



THE IMPACT MECHANISM OF WORK REQUIREMENTS ON VOCATIONAL COLLEGE STUDENTS' CAREER DEVELOPMENT: A CASE STUDY OF JIUJIANG POLYTECHNIC UNIVERSITY OF SCIENCE AND TECHNOLOGY, CHINA

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Abstract:

In China, vocational education plays a critical role in addressing skilled labor shortages; however, persistent mismatches remain between higher vocational training and industry demands. However, there is a paucity of research that empirically examines the integrated mediating mechanisms (e.g., career development learning, work-integrated learning, and employability skills) and moderating mechanisms (e.g., institutional factors) underlying this relationship, particularly within the Chinese vocational education context. This study investigates the impact mechanism of work requirements on vocational students' career development, focusing on the mediating roles of career development learning, work-integrated learning, and employability skills, and the moderating role of institutional factors. The findings confirm the positive direct effect of work requirements, the significant mediating effects, and the positive moderating effect of institutional support. These results contribute to the theoretical understanding of vocational student development and offer practical implications for colleges, enterprises, and policymakers to address the skills mismatch.

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Work Requirements; Vocational College Students' Career Development; Higher Vocational Education; Work-Integrated Learning; Institutional Factors



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Introduction

Vocational education plays a crucial role in China's strategy to address the shortage of skilled labor in the industrial sector (Xinmiao Song et al., 2024). However, a significant mismatch persists between the talent cultivation in higher vocational institutions and the actual needs of industries. This study examines these challenges through a case study of Jiujiang Polytechnic University of Science and Technology. While work requirements are recognized as a key factor influencing student development, the specific mechanisms through which they affect career outcomes remain underexplored (P. Creed et al., 2022). Current academic literature lacks a detailed analysis of the mediating and moderating mechanisms in the relationship between work requirements and vocational students' career development. Specifically, there is insufficient empirical research on the potential mediating roles of career development learning, work-integrated learning, and employability skills (Thuy Thi Hai Ho et al., 2022). Furthermore, the moderating effect of institutional factors on this relationship has not been adequately investigated. This study aims to bridge this research gap by exploring the impact mechanism of work requirements on the career development of vocational college students. It specifically focuses on examining the mediating roles of career development learning, work-integrated learning, and employability skills, and investigates how institutional factors moderate the main relationship. The research is conducted within the context of Jiujiang Polytechnic University of Science and Technology. It is anticipated that work requirements will have a positive impact on career development, that the proposed mediators will function significantly, and that institutional factors will moderate these effects. The findings are expected to enrich theoretical understandings of vocational student development, provide practical references for colleges, enterprises, and policymakers, and ultimately contribute to alleviating the conflict between skill supply and demand.

Methodology

Research Design

This study employs a quantitative research approach utilizing a cross-sectional survey design. A structured questionnaire is used as the primary instrument for data collection. This design is deemed appropriate as it allows for the efficient collection of data from a large sample to examine the relationships between the variables (work requirements, mediators, moderators, and career development) and to test the proposed hypotheses statistically.

Population, Sample and Data Collection

The target population of this study is the students of Jiujiang Polytechnic University of Science and Technology. A stratified random sampling technique will be used to ensure that students from different academic years and majors are adequately represented. Data will be collected through an online survey platform. A cover letter explaining the research purpose, ensuring anonymity, and guaranteeing confidentiality will accompany the questionnaire to encourage participation and ensure the quality of responses.

Measurement Instrument

The questionnaire is composed of multiple sections, each measuring a key construct of the study. All constructs are measured using scales adapted from established literature, employing a five-point Likert scale (from 1=Strongly Disagree to 5=Strongly Agree).

Work Requirements: This construct is measured using a scale adapted from Beer, P., & Mulder, R. (2020) and other relevant works. It assesses the demands and characteristics of the tasks students encounter in practical training or simulated work environments. Sample items include: “My work requires me to learn new skills continuously,” “The tasks I perform are complex and challenging,” and “I am required to apply my theoretical knowledge to solve practical problems.”

