently emphasized that enterprise internships were most valuable when their content closely aligned with actual teaching demands and when there was sufficient institutional support. Three recurring themes emerged: the relevance of practical experience, the necessity of strong perceived organizational support, and the importance of a sense of collaborative belonging.

These findings are consistent with the theoretical perspectives discussed in Chapter 2. For example, Ngobeni et al. (2022) highlighted the critical role of fulfilling psychological contracts in maintaining teachers' work engagement, a sentiment echoed by teachers in this study, who reported disengagement when institutional promises were not fulfilled.

Experts, on the other hand, highlighted several institutional gaps in the implementation of internships. They pointed out inconsistencies between training goals and actual industry needs, stressing the importance of aligning curriculum design with enterprise demands. Furthermore, they emphasized the necessity of creating mechanisms for regular feedback and incorporating teachers' voices into program development and refinement processes. These insights reinforce findings by Dong et al. (2022) and studies published in Frontiers in Psychology (2023), which suggest that perceived subjective norms and organizational culture significantly shape knowledge sharing, job embeddedness, and employee motivation, particularly in high power-distance contexts.

In addition to these qualitative insights, a refreshing report from the expert validation process provided further support for the proposed model and its practical implications. Using a structured evaluation framework that covers three dimensions—Propriety, Feasibility, and Utility—ten domain experts from five universities independently assessed the model. The results showed consistently high mean scores, ranging from 4.4 to 4.8 across different indicators, with relatively low standard deviations (ranging from 0.42 to 0.53), indicating strong consensus among experts.

Specifically, experts rated the model highly for its conceptual relevance and clarity (mean scores of 4.5–4.6 under Propriety), its practicality and policy compatibility (mean scores of 4.6–4.8 under Feasibility), and its value for policy recommendations

and future teacher development planning (mean scores of 4.3–4.6 under Utility). This consensus underscores that the model is not only theoretically robust but also contextually relevant and practically actionable.

Both teachers and experts emphasized that an enterprise internship should not be perceived merely as technical or procedural exercises, but as relational and psychological experiences profoundly shaped by institutional responsiveness, social recognition, and trust. The integration of expert validation data further confirms that truly effective internship programs must address skill development alongside the psychological and organizational contexts in which these activities occur. These combined qualitative and quantitative insights strongly reinforce and extend the theoretical framework presented in Chapter 2, providing a solid foundation for future policy design and program refinement.

5.1.2 Discussion on Variable: Perceived Subjective Norms

Although PSN did not exhibit the strongest path coefficient in the SEM model (β = 0.24), it remains theoretically significant, grounded in the Theory of Planned Behavior (Ajzen, 1991). The findings support Hypotheses H1, H4a, and H6, confirming PSN's direct and indirect influence on psychological contracts.

From the descriptive statistics (Table 4.10), PSN's overall mean was 3.604 (SD = 0.814). PSN1 ("My closest family members believe I should pursue an internship in the enterprise sector") had the highest mean (3.748), suggesting a strong family and social environment influence. In contrast, PSN5 ("My colleagues in enterprises view me as a competent and resourceful professional") recorded the lowest mean (3.451, SD = 1.078), indicating that enterprise peer perceptions exert less influence.

This variability reflects cultural differences, echoing Zhang and Fang (2020), who argued that social and familial norms shape psychological contracts but may lack sufficient motivational strength if not reinforced by organizational or policy incentives. "Double-Qualified" centers should recognize that while peer and institutional encouragements are vital, they must be supported by tangible incentives (e.g., curriculum integration, performance evaluations, or formal recognition mechanisms) to drive sustained behavioral commitment.

5.1.3 Discussion on Variable: Perceived Organizational Support

POS showed a robust influence on psychological contracts (β = 0.47) and ultimately on teachers' work engagement, confirming Hypotheses H2, H4b, and H7. According to Table 4.10, POS had an overall mean of 3.484 (SD = 0.842). Notably, POS3 ("My school takes my goals and values into strong consideration") had the highest factor loading (0.80) and a mean of 3.267, highlighting teachers' desire for value alignment and individualized support.

Meanwhile, POS6 ("My school provides me with limited opportunities to advance my career. (R)") also had a high factor loading (0.80), but a moderate mean of 3.581, revealing underlying concerns about career advancement opportunities. This aligns with Settoon et al. (1996) and Sylvia et al. (2024), emphasizing that perceived organizational support fosters psychological contract and teachers' work engagement but requires transparent career pathways to sustain long-term motivation.

Management within "Double-qualified" programs should establish formal mechanisms—such as individualized growth plans, structured promotion frameworks, and regular feedback sessions—to enhance perceived organizational support and reinforce psychological contract.

5.1.4 Discussion on Variable: Job Embeddedness

Job Embeddedness also showed a strong influence (β = 0.41) on psychological contracts and teachers' work engagement, supporting Hypotheses H3, H4c, and H8. JE had an overall mean of 3.583 (SD = 0.829) in Table 4.10, suggesting generally positive perceptions.

Among JE items, JE5 ("I am willing to sacrifice time to participate in enterprise internship training programs") had one of the highest loadings (0.78) and a mean of 3.574, emphasizing emotional and time investments. However, JE4 ("The prospects for continuing with the enterprise where I intern are helping with my teaching work at my school") showed a slightly lower mean (3.554) and weaker motivational linkage, suggesting a need to clarify tangible benefits from enterprise connections.

This confirms Felps et al. (2009) and He et al. (2023), who emphasized that embeddedness is strengthened when personal goals are visibly aligned with institutional outcomes. Thus, programs should combine relational support with career advancement opportunities (e.g., co-lead curriculum design, professional recognition, future collaboration with enterprises) to bolster embeddedness.

5.1.5 Discussion on Variable: Teachers' Work Engagement

TWE achieved an overall mean of 3.655 (SD = 0.803), suggesting generally positive yet moderate engagement levels. Items with the highest means were WE5 ("I expend a great deal of energy while performing my job", M = 3.765) and WE2 ("I put my heart into my job", M = 3.755), indicating a high level of personal investment.

In contrast, WE3 ("I feel excited when I perform well at my job") had a lower mean (3.463), and reverse-coded items (e.g., WE6: "I try to avoid exerting too much effort at work") further highlight areas of emotional disengagement. This partially aligns with Costa and Oliveira (2023), who found that fulfillment of psychological contracts and organizational support strongly predict sustained engagement.

These findings suggest that, while teachers are committed, there is still room for improvement in emotional excitement and a deep psychological connection, which could be enhanced through co-creation opportunities and meaningful feedback mechanisms.

5.1.6 Discussion on the Mediating Effect of Psychological Contract

The PC mediated the effects of PSN, POS, and JE on TWE, supporting Hypotheses H6a, H7a, and H8a. The overall mean for PC was 3.434 (SD = 0.858), indicating moderate perceptions of contract fulfillment.

PC4 ("I propose improvements to Enterprise Internship contracts and policies") had the highest factor loading (0.80) and a mean of 3.515, reflecting proactive institutional citizenship behavior. Meanwhile, PC3 ("I do not encourage colleagues' engagement if the enterprise breaches the contract. (R)") also had a high loading (0.80) and a mean of 3.534, underscoring sensitivity to institutional breaches.

This supports Ngobeni et al. (2022), emphasizing that trust and transparency in fulfilling psychological contracts are crucial for maintaining teachers' work engagement. Institutions should closely monitor enterprise compliance and incorporate teacher feedback into policy revisions, thereby reinforcing relational trust and organizational justice.

5.1.7 Discussion on the Moderating Effect of Enterprise Internship

The SEM and hierarchical regression analyses confirmed that Enterprise Internship (EI) significantly moderated the relationships between Perceived Subjective Norms (PSN), Perceived Organizational Support (POS), Job Embeddedness (JE), and the Psychological Contract (PC), supporting Hypotheses H4a, H4b, and H4c.

Moderating effect of EI on the relationship between PSN and PC:

For PSN, the interaction term PSN*EI had a standardized coefficient $\beta = 0.219$ ($p = 0.024$), indicating a significant positive moderation effect. This suggests that when teachers have stronger experiences with enterprise internships, the positive relationship between PSN and PC is amplified. Specifically, the regression equation:

$$PC = 2.546 + 0.230PSN + 0.307EI + 0.260PSNEI$$

demonstrates that real-world exposure through enterprise internship validates social and peer encouragement, enhancing the internalization of perceived subjective norms into psychological contract obligations. This finding is consistent with Dong et al. (2022), who noted that contextual factors, such as workplace exposure, strengthen normative influences on psychological contract outcomes.

Moderating effect of EI on the relationship between POS and PC:

For POS, the interaction term POS*EI also showed a significant effect with $\beta = 0.188$ ($p = 0.046$). The regression model:

$$PC = 2.256 + 0.299POS + 0.290EI + 0.216POSEI$$

confirms that enterprise internships strengthen the influence of perceived organizational support on psychological contract. This aligns with Sylvia et al. (2024), who highlighted that supportive organizational contexts and experiential learning opportunities jointly foster more substantial employee commitment. In this study, teachers with robust experience in enterprise internships perceived organizational support more deeply, which translated into higher levels of trust and perceived fairness.

Moderating effect of EI on the relationship between JE and PC:

Similarly, for JE, the interaction term JE*EI demonstrated a significant effect with $\beta = 0.148$ ($p = 0.001$). The regression equation:

$$PC = 2.110 + 0.388JE + 0.249EI + 0.395JEEI$$

indicates that enterprise internships enhance the impact of job embeddedness on psychological contract. Teachers with high job embeddedness who also participated in enterprise internship reported stronger psychological contract ties to their institutions. This finding is consistent with Felps et al. (2009) and He et al. (2023), who emphasized that real-world enterprise internship connections deepen organizational attachment, making teachers more resilient to contract breaches and fostering greater loyalty.

Discussion on Mean Differences in Psychological Contract Items Between Teachers With and Without Enterprise Internship

To further validate the moderating effect of EI on the relationship between antecedent variables (PSN, POS, JE) and the PC, a group comparison analysis was conducted using independent samples t-tests on each of the five psychological contract items (PC1–PC5). Tables 4.1, 4.12, 4.13, and 4.29 present the descriptive statistics, significance tests, and mean difference analyses, respectively.

Group Differences in Psychological Contract Items

Table 4.11 shows that across all psychological contract items, teachers who had participated in enterprise internships consistently reported higher mean scores than those without such experience. For example, PC1 (“I make an effort to contribute to the school's success”) had a mean score of 3.42 (SD = 1.03) for the internship group, compared to 3.15 (SD = 1.12) for the non-internship group. Similarly, PC5 (“I advocate a climate that fulfills contractual expectations”) showed a mean of 3.55 compared to 3.26. These higher means suggest that practical internship experiences strengthen teachers' sense of commitment and responsibility toward their institutions.

Significance of Group Differences

Table 4.13 reports the independent samples t-test results, confirming that while most items approached statistical significance, PC5 demonstrated a significant group difference ($t = –2.347$, $p = .019$). This indicates that teachers who have participated in enterprise internships are significantly more likely to advocate for a work climate that aligns with psychological and institutional agreements, reflecting a deeper level of teachers' work engagement and stronger trust in institutional support.

Magnitude of the Moderating Effect

Table 4.13 further details the mean differences and confidence intervals. For PC5, the significant mean difference of –0.287 ($p = .019$) with confidence intervals excluding zero underscores the robust impact of EI on strengthening psychological contract perceptions. Across all items, teachers without experience in enterprise internships consistently reported lower scores, reinforcing the idea that internships play a critical role in shaping teachers’ work engagement and policy-related attitudes.

Overall Implications for the Moderating Role of Enterprise Internship

Table 4.29: Independent Samples Effect Sizes. The combined results confirm that EI significantly moderates the relationship between social, organizational, and embeddedness factors and the psychological contract. Specifically, for PC1 (“I make an effort to contribute to the school's success”), higher mean scores among the internship group demonstrate more substantial institutional alignment and organizational responsibility. For PC2 (“I encourage other in-service teachers to participate in the training”), these teachers demonstrated a greater willingness to promote peer participation, indicating a stronger collective development mindset that was cultivated through real-world exposure.

For PC3 (“I do not encourage colleagues' engagement if the enterprise breaches the contract”), lower (reverse-coded) mean scores in the experience internship group suggest greater relational stability and trust toward institutional commitments. PC4 (“I

propose improvements to enterprise internship contracts and policies") revealed that teachers with internship experience are more proactive in contributing to policy enhancements and organizational improvement, reflecting their empowerment through practice. Finally, the significant difference in PC5 confirms that experience-based internships enhance teachers' advocacy for fulfilling institutional expectations and upholding the psychological contract.

Taken together, these findings strongly validate the hypothesized moderating effect of EI (Hypotheses H4a–H4c). An enterprise internship not only provides technical skill development but also serves as an essential mechanism for strengthening the psychological contract between the employer and the employee. The enhanced commitment, proactive teachers' work engagement, and institutional trust observed among the internship group emphasize the necessity of integrating enterprise internship experiences as a core element of "Double-Qualified" teacher training. These results highlight the practical relevance of the developed teachers' work engagement model in fostering long-term teacher motivation, institutional loyalty, and sustained professional commitment.

Group Differences and Demographic Distribution

As presented in Table 4.1, 82.4% of the sample (n = 336) reported participating in enterprise internship, while 17.6% (n = 72) did not. This high participation rate reflects the policy shift in the III phase "Double-Qualified" teacher training model (2022–2025), which emphasized localized, cooperative training centers co-established with large and medium-sized enterprises to reduce logistical barriers and improve teachers' willingness to participate. In the II phase, many teachers were reluctant to engage due to factors such as remote enterprise locations, inadequate institutional support, and disruptions to family life. The new model has addressed these challenges through more concentrated, institution-based training programs, thereby increasing the facilitation of higher teachers' work engagement levels.

Practical and Theoretical Implications

The results confirm that enterprise internship functions not only as a technical and skills-enhancing mechanism but also as a crucial relational enhancer that strengthens psychological contracts among vocational teachers. Teachers who participate in enterprise internships exhibit higher work engagement, contributing to institutional success, promoting peer engagement, proposing policy improvements, and fostering an environment of contractual fulfillment. These insights align with hypotheses H4aa–H4ca, supporting the inclusion of EI as a key moderator in the model of developing teachers' work engagement.

5.1.8 Alignment with Theory and Practice

The findings confirm that POS and PC are the most influential variables shaping TWE, aligning with Organizational Support Theory (Eisenberger et al., 1986) and Psychological Contract Theory (Rousseau, 1995). The high factor loadings of POS3 and PC4 underscore the importance of value alignment and policy co-construction.

From an intervention perspective, program developers in the current third-phase training centers are advised to pilot targeted support strategies —such as goal-alignment workshops, transparent promotion pathways, and co-led enterprise collaborations—and

evaluate their effectiveness using controlled SEM analysis. Items with lower mean scores (e.g., PSN3, JE4, WE3) suggest potential areas for improvement, including the introduction of more targeted career incentives and the deeper integration of enterprise internship experiences into daily teaching practice.

By integrating these findings into the practices of third-phase "Double-Qualified" teacher training centers, institutions can design more targeted teachers' work engagement strategies—such as incorporating structured reflective sessions after internships, creating peer advocacy networks, and embedding continuous policy feedback mechanisms—to further strengthen teachers' psychological contracts and enhance long-term teachers' work engagement.

Figure 5.1: The Development of a Model of Teachers' Work Engagement in Enterprise Internship in Henan, China

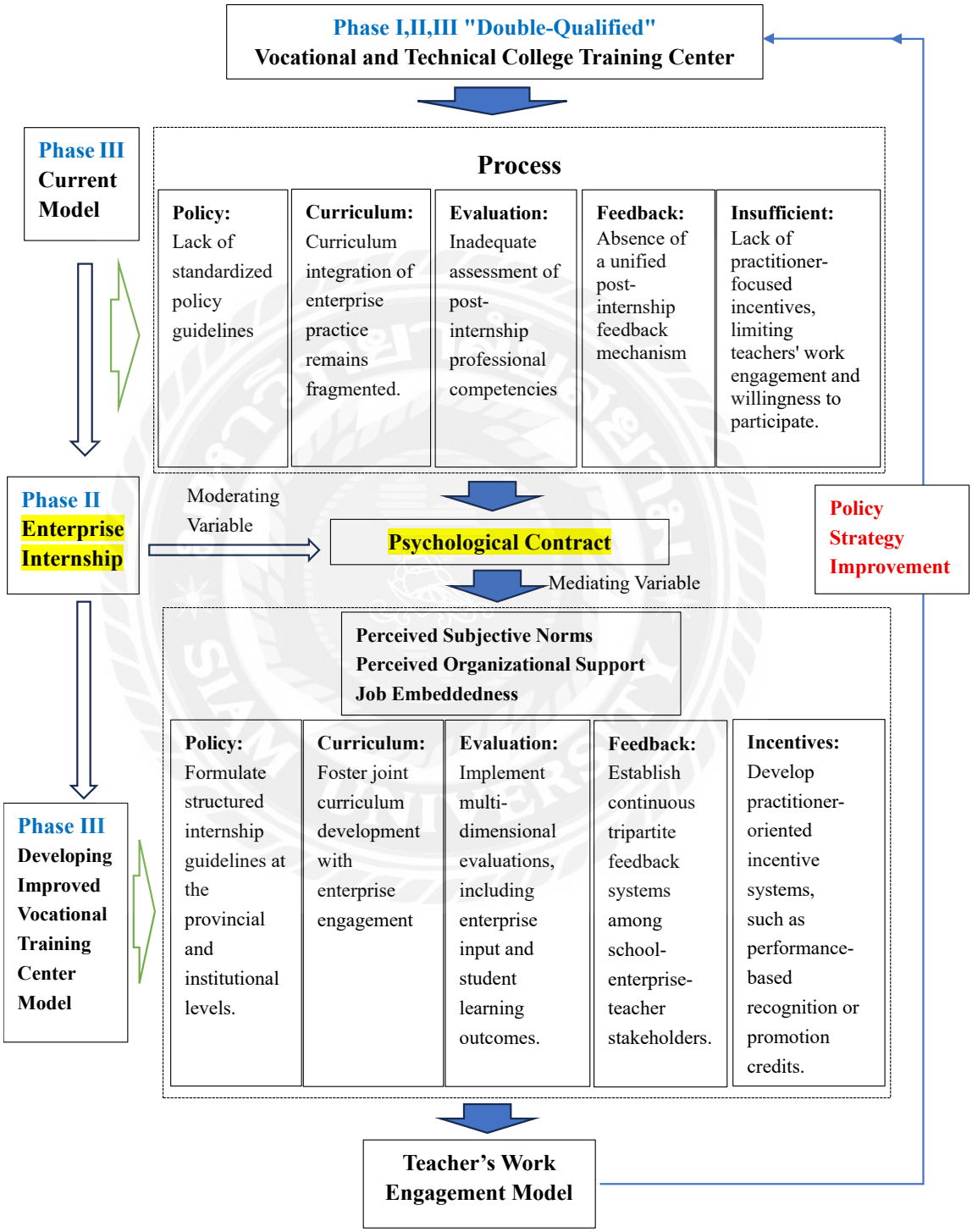


Figure 5.1. This proposed model is innovative in that it explicitly integrates perceived subjective norms (PSN), perceived organizational support (POS), and job embeddedness (JE) as antecedent factors positively influencing the psychological contract (PC), which in turn mediates their effects on teachers' work engagement (TWE). In contrast to traditional models that mainly focus on linear relationships or general predictors of engagement, this model introduces enterprise internship (EI) as a contextual moderating variable, offering a dynamic mechanism to enhance the impact of PSN, POS, and JE on PC.

The model clearly differentiates between Phase II and Phase III training approaches. In Phase II, teachers typically completed enterprise internships after finishing their theoretical training, often facing challenges such as distant enterprise locations, insufficient institutional support, and low engagement willingness. In response, Phase III (2022–2025) shifts toward localized, co-constructed training centers collaboratively developed with large and medium-sized enterprises. This new approach offers concentrated, institutionally supported internships designed to improve accessibility and motivation, thereby addressing shortcomings identified in earlier phases.

The novelty of this model lies in its multi-dimensional, evidence-based approach. First, it is grounded in empirical data from structural equation modeling (SEM), revealing statistically significant paths among PSN, POS, JE, PC, and TWE. Second, it incorporates qualitative insights from expert interviews and focus group discussions with vocational educators and administrators, ensuring strong contextual relevance and practical feasibility. Third, each antecedent construct is accompanied by actionable, strategy-oriented recommendations derived from high-frequency qualitative coding and validated by expert feedback.

By combining quantitative validation, qualitative refinement, and policy-level strategy integration, this model provides a comprehensive, context-specific framework to strengthen "Double-Qualified" teachers' work engagement during enterprise internships in Henan, China. It offers step-by-step operational guidelines for enhancing institutional support, fostering social and peer recognition, aligning teacher and organizational goals, and reinforcing the psychological contract — ultimately supporting sustainable vocational education reform.

To facilitate practical application, the model outlines a clear implementation pathway for vocational training centers. The first step involves conducting a needs assessment to identify gaps in current teachers' work engagement and aligning institutional goals with teacher development priorities. Subsequently, institutions should integrate targeted strategies for PSN (e.g., promoting peer collaboration and professional identity), POS (e.g., aligning teacher goals with promotion pathways and providing mentorship), and JE (e.g., designing skill-based internships and flexible schedules). The Enterprise Internship component should be operationalized through structured agreements with industry partners, ensuring mutual accountability and continuous feedback loops. Finally, the PC can be strengthened through transparent communication, explicit policy updates, and fostering a culture of trust and reciprocity. By providing a detailed, actionable framework supported by robust empirical evidence and expert feedback, this model offers a comprehensive roadmap for enhancing teachers' work engagement, bridging theoretical and practical gaps, and advancing "Double-Qualified" teacher development in Henan and similar vocational education contexts.

5.2 Conclusion

This study systematically examined the mechanisms by which PSN, POS, and JE influence the PC, which in turn affects TWE in the context of China's vocational education. By employing a mixed-methods approach that combined SEM with qualitative interviews and expert validation, this research developed and confirmed a comprehensive model integrating.

The quantitative results strongly supported the hypothesized model. PSN (H1, H4a, H6) demonstrated a significant, albeit weaker, path to PC, underscoring that social encouragement alone cannot sustain teachers' work engagement without institutional reinforcement. This aligns with De Vos and Meganck (2009), who emphasized the importance of embedding perceived subjective norms within structured organizational systems to strengthen the psychological contract. Therefore, training centers should formalize these perceived subjective norms through clear incentives and performance evaluations.

POS (H2, H4b, H7) emerged as the most robust predictor of PC and TWE, corroborating the findings of Bai et al. (2023) and Sylvia et al. (2024), which underscore the vital role of supportive organizational environments in fostering psychological contract well-being and teachers' work engagement. Items POS3 and POS6 highlighted both the importance of value alignment and latent dissatisfaction with career advancement opportunities, indicating a pressing need for transparent promotion pathways and individualized development plans to bolster institutional trust.

JE (H3, H4c, H8) displayed moderate-to-strong effects on PC, echoing the conclusions of Guchait et al. (2015) and Sekiguchi (2008) that job embeddedness strengthens the psychological contract and teachers' work engagement. High-loading item JE5 emphasized teachers' willingness to invest time and effort, whereas JE4 revealed relatively weaker perceived long-term incentives, suggesting the necessity for dual-focused strategies that integrate relational (e.g., mentorship, social cohesion) and material (e.g., career advancement, rewards) dimensions.

The findings of this study confirm that POS and PC are the strongest predictors of TWE, aligning with Organizational Support Theory (Eisenberger et al., 1986) and Psychological Contract Theory (Rousseau, 1995). Furthermore, the moderating effect of EI (H4a, H4b, H4c) significantly amplified the relationships between PSN, POS, JE, and PC. Teachers with more extensive experience in enterprise internships showed greater institutional trust, more substantial goal alignment, and an increased willingness to invest effort and advocate for institutional improvement. The subgroup analyses of psychological contract items (PC1–PC5) revealed that teachers with EI consistently reported higher average scores. For example, PC1 ("I make an effort to contribute to the school's success") and PC5 ("I advocate a climate that fulfills contractual expectations") reflected significantly stronger commitments among teachers with internship experience. These results highlight that EI not only provides technical skill enrichment but also reinforces teachers' psychological contract and professional identity.

PC (H5, H6, H7, H8) was confirmed as a key mediator, reinforcing both direct and indirect effects of PSN, POS, and JE on TWE. The high loadings of PC4 ("I propose improvements to Enterprise Internship contracts and policies") and PC3 ("I do not

encourage colleagues' engagement if the enterprise breaches the contract. (R)") illustrate teachers' proactive and reactive responses to institutional trust and contract fulfillment. As shown in Ngobeni et al. (2022) and Dong et al. (2022), a firm psychological contract is associated with higher motivation and less disengagement.

Overall, POS and PC emerged as the strongest predictors of TWE, affirming the foundational relevance of Organizational Support Theory and Psychological Contract Theory. The mutual reinforcement between quantitative and qualitative results validated the contextual applicability and robustness of the proposed model. Expert feedback further affirmed the practical feasibility, propriety, and utility of the model, emphasizing its potential for broader application within vocational education systems.

This study makes significant theoretical and practical contributions by developing and validating a teachers' work engagement model tailored explicitly to "Double-Qualified" teachers in vocational education. The model highlights the pivotal role of the psychological contract (PC) and job embeddedness (JE), with enterprise internship (EI) serving as a key moderating factor that strengthens the positive effects of perceived subjective norms (PSN), perceived organizational support (POS), and job embeddedness (JE) on the psychological contract (PC), which in turn enhances teachers' work engagement (TWE). In Henan's third-phase training centers (2022–2025), the shift toward localized, co-constructed bases with large and medium-sized enterprises aims to address the previous challenges identified in the second phase, including distant enterprise locations, insufficient institutional support, and low teacher work engagement. This structural adjustment has enhanced teachers' work engagement and contributed to strengthening their psychological contracts.

Additionally, areas identified with lower mean scores (e.g., PSN3, JE4, TWE3) highlight the need for curricular adjustments and policy refinements to ensure that institutional and social support effectively translates into sustained engagement. By implementing structured enterprise internship programs, integrating evaluations into performance metrics, and embedding teacher feedback into policy development, training centers can foster deeper relational trust and institutional loyalty. These strategies are crucial for enhancing the quality and competitiveness of vocational education in China, ultimately supporting national educational reform and aligning with industry needs.

5.3 Recommendation

The findings of this study have several important implications for theory, practice, and policy in vocational teacher development, particularly within the context of the third-phase training phase, which relies on collaborative "Double-Qualified" teacher training bases jointly established by higher education institutions and large- and medium-sized enterprises in China.