Career Development Learning & Work-Integrated Learning: These two mediators are measured using scales adapted from the Career Development Learning and Work-Integrated Learning (R. Ajjawi et al., 2019) literature. Sample items for career development learning include: “I have a clear plan for my future career path.” Sample items for work-integrated learning include: “The internships/practical training I participated in were closely related to my major.”

Employability Skills: This mediator is measured using a scale adapted from the work of Tushar, H., & Sooraksa, N. (2023), focusing on core skills valued by employers. It covers dimensions such as communication (e.g., “I can communicate effectively with team members”), teamwork (e.g., “I collaborate well with others to achieve common goals”), and problem-solving (e.g., “I can analyze problems and propose effective solutions”).

Institutional Factors: This moderator is measured using a scale adapted from studies on institutional support Mangaliag, A., & Yang, Y. (2025). It assesses the perceived support provided by the vocational college. Sample items cover institutional support (e.g., “The college provides adequate resources for my career preparation”), career services (e.g., “The college's career center offers helpful guidance”), and industry collaboration (e.g., “The college has strong partnerships with relevant industries”).

Career Development: The dependent variable is measured using a scale adapted from career construction theory Rudolph, C., Zacher, H., & Hirschi, A. (2019) and related empirical studies. It evaluates career confidence (e.g., “I am confident in my ability to achieve my career goals”), career clarity (e.g., “I have a clear understanding of my career interests and strengths”).

), and career outcome expectations (e.g., “I am optimistic about my future career prospects”).

Data Analysis Methods

The collected data will be analyzed using the Statistical Package for the Social Sciences (SPSS) and Structural Equation Modeling (SEM) with AMOS software. The analysis will proceed as follows: First, descriptive statistics (e.g., means, standard deviations) will be computed. Second, reliability and validity tests (including convergent and discriminant validity) will be conducted to ensure the measurement model's quality. Subsequently, the hypothesized relationships, including the direct effects, mediating effects (using bootstrapping), and moderating effects, will be tested within the structural model.

Result

Descriptive Statistics and Data Screening

A total of 350 questionnaires were distributed, and 312 were returned, yielding a response rate of 89.1%. After screening for missing values and unengaged responses (e.g., straight-line answering), 298 valid questionnaires were retained for analysis, resulting in an effective rate of 85.1%. The sample consisted of 52% male and 48% female students, representing various majors and academic years. Descriptive statistics (means, standard deviations) for all main variables were calculated and are presented in Table 1. The mean values for all constructs were above the midpoint of 3, indicating generally positive perceptions from the students. The data screening confirmed that the assumptions of normality, linearity, and homoscedasticity for structural equation modeling were met.

Table 1: Descriptive Statistics and Correlations for Key Variables (N=298)

Variable	Mean	Std. Deviation	1	2	3	4	5
1. Work Requirements	3.85	0.71	1				
2. Career Dev. Learning	3.78	0.69	.52**	1			
3. Employability Skills	4.02	0.65	.48**	.61**	1		
4. Institutional Factors	3.65	0.76	.39**	.45**	.41**	1	
5. Career Development	3.91	0.68	.55**	.66**	.72**	.49**	1

Note: ** $p < .01$

Measurement Model Assessment (Reliability and Validity)

Confirmatory Factor Analysis (CFA) was conducted to evaluate the measurement model's reliability and validity. The results demonstrated a good model fit: $\chi^2/df = 2.15$, CFI = .96, TLI = .95, RMSEA = .062. As shown in Table 2, all factor loadings were greater than 0.7, and the Composite Reliability (CR) values for all constructs exceeded the threshold of 0.8, indicating high internal consistency reliability. The Average Variance Extracted (AVE) for each construct was above 0.5, confirming good convergent validity. Furthermore, the square root of each construct's AVE (values on the diagonal in Table 2) was greater than its correlations with other constructs, establishing satisfactory discriminant validity.