5.3.1 Theoretical Implications

This study advances the theoretical landscape in several ways:

1) **Integration of Organizational and Psychological Theories:** Contextualization of Moderation Effects: The identification of Enterprise Internship as a significant moderator highlights its crucial role in amplifying the impact of perceived subjective norms, perceived organizational support, and job embeddedness on the

psychological contract. This finding underscores the importance of Enterprise Internship learning as a moderating variable, supporting the need for more practice-oriented and context-sensitive models in vocational teacher development.

2) **Validation of Psychological Contract as a Mediating Mechanism:** While traditionally associated with corporate HR contexts, this study confirms the psychological contract as a key mediator within the education sector, expanding its relevance to faculty development and educational reform.

3) **Contextualization of Moderation Effects:** The identification of Enterprise Internship as a significant moderator emphasizes the importance of experiential learning in amplifying psychological contract. This highlights the need for more context-sensitive and practice-oriented models in vocational teacher development.

5.3.2 Practical Implications for Vocational Institutions

The research offers actionable guidance for school leaders, training coordinators, and HR professionals in vocational institutions:

1) **Redesign the Enterprise Internship as a Professional Development Opportunity:** Enterprise internship should be seen as key elements of professional growth, not just administrative tasks. The strong moderating effect of EI, as demonstrated in this study, suggests that well-structured, locally tailored, and co-designed internship programs can significantly reinforce the psychological contract and enhance teachers' work engagement. Aligning internship content with subject areas, adding reflective practice sessions, and establishing transparent feedback processes can enhance knowledge transfer, support professional development, and maintain teachers' long-term engagement.

2) **Strengthen Institutional Support Systems:** As perceived organizational support emerged as a critical predictor of psychological contract, institutions should prioritize fostering a supportive climate through visible leadership involvement, structured mentoring programs, and formal recognition strategies.

3) **Activate Positive Peer Norms:** Teachers' work engagement is shaped by social expectations and peer culture. Building mentorship networks, sharing success stories, and hosting peer recognition events can foster a strong culture of positive normative influence.

4) **Manage Psychological Contracts Transparently:** Schools should communicate and consistently meet both explicit commitments and implicit obligations to maintain trust. Creating strong feedback channels allows teachers to express unmet expectations and raise emerging concerns.

5.3.3 Policy Implications

At the systemic level, this study suggests the following policy recommendations:

1) **Support Structured "Double-Qualified" Pathways:** Provincial policymakers should provide detailed guidelines and additional funding to support the integration of enterprise internship experiences into teacher development. Well-structured growth frameworks and clear career incentives are essential for fostering sustainable engagement among teachers.

2) **Establish Quality Standards for Internships:** Policies should ensure that internships are meaningful, evaluated, and linked to career growth, promotions, and certification standards rather than regarded as mere formalities.

3) **Institutionalize Feedback Mechanisms:** Implement periodic surveys or interviews to systematically capture teachers' experiences and insights. Establishing an evidence-based feedback loop will support continuous improvement in enterprise internship models and teacher development policies.

5.3.4 Research Limitations

Methodological Constraints:

This study used a cross-sectional research design, capturing teacher perceptions at a single point in time. While effective for establishing correlations, this approach limits the ability to track changes in the psychological contract and teachers' work engagement over time. Future studies should consider longitudinal designs to examine these dynamics.

Contextual and Cultural Specificity:

The sample included "Double-Qualified" teachers in public vocational colleges and universities in Henan Province, China. While focusing on an important policy target group, the findings may not apply to private institutions, non-vocational settings, or different cultural contexts. Differences in organizational culture and enterprise-school collaboration models might result in different psychological outcomes.

Data Collection Limitations:

Due to cultural sensitivities, most participants refused to be audio recorded during the interviews, resulting in a reliance on field notes and written responses for qualitative data.

Exclusion of Additional Variables:

This study focused on PSN, POS, and JE. Other potential variables—such as digital competence, teacher leadership, burnout, and career resilience—might also significantly impact psychological contracts and teachers' work engagement.

5.3.5 Future Research

Expand Research Contexts and Population:

Future research should apply this framework across different provinces, institution types, and countries to validate its generalizability and uncover context-specific nuances.

Implement Longitudinal Tracking:

Longitudinal designs would help examine how enterprise internships influence psychological contracts and teachers' work engagement over time, providing insights into the sustainability of observed effects.

Apply Enhanced Mixed-Method Approaches:

In addition to interviews and open-ended surveys, incorporating diary studies, classroom observations, or focus groups can offer a richer, real-time understanding of teachers lived experiences.

Explore New Mediating or Moderating Variables:

Future studies should examine constructs such as career adaptability, emotional labor, and perceived institutional justice to deepen the understanding of how organizational and psychological factors interact to influence outcomes.

Evaluate Institutional Interventions and Policy Impact:

Assessing the effects of specific interventions—such as post-internship debriefs, professional portfolios, and formal reward systems—can provide data-driven insights into best practices for supporting "Double-Qualified" teachers.

Incorporate Expert Recommendations:

Experts highlighted the importance of co-designed curricula, transparent communication strategies, and shared feedback systems. Future studies should investigate how these mechanisms facilitate sustained teachers' work engagement and strengthen alignment between enterprise objectives and educational missions.

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Appendix

Appendix A: Expert Interview Outline

Interview with Participant A (Theoretical Training Expert)

Interviewer: Hi, Participant A. Thank you for joining us today. Let us delve into your experiences with the new training center's approach. How do you perceive the differences between this approach and previous methods regarding whether they fit your teaching style and industry needs?

Participant A: The new training model seems more aligned with industry requirements, which bridges the gap between theory and practice. However, adapting to my current methods from a teaching perspective is challenging. The curriculum does not accommodate different teaching styles, and I feel somewhat restricted.

Interviewer: How have your interactions with colleagues and supervisors in this new model influenced your sense of belonging and commitment as a "Double-Qualified" teacher?

Participant A: There has been some improvement in support from supervisors; however, peer collaboration remains limited. I primarily work alone, which makes it harder to feel connected to my colleagues. Despite this, I feel more committed when there is teamwork and shared ideas.

Interviewer: What sacrifices, if any, do you feel you make in terms of personal time or professional growth by engaging in the current training program?

Participant A: The time commitment is significant. I have invested a significant amount of time in adapting to the new tools and methodologies. While it has been overwhelming, I believe the professional growth I am gaining makes it a worthwhile investment in the long run.

Interviewer: How do perceived expectations from your peers, superiors, and industry professionals influence your motivation and commitment to the current training model?

Participant A: Expectations from both peers and industry professionals have increased. This is motivating, but it also puts pressure on me to perform at a higher level. Peer expectations push me to stay engaged and committed.

Interviewer: In your view, how does the current training model fulfill the commitments or promises made by your organization, and how does this affect your sense of loyalty and obligation to stay?

Participant A: The organization is trying, but has not fully met its promises. The lack of resources is a big issue, affecting my sense of loyalty. The model meets some promises, but there is room for improvement.

Interviewer: To what extent does the Enterprise Internship, connected to the training model, improve your skills and career prospects?

Participant A: The internships seem beneficial and have improved my practical skills. However, it is too early to tell if they will have a long-term impact. More structure is needed to harness their potential fully.

Interviewer: How does the current training model influence your engagement and motivation in teaching and industry-related activities?

Participant A: It has increased my engagement in teaching, as it is more interactive and practical. However, the administrative tasks have also increased, which can be frustrating. Overall, I am more motivated when the training is aligned with industry demands and allows for collaboration with colleagues.

Interview with Participant B (Enterprise Teaching Expert)

Interviewer: Thank you for taking the time, Participant B. Let us start with your thoughts on the differences between the new training center's approach and the previous methods. How do they fit with your teaching and industry needs?
Participant B: The new approach is more hands-on, which fits perfectly with industry needs. It is much more practical and directly relates to what is happening in the industry, which the old methods did not focus on. The new model is much more aligned with industry needs. It has improved the overall training quality, but could still be better adapted to specific industries.
Interviewer: How do your interactions with colleagues and supervisors in this model influence your sense of belonging and commitment?
Participant B: Interacting with industry professionals has deepened my connections. We work closely, strengthening my commitment to the program because we focus on practical results. I work closely with my team, but there is limited interaction with the academic faculty, which can sometimes make it challenging to maintain a connection.
Interviewer: Have you made any personal or professional sacrifices to participate in this training?
Participant B: Balancing work and the demands of this program can be challenging at times. I have had to give up some personal time, but the professional growth is worth it. I have sacrificed a significant amount of personal time, especially when dealing with tight deadlines. It can be exhausting, but it is necessary.
Interviewer: How do the expectations from your peers, superiors, and industry professionals affect your commitment?
Participant B: There is much pressure to stay updated with the latest skills, especially from industry professionals. It keeps me motivated because I want to meet those expectations. The expectations from industry professionals are high, which motivates me to perform better, but it also adds pressure to meet these standards.
Interviewer: How well does the current training model fulfill your organization's promises, and how does this affect your sense of loyalty?
Participant B: The company has fulfilled its promises through this program. I feel firmly obligated to stay because they have invested in my development. The organization has fulfilled most of its commitments; however, some promises regarding mentorship and long-term support remain unfulfilled.
Interviewer: How have the internships connected to this training improved your skills and career prospects?
Participant B: The internships are essential. They give me hands-on experience, which is crucial for industry competitiveness. Internships have been beneficial, but I believe a more structured mentorship is necessary to achieve long-term benefits.
Interviewer: How has the new training model influenced your teachers' work engagement and motivation?
Participant B: I am more motivated than before. Focusing on real-world applications has made me more engaged in teaching and industry work. The model has increased my engagement in practical skills training, but I feel it limits opportunities for innovation.

Interview with Participant C (Theoretical Training Expert)
Interviewer: Participant C, thanks for joining us. How do you see the differences between the new training center's approach and the previous methods in terms of fit

with your teaching style and industry needs?
Participant C: The new model integrates practical applications much better. It is more flexible and aligns with my teaching style, which is great because students are now better prepared for the job market.
Interviewer: How have your interactions with colleagues influenced your sense of belonging?
Participant C: We collaborate more often now, which has improved our teaching outcomes and made me feel more connected and committed.
Interviewer: Have you had to make any sacrifices in terms of personal or professional growth?
Participant C: I sacrifice personal time, but the benefits for my career outweigh the drawbacks. It is a worthwhile investment.
Interviewer: How do expectations from your peers and superiors influence your commitment?
Participant C: There is pressure to perform, but it keeps me on track and motivated to stay engaged with the program.
Interviewer: How does the training model fulfill the commitments made by your organization?
Participant C: It aligns perfectly with what the organization promised, strengthening my loyalty and commitment to the school.
Interviewer: How have the internships connected to this training improved your skills?
Participant C: The internships have provided me with new insights into the industry and are a valuable addition to my theoretical training.
Interviewer: How has the new model influenced your engagement and motivation?
Participant C: I am much more engaged because the training is practical and relevant. It aligns with my professional interests, which keeps me motivated.
Interview with Participant D (Enterprise Teaching Expert)
Interviewer: Participant D, thank you for your time. Let us start with how you perceive the differences between the new training center's approach and the previous methods in how they fit your industry needs.
Participant D: The focus on skills development is now more comprehensive. The new model is more aligned with the specific skills our industry requires, making it a much better fit compared to the previous methods. There was a disconnect between training and actual industry demands in the past, but now it is much closer.
Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?
Participant D: I interact a lot more with colleagues and supervisors now. Frequent discussions have helped me build stronger relationships and strengthen my commitment to the program. I feel like we are all working toward a common goal, and that helps.
Interviewer: What sacrifices have you made regarding personal time or professional growth to engage in this training?
Participant D: I have had to give up a significant quantity of personal time, especially after hours, but the skills I am gaining are worth it. The professional growth far outweighs the personal sacrifices. It is challenging, but the rewards make it worthwhile.
Interviewer: How do expectations from your peers and superiors influence your commitment to the training?

Participant D: My superiors' expectations are high, pushing me to stay committed. It motivates me to improve and stay engaged in the program continually. Peers also expect a lot, which adds some pressure, but overall, it is beneficial. It keeps me on my toes.
Interviewer: How well does the current training model fulfill your organization's commitments, and how does this affect your loyalty?
Participant D: The program has delivered its promises, increasing my loyalty to the organization. I feel a more vital obligation to stay because they have invested in my development. The model makes me feel more connected to the organization, increasing my likelihood of staying long-term.
Interviewer: How have the internships connected to this training improved your skills and career prospects?
Participant D: The internships allow me to apply the skills I have learned in real-world scenarios. This has enhanced my career prospects and increased my confidence in my abilities. I feel more prepared for the industry after the internships.
Interviewer: How has the new model influenced your engagement and motivation in teaching and industry-related activities?
Participant D: I am more motivated than ever. The new model keeps me engaged in teaching and industry activities because it is hands-on and relevant. I enjoy seeing direct applications of what I teach, which motivates me.

Interview with Participant E (Theoretical Training Expert)
Interviewer: Participant E, thanks for joining us. How do you perceive the differences between the new training center's approach and the previous methods in terms of how they align with your teaching style and industry needs?
Participant E: The new approach integrates theory and real-world applications more effectively. It aligns with my teaching style and makes the content more relevant for students who are preparing for the workforce. Previously, it felt like there was a gap between what we were teaching and what students needed in the industry.
Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?
Participant E: There is a stronger sense of teamwork now. I get more feedback and collaboration with colleagues, which helps me feel more connected and committed. My interaction with supervisors has also improved, which helps me feel supported.
Interviewer: What sacrifices have you made regarding personal time or professional growth by engaging in this program?
Participant E: The program demands many extra hours, which affects my work-life balance, but it is a necessary sacrifice for professional growth. I see the benefits in the long run, so I am willing to make the trade-off.
Interviewer: How do expectations from your peers, superiors, and industry professionals influence your commitment?
Participant E: My peers' high expectations motivate me. I feel a strong sense of responsibility to meet those expectations, which helps me stay committed to my goals. Although it can be stressful sometimes, it is a good motivator.
Interviewer: How does the current training model fulfill your organization's commitments and affect your loyalty?
Participant E: Through this model, the organization has fulfilled its promises, strengthening my loyalty. I feel like they are investing in my development, and that

makes me more likely to stay.
Interviewer: How have the internships connected to this training improved your skills?
Participant E: The internships have allowed me to apply what I have learned in the classroom to real-world situations, significantly improving my skills. The hands-on experience makes a big difference.
Interviewer: How has the new model influenced your engagement and motivation?
Participant E: I am much more engaged now. The new model has made teaching more interactive and practical, which motivates me to stay involved and improve my skills. It is a step in the right direction.

Interview with Participant F (Enterprise Teaching Expert)
Interviewer: Participant F, thank you for your time. How do you perceive the differences between the new training center's approach and the previous methods in terms of how they address your industry's needs?
Participant F: The new model is efficient. It offers direct solutions to real-world industry problems, making it significantly more relevant than previous methods. The older model was more theoretical, and while that is important, it did not align well with the industry's needs.
Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?
Participant F: The new model encourages better teamwork between industry and academic staff. I feel more connected to both sides, which has strengthened my commitment to them. Collaboration with academic staff has been particularly helpful in understanding how to blend theory with practice.
Interviewer: Have you had to make any sacrifices in terms of personal time or professional growth?
Participant F: Yes, I have made some personal sacrifices, especially in terms of my time, but the professional benefits are worth it. I have grown significantly through this program, and it has had a profoundly positive impact on my professional development; therefore, the trade-off is acceptable.
Interviewer: How do the expectations from your peers, superiors, and industry professionals influence your commitment?
Participant F: The pressure to meet industry standards is high, but it keeps me motivated. I know that staying updated with the latest skills is crucial, and that drives my commitment. It is challenging at times, but the expectations push me to improve.
Interviewer: How well does the current training model fulfill the commitments made by your organization?
Participant F: The company has supported my growth through this model, and I feel obligated to stay. They have kept their promises, which has increased my loyalty to the organization.
Interviewer: How have the internships improved your skills and career prospects?
Participant F: The hands-on experience from the internships is invaluable. I have developed my practical skills and significantly improved my career prospects. The internships have provided me with real-world experiences that have been highly beneficial.
Interviewer: How has the new training model influenced your engagement and motivation?

Participant F: The program's practical focus has reignited my passion for teaching and industry work. I am much more engaged now. It is refreshing to be part of something that feels both relevant and impactful.

Interview with Participant G (Theoretical Training Expert)

Interviewer: Participant G, thank you for joining us. How do you perceive the differences between the new training center's approach and the previous methods in terms of how they align with your teaching style and industry needs?

Participant G: The previous method was too rigid, but the new approach is more flexible and aligns better with the industry's evolving needs. It aligns better with my teaching style because it allows me to incorporate more practical elements into my lessons. The industry changes so fast that we need this kind of flexibility.

Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?

Participant G: I feel more integrated into the teaching team now. The new model encourages frequent idea sharing, strengthening my sense of belonging. I also feel like my supervisors are more engaged, which significantly impacts my feeling of support.

Interviewer: Have you had to make any sacrifices in terms of personal time or professional growth?

Participant G: It is a demanding program, but the benefits for my professional growth outweigh the sacrifices. I have given up some personal time, but it is worth it because I am growing professionally. The long hours are strict, but I see the value in them.

Interviewer: How do the expectations from your peers, superiors, and industry professionals influence your commitment?

Participant G: There is an unspoken expectation to be fully engaged, which influences my participation. It keeps me motivated to stay committed. I do not want to disappoint my peers or supervisors, which drives me to stay on top.

Interviewer: How well does the current training model fulfill the commitments made by your organization?

Participant G: The program fulfills its promises, and that strengthens my sense of loyalty. I want to stay with the organization because they have invested in my development. It is reassuring that the training model is aligned with what was promised.

Interviewer: How have the internships connected to this training improved your skills?

Participant G: The internships have been crucial in developing the skills I need for my career. They have allowed me to apply what I have learned in practical settings, greatly enhancing my teaching and understanding of industry demands.

Interviewer: How has the new model influenced your engagement and motivation?

Participant G: I am more engaged in daily work because the new model is more hands-on and practical. It has made a big difference in my motivation. I feel more connected to teaching and industry, which has driven me.

Interview with Participant H (Enterprise Teaching Expert)

Interviewer: Participant H, thank you for taking the time. How do you perceive the differences between the new training center's approach and the previous methods in terms of how they address your industry's needs?

Participant H: The new model significantly improves previous methods by providing better opportunities to apply knowledge in real-time industry settings. Before, it was more theoretical, and we did not have as much practical integration. Now, it feels like everything is more aligned with what we need in the field.

Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?
Participant H: The collaboration between teaching staff and industry experts has improved significantly. I feel more connected to the organization, strengthening my commitment. It is great to have more interaction between academia and industry—it makes the whole process feel more cohesive.
Interviewer: Have you made any personal sacrifices or compromises regarding your professional growth?
Participant H: The time commitment is intense, but staying competitive is necessary. The professional growth makes it worthwhile. I have had to make personal sacrifices, but I see the benefits in how much I am learning and improving.
Interviewer: How do the expectations from your peers and superiors influence your commitment?
Participant H: The expectations from both industry and peers keep me striving to improve. There is much pressure, but it is motivating. Knowing that my colleagues and supervisors expect me to perform well motivates me to strive for excellence.
Interviewer: How well does the current training model fulfill the commitments made by your organization?
Participant H: The training center has met my expectations, strengthening my loyalty to the organization. I feel a strong sense of obligation to stay because the organization has invested in me. They have kept their promises, making me more likely to remain.
Interviewer: How have the internships improved your skills?
Participant H: The internship experience has helped me better understand industry needs and sharpen my practical skills. It has been precious in improving my ability to teach and contribute to industry projects.
Interviewer: How has the new model influenced your engagement and motivation?
Participant H: The new model's practical focus has improved my engagement. I feel more motivated and connected to my teaching and industry responsibilities. It has been a positive change, for sure.

Interview with Participant I (Theoretical Training Expert)
Interviewer: Thank you, Participant I. Let us start by asking how you perceive the differences between the new training center's approach and the previous methods in terms of their fit with your teaching style and industry needs.
Participant I: The new curriculum now includes real industry examples, significantly improving teaching effectiveness. It is a better fit for my teaching approach, as it blends theory with real-world applications. Previously, it was primarily theoretical, but now students are acquiring practical skills that are more useful in the workforce.
Interviewer: How have your interactions with colleagues and supervisors in the new model influenced your sense of belonging and commitment?
Participant I: We now have more opportunities for joint projects, strengthening the teaching experience. This increased collaboration has improved my sense of belonging and commitment to the team. I feel like there is a more robust support system now.
Interviewer: What sacrifices have you made regarding personal time or professional growth by engaging in this program?
Participant I: Personal time has trade-offs, but the professional benefits make it worth it. The experience I am gaining is valuable for my career, so I am willing to make the

necessary sacrifices. The extra work is paying off in terms of skill development.
Interviewer: How do expectations from your peers, superiors, and industry professionals influence your motivation and commitment?
Participant I: Peer and industry expectations push me to stay committed to the training. Knowing that my colleagues and the industry count on me motivates me. I do not want to disappoint them, which helps me stay focused.
Interviewer: How does the current training model fulfill your organization's commitments and affect your loyalty?
Participant I: The organization has kept its promises, making me more committed to staying. I feel that my efforts are recognized, which strengthens my loyalty. I am happy with the way they have followed through on their commitments.
Interviewer: How have the internships connected to this training improved your skills and career prospects?
Participant I: The internship experience has been instrumental in helping me better understand industry needs. It has enhanced my practical skills, which will ultimately benefit my career. The connection between the internships and real-world experience has been invaluable.
Interviewer: How has the new model influenced your engagement and motivation in teaching and industry-related activities?
Participant I: I feel more engaged in both teaching and industry-related tasks. The new model has made everything more hands-on, which aligns well with my professional goals. I am more motivated because it aligns with my work in the industry.

Interview with Participant J (Enterprise Teaching Expert)
Interviewer: Participant J, thank you for taking the time to speak with us. How do you perceive the differences between the new training center’s approach and the previous methods in terms of how they address your industry's needs?
Participant J: The focus is now more on real-time problem-solving, which makes the training far more relevant to industry needs. This approach is much more helpful for students and us in the industry. It helps bridge the gap between what is taught in the classroom and what is needed in the workforce.
Interviewer: How have your interactions with colleagues and supervisors influenced your sense of belonging and commitment?
Participant J: Collaborating with other field experts has enhanced my sense of professional belonging. I feel more connected to both the academic and industry sides. It has been good to build stronger relationships with colleagues through this process.
Interviewer: What sacrifices have you made regarding personal time or professional growth?
Participant J: The time commitment is significant, especially when balancing it with work, but the hands-on experience makes it valuable. I have made personal sacrifices, but the growth is worth it. It is not easy, but I can see the rewards.
Interviewer: How do expectations from your peers, superiors, and industry professionals influence your motivation and commitment?
Participant J: Industry demands and peer expectations push me to commit fully. There is considerable pressure to continue improving, but it motivates me to engage more deeply with the program. It is demanding, but it is necessary to keep up.
Interviewer: How does the current training model fulfill your organization's

commitments and affect your loyalty?
Participant J: The program has lived up to its promises, strengthening my loyalty. I feel like the organization has supported my growth, which makes me want to stay. They have done what they said they would, which builds trust.
Interviewer: How have the internships connected to this training improved your skills and career prospects?
Participant J: The practical experience gained through internships has transformed my career. It has given me a deeper understanding of applying my skills in the industry, and the internships have been a crucial part of my development.
Interviewer: How has the new model influenced your engagement and motivation in teaching and industry-related activities?
Participant J: I am now more connected and engaged in teaching and industry responsibilities. The program's practical focus has made a significant difference in keeping me motivated and engaged. It has helped me feel more connected to both aspects of my work.

Appendix B: Interview Outline for Teachers from the Five Major Training Centers

Group A (Vocational School 1)

Interviewer: Thank you for your time, Participant A. How do you perceive the differences between the new training center's approach and the previous "Double-Qualified" training methods?

Participant A: The new model seems more comprehensive in bridging theory and practice. However, the industry relevance is still not fully integrated. The old methods were even more rigid in the past, but there is room for improvement in customizing the training to meet actual enterprise needs.

Interviewer: How do your interactions with colleagues and supervisors in the new model influence your sense of belonging and commitment as a "Double-Qualified" teacher?

Participant A: Collaboration has increased. We now have more discussions, especially with enterprise trainers. However, it is still somewhat disconnected from the institution itself. More organizational support would help integrate the skills learned into teaching.

Interviewer: What sacrifices have you made regarding personal time or professional growth by engaging in this program?

Participant A: There is a heavy time commitment outside regular work hours. Balancing this with my personal life is challenging, and I do not feel the training has addressed these sacrifices yet.

Interviewer: How do expectations from your peers and superiors influence your motivation and commitment to the training model?

Participant A: The school and enterprise have high expectations, motivating me. However, the lack of clear communication about what is expected post-training can be frustrating.

Interviewer: How does the training model fulfill your organization's commitments and affect your loyalty?

Participant A: So far, the model has met some promises, but there is still a gap between what was promised and the practical outcomes, especially in applying skills to natural teaching environments.

Interviewer: How has the Enterprise Internship, connected to this training, improved your skills?

Participant A: The internship helped me better understand the industry, but translating that knowledge into practical teaching is still challenging without more organizational guidance.

Interviewer: How has the new training model influenced your teachers' work engagement?

Participant A: It has helped increase my engagement, but better support systems are still needed to maintain that engagement in the long term.

Group B (Vocational School 2)

Interviewer: Participant B, how do you perceive the differences between the new and old training models?

Participant B: The new approach is more tailored toward practical skills, but it lacks depth in areas such as long-term professional development. The old model was too theoretical, but I think the new one needs more refinement to focus on continuous

learning.
Interviewer: How do your interactions with colleagues influence your sense of belonging?
Participant B: My sense of belonging has increased due to closer collaboration with enterprise trainers. However, I lack interaction with academic peers, which leaves me feeling isolated.
Interviewer: What personal or professional sacrifices have you made to participate in this training?
Participant B: Time is the most significant sacrifice. The training often happens during weekends, and while it is beneficial professionally, it takes away from personal time.
Interviewer: How do peer and industry expectations influence your motivation?
Participant B: There is much pressure from both sides. While it motivates me to stay on track, there are times when the expectations are unclear, especially regarding the skills I am supposed to bring back to the classroom.
Interviewer: How well does the training model fulfill the commitments made by your organization?
Participant B: The model meets the basic requirements but lacks follow-through after the training. The organization promised additional post-training support, which has yet to materialize.
Interviewer: How have internships improved your skills?
Participant B: The internship was eye-opening regarding industry practices, but I still struggle to align my knowledge with the academic curriculum.
Interviewer: How has the new model influenced your engagement and motivation?
Participant B: My engagement has increased, but maintaining that motivation is challenging without more institutional support.