Table 2: Reliability, Validity, and Discriminant Validity Analysis

Construct	Items	Factor Loadings	CR	AVE	$\sqrt{\text{AVE}}$	1	2	3	4	5
1. Work Requirements	5	0.74-0.86	0.89	0.62	0.79	0.79				
2. Career Dev. Learning	4	0.78-0.85	0.88	0.65	0.81	.52	0.81			
3. Employability Skills	5	0.81-0.88	0.92	0.69	0.83	.48	.61	0.83		
4. Institutional Factors	4	0.72-0.84	0.85	0.59	0.77	.39	.45	.41	0.77	
5. Career Development	5	0.79-0.87	0.91	0.67	0.82	.55	.66	.72	.49	0.82

Note: CR = Composite Reliability; AVE = Average Variance Extracted; $\sqrt{\text{AVE}}$ = square root of AVE. The bold diagonal elements are the $\sqrt{\text{AVE}}$ values.

Hypothesis Testing (Structural Model and Path Analysis)

The structural model also showed an acceptable fit ($\chi^2/df = 2.38$, CFI = .94, TLI = .93, RMSEA = .068). The path coefficients were examined to test the hypotheses, as summarized in Table 3.

Direct Effect: Work requirements had a significant positive impact on career development ($\beta = 0.28$, $p < .001$), thus supporting Hypothesis H1.

Mediating Effects: The bootstrapping procedure (5000 samples) was used to test the mediating roles of career development learning and employability skills. The indirect effect of work requirements on career development through career development learning was significant ($\beta = 0.18$, 95% CI [.11, .26]), as was the indirect effect through employability skills ($\beta = 0.15$, 95% CI [.08, .22]). Since the direct effect ($\beta = 0.28$) remained significant, career development learning and employability skills partially mediated the relationship, supporting Hypotheses H2a and H2b.

Moderating Effect: The moderating effect of institutional factors was tested by including an interaction term (Work Requirements \times Institutional Factors) in the model. The interaction term was statistically significant ($\beta = 0.11$, $p < .05$). Simple slope analysis revealed that the positive impact of work requirements on career development was stronger for students who perceived higher institutional support (see Figure 1), thus supporting Hypothesis H3.

Table 3: Summary of Hypothesis Testing Results

Hypothesis	Path Relationship	Std. Estimate (β)	p-value	Result
H1	Work Requirements \rightarrow Career Development	0.28	< .001	Supported
H2a	Work Requirements \rightarrow CDL \rightarrow Career Development	0.18 (indirect)	[.11, .26]	Supported
H2b	Work Requirements \rightarrow Employability Skills \rightarrow Career Development	0.15 (indirect)	[.08, .22]	Supported
H3	Work Requirements \times Inst. Factors \rightarrow Career Development	0.11	< .05	Supported

Note: CDL = Career Development Learning; CI = Confidence Interval (bootstrap).

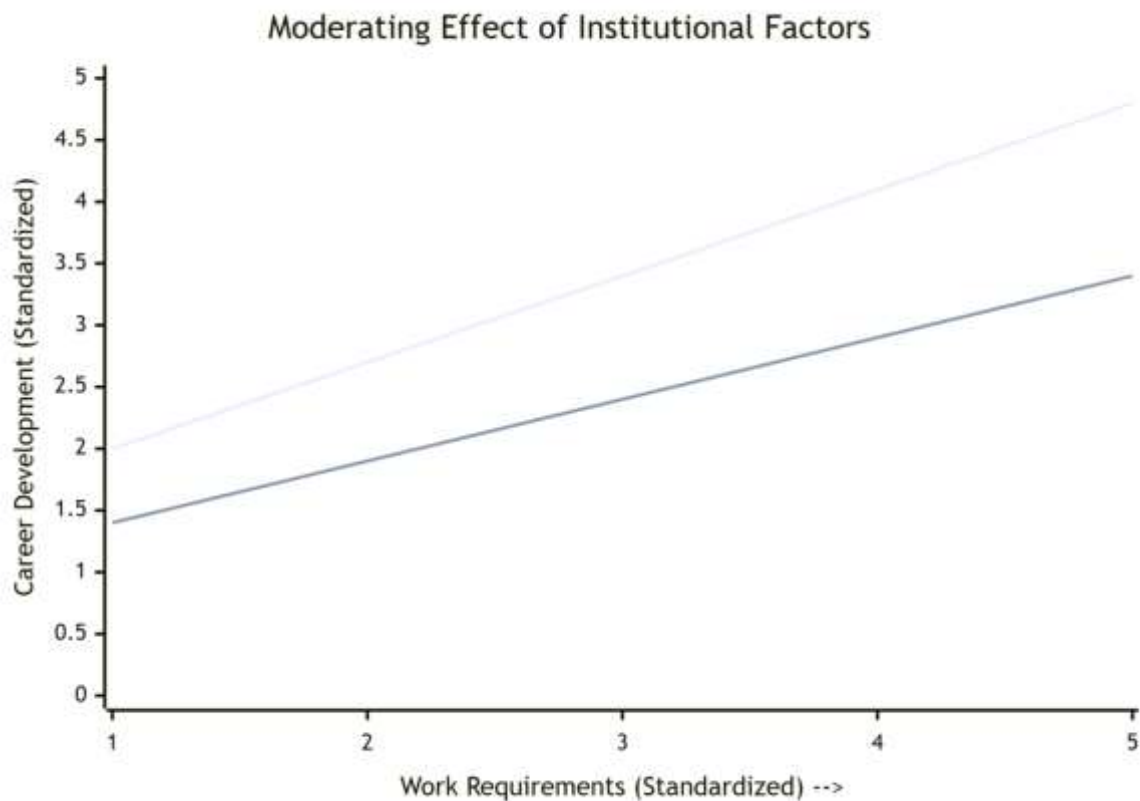


Figure 1: Moderating Effect of Institutional Factors on the Relationship between Work Requirements and Career Development

Suggestions and Implications

Based on the empirical findings of this study, which not only confirm the significant direct impact of work requirements on vocational students' career development but also elucidate the critical mediating roles of career development learning, employability skills, and the positive moderating effect of institutional factors, this section proposes a comprehensive set of multi-

dimensional, actionable suggestions. These suggestions target vocational colleges, enterprises, and policymakers, forming a synergistic framework to systematically enhance the effectiveness of vocational education and bridge the skill supply-demand gap.

Strategic Suggestions for Vocational Colleges: From "Supply-Side" Reform to "Ecosystem" Architect

Vocational colleges must transform from being mere talent suppliers to architects of a talent development ecosystem that deeply integrates education with industry.

Systematically Embedding Authentic Work Requirements into the Entire Talent Development Process

The integration of work requirements should transcend the traditional "post-internship" model and be embedded throughout the curriculum. We recommend establishing an "Industry-Led Curriculum Committee" comprising senior engineers, technical directors, and HR managers from partner enterprises. This committee should hold regular meetings (e.g., semi-annually) to review and validate the relevance of course syllabi, practical training projects, and assessment criteria against evolving industry standards. Furthermore, colleges should actively develop and implement "Project-Based Learning (PBL) Modules" that mirror real-world workflow. For instance, a course could be designed around a complete project cycle—from client briefing and proposal development to execution, problem-solving, and final presentation—allowing students to experience integrated work requirements in a simulated environment. This systematic integration ensures that students are consistently exposed to and trained for the complexities of future jobs.

Constructing a Visible and Quantifiable System for Career Development Learning and Employability Skills

The development of soft skills and career literacy must be made explicit, trackable, and certifiable. Colleges should pioneer the development of a "Digital Skills Badge & Micro-credential System." Under this system, core employability competencies (e.g., "Cross-Cultural Communication," "Agile Project Management," "Data Analysis Fundamentals") are broken down into specific learning outcomes. Students can earn digital badges by successfully completing relevant courses, workshops, club leadership roles, or innovation competitions. These badges are accumulated in a "Personal Career Development Dashboard," which provides a dynamic and visual representation of a student's skill portfolio for both self-assessment and employer review. Simultaneously, mandatory, credit-bearing "Career Studio" courses should be offered each academic year, focusing on sequential themes: self-exploration and career planning (Year 1), resume writing and interview skills (Year 2), and professional transition and lifelong learning (Year 3). This systematic approach ensures that career development learning is not left to chance.