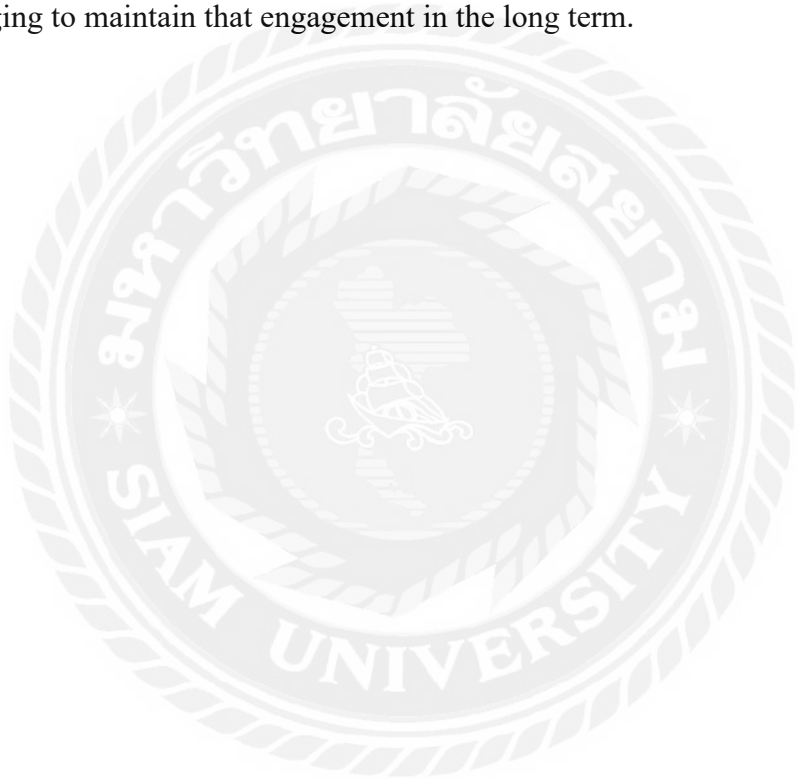
Group C (Vocational School 3)
Interviewer: Participant C, how does the new training center's approach fit your teaching style compared to previous methods?
Participant C: It is an improvement, but it still lacks flexibility. The content is too generalized and does not fully adapt to different industry sectors, which is a limitation.
Interviewer: How have your interactions with colleagues in this model impacted your commitment?
Participant C: I feel more engaged with enterprise trainers than academic staff. There is a communication gap between the two, which affects my commitment to integrating these skills into my teaching.
Interviewer: Have you made any sacrifices to participate in this training?
Participant C: The workload is a big sacrifice. There is little room for professional growth beyond the immediate skills being taught, which is limiting.
Interviewer: How do peer expectations influence your engagement?
Participant C: Expectations from industry professionals keep me motivated, but I often feel disconnected from what the school expects. That mismatch affects my long-term engagement.
Interviewer: How does the training fulfill the promises made by your institution?
Participant C: There is a gap between what was promised and what is being delivered. The school promised more industry and academic integration, but that has not fully materialized.

Interviewer: How has the internship impacted your skill set?
Participant C: The internship has been beneficial, but it is challenging to implement those skills in teaching because there are no clear pathways.
Interviewer: How has the new training model influenced your engagement?
Participant C: I am engaged, but the lack of institutional support makes it challenging to stay motivated in the long term.

Group D (Vocational School 4)
Interviewer: Participant D, how does the new training center's approach fit with your industry needs?
Participant D: It is more industry-relevant than the previous methods, but it is still not specific enough to my field. More tailored training is needed.
Interviewer: How do workplace interactions influence your sense of belonging and commitment?
Participant D: I feel a stronger sense of belonging with industry professionals but not as much with academic colleagues. The disconnect between the two affects my overall commitment to the project.
Interviewer: What sacrifices have you made for this program?
Participant D: Time is a big sacrifice. The training takes up weekends, and there is little flexibility. It impacts my work-life balance.
Interviewer: How do peer expectations influence your motivation?
Participant D: The expectations from my peers in the industry push me to stay engaged, but I feel like my academic peers do not have the same level of involvement, which is frustrating.
Interviewer: Does the training model fulfill the promises made by your organization?
Participant D: It partially fulfills the promises but lacks follow-through, especially in providing long-term career development after the training.
Interviewer: How has the internship impacted your professional skills?
Participant D: The internship provided me with valuable experience, but applying that knowledge in the classroom remains challenging without additional support.
Interviewer: How has this new model influenced your overall engagement?
Participant D: I am more engaged, but the lack of sustained institutional support makes it hard to maintain that level of engagement.

Group E (Vocational School 5)
Interviewer: Participant E, how does the new training center's approach fit with your teaching and industry needs?
Participant E: It is a step in the right direction, but still too general. The new approach needs more industry-specific content to be effective.
Interviewer: How do your interactions with colleagues affect your sense of belonging?
Participant E: My interactions with enterprise professionals have improved, but there is still a lack of collaboration with academic staff, which limits my sense of belonging.
Interviewer: What sacrifices have you made to participate in this training?
Participant E: The most significant sacrifice has been personal time. The training takes up weekends and evenings, which makes it challenging to balance with my other responsibilities.
Interviewer: How do expectations from peers and industry professionals influence

your commitment?
Participant E: The expectations from industry professionals are motivating, but I often feel disconnected from the academic expectations, which makes it harder to stay fully engaged.
Interviewer: How does the training fulfill the commitments made by your institution?
Participant E: The training has delivered on some promises, but there is still much room for improvement, particularly post-training support.
Interviewer: How has the internship improved your skills and career prospects?
Participant E: The internship provided valuable insights, but I feel disconnected from how to apply what I learned in the classroom.
Interviewer: Lastly, how has the new model influenced your engagement?
Participant E: I am more engaged than before, but without continued support, it is challenging to maintain that engagement in the long term.



Appendix C: Index of Item Objective Congruence

DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA
河南省教师参与企业实习工作模型的开发

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PhD in Educational Administration Innovation
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Research Questions

1) What is the current status of teachers' work engagement in enterprise internship professional development activities in the context of vocational education in Henan, China?
2) What factors influence the relationship between teachers' work engagement and the effectiveness of Enterprise Internship and their professional training programs?
3) What evidence-based model can be proposed to enhance teachers' work engagement and effectiveness in enterprise internship and professional development programs?
4) What are teachers' insights and experts' opinions of the enterprise internship and professional development programs?

Research Objectives

1) To assess the current status of teachers' work engagement in enterprise internship and professional development activities within the vocational education system in Henan, China.
2) To identify and analyze the factors that influence the relationship between teachers' work engagement in enterprise internships and the effectiveness of professional training programs.
3) To develop an evidence-based model to enhance teachers' work engagement and effectiveness in enterprise internship and professional development programs, focusing on meeting modern industries' technological demands.
4) To reveal teachers' insights and experts' opinions on the enterprise internship and professional development programs.

Instruction

This IOC form seeks the experts' opinions on all questions embedded in this questionnaire and whether they are congruent with research objectives and definitions of terms. The criteria used for IOC are explained below.

+1 = Congruent 0= Questionable -1= Incongruent

说明：此 IOC 表格旨在征求专家对本问卷中所有问题的意见，这些项目是否符合研究 目标和术语定义。IOC 使用的标准解释如下。

+1 = 一致 0 = 可疑 -1 = 不一致

Table Quantitative Item-Objective Congruence (IOC)

Perceived Subjective Norms (PSN) This refers to the social pressure or expectations from significant others, such as colleagues and supervisors, regarding participation in an enterprise internship.	**Expert Opinion**			**Remark**
	1	**0**	**-1**	
PSN1. My closest family members believe I should pursue an internship in the enterprise sector. 我最亲近的家人认为我应该参加企业实习.				
PSN2. My colleagues think I should pursue participation in an enterprise internship. 我的同事认为我应该争取参加企业实习.				
PSN3. I do not seek approval from people important to me regarding my career. (R) 我不会寻求那些对我的职业生涯很重要的人的认可.（R）				
PSN4. Stories highlighting others' achievements often influence my decision to participate in an internship at a company. 他人成就的故事常常影响我参加企业实习的决定.				
PSN5. My colleagues in enterprises view me as a competent and resourceful professional for participating in internships. 企业同事都认为我是一个有能力、足智多谋的专业人士，适合参加实习.				
Perceived Organizational Support (POS) In "Double-Qualified," teachers are operationalized as the level of policy enforcement and the support the school provides to facilitate teachers' participation in enterprise internship training programs, thereby developing both theoretical knowledge and practical skills.	**1**	**0**	**-1**	**Remark**
POS1. My school values my contribution to its success. 我的学校重视我对其成功的贡献.				
POS2. My school fails to appreciate any extra effort I make. (R) 我的学校对我做出的额外努力不予重视.(R).				
POS3. My school takes my goals and values into strong consideration. 我的学校非常重视我的目标和价值观.				

POS4. My school does not take my feedback seriously. (R) 我的学校不认真对待我的投诉.（R）				
POS5. Timely help is available from my school whenever I need it. 我的学校在我遇到问题时能够及时提供帮助.				
POS6. My school provides me with limited opportunities to advance my career. (R) 我的学校很少提供机会让我在职业上获得提升.（R）				
Job Embeddedness (JE) To the extent that teachers believe participating in enterprise internship training programs will enhance their teaching effectiveness and professional development.	**1**	**0**	**-1**	**Remark**
JE1. My job as a teacher does not effectively utilize my skills and talents during enterprise internship training programs. (R) 作为一名教师，我的技能和才能在企业实习培训项目中没有得到有效的发挥.				
JE2. My job as a teacher effectively utilizes my skills and talents during enterprise internship training programs. 作为一名教师，我的技能和才能在企业实习培训项目中得到有效的发挥.				
JE3. I actively promote my enterprise internship training programs to my colleagues. 我积极向同事宣传我的企业实习培训项目.				
JE4. I actively promote my enterprise internship training programs to my colleagues. 继续在我实习的企业工作的前景对我在学校的教学工作有帮助.				
JE5. I am willing to sacrifice time to participate in enterprise internship training programs. 我愿意牺牲时间来参加企业实习培训项目.				
Psychological Contract (PC) Encompasses the unwritten expectations between teachers and their enterprise internship training programs regarding mutual obligations, including professional growth opportunities and fair treatment, influencing their engagement and commitment.	**1**	**0**	**-1**	**Remark**
PC1. I make an effort to contribute to the school's success. 我努力为学校所要求的成功做出贡献。				

PC2. PC2. I encourage other in-service teachers to participate in the training. 我鼓励其他在职教师参与培训.				
PC3. I do not encourage colleagues' engagement if the enterprise breaches the contract. (R) 如果企业违背承诺，我不鼓励同事参与。（R）				
PC4. I propose improvements to Enterprise Internship contracts and policies. 我建议改进企业实习合同和政策。				
PC5. I advocate for a climate that fulfills contractual expectations. 我提倡一种履行合同期望的氛围。				
Enterprise Internship (EI) They are part of the "Double-Qualified" teacher training and are operationalized as mandatory practice periods within the enterprise. Teachers engage directly with the production environment during these internships to acquire practical skills. This experience aligns their teaching practices with industry standards, ensuring they can effectively integrate real-world applications into their vocational education teaching.	**1**	**0**	**-1**	**Remark**
EI1. Have you ever participated in an internship at a company or organization? Y/N 你是否参加过企业实习？是/否				
Teachers' Work Engagement (WE) The intrinsic motivation to participate in enterprise internship training and professional development activities. This motivation includes improving one's teaching ability and enhancing one's professional skills.	**1**	**0**	**-1**	**Remark**
WE1. I often find my thoughts drifting away when performing my job. (R) 在工作时我经常分心，想其他事情.（R）				
WE2. I put my heart into my job. 我全心投入到我的工作中.				
WE3. I feel excited when I perform well at my job. 在工作中表现出色时，我感到非常兴奋.				
WE4. I often feel emotionally detached from my job. (R) 我经常对工作无感.（R）				

WE5. I expend a great deal of energy while performing my job. 我在工作中投入了大量精力.				
WE6. I try to avoid exerting too much effort at work. (R) 我尽量避免在工作中付出太多努力. (R)				

Interview Questions for Experts

Table Interview Questions for Double-Qualified Teachers

Qualitative Questions	**IOC Score**			**Remark 得分**
	1	**0**	**-1**	**Remark**
1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship? 您会如何评价该模式在实习期间提升教师参与度的效果？				
2. What would this model contribute to addressing the challenges "Double-Qualified" internship teachers face? 该模式在解决"双师型"教师实习过程中所面临的挑战方面会有哪些帮助？				
3. What would this model do to support teachers in becoming "Double-Qualified" professionals? 该模式将如何帮助教师成为"双师型"专业人才？				
4. What competencies or resources are essential for teachers to benefit from this model? 教师需要具备哪些能力或资源才能从该模式中受益？				
5. What would you say about how well this model incorporates suggestions from both schools and enterprises? 您认为该模式是否有效地融合了学校和企业双方的建议？				

Expert's name: _____

Review date: _____

Thank you very much for your valuable comments.

Xiang Wei

ID 6419000023

Appendix D: Preliminary Studies Interview Questions

DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA

To Questionnaire Respondent

Thank you for your participation in this study. As a doctoral student, I am now seeking to interview with you. Please be assured that all information obtained from this study will be used solely for academic purposes. Your personal information will be kept strictly confidential. Once again, I would like to express my sincere gratitude for your involvement.