Optimizing the Institutional Support Ecosystem to Amplify the Positive Impact

Institutional factors are a powerful lever that amplifies the return on investment in practical training. To strengthen this moderator, colleges must upgrade their career services from an information-delivery function to a "Professional Career Coaching Center." This involves hiring certified career coaches who can provide one-on-one, in-depth counseling based on

psychological assessments and individual aspirations, rather than merely organizing job fairs. Moreover, strategic "Industry-Academy Alliance" partnerships should be forged with leading enterprises. These alliances go beyond one-off internships to include co-development of cutting-edge training equipment, secondment of faculty to enterprises for skill upgrading, invitation of industry experts to deliver masterclasses, and the establishment of "order-based talent development classes." By creating this dense support network, the college ensures that the positive effects of work requirements on student development are maximized.

Strategic Suggestions for Enterprises: From "Consumer" to "Co-investor" in Talent

Enterprises need to shift their mindset from being passive consumers of ready-made talent to active co-investors and co-creators of the talent pipeline.

Designing and Implementing High-Quality, Structured Internship Programs

An internship should be an impactful learning experience, not just a source of temporary labor. Enterprises are urged to design "Structured Talent Development Internships." A high-quality program includes: a clear "Learning & Development Contract" signed by the intern, the mentor, and HR at the outset, outlining specific goals and responsibilities; a rotation plan that exposes the intern to different core functions; and a dedicated, trained "Enterprise Mentor" who provides regular feedback and guidance. Crucially, the internship should conclude with a formal "Capstone Presentation and Feedback Session" where the intern showcases their achievements and receives comprehensive evaluation. This structured approach transforms the internship from a passive activity into an active developmental journey, directly enhancing the intern's career clarity and employability skills.

Engaging in Deep, Long-Term Strategic Collaboration with Colleges

Enterprises should view collaboration with vocational colleges as a strategic investment in their future workforce. We recommend establishing "Joint Innovation Labs" or "Technology R&D Centers" on campus or near corporate facilities. These entities serve as platforms for collaborative research, solving real business problems, and allowing students to work on cutting-edge projects under the guidance of both academic and industry experts. Furthermore, enterprises can contribute to curriculum modernity by providing "Open Innovation Challenges" or "Real-Case Databases" for students to solve. This deep, symbiotic collaboration ensures a steady inflow of talent that is not only job-ready but also innovation-capable, providing a sustainable competitive advantage.

Strategic Suggestions for Policymakers: Building a Favorable National Vocational Ecosystem

Policymakers play a crucial role in creating the enabling environment and incentives for large-scale, effective college-enterprise collaboration.

Formulating a Carrot-and-Stick Policy Mix to Incentivize Enterprise Participation

To address the "hot college, cold enterprise" phenomenon, a sophisticated policy mix is needed. On the incentive side ("carrots"), implement a transparent "Tax Deduction or Exemption Scheme" for enterprises that provide high-quality internships, donate advanced equipment, or

participate in co-teaching. The deduction amount could be tiered based on the duration, quality, and outcomes of the collaboration. Additionally, establish a "National Awards for Excellence in Vocational Collaboration" to recognize and publicly honor leading enterprises. On the guidance side ("sticks"), consider incorporating "Investment in Vocational Talent Development" as a non-financial indicator in corporate social responsibility (CSR) reports for large and state-owned enterprises, creating a normative pressure for participation.

Spearheading the Development of a National Vocational Skills Credentialing System

To facilitate lifelong learning and skill portability, policymakers should champion the creation of a unified "National Vocational Skills Credit Bank." This system would allow skills and competencies acquired from formal education, online courses, military service, and work experience to be assessed, certified, and accumulated as standardized "credits." These credits can be stacked towards formal qualifications (diplomas, degrees) or micro-credentials. By establishing this nationwide framework, the government significantly reduces information asymmetry in the labor market, empowers individuals to manage their careers, and provides a clear, standardized basis for skill recognition, thereby greatly enhancing the mobility and matching efficiency of the talent market.