Mr. Wei Xiang, Ph.D.
Student Siam University

	Question	Probe
1.	How do you perceive the differences between the new training center's approach and previous methods in terms of fit with your teaching style and industry needs?	Can you tell me more specifically?
2.	How does your interaction with the Enterprise Engineer affect your sense of belonging and commitment as a "Double-Qualified" instructor in the new training model?	Can you tell me more specifically?
3.	What sacrifices, if any, do you feel you make in terms of personal time or professional growth by engaging in the current training program?	Can you tell me specifically?
4.	How do perceived expectations from your peers, superiors, and industry professionals influence your motivation and commitment to the current training model?	Can you tell me specifically?
5.	How does the current training model fulfill the commitments or promises made by your organization, and how does this affect your sense of loyalty and obligation to stay?	Can you tell me specifically?
6.	To what extent do you think the enterprise internship connected to the training model improves your skills and career prospects?	Can you tell me specifically?
7.	How does the current training model influence your teachers' work engagement and motivation in teaching and industry-related activities?	Any examples?

Appendix E: Questionnaire

DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA

To Questionnaire Respondent

Thank you for your participation. This questionnaire consists of two parts: demographic information and factors influencing the improvement of the teachers' work engagement model for "Double-Qualified" teachers in Enterprise Internship in Henan Province. The information from this research will be used only for academic purposes, and all your personal information will be strictly confidential. Thank you again for your participation. If you require further information or need our assistance, please do not hesitate to contact us.

Please answer objectively to ensure the research results are objective and accurate.

Mr. Wei Xiang, Ph.D.
Student Siam University

Part 1: Demographic information

Note: The first part of the questionnaire pertains to you and the Board of Directors. Please check "√before the options that match.

1. Gender □ Male, □ Female

2. Age □ Under 30 □ 30-40 □ 40-50 □ 50-60

3. Education □ Associate degree □ Undergraduate degree
□ Bachelor's degree □ Master's degree
□ Doctoral Degree

4. The College you work for is

□ Yellow River Water Conservancy Vocational and Technical College
□ Shang Qiu Vocational and Technical College
□ Henan Institute of Science and Technology
□ Henan Polytechnic
□ Zhengzhou Electric Power College

5. Have you ever participated in an enterprise internship?

□YES □ NO

Part 2: Relational factors
Part II: Teachers' Work Engagement

Please rate your agreement level. Tick "√" in the appropriate box. There are five levels: "1. disagree; 2. Disagree; 3. Not sure; 4. Agree; 5. Strongly agree"

Teachers' Work Engagement (WE)	**5**	**4**	**3**	**2**	**1**
WE1. I often find my thoughts drifting away when performing my job. (R)					
WE2. I put my heart into my job.					
WE3. I feel excited when I perform well at my job.					
WE4. I often feel emotionally detached from my job. (R)					
WE5. I expend a great deal of energy while performing my job.					
WE6. I try to avoid exerting too much effort at work. (R)					

Part III: Perceived Subjective Norms, Perceived Organization Support, Job Embeddedness, Psychological Contract

Perceived Subjective Norms (PSN)	**5**	**4**	**3**	**2**	**1**
PSN1. My closest family members believe I should pursue an internship in the enterprise sector.					
PSN2. My colleagues think I should pursue participation in an enterprise internship.					
PSN3. I do not seek approval from people important to me regarding my career. (R)					
PSN4. Stories highlighting others' achievements often influence my decision to participate in an internship at a company.					
PSN5. My colleagues in enterprises view me as a competent and resourceful professional for participating in internships.					
Perceived Organization Support (POS)	**5**	**4**	**3**	**2**	**1**
POS1. My school values my contribution to its success.					
POS2. My school fails to appreciate any extra effort I make. (R)					
POS3. My school takes my goals and values into strong consideration.					
POS4. My school does not take my feedback seriously. (R)					

POS5. Timely help is available from my school whenever I need it.					
POS6. My school provides me with limited opportunities to advance my career. (R)	**5**	**4**	**3**	**2**	**1**
Job Embeddedness (JE)					
JE1. My job as a teacher does not effectively utilize my skills and talents during enterprise internship training programs. (R)					
JE2. My job as a teacher effectively utilizes my skills and talents during enterprise internship training programs.					
JE3. I actively promote my enterprise internship training programs to my colleagues.					
JE4. The prospects for continuing with the enterprise where I intern are helping with my teaching work at my school.					
JE5. I am willing to sacrifice time to participate in enterprise internship training programs.	**5**	**4**	**3**	**2**	**1**
Psychological Contract (PC)					
PC1. I make an effort to contribute to the school's success.					
PC2. I encourage other in-service teachers to participate in the training.					
PC3. I do not encourage colleagues' engagement if the enterprise breaches the contract. (R)					
PC4. I propose improvements to Enterprise Internship contracts and policies.					
PC5. I advocate a climate that fulfills contractual expectations.					

You have completed this questionnaire.

Thank you for your support.

Appendix F: Qualitative Expert Interviews

DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA

To Questionnaire Respondent

Thank you for agreeing to participate in this follow-up interview. This discussion aims to gather your insights on the proposed model developed from this study. Specifically, we seek your expert evaluation regarding the model's effectiveness, innovation, and scalability in addressing the challenges of enhancing teachers' work engagement among "Double-Qualified" teachers during enterprise internship. Your feedback will be invaluable in refining the model and ensuring it offers practical solutions that align with real-world practices within vocational education. We appreciate your time and expertise in contributing to the success of this research.

Mr. Wei Xiang, Ph.D.
Student Siam University

Question	Probe
1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship?	Can you tell me more specifically?
2. What would this model contribute to addressing the challenges "Double-Qualified" internship teachers face?	Can you tell me more specifically?
3. What would this model do to support teachers in becoming "Double-Qualified" professionals?	Can you tell me specifically?
4. What competencies or resources are essential for teachers to benefit from this model?	Can you tell me specifically?
5. What would you say about how well this model incorporates suggestions from both schools and enterprises?	Any examples?

Appendix G: English-Chinese Questionnaire

感谢您的参与。本问卷由两部分组成：第一部分是人口统计学信息，第二部分是河南省“双师型”教师企业实习参与模式改进影响因素。本研究所得信息仅用于学术研究，您的所有个人信息将严格保密。再次感谢您的参与。如果您需要进一步的信息或需要我们的帮助，请联系我们。我将采用 5 点李克特量表：1=非常不同意 2=不同意 3=中立 4=同意 5=非常同意 进行打分。

1. 性别 : 男 , 女

2. 年龄 30 岁以下 30-40 岁 40-50 岁 50-60 岁

3. 学历 大专 本科 本科 硕士 博士

4. 您所在的大学是

黄河水利职业技术学院 商丘职业技术学院

河南科技学院 河南职业技术学院

郑州电力学院

5. 您是否在参加过企业实习?

是 否

教师工作参与度		5	4	3	2	1
1.WE1	在工作时我经常分心，想其他事情。(R)					
2.WE2	我全心投入到我的工作中。					
3.WE3	在工作中表现出色时，我感到非常兴奋					
4.WE4	我经常对工作无感（R）					
5.WE5	我在工作中投入了大量精力。					
6.WE6	我尽量避免在工作中付出太多努力。(R)					
感知主观规范		5	4	3	2	1
7.PSN1	我最亲近的家人认为我应该参加企业实习。					
8.PSN2	我的同事认为我应该争取参加企业实习。					
9.PSN3	我不会寻求那些对我的职业生涯很重要的人的认可。(R)					
10.PSN4	他人成就的故事常常影响我参加企业实习的决定。					
11.PSN5	企业同事都认为我是一个有能力、足智多谋的专业人士，适合参加实习。					
感知组织支持		5	4	3	2	1
12.POS1	我的学校重视我对其成功的贡献。					
13.POS2	我的学校对我做出的额外努力不予重视。(R)					

14.POS3	我的学校非常重视我的目标和价值观。					
15.POS4	我的学校不认真对待我的投诉。(R)					
16.POS5	我的学校在我遇到问题时能够及时提供帮助。					
17.POS6	我的学校很少提供机会让我在职业上获得提升。(R)					
工作嵌入		5	4	3	2	1
18.JE1	作为一名教师，我的技能和才能在企业实习培训项目中没有得到有效的发挥。					
19.JE2	作为一名教师，我的技能和才能在企业实习培训项目中得到有效的发挥。					
20.JE3	我积极向同事宣传我的企业实习培训项目。					
21.JE4	继续在我实习的企业工作的前景对我在学校的教学工作有帮助。					
22.JE5	我愿意牺牲时间来参加企业实习培训项目。					
心理契约		5	4	3	2	1
23.PC1	我努力为培训计划的成功做出贡献。					
24.PC2	我鼓励其他在职教师参与培训。					
25.PC3	如果企业违背承诺，我不鼓励同事参与。(R)					
26.PC4	我建议改进企业实习合同和政策。					
27.PC5	我提倡一种履行合同期望的氛围。					

Appendix H: Item-Objective Congruence Examination

Result Of the Index of Item-Objective Congruence Examination

Result of the Index of Item-Objective Congruence (OC) Rating

Construct No.	Item No.	Rating from experts			$\sum \mathcal{R}$	$\frac{\sum \mathcal{R}}{N}$	Result
		Dr. Muhammad Rizwanullah	Dr. Sungworn Ngudgratoke	Dr. Wang Yanqiong			
I **Perceived Subjective Norms (PSN)**	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	1	3	1	Pass
	4	0	1	1	2	0.67	Pass
	5	1	1	1	3	1	Pass
II **Perceived Organizational Support (POS)**	1	1	1	1	3	1	Pass
	2	0	1	1	2	0.67	Pass
	3	1	1	1	3	1	Pass
	4	0	1	1	2	0.67	Pass
	5	1	1	1	3	1	Pass
	6	1	1	1	3	1	Pass
III **Job Embeddedness (JE)**	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	0	1	2	0.67	Pass
	4	1	1	1	3	1	Pass
	5	1	0	1	2	0.67	Pass
IV **Psychological Contract (PC)**	1	1	1	1	3	1	Pass
	2	1	0	1	2	0.67	Pass
	3	1	0	1	2	0.67	Pass
	4	0	1	1	2	0.67	Pass
	5	1	1	1	3	1	Pass
V **Enterprise Internship (EI)**	1	1	1	1	3	1	Pass
VI **Teachers' Work Engagement (WE)**	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	1	1	0	2	0.67	Pass
	4	0	1	1	2	0.67	Pass
	5	1	1	1	3	1	Pass

	6	0	1	1	2	0.67	Pass
VII **Qualitative Questions**	1	1	1	1	3	1	Pass
	2	1	1	1	3	1	Pass
	3	0	1	1	2	0.67	Pass
	4	1	1	1	3	1	Pass
	5	0	1	1	2	0.67	Pass
	6	1	1	1	3	1	Pass

IOC No.	Name	Academic Title	Affiliation	Field / Degree	Nationality
1	Dr. Muhammad Rizwanullah	Associate Professor	Xiangtan University (XTU), Hunan Province, P.R. China	Ph.D. in Public Administration	Pakistan
2	Dr. Sungworn Ngudgratoke	Associate Professor	Michigan State University	Ph.D. in Measurement and Quantitative Methods	Thailand
3	Prof. Yanqiong Wang	Professor Master's Mentor	School of Physical Education and Health, Guangxi Normal University	Master of Computer Science	China

SU.0210.04/ 22

Graduate School of Education
Siam University
38 Phet Kasem Rd, Bang Wa
Phasi Charoen, Bangkok 10160

January 2025

Dear Associate Professor Dr. Muhammad Rizwanullah,

You hold a Ph.D. in Public Administration from Xiangtan University (XTU), Hunan Province, P.R. China. You currently serve as a Postdoctoral Research Fellow at the School of Public Administration (South Asia Research Center), Xiangtan University.

Subject:Invitation to Serve as an Expert for Evaluating the Index of Item-Objective Congruence (IOC) of Research Instruments

Since Mr.Wei Xiang , student ID 6419000023 a doctoral student in English program, Graduate School of Education, works on a dissertation "DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA" with Assoc, Prof, Dr. BoonmeNenyod (the advisor) and Assistant Professor Dr. Leehsing Lu (the co-advisor), the Graduate School of Education would like to invite you to be an expert to provide your opinion in the Graduate School of Education would like to invite you to be an expert to examine the research tools.

The questionnaire addressing the current circumstances is a crucial instrument in this research. Therefore, an evaluation using the Index of Item-Objective Congruence (IOC) is required to ensure the validity of the research tools. Mr.Wei Xiang will be in direct contact with you to coordinate all relevant details.

We sincerely appreciate your support and valuable contribution to this research.

Best Regards

Professor Emeritus Dr. Chanita Rukspollmuang

Dean of Graduate School of Education

SU.0210.04/ 22

Graduate School of Education
Siam University
38 Phet Kasem Rd, Bang Wa
Phasi Charoen, Bangkok 10160

January 2025

Dear Associate Professor Dr. Sungworn Ngudgratoke,

You hold a Ph.D. in Measurement and Quantitative Methods from Michigan State University. You currently serve as the Head of the Master's and Doctoral Programs in Educational Measurement and Evaluation at Sukhothai Thammathirat Open University, where you are also the Director of the Institute for Research and Development. Additionally, you serve as the current President of the Thailand Association of Educational Measurement, Research, and Statistics.

Subject:Invitation to Serve as an Expert for Evaluating the Index of Item-Objective Congruence (IOC) of Research Instruments.

Since Mr.Wei Xiang, Student ID 6419000023 a doctoral student in English program, Graduate School of Education, works on a dissertation "DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA" with Assoc. Prof. Dr. BoonmeNenyod (the advisor) and Assistant Professor Dr. Leehsing Lu (the co-advisor), the Graduate School of Education would like to invite you to be an expert to provide your opinion in the Graduate School of Education would like to invite you to be an expert to examine the research tools.