Conclusion

In conclusion, this study, grounded in the context of Jiujiang Polytechnic University of Science and Technology, empirically validates a comprehensive theoretical model elucidating the impact mechanism of work requirements on vocational students' career development. The findings robustly demonstrate that work requirements not only exert a significant direct positive influence on career development but also operate through the critical mediating channels of career development learning and employability skills. Moreover, the reinforcing moderating effect of institutional factors is confirmed, highlighting that a supportive college environment acts as a crucial amplifier of the positive outcomes derived from work demands. These insights substantially enrich the theoretical discourse on vocational education by delineating the "how" and "when" of work requirements' impact. Consequently, the study provides a solid empirical foundation and actionable guidance for vocational colleges to refine talent cultivation models, for enterprises to engage in meaningful collaboration, and for policymakers to design enabling frameworks, collectively contributing to bridging the skill gap and fostering sustainable career development for vocational students.

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Appendix: Sample Questionnaire

Questionnaire on Work Requirements and Career Development for Vocational College Students

Dear Student,

We are conducting an academic study on work requirements and career development. This questionnaire aims to understand your genuine perceptions and experiences. All data will be strictly confidential, used only for aggregate analysis, and no personal information will be disclosed. It takes about 10-15 minutes to complete. Your participation is crucial to this research. Thank you for your support!

Part A: Demographic Information

(Please select or describe your situation)

Gender: Male Female

Year of Study: Year 1 Year 2 Year 3

Field of Study: Engineering & Technology Business & Management IT Others:

Part B: Main Questionnaire

(Please indicate the extent to which you agree with each statement based on your true feelings and experiences by marking "√". 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

No. Items	Strongly Disagree -> Strongly Agree
B1: Work Requirements	
1. My work/practice requires me to continuously learn new knowledge and skills.	□1 □2 □3 □4 □5
2. The tasks I perform are usually complex and challenging.	□1 □2 □3 □4 □5
3. I need to apply my professional knowledge to solve practical problems.	□1 □2 □3 □4 □5
4. My work/practice has clear requirements for quality and efficiency.	□1 □2 □3 □4 □5
B2: Career Development Learning	

No. Items

Strongly Disagree ->
Strongly Agree

5. I have a clear plan for my future career development. 1 2 3 4 5
6. I understand my own career interests and strengths. 1 2 3 4 5
7. I actively seek and utilize information and resources for career development. 1 2 3 4 5
8. I have a clear idea of the type of occupation I want to pursue after graduation. 1 2 3 4 5

B3: Employability Skills

9. I can communicate clearly and effectively with others, both orally and in writing. 1 2 3 4 5
10. I can collaborate well with team members to accomplish tasks together. 1 2 3 4 5
11. When facing problems, I can analyze the situation and find effective solutions. 1 2 3 4 5
12. I can adapt to new environments and job requirements. 1 2 3 4 5

B4: Institutional Factors

13. Our college provides adequate resources (e.g., training equipment, library) to support my learning and development. 1 2 3 4 5
14. The college's career guidance services (e.g., job-seeking guidance, career fairs) are very helpful to me. 1 2 3 4 5
15. Our college has close cooperation with enterprises, providing me with good practical opportunities. 1 2 3 4 5
16. The college's teachers have rich professional knowledge and practical experience. 1 2 3 4 5

B5: Career Development

17. I am confident in my ability to achieve my career goals. 1 2 3 4 5
18. I am optimistic about my future career prospects. 1 2 3 4 5

No. Items

Strongly Disagree ->
Strongly Agree

19. I believe the education I have received will help me find a good job. 1 2 3 4 5
20. Overall, I feel I am moving in the right direction with my career. 1 2 3 4 5
-

This is the end of the questionnaire. Thank you again for your participation and support!