The questionnaire addressing the current circumstances is a crucial instrument in this research. Therefore, an evaluation using the Index of Item-Objective Congruence (IOC) is required to ensure the validity of the research tools. Mr.Wei Xiang will be in direct contact with you to coordinate all relevant details.

We sincerely appreciate your support and valuable contribution to this research.

Best Regards

Professor Emeritus Dr. Chanita Rukspollmuang

Dean of Graduate School of Education

SU.0210.04/ 22

Graduate School of Education
Siam University
38 Phet Kasem Rd, Bang Wa
Phasi Charoen, Bangkok 10160

January 2025

Dear Professor Wang Yanqiong,

Professor at the School of Physical Education and Health, Guangxi Normal University, holding Master of Computer Science from Guangxi Normal University, China. You currently oversee the doctoral admissions review process and serve as the college's primary admissions contact. In addition, you serve as a Master's advisor in the field of sports education. Subject:Invitation to Serve as an Expert for Evaluating the Index of Item-Objective Congruence (IOC) of Research Instruments

Since Mr.Wei Xiang, student ID 6419000023 a doctoral student in English program, Graduate School of Education, works on a dissertation "DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA" with Assoc, Prof, Dr. BoonmeNenyod (the advisor) and Assistant Professor Dr. Leehsing Lu (the co-advisor), the Graduate School of Education would like to invite you to be an expert to provide your opinion in the Graduate School of Education would like to invite you to be an expert to examine the research tools.

The questionnaire addressing the current circumstances is a crucial instrument in this research. Therefore, an evaluation using the Index of Item-Objective Congruence (IOC) is required to ensure the validity of the research tools. Mr.Wei Xiang will be in direct contact with you to coordinate all relevant details.

We sincerely appreciate your support and valuable contribution to this research.

Best Regards

Professor Emeritus Dr. Chanita Rukspollmuang

Dean of Graduate School of Education

Appendix I: A Follow-up Questionnaire was Sent Via Email after the Interview

Focus Group Consent Letter

Title of Study: DEVELOPING THE MODEL OF TEACHERS' WORK ENGAGEMENT OF ENTERPRISE INTERNSHIP IN HENAN, CHINA

Principal Investigator: Wei Xiang
Institution: Graduate School of Educational Administration, Siam University, Thailand
Contact Information: 244417576@qq.com

Participation and Procedures (Modified to Chinese Research Context):

Given the relational and cultural sensitivities inherent in Chinese academic and professional settings, most participants declined to be recorded. Therefore, instead of conventional recordings, semi-structured online interviews were conducted via Tencent Meeting and documented in real time through detailed note-taking by the researcher. These interviews were a rapport-building phase, helping participants become familiar with the study's goals and fostering mutual trust.

Following the interview sessions, participants were invited to complete a follow-up, open-ended questionnaire, which was sent to them via email. This two-phase approach—combining conversational, relationship-oriented interviews with reflective written responses—proved particularly effective in eliciting richer qualitative data in the Chinese context. It respected participants' privacy and comfort while promoting deeper, more thoughtful engagement with the research topic. All responses were treated with strict confidentiality, and no personally identifiable information was used in the analysis or reporting process.

Participant's Name: _____

Participant's Signature: _____

Date: _____

If you have any questions or concerns, please contact Wei Xiang.

Thank you for your valuable contribution to this research.

Sincerely,

Siam University

Participants Introduction

Name	Title and Position	Research
G: Zhang Yali	Vice Dean of the Public Art Education Department, Associate Professor at Henan Polytechnic Member of the Chinese Musicians Association, Henan Musicians Association, Chinese Music Education Association, and ISME National Training Expert for Double-Qualified Teachers	Double-Qualified Teacher Development in Music Education
C: Liang Bin	Vice Dean of Public Basic Education, Associate Professor at Shangqiu Vocational and Technical College Correspondent of Henan Provincial College Education and Service Center National Training Expert for Double-Qualified Teachers	Implementation of Double-Qualified Teaching Models
E: Zhang Tao	Director of the Educational Technology Teaching and Research Section, Associate Professor at Henan Institute of Science and Technology of Information Engineering National Training Expert for Double-Qualified Teachers	Integration of Technology and Practice in Double-Qualified Teacher Training
A: An Yusu	Backbone Teacher of the Marketing Teaching Team, Associate Professor at Yellow River Conservancy Technical Institute, Department of Management National Training Expert for Double-Qualified Teachers	Industry-Practice-Oriented Curriculum Reform
I: Xue Xiang mei	Associate Professor at Zhengzhou Electric Power College Prefecture-level Expert of Henan Provincial Electric Power Company Member of the Company's Financial System Construction Think Tank National Training Expert for Double-Qualified Teachers	Enterprise Collaboration and Practical Finance Training

Participant A: Theoretical Training Expert

- **Q1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship?**

Participant A:

Overall, the new training model has increased my work engagement in teaching. The approach is more interactive and practical, stimulating my day-to-day teaching. I find myself more absorbed and dedicated (key facets of Teachers' Work Engagement) when the training content aligns with real industry demands – it makes the work feel meaningful and relevant. Moreover, when I have the opportunity to collaborate with colleagues under this model, it boosts my enthusiasm even further; working together

on practical tasks energizes me. These factors have elevated my motivation to put effort into the classroom and related industry activities. That said, there have also been increases in administrative tasks and paperwork as part of the new model, which can be frustrating. Those bureaucratic duties sometimes sap my energy and illustrate that the positive effects on engagement could be dampened without sufficient support. Nonetheless, I am more motivated now than under the previous system.

🔹 **Q2. How would this model address the challenges that "Double-Qualified" internship teachers face?**

Participant A:

The enterprise internship has been quite beneficial so far – I can already see improvements in my practical skills. Working directly with industry through these internships, I gained insights and competencies I would not have acquired through classroom training alone. In terms of our conceptual model, this hands-on experience enhances my alignment with industry requirements (since I am learning skills directly relevant to the field), and it can also be viewed as a form of organizational support – the organization is providing me with career development opportunities. However, it is still too early to determine whether these benefits will have a significant long-term impact on my career trajectory. More structure and guidance are needed to fully harness the potential of internships. Without the straightforward integration of internship experiences into my teaching practice, converting those new skills into better teaching outcomes is challenging. In theory, the internship component should strengthen my job embeddedness by creating new links with industry professionals and increasing my sense of investment in this dual role. Moreover, I feel more professionally connected to the industry now.

🔹 **Q3. How would this model support teachers becoming "Double-Qualified" professionals?**

Participant A:

I find the new training model to be far more aligned with industry requirements, which helps bridge the gap between theory and practice in my teaching. This greater alignment with industry needs improves the fit aspect of my role (an element of Job Embeddedness), as the content is now more relevant to real-world demands. However, adapting the new model to my current teaching style is challenging – the curriculum is still not flexible enough to accommodate different teaching approaches, so, in that sense, the person–job fit is not fully achieved. I sometimes feel restricted by this misalignment, which suggests that while the external fit has improved, the internal fit with my style remains an issue. Ensuring a better overall fit would likely enhance my comfort and effectiveness in the role.

The time commitment required by this program is significant. I have dedicated a significant amount of personal time to learning the new tools and methodologies introduced during the training. These are substantial sacrifices on my part – an aspect of Job Embeddedness – because investing so much extra time means I have more to lose if I disengage or leave the program. It has been overwhelming at times and has strained my work-life balance. However, I consider the professional growth I am experiencing to be a worthwhile return on this investment.

- **Q4. What competencies or resources are essential for teachers to benefit from this model?**

Participant A:

There has been a noticeable improvement in support from my supervisors – I feel the organization values my efforts more now, reflecting stronger Perceived Organizational Support. This heightened support makes me feel more valued and has a positive impact on my commitment... The lack of regular interaction means fewer social links at work (a component of Job Embeddedness), and as a result, my sense of belonging remains weaker than I would like.

I have sacrificed a significant amount of personal time to learn new tools and methodologies... In the long run, the new skills and knowledge I gain should advance my career, making the trade-off worthwhile. In other words, despite the personal costs, the benefits for my development tether me more strongly to my role.

- **Q5. What would you say about how well this model incorporates suggestions from schools and enterprises?**

Participant A:

The organization is trying to fulfill its promises, but has not completely delivered. In terms of the Psychological Contract – the unwritten expectations I had – only some parts have been met. For instance, the institution promised adequate resources and support for implementing the new model, and while they have provided some support, the lack of specific resources is a significant gap. This shortfall partially breaches what I believe was promised, negatively impacting my loyalty.

If the program can better structure this process [internship integration], it would likely further enhance my engagement. My cautious optimism here aligns with the idea that these practical experiences contribute positively to teachers' growth and engagement, and my experience tentatively supports this, even if the full effect has yet to be realized.

Participant C Theoretical Training Expert

- **Q1. What would you evaluate as the effectiveness of this model in increasing teachers ' work engagement during the internship?**

Participant C:

I am now much more engaged in my teaching. The training model's practical orientation keeps things interesting for me as an instructor, not just for the students. Because the content is relevant to actual industry scenarios, I find myself more engaged and dedicated when preparing lessons – I want to ensure I get it right, as it has a real-world impact. In class, I feel energized (exhibiting greater vigor, a facet of Work Engagement) by the hands-on projects we undertake. My overall motivation has increased because the work feels meaningful; I can see the direct line from what I teach to what students will need in their careers. This sense of purpose was less tangible in the old theoretical model, where I occasionally questioned the practical value of my teaching.

Additionally, knowing that I have strong support and that promises were kept (as I mentioned earlier) contributes to sustained engagement – I am not distracted by grievances or unmet expectations, allowing me to focus entirely on my teaching mission. I will note there is still some need for flexibility – the model, while better, can

sometimes be generalized and not tailor perfectly to every specialization, which I hope will improve. However, beyond that, my teachers' work engagement is high.

🔹 **Q2. How would this model address the challenges that "Double-Qualified" internship teachers face?**

Participant C:

The internships built into the program have been extremely valuable. They have given me new insights into the industry that I would not have otherwise. Each stint in an enterprise setting has allowed me to apply what I have learned in the training sessions to a real-world context, solidifying my understanding. My skill set has expanded – for example, I learned a new manufacturing process during one internship that I have since incorporated into my classroom demonstrations.

This practical experience is a valuable addition to the theoretical training, as it reinforces the relevance of what I teach. Regarding our model, these internships have enhanced my alignment with industry practices (an aspect of Job Embeddedness), as I now speak the language of the industry more fluently and can apply that knowledge to my teaching. They have also created additional links – I have made professional contacts with whom I continue to communicate during the internships. Those contacts strengthened my professional network and made me feel more connected to the broader field, not just my school.

🔹 **Q3. How would this model support teachers becoming "Double-Qualified" professionals?**

Participant C:

The new training center's approach integrates practical applications much better than the old methods. I feel it is more flexible and fits my teaching style quite well. This is a welcome change, because there was a clear gap between what we taught and what the industry expected; now that gap is narrowing. For example, the curriculum now includes industry-relevant projects that I am comfortable teaching, and as a result, my students are more prepared for the job market.

Regarding our conceptual variables, I would say this reflects an improved person–job fit (part of Job Embeddedness). The content and activities align with industry needs and my teaching style, making me feel a sense of belonging in this program. This enhanced fit contributes to my overall satisfaction and effectiveness. Indeed, by better aligning with both personal teaching style and external demands, the new approach has increased my sense of embedding in the role.

🔹 **Q4. What competencies or resources are essential for teachers to benefit from this model?**

Participant C:

We collaborate far more often now than we did before. Regular meetings and joint sessions with academic colleagues and enterprise trainers exist. This increased collaboration has led to improved teaching outcomes, and on a personal level, it has made me feel much more connected to my peers. I now experience a stronger sense of belonging to the teaching team. Knowing we are working together towards common goals has boosted my commitment to the program and the institution.

In theoretical terms, these frequent interactions have elevated my Job

Embeddedness through the social links I have developed – I am more embedded in my organization because I have closer relationships and professional ties with my colleagues. Additionally, support and feedback from my supervisors have improved alongside peer collaboration. I interpret this as enhanced Perceived Organizational Support; I feel valued and backed by the organization when we all work together. The effect on my commitment is significant: I am more loyal and willing to go above and beyond because I sense the team support around me.

- **Q5. What would you say about how well this model incorporates suggestions from schools and enterprises?**

Participant C:

The organization has fully delivered its promises with this new training model. When the program was introduced, the school administration assured us it would bridge academic theory with industry practice, which is precisely what happened. They also promised support regarding resources and time for training, which I have received. This fulfillment of promises means a great deal to me. It shows that the institution stands by its word, strengthening my trust.

Regarding the Psychological Contract, I would say it has been honored – my expectations of support and relevant training have been met or even exceeded. As a result, my sense of loyalty has grown. I feel more obligated to stay with the school because they have kept their end of the deal. I am more committed to contributing to the school's success in return. This reaction is precisely what organizational theory would predict: employees tend to reciprocate with greater loyalty and commitment when the psychological contract is fulfilled. My experience exemplifies that finding the precise alignment between what was promised and what was delivered has solidified my dedication to the institution.

Participant E Theoretical Training Expert

- **Q1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship?**

I am far more engaged in my work than before the new model was implemented. To give you an idea, I wake up looking forward to teaching because I know the day will involve interactive projects, honest case discussions, and possibly some collaboration with industry partners – all things that I find intrinsically motivating. The practical nature of the curriculum has injected a sense of purpose and excitement into my teaching routine. I feel a sense of vigor in the classroom; for instance, even if I am physically tired at the end of a long day, I find myself mentally stimulated and satisfied with what the students and I have accomplished. My dedication to teaching has also grown – I am willing to spend extra time refining a lesson or mentoring a student on a project because I can see the direct impact and relevance of those efforts.

Moreover, this model has encouraged me to improve my skills, continuously keeping me intellectually engaged. There is a positive feedback loop: the more engaged I am, the better my teaching becomes, which further engages my students and gives me a sense of accomplishment, fueling my motivation even more. Of course, maintaining this high level of engagement long-term will require sustained support; if the program stopped evolving or the school stopped supporting us, it could plateau. However, as of now, the trajectory is remarkable.

◆ **Q2. How would this model address the challenges that "Double-Qualified" internship teachers face?**

The internships have been one of the most impactful components of my training. By participating in the internships, I have been able to apply classroom teachings in a real industrial setting, which has significantly improved my practical skills. For example, during an internship at a partner company, I learned how a cutting-edge piece of equipment is used in practice – something I had only lectured about theoretically before. Now, I not only teach that topic with firsthand insight, but I have also networked with industry professionals in that field.

These experiences have broadened my understanding of the industry's needs and trends, which in turn helps me keep my teaching content up-to-date. Regarding career prospects, I have become a more versatile professional. I could potentially take on consultancy roles or lead industry collaborations for the school because of my exposure. These hands-on experiences have improved my confidence and made me more enthusiastic in the classroom.

◆ **Q3. How would this model support teachers becoming "Double-Qualified" professionals?**

The new approach represents a significant improvement in integrating theoretical knowledge with real-world applications. From my perspective, it aligns much better with my teaching style. I have always tried to bring practical examples into my lectures, and now the curriculum provides those examples – it is as if the program is finally on the same page as me. This alignment means I spend less time trying to "translate" theory into practice, because the materials already integrate the two.

For the students, it is beneficial: they find the content more relevant and engaging, and I can tell they are better prepared for the workforce than students from previous cohorts. I genuinely believe that my professional values and skills align with what the new model requires, which was previously lacking. Previously, there was a noticeable gap between what we taught and what the industry needed; that gap has narrowed substantially, making me feel more effective and satisfied as an instructor. This better fit ultimately contributes to my commitment and enthusiasm for the program.

◆ **Q4. What competencies or resources are essential for teachers to benefit from this model?**

I have noticed a much stronger sense of teamwork now. The new model has introduced regular collaborative planning sessions and cross-feedback meetings. I receive more constructive feedback from colleagues and supervisors than I used to, and I also have more opportunities to collaborate on projects or co-teach with others. All of this makes me feel far more connected to my peers. Teaching could feel isolating in the past, but now it feels like we are genuinely in a community of practice. My department head has been actively monitoring my adaptation to the new model and offering assistance, which indicates that the administration is invested in my success.

As a result, my commitment to the organization has deepened. I am loyal to this supportive community; it is easier to go the extra mile when you know the organization and your colleagues have your back. The peer collaboration has also created stronger social links – I have built closer relationships with other teachers as we work together

to solve problems and share ideas. These links further enhance my sense of belonging in the school, because work is now a place of social fulfillment and professional activity.

◆ **Q5. What would you say about how well this model incorporates suggestions from schools and enterprises?**

I can say that the organization has fulfilled its promises regarding this training model. Before we started, we were assured of certain things – for example, that we would receive proper training to handle new technology, that partnerships with industry would be established to facilitate internships, and that our efforts would be recognized. For the most part, all of these have occurred. The school provided us with workshops and arranged internship placements for our students, and I have personally received positive recognition from management for my participation in the program. This follow-through means the commitments I had expected were met.

They did what I expected them to do, and in some cases, even exceeded my expectations. Seeing the institution invest in my development and keep their word has greatly strengthened my loyalty to them. I feel a heightened obligation to stay with the organization because I know I am in an environment that values and supports me. It is a reciprocal relationship – they deliver on promises, and I respond with loyalty and commitment. This trust would erode quickly if promises were broken, but fortunately, the opposite has occurred – each kept promise reinforces my dedication.

Participant G Theoretical Training Expert

◆ **Q1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship?**

Thanks to the new model, I am noticeably more engaged in my daily work. The hands-on, practical elements of the program keep me interested and challenged. Every day, there is something new – maybe I am integrating an industry case study, or I have an industry professional co-teaching with me, or I am guiding a student project that simulates real workplace problems. These activities pull me in; I often find myself losing track of time in a good way. My motivation has also climbed. I no longer view my job as just delivering lectures; I see it as building a bridge between academia and industry, and that mission is exciting. I am driven to continually improve the program, try new teaching techniques, and see my students succeed in their internships and careers. The result is that I happily put in extra effort, for example, organizing an extra workshop with an industry partner on my initiative, because I am motivated by the impact it can have. Additionally, feeling more connected and supported means I approach my work with a positive attitude rather than frustration.

◆ **Q2. How would this model address the challenges that "Double-Qualified" internship teachers face?**

The internships have been crucial in developing the skills I need for my dual role as a teacher with industry expertise. I have directly entered the industry environment through internships, updating my practical knowledge. Each internship taught me something new: the first immersed me in a company's project management process, the second exposed me to the latest machinery in my field. Applying what I learned in training to real-world settings, I refined my technical skills. I developed soft skills, including industry-specific communication and teamwork, in a non-academic setting.

These are things I bring back to the classroom – for instance, I now teach my students not just theory, but how that theory is applied in real projects, and I share anecdotes from my internship experiences. Moreover, having gone through the internships, I can better mentor my students during their industry placements.

◆ **Q3. How would this model support teachers becoming "Double-Qualified" professionals?**

The previous training method I experienced was very rigid and theory-heavy. It left little room for adaptation or practical input, which often frustrated me. The new approach, by contrast, is much more flexible and up-to-date with industry developments. It aligns significantly better with the industry's evolving needs, and notably, with how I prefer to teach. I tend to incorporate current industry case studies in my lessons, and now the training program encourages that practice. This means the fit is better on two levels: the program fits the external demand (industry relevance), and it fits my teaching style (which values practical engagement). Because the field I teach in changes so fast, having a flexible curriculum is essential, and the new model provides that, whereas the old one did not.

◆ **Q4. What competencies or resources are essential for teachers to benefit from this model?**

I feel much more integrated into the teaching team now than I did with the previous model. One reason is that the new model actively encourages the sharing of ideas and the co-development of materials. For example, we have monthly interdisciplinary workshops where teachers exchange techniques and industry insights. This type of collaboration was previously lacking, and its introduction has strengthened my sense of belonging. I now frequently discuss challenges and successes with colleagues, creating a camaraderie I value deeply. These frequent interactions and idea-sharing sessions have increased my number of social links at work. Another aspect is the role of supervisors – I have noticed that my supervisors are more engaged with our work under this new model. They join our workshops, listen to our feedback, and often implement our suggestions. This behavior makes me feel genuinely supported by the organization.

◆ **Q5. What would you say about how well this model incorporates suggestions from schools and enterprises?**

I believe the program lives up to its promises quite well. When I signed up for this, the organization promised to invest in our development and provide a program integrating enterprise experience with teaching. They have delivered on that. For example, they promised that each teacher would have the opportunity to undertake a sabbatical stint in industry. I just completed mine last term, which was a fantastic learning experience. They also discussed providing ongoing training, which we hold regularly. From resources to moral support, I see the administration following through on its promises. This consistency has a significant impact on me: it strengthens my loyalty to the institution. I feel that the organization has upheld the psychological contract – I had certain expectations, and they were met. As a result, I feel obligated in a positive way to continue contributing here and not to jump ship.

Participant I Theoretical Training Expert

- **Q1. What would you evaluate as the effectiveness of this model in increasing teachers' work engagement during the internship?**

I feel more engaged in my teaching and related industry activities. The new model's hands-on and relevant approach has rejuvenated my passion for teaching. In the classroom, I am not just going through the motions of delivering content; I am actively facilitating workshops, guiding simulations, and mentoring projects with a level of enthusiasm and focus that I did not consistently have with the old model.

- **Q2. How would this model address the challenges that "Double-Qualified" internship teachers face?**

The internship experiences connected to the training have been instrumental in advancing my skills and understanding of the industry. Engaging directly with the industry through these internships provided me with insights that I could not have obtained through classroom work alone. For example, one of my internships was with a cutting-edge tech company where I observed their problem-solving and project management process.

- **Q3. How would this model support teachers becoming "Double-Qualified" professionals?**

The new curriculum is significantly better tailored to both my teaching approach and the industry's needs. It now includes numerous real-world industry examples and case studies, which have significantly enhanced the effectiveness of my teaching. Under the previous, more current approach, everything was primarily theoretical – I often felt I was lecturing in a vacuum, hoping students would somehow infer the practical applications.

- **Q4. What competencies or resources are essential for teachers to benefit from this model?**

The new model has opened up more opportunities for collaboration with my colleagues and supervisors. One specific change is that we now undertake joint projects – for instance, co-authoring training materials with colleagues from different departments or teaming up to supervise student internship projects.

- **Q5. What would you say about how well this model incorporates suggestions from schools and enterprises?**

The organization has kept its promises with this training model, which has positively affected my loyalty. At the outset, the administration made several commitments: that we would receive proper training for new content, that the program would not simply add to our workload without compensation, that successful implementation could lead to career advancement opportunities, and that the necessary resources would be provided.

梁斌 Liang Bin 张西丽 安玉诗 An Yusu 薛香梅 张涛

Appendix J: Refreshing Report Questionnaire Expert Evaluation Result

A structured expert evaluation was conducted to validate the conceptual model proposed in this study. Five domain experts participated in the review process, each holding national credentials as Double-Qualified Teacher Training Experts and occupying leadership positions in vocational universities across Henan Province. Their professional authority and direct engagement in vocational training policies and practice ensured the credibility of the evaluation.

The evaluation framework was structured around three primary dimensions:

1. Propriety – Assessing the theoretical soundness and content relevance of each item;
2. Feasibility – Evaluating the practical applicability within real-world enterprise internship environments;
3. Utility – Measuring the item's potential to inform policy, guide teachers' work engagement strategies, and support curriculum enhancement.

Table Expert Evaluation of the Conceptual Framework

Criteria Category	Expert A1	Expert A2	Expert E1	Expert E2	Expert I1	Expert I2	Expert C1	Expert C2	Expert G1	Expert G2	Mean Score
Propriety	4	4	4	5	4	5	5	5	5	4	4.5
	5	5	4	5	4	5	5	5	4	4	4.6
	4	5	5	4	4	5	5	5	5	4	4.6
	4	5	5	5	4	4	5	5	4	4	4.5
	4	4	5	5	4	5	5	4	4	4	4.4
Feasibility	5	5	4	4	5	4	5	5	5	5	4.7
	4	4	5	5	5	5	5	4	5	4	4.6
	4	5	4	4	4	4	5	5	4	5	4.4
	4	5	4	5	5	5	5	5	5	5	4.8
	5	5	4	4	5	4	4	4	5	5	4.5
Utility	4	5	4	5	5	4	4	5	5	4	4.5
	4	5	4	5	5	5	5	4	4	4	4.5
	4	5	5	4	4	4	5	5	4	4	4.4
	4	5	5	4	5	5	5	5	4	4	4.6
	5	5	5	4	4	5	5	4	4	5	4.6

Participants Introduction

Name	Title and Position	Research
G1: Zhang Yali	Vice Dean of the Public Art Education Department, Associate Professor at Henan Polytechnic Member of the Chinese Musicians Association, Henan Musicians Association, Chinese Music Education Association, and ISME National Training Expert for Double-Qualified Teachers	Double-Qualified Teacher Development in Music Education
G2: Zhang Qing Guo	Public Art Education Department, Associate Professor at Henan Polytechnic	Double-Qualified Teacher, Theoretical training expert
C:1 Liang Bin	Vice Dean of Public Basic Education, Associate Professor at Shangqiu Vocational and Technical College Correspondent of Henan Provincial College Education and Service Center National Training Expert for Double-Qualified Teachers	Implementation of Double-Qualified Teaching Models
C2:Zhou Miao	Vice Dean of the College of Animal Husbandry, Associate Professor at Shangqiu Vocational and Technical College	Double-Qualified Teacher, Theoretical training expert
E1:Zhang Tao	Director of the Educational Technology Teaching and Research Section, Associate Professor at Henan Institute of Science and Technology of Information Engineering National Training Expert for Double-Qualified Teachers	Integration of Technology and Practice in Double-Qualified Teacher Training
E2:Zhou Qi	Deputy Dean of the School of Educational Sciences, Master, Associate Professor. Mainly teaches "Curriculum Theory" and "Pedagogy", and his main research areas are vocational education and higher education.	Double-Qualified Teacher, Theoretical training expert
A1:An Yusu	Backbone Teacher of the Marketing Teaching Team, Associate Professor at Yellow River Conservancy Technical Institute, Department of Management National Training Expert for Double-Qualified Teachers	Industry-Practice-Oriented Curriculum Reform
A2:Li Yao	Vice Dean of the School of Business Administration, instructor of the AIGC Internet Marketing National Finals, and teacher of the School of Business and Management	Double-Qualified Teacher, Theoretical training expert
I1: Xue Xiang mei	Associate Professor at Zhengzhou Electric Power College Prefecture-level Expert of Henan Provincial Electric Power Company Member of the Company's Financial System Construction Think Tank National Training Expert for Double-Qualified Teachers	Enterprise Collaboration and Practical Finance Training
I2: Li Peng	Associate Professor of the School of Electrical Engineering, teaching major: Substation Operation and Maintenance	Double-Qualified Teacher, Theoretical training expert

Researcher Vitae

